ANALYTICAL REPORT

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

Laboratory Job ID: 240-163065-1 Client Project/Site: Ford LTP - Off-Site

For:

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

Attn: Kristoffer Hinskey

Mode Del Your

Authorized for release by: 3/11/2022 3:15:24 PM

Michael DelMonico, Project Manager I (330)497-9396

Michael.DelMonico@Eurofinset.com

·····LINKS ······

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www.eurofinsus.com/Env

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

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

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off-Site Laboratory Job ID: 240-163065-1

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Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Qualifiers

GC/MS VOA
Qualifier Qualifier Description

E Result exceeded calibration range.

U Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Example 2 Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Eurofins Canton

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Case Narrative

Client: ARCADIS U.S., Inc.

Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Job ID: 240-163065-1

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-163065-1

Comments

No additional comments.

Receipt

The samples were received on 2/25/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.0° C.

GC/MS VOA

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

VOA Prep

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

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Method Summary

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off-Site

Job ID: 240-163065-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

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

Laboratory References:

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

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Sample Summary

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

Job ID: 240-163065-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163065-1	TRIP BLANK_43	Water	02/21/22 00:00	02/25/22 08:00
240-163065-2	MW-95S 022122	Water	02/21/22 12:21	02/25/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Client Sample ID: TRIP BLANK_43 Lab Sample ID: 240-163065-1

No Detections.

No Detections.

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Client Sample ID: TRIP BLANK_43

Date Collected: 02/21/22 00:00 Date Received: 02/25/22 08:00 Lab Sample ID: 240-163065-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/28/22 18:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/28/22 18:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 18:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/28/22 18:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 18:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/28/22 18:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		62 - 137					02/28/22 18:55	1
4-Bromofluorobenzene (Surr)	112		56 ₋ 136					02/28/22 18:55	1
Toluene-d8 (Surr)	85		78 - 122					02/28/22 18:55	1
Dibromofluoromethane (Surr)	91		73 - 120					02/28/22 18:55	1

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Client Sample ID: MW-95S_022122

Date Collected: 02/21/22 12:21 Date Received: 02/25/22 08:00 Lab Sample ID: 240-163065-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/02/22 00:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		66 - 120					03/02/22 00:36	1
Method: 8260B - Volatile O	rganic Compo	unds (GC/I	MS)						
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/28/22 19:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/28/22 19:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 19:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/28/22 19:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 19:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/28/22 19:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			62 - 137					02/28/22 19:19	1
4-Bromofluorobenzene (Surr)	112		56 ₋ 136					02/28/22 19:19	1
Toluene-d8 (Surr)	88		78 - 122					02/28/22 19:19	1
Dibromofluoromethane (Surr)	90		73 - 120					02/28/22 19:19	1

Surrogate Summary

Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

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

Matrix: Water Prep Type: Total/NA

			Percent Surrogate Reco				
		DCA	BFB	TOL	DBFM		
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)		
240-163026-F-2 MS	Matrix Spike	82	121	90	95		
240-163026-F-2 MSD	Matrix Spike Duplicate	78	118	86	89		
240-163065-1	TRIP BLANK_43	78	112	85	91		
240-163065-2	MW-95S_022122	77	112	88	90		
LCS 240-518866/5	Lab Control Sample	74	118	88	89		
MB 240-518866/8	Method Blank	75	111	85	88		

Surrogate Legend

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

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

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

Matrix: Water Prep Type: Total/NA

			Percent Surrogate Recovery (Acceptance Limits)
		DCA	
Lab Sample ID	Client Sample ID	(66-120)	
240-163065-2	MW-95S_022122	79	
240-163074-G-3 MS	Matrix Spike	76	
240-163074-M-3 MSD	Matrix Spike Duplicate	81	
LCS 240-518984/4	Lab Control Sample	83	
MB 240-518984/5	Method Blank	82	
Surrogate Legend			

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Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

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

Lab Sample ID: MB 240-518866/8

Matrix: Water

Analysis Batch: 518866

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

MB MB Result Qualifier RL **MDL** Unit Dil Fac Analyte D Prepared Analyzed 1,1-Dichloroethene 1.0 U 1.0 0.49 ug/L 02/28/22 14:02 cis-1,2-Dichloroethene 1.0 U 1.0 0.46 ug/L 02/28/22 14:02 1.0 U 0.44 ug/L Tetrachloroethene 1.0 02/28/22 14:02 0.51 ug/L trans-1,2-Dichloroethene 1.0 U 1.0 02/28/22 14:02 Trichloroethene 10 U 1.0 0.44 ug/L 02/28/22 14:02 Vinyl chloride 1.0 U 1.0 0.45 ug/L 02/28/22 14:02

MB MB Surrogate %Recovery Qualifier Limits Prepared Dil Fac Analyzed 62 - 137 1,2-Dichloroethane-d4 (Surr) 75 02/28/22 14:02 4-Bromofluorobenzene (Surr) 111 56 - 136 02/28/22 14:02 85 78 - 122 Toluene-d8 (Surr) 02/28/22 14:02 Dibromofluoromethane (Surr) 88 73 - 120 02/28/22 14:02

Lab Sample ID: LCS 240-518866/5

Matrix: Water

Analysis Batch: 518866

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit %Rec Limits 20.0 22.6 63 - 134 1,1-Dichloroethene ug/L 113 cis-1,2-Dichloroethene 20.0 21.6 108 ug/L 77 - 123 Tetrachloroethene 20.0 19.6 98 ug/L 76 - 123 trans-1.2-Dichloroethene 20.0 22.5 ug/L 113 75 - 124 Trichloroethene 20.0 21.9 ug/L 109 70 - 122 Vinyl chloride 20.0 22.9 ug/L 114 60 - 144

LCS LCS Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 62 - 137 4-Bromofluorobenzene (Surr) 118 56 - 136 78 - 122 Toluene-d8 (Surr) 88 73 - 120 Dibromofluoromethane (Surr) 89

Lab Sample ID: 240-163026-F-2 MS

Matrix: Water

Analysis Batch: 518866

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

	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	13	U	250	283		ug/L		113	56 - 135
cis-1,2-Dichloroethene	63		250	337		ug/L		110	66 - 128
Tetrachloroethene	13	U	250	249		ug/L		99	62 - 131
trans-1,2-Dichloroethene	11	J	250	290		ug/L		112	56 - 136
Trichloroethene	13	U	250	282		ug/L		113	61 - 124
Vinyl chloride	600		250	857	E	ug/L		102	43 - 157

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	82		62 - 137
4-Bromofluorobenzene (Surr)	121		56 - 136
Toluene-d8 (Surr)	90		78 - 122

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Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off-Site Job ID: 240-163065-1

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

Lab Sample ID: 240-163026-F-2 MS

Matrix: Water

Analysis Batch: 518866

Client Sample ID: Matrix Spike

Prep Type: Total/NA

MS MS

%Recovery Qualifier Limits Surrogate Dibromofluoromethane (Surr) 95 73 - 120

Lab Sample ID: 240-163026-F-2 MSD

Matrix: Water

Analysis Batch: 518866

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	13	U	250	262		ug/L		105	56 - 135	8	26
cis-1,2-Dichloroethene	63		250	326		ug/L		105	66 - 128	3	14
Tetrachloroethene	13	U	250	227		ug/L		91	62 - 131	9	20
trans-1,2-Dichloroethene	11	J	250	273		ug/L		105	56 - 136	6	15
Trichloroethene	13	U	250	254		ug/L		102	61 - 124	10	15
Vinyl chloride	600		250	843	E	ug/L		97	43 - 157	2	24

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		62 - 137
4-Bromofluorobenzene (Surr)	118		56 - 136
Toluene-d8 (Surr)	86		78 - 122
Dibromofluoromethane (Surr)	89		73 - 120

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

Lab Sample ID: MB 240-518984/5

Matrix: Water

Analysis Batch: 518984

Client Sample ID: Method Blank

Prep Type: Total/NA

MB MB **Analyte** Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 1,4-Dioxane 2.0 U 2.0 03/01/22 19:35 0.86 ug/L

MB MB

%Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 03/01/22 19:35 82 66 - 120

Lab Sample ID: LCS 240-518984/4

Matrix: Water

Analysis Batch: 518984

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

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit D %Rec 1,4-Dioxane 10.0 9.68 ug/L 97 80 - 122

LCS LCS

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

Lab Sample ID: 240-163074-G-3 MS

Matrix: Water

Analysis Batch: 518984

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Unit Limits Analyte %Rec 1,4-Dioxane 2.0 U 10.0 10.2 ug/L 102 51 - 153

Eurofins Canton

QC Sample Results

Client: ARCADIS U.S., Inc.

Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

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

	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	76		66 - 120								
Lab Sample ID: 240-1630 Matrix: Water Analysis Batch: 518984						Client	Samp	le ID: N	latrix Spil Prep Ty		
		Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	1	16
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	81		66 - 120								

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QC Association Summary

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off-Site

Job ID: 240-163065-1

GC/MS VOA

Analysis Batch: 518866

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163065-1	TRIP BLANK_43	Total/NA	Water	8260B	
240-163065-2	MW-95S_022122	Total/NA	Water	8260B	
MB 240-518866/8	Method Blank	Total/NA	Water	8260B	
LCS 240-518866/5	Lab Control Sample	Total/NA	Water	8260B	
240-163026-F-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-163026-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 518984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163065-2	MW-95S_022122	Total/NA	Water	8260B SIM	
MB 240-518984/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-518984/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-163074-G-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-163074-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

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Lab Chronicle

Client: ARCADIS U.S., Inc.

Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Client Sample ID: TRIP BLANK_43 Lab Sample ID: 240-163065-1

Date Collected: 02/21/22 00:00 Matrix: Water Date Received: 02/25/22 08:00

Batch Batch Dilution Batch Prepared Method **Prep Type** Run **Factor** Number or Analyzed Analyst Type Lab TAL CAN Total/NA Analysis 8260B 518866 02/28/22 18:55 LEE

Date Collected: 02/21/22 12:21 Matrix: Water

Date Received: 02/25/22 08:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518866	02/28/22 19:19	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	518984	03/02/22 00:36	CS	TAL CAN

Laboratory References:

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

Eurofins Canton

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Laboratory: Eurofins Canton

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

Authority	thority Program		Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
lowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Chain of Custody Record

City/State/Zip: Novi, MI, 48377 pecial Instructions/QC Requirements & Comments: 3ample Address: 1213 | 1365 to 17 RST 3ubmit all results through Cadena at Jtomalia@cadenaco.com. Cadena #E203631 0 # 30080642,402.04 roject Number: 30080642,402,04 Project Name: Ford LTP Off-Site Address: 28550 Cabot Drive, Suite 500 telinquished by hone: 248-994-2240 clinquished by: ompany Name: Arcadis vel IV Reporting requested Possible Hazard Identification

Non-Hazard

Fl DIO) INON MW-955_0aalaa TRIP BLANK_ 43 MICHIGAN Sample Identification Client Contact Flammable Skin Irritant TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763 Company: Method of Shipment/Carrier: Shipping/Tracking No: Sampler Name: Client Project Manager: Kris Hinskey Email: kristoffer.hinskey@arcadis.com Telephone: 248-994-2240 Sample Date 5 Regulatory program: Poison B 12.21 Sample Time Unknown Air Pay Time / 33 Date/Time \times Aqueous Sediment DΨ Solid Other: 1030 053 145 H2SO4 Site Contact: Julia McClafferty Telephone: 734-644-5131 10 day Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal By Lab Archive For Mo Analysis Turnaround Time NPDES HNO3 HCI from below Received by: 3 weeks
2 weeks
1 week
2 days Received in Laboratory by: RCRA Unpres \geq Z Filtered Sample (Y / N) Other a 0 Composite=C / Grab=G 240-163065 Chain of Custody \times 1.1-DCE 8260B Storage × × × Telephone: 330-497-9396 cis-1,2-DCE 8260B ab Contact: Mike DelMonico \times Trans-1,2-DCE 8260B X × PCE 8260B \times TCE 8260B $\frac{1}{2}$ / $\frac{1}{10}$ TestAmerica × × Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM Months Date/Time: Sale/Time TestAmerica Laboratories, Inc. COC No: 7-74-72 1030 Walk-in client lob/SDG No ab sampling 3 VOAs for 8260B 3 VOAs for 8260B SIM 1 Trip Blank Sample Specific Notes / Special Instructions: 093/ 80

19. SAMPLE CONDITION	,
Sample(s)	were received after the recommended holding time had expired.
Sample(s)	
	were received with bubble >6 mm in diameter. (Notify PM)
20. SAMPLE PRESERVATION ,	· · · · · · · · · · · · · · · · · · ·
Sample(s)	were further preserved in the laboratory.
Time preserved:Preservative(s)	added/Lot number(s):
VOA Sample Preservation - Date/Time VOAs	Frozen:

additional next page

Samples processed by:

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

DATA VERIFICATION REPORT



March 12, 2022

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

CADENA project ID: E203631

Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater

Project number: 30080642.402.04 WA04 OFF-SITE GW Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - North Central

Laboratory submittal: 163065-1 Sample date: 2022-02-21

Report received by CADENA: 2022-03-11

Initial Data Verification completed by CADENA: 2022-03-12

Number of Samples:2 Sample Matrices:Water Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

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

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

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

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

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

Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - North Central

Laboratory Submittal: 163065-1

	Sample Name:	TRIP BLA	ANK_43			MW-959	5_02212	2	
	Lab Sample ID:	2401630	0651			2401630	0652		
	Sample Date:	2/21/20	22			2/21/20	22		
			Report		Valid		Report		Valid
Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC									
OSW-8260B									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l		ND	1.0	ug/l	
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l		ND	1.0	ug/l	
Tetrachloroethene	127-18-4	ND	1.0	ug/l		ND	1.0	ug/l	
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l		ND	1.0	ug/l	
Trichloroethene	79-01-6	ND	1.0	ug/l		ND	1.0	ug/l	
Vinyl chloride	75-01-4	ND	1.0	ug/l		ND	1.0	ug/l	
OSW-8260BBSim									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	



Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-163065-1

CADENA Verification Report: 2022-03-12

Analyses Performed By: TestAmerica

North Canton, Ohio

Report # 44843R Review Level: Tier III Project: 30080642.402.04

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-163065-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Sample Collection Davant Comple		Ana	lysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM
TRIP BLANK_43	240-163065-1	Water	02/21/2022		Х	
MW-95S_022122	240-163065-2	Water	02/21/2022		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

ORGANIC ANALYSIS INTRODUCTION

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

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

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

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

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

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

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

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

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

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

System performance and column resolution were acceptable.

3. Calibration

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

3.1 Initial Calibration

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

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

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

3.2 Continuing Calibration

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

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

4. Internal Standard Performance

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

All internal standard responses were within control limits.

5. Field Duplicate Analysis

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

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

6. Compound Identification

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

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

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

DATA VALIDATION CHECKLIST FOR VOCs

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

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: March 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: March 22, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

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

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Chain of Custody Record

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Company Name: Arcadis																									TestAmerica Laboratories, Inc.
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey				Site Contact: Julia McClafferty						Lab Contact: Mike DelMonico						COC No:								
	Telephone: 248	3-994-2240				Tele	phone	: 734	1-644-	5131					Teles	hone	330-4	197-93	196						
City/State/Zip: Novi, MI, 48377	E 11 1 1 6					\perp	Analys	T PORT IN		ound	I Maria		_												1 of 1 COCs
Phone: 248-994-2240	Email: kristoff	er.hinskey@a	rcadis.	.com			Amaiys	818 11	urgar	ound	rime	\dashv		Н	1			1	naly	ses	т-	_	_	_	For lab use only
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Project Number: 30080642.402.04	Method of Shi	ment/Carrier:					,					9	္			m				SIM					Lao samping
PO # 30080642.402.04	2.402.04 Shipping/Tract	king No:					Containers & Preservatives Containers & Preservatives Containers & Preservatives Containers & Containe						9	260			82608	S SC					Job/SDG No:		
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				snoc		3	2		Į.,	- E	٠	pred	Sodu	1.1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride	1,4-Dioxane					Sample Specific Notes /
Sample Identification	Sample Date	Sample Time	Air a	Aqueous	Solid	H2SO4	HN03	<u>⊒</u>	NaOH	NaOH Unpres	Other	Ē	ပိ	= =	CIS-	Trar	PCE	12	Ş	1.4					Special Instructions:
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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Client Sample ID: TRIP BLANK_43

Date Collected: 02/21/22 00:00 Date Received: 02/25/22 08:00 Lab Sample ID: 240-163065-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/28/22 18:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/28/22 18:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 18:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/28/22 18:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 18:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/28/22 18:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		62 - 137					02/28/22 18:55	1
4-Bromofluorobenzene (Surr)	112		56 ₋ 136					02/28/22 18:55	1
Toluene-d8 (Surr)	85		78 - 122					02/28/22 18:55	1
Dibromofluoromethane (Surr)	91		73 - 120					02/28/22 18:55	1

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-163065-1

Project/Site: Ford LTP - Off-Site

Client Sample ID: MW-95S_022122

Date Collected: 02/21/22 12:21 Date Received: 02/25/22 08:00 Lab Sample ID: 240-163065-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/02/22 00:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		66 - 120					03/02/22 00:36	1
Method: 8260B - Volatile O	rganic Compo	unds (GC/I	MS)						
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/28/22 19:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/28/22 19:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 19:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/28/22 19:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 19:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/28/22 19:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			62 - 137					02/28/22 19:19	1
4-Bromofluorobenzene (Surr)	112		56 - 136					02/28/22 19:19	1
Toluene-d8 (Surr)	88		78 - 122					02/28/22 19:19	1
Dibromofluoromethane (Surr)	90		73 - 120					02/28/22 19:19	1

3/11/2022

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