

Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton 4101 Shuffel Street NW North Canton, OH 44720 Tel: (330)497-9396

Laboratory Job ID: 240-144917-1 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: 3/11/2021 4:42:48 PM

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

·····LINKS ······

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Have a Question?



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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: 240-144917-1

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Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier **Qualifier Description**

Indicates the analyte was analyzed for but not detected.

Glossary

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

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

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

Duplicate Error Ratio (normalized absolute difference) **DER**

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 MLMinimum Level (Dioxin) MPN Most Probable Number Method Quantitation Limit MQL

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**

Relative Error Ratio (Radiochemistry) **RER**

Reporting Limit or Requested Limit (Radiochemistry) RL

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

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

Too Numerous To Count **TNTC**

Case Narrative

Client: ARCADIS U.S., Inc. Job ID: 240-144917-1 Project/Site: Ford LTP - Off Site

Job ID: 240-144917-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-144917-1

Comments

No additional comments.

Receipt

The samples were received on 2/25/2021 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 2.7° C.

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

VOA Prep

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

Method Summary

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

Job ID: 240-144917-1

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 TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Sample Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-144917-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-144917-1	TRIP BLANK	Water	02/23/21 00:00	02/25/21 08:00	
240-144917-2	MW-104S_022321	Water	02/23/21 16:30	02/25/21 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK Lab Sample ID: 240-144917-1

No Detections.

No Detections.

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-144917-1 Date Collected: 02/23/21 00:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 15:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 15:07	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 15:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 15:07	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 15:07	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 15:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 130			•		03/02/21 15:07	1
4-Bromofluorobenzene (Surr)	75		47 - 134					03/02/21 15:07	1
Toluene-d8 (Surr)	79		69 - 122					03/02/21 15:07	1
Dibromofluoromethane (Surr)	99		78 - 129					03/02/21 15:07	1

3/11/2021

Client Sample Results

Client: ARCADIS U.S., Inc.

Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

Client Sample ID: MW-104S_022321

Date Collected: 02/23/21 16:30 Date Received: 02/25/21 08:00 Lab Sample ID: 240-144917-2

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			03/02/21 18:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133					03/02/21 18:40	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	0.19	ug/L			03/02/21 16:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 16:19	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 16:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 16:19	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 16:19	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 16:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			75 - 130					03/02/21 16:19	1
4-Bromofluorobenzene (Surr)	67		47 - 134					03/02/21 16:19	1
Toluene-d8 (Surr)	80		69 - 122					03/02/21 16:19	1
Dibromofluoromethane (Surr)	113		78 - 129					03/02/21 16:19	1

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Surrogate Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

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

Matrix: Water Prep Type: Total/NA

			Pe	ercent Surre	ogate Reco
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(75-130)	(47-134)	(69-122)	(78-129)
240-144917-1	TRIP BLANK	96	75	79	99
240-144917-2	MW-104S_022321	115	67	80	113
240-144917-2 MS	MW-104S_022321	89	90	90	91
240-144917-2 MSD	MW-104S_022321	88	90	102	89
LCS 240-475070/4	Lab Control Sample	91	92	91	94
MB 240-475070/7	Method Blank	107	77	81	108

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	(70-133)	
240-144917-2	MW-104S_022321	91	
240-145076-O-2 MS	Matrix Spike	94	
240-145076-O-2 MSD	Matrix Spike Duplicate	91	
LCS 240-475052/4	Lab Control Sample	88	
MB 240-475052/5	Method Blank	87	
Surrogate Legend			

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

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Client: ARCADIS U.S., Inc. Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

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

Lab Sample ID: MB 240-475070/7

Matrix: Water

Analysis Batch: 475070

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

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.19 ug/L 1,1-Dichloroethene 1.0 U 1.0 03/02/21 14:44 cis-1,2-Dichloroethene 1.0 U 1.0 0.16 ug/L 03/02/21 14:44 1.0 U Tetrachloroethene 1.0 0.15 ug/L 03/02/21 14:44 trans-1,2-Dichloroethene 1.0 U 1.0 0.19 ug/L 03/02/21 14:44 Trichloroethene 1.0 U 1.0 0.10 ug/L 03/02/21 14:44 Vinyl chloride 1.0 U 1.0 0.20 ug/L 03/02/21 14:44

MB MB Surrogate %Recovery Qualifier Limits Prepared Dil Fac Analyzed 1,2-Dichloroethane-d4 (Surr) 107 75 - 130 03/02/21 14:44 4-Bromofluorobenzene (Surr) 77 47 - 134 03/02/21 14:44 81 69 - 122 Toluene-d8 (Surr) 03/02/21 14:44 Dibromofluoromethane (Surr) 108 78 - 129 03/02/21 14:44

Lab Sample ID: LCS 240-475070/4

Matrix: Water

Analysis Batch: 475070

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	10.0	11.0		ug/L		110	73 - 129	
cis-1,2-Dichloroethene	10.0	9.24		ug/L		92	75 - 124	
Tetrachloroethene	10.0	11.3		ug/L		113	70 - 125	
trans-1,2-Dichloroethene	10.0	11.8		ug/L		118	74 - 130	
Trichloroethene	10.0	9.62		ug/L		96	71 - 121	
Vinyl chloride	10.0	10.8		ug/L		108	61 - 134	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		75 - 130
4-Bromofluorobenzene (Surr)	92		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	94		78 - 129

Lab Sample ID: 240-144917-2 MS

Matrix: Water

Analysis Batch: 475070

Client Sample ID: MW-104S_022321 Prep Type: Total/NA

Analyte	Docult				MS				%Rec.
	Kesuit	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	1.0	U	10.0	11.2		ug/L		112	64 - 132
cis-1,2-Dichloroethene	1.0	U	10.0	9.43		ug/L		94	68 - 121
Tetrachloroethene	1.0	U	10.0	12.3		ug/L		123	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	11.8		ug/L		118	69 - 126
Trichloroethene	1.0	U	10.0	9.86		ug/L		99	56 - 124
Vinyl chloride	1.0	U	10.0	10.7		ug/L		107	49 - 136

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		75 - 130
4-Bromofluorobenzene (Surr)	90		47 - 134
Toluene-d8 (Surr)	90		69 - 122

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

Lab Sample ID: 240-144917-2 MS

Matrix: Water

Analysis Batch: 475070

Client Sample ID: MW-104S_022321

Prep Type: Total/NA

MS MS

%Recovery Qualifier Limits Surrogate Dibromofluoromethane (Surr) 91 78 - 129

Lab Sample ID: 240-144917-2 MSD

Matrix: Water

Analysis Batch: 475070

Client Sample ID: MW-104S 022321

Prep Type: Total/NA

Sample Sample Spike MSD MSD %Rec. **RPD** Limit Result Qualifier Added Limits RPD **Analyte** Result Qualifier Unit D %Rec 1.0 U 1,1-Dichloroethene 10.0 10.7 ug/L 107 64 - 132 4 35 cis-1,2-Dichloroethene ug/L 1.0 U 10.0 9.39 94 68 - 121 O 35 Tetrachloroethene 1.0 U 10.0 11.7 ug/L 117 52 - 129 5 35 trans-1.2-Dichloroethene 1.0 U 10.0 9.70 ug/L 35 97 69 - 12619 Trichloroethene 1.0 U 10.0 10.7 ug/L 107 56 - 124 8 35 Vinyl chloride 1.0 U 10.0 11.2 ug/L 112 49 - 136 35

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		75 - 130
4-Bromofluorobenzene (Surr)	90		47 - 134
Toluene-d8 (Surr)	102		69 - 122
Dibromofluoromethane (Surr)	89		78 - 129

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

Lab Sample ID: MB 240-475052/5

Matrix: Water

Analysis Batch: 475052

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

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 2.0 03/02/21 12:26 1,4-Dioxane 2.0 U 0.86 ug/L

MB MB

MB MB

Qualifier Limits Dil Fac Surrogate %Recovery Prepared Analyzed 1,2-Dichloroethane-d4 (Surr) 87 70 - 133 03/02/21 12:26

Lab Sample ID: LCS 240-475052/4

Matrix: Water

Analysis Batch: 475052

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

%Rec.

Spike LCS LCS Added Result Qualifier Limits Analyte Unit D %Rec 1,4-Dioxane 10.0 9.00 ug/L 90 80 - 135

LCS LCS

Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 88 70 - 133

Lab Sample ID: 240-145076-O-2 MS

Matrix: Water

Analysis Batch: 475052

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 9.73 ug/L 97 46 - 170

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QC Sample Results

Client: ARCADIS U.S., Inc.

Job ID: 240-144917-1

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)	94		70 - 133								
Lab Sample ID: 240-1450 Matrix: Water Analysis Batch: 475052	76-O-2 MSD					Client	Samp	le ID: N	latrix Spil Prep Ty		
	Sample	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	9.82	-	ug/L		98	46 - 170	1	26
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	91		70 - 133								

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QC Association Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 475052

Lab Sample ID 240-144917-2	Client Sample ID MW-104S_022321	Prep Type Total/NA	Matrix Water	Method 8260B SIM	Prep Batch
MB 240-475052/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-475052/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-145076-O-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-145076-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 475070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144917-1	TRIP BLANK	Total/NA	Water	8260B	_ <u> </u>
240-144917-2	MW-104S_022321	Total/NA	Water	8260B	
MB 240-475070/7	Method Blank	Total/NA	Water	8260B	
LCS 240-475070/4	Lab Control Sample	Total/NA	Water	8260B	
240-144917-2 MS	MW-104S_022321	Total/NA	Water	8260B	
240-144917-2 MSD	MW-104S 022321	Total/NA	Water	8260B	

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Lab Chronicle

Client: ARCADIS U.S., Inc. Job ID: 240-144917-1 Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-144917-1 Date Collected: 02/23/21 00:00

Matrix: Water

Date Received: 02/25/21 08:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	475070	03/02/21 15:07	LRW	TAL CAN

Client Sample ID: MW-104S_022321 Lab Sample ID: 240-144917-2

Date Collected: 02/23/21 16:30 **Matrix: Water**

Date Received: 02/25/21 08:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	475070	03/02/21 16:19	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	475052	03/02/21 18:40	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off Site

Job ID: 240-144917-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21 *
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21 *
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21 *
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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

Contact	Regulatory program: DW	" NPDES " RCRA " O	Other	
Company Name: Arcadis				TestAmerica Laburatorium, Inc.
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephoue: 330-497-9396	()0 ;
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis I urnaround I ime	Analyses	only
Project Name: Ford LTP Off-Site		TAT if different from below 3 weeks		Walk-in cliens
Project Number: 30050315.402.04	l e	()	ε	Lab sampling
PO # 30050315,402.04	Shipping/Tracking No:		8560B 8560B 860B	Job/SDG No:
		Containers & Preservatives	608 S-DCE 82 DCE 83	
Sample Identification	Sample Date Sample Time Advenus	_	1,1-DCI cis-1,2- Trans-1 PCE 82 TCE 82	Sample Special Naturations:
TRIP BLANK	1	72.	X X X X X X S S S S	1 Trip blank
MW-1045,022321	423/2 1630 6	2.	×	SECTION TO SECULA
And the second s	240-144917 Chain of Custody			
	-			
Possible Hazard Identification Non-Hazard	iant Poison B Thelwown	Sample Disposal (A fee may be assessed	Sample Disposal (A fee may be assessed ifamples are retained longer than 1 month)	
s/QC Requirements & Comments:		Neturn to Citent & Disposal	YEAD Archive For Months	
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.	aco.com. Cadena #E203631			
Relinquished by Andre Saper	Company: Date Time:	Received by:	Company:	Date Time:
Relinquished by:	Date Time:	Regard by:	Component	of ime
Relinguished by:	The same of	Received in Laboratory by:	Company:	Differing NO
COOK, Teatingmos Laboratores, Inc. Al regist reserved.			\	1
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Chain of Custody Record

Eurofins TestAmerica Canton Sample Receipt Form/Narrative		Login #: 144917
Canton Facility		
Client Site Name		Coeler unpacked by:
Cooler Received on 2-25-21 Opened on 2-2	75-21	Kyan C
		Other
Receipt After-hours: Drop-off Date/Time	Storage Location	
TestAmerica Cooler # Foam Box Client Cooler	Box Other	
Packing material used: Hubble Wrap Foam Plastic Bag COOLANT: Wet Ice Blue Ice Dry Ice Water 1. Cooler temperature upon receipt IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp.		mp. <u>2.7</u> ℃
IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp.	_°C Corrected Cooler Te	
 Were tamper/custody seals on the outside of the cooler(s)? If Yes -Were the seals on the outside of the cooler(s) signed & dated? -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg -Were tamper/custody seals intact and uncompromised? Shippers' packing slip attached to the cooler(s)? Did custody papers accompany the sample(s)? Were the custody papers relinquished & signed in the appropriate plants. Was/were the person(s) who collected the samples clearly identified. Did all bottles arrive in good condition (Unbroken)? Could all bottle labels (ID/Date/Time) be reconciled with the COC person of the correct bottle(s) used for the test(s) indicated? Sufficient quantity received to perform indicated analyses? Are these work share samples and all listed on the COC? If yes, Questions 13-17 have been checked at the originating labor. Were all preserved sample(s) at the correct pH upon receipt? Were all preserved sample(s) at the correct pH upon receipt? Were air bubbles >6 mm in any VOA vials? Larger the Larger the Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	place? red on the COC? res res res res res res res re	No NA No NA No NA No NA No N
Contacted PM Date by	via Verbal Voie	
Contacted Five Date	via veibai voi	oc Man One
Concerning		
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES	additional next page	Samples processed by:
19. SAMPLE CONDITION Sample(s) were received after to	the recommended holding	time had expired
Sample(s)were received after to		a broken container.
Sample(s) were receive		
20. SAMPLE PRESERVATION		
Sample(s)	were furth	er preserved in the laboratory.
Sample(s)Preservative(s) added/Lot number(s):		
VOA Sample Preservation - Date/Time VOAs Frozen:		

WI-NC-099

DATA VERIFICATION REPORT



March 11, 2021

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: 30050315.402.04 off site

Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 144917-1 Sample date: 2021-02-23

Report received by CADENA: 2021-03-11

Initial Data Verification completed by CADENA: 2021-03-11

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, MS/MSD Recovery, MS/MSD RPD, 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

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 144917-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401449 2/23/20	9171			MW-104S_022321 2401449172 2/23/2021				
				Report		Valid		Report		Valid	
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	
GC/MS VOC											
OSW-8260											
	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-8260	<u>OBBSim</u>										
	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 # 240-144917-1

CADENA Verification Report: 2021-03-11

Analyses Performed By: TestAmerica North Canton, Ohio

Report # 40667R Review Level: Tier III Project: 30080642.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-144917-1 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) includes 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		Ana	lysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM
TRIP BLANK	240-144917-1	Water	02/23/2021		Х	
MW-104S_022321	240-144917-2	Water	02/23/2021		Х	Х

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

	Rep	orted		mance ptable	Not
Items Reviewed	No	Yes	No	Yes	Required
Sample receipt condition		Х		Х	
2. Requested analyses and sample results		X		X	
Master tracking list		Х		Х	
4. Methods of analysis		Х		Х	
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		Х	
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	Rep	orted	Acce	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	
lon abundance criteria for each instrument used		Х		Х	
Field Duplicate RPD	Х				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		X		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: Hrishikesh Upadhyaya

SIGNATURE:

DATE: March 23, 2021

PEER REVIEW: Andrew Korycinski

DATE: March 24, 2021

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIG Est America

TestAmerica Laboratory location: Brighton - 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810/29-2763

Client Contact	Regula	tory program	:		D'	W.	>	PDES		1 40	RCRA		Oth	107					-		1	90					
Company Name: Arcadis																						Te	stAmerica	Labor	erm 6 as miss.		
Address: 28550 Cabot Drive, Suite 500	Client Project	Manager: Kris	Hinsl	iev			Site Contact: Julia McClafferty								Lab Contact: Mike DelMonico						CO	C No:	TIME	MAULINE	inc.		
	Telephone: 248	3-994-2240				-	Telephone: 734-644-5131							Telephone: 330-497-9396							+						
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com																		上	of	7	COCH					
Phone: 248-994-2240	E.mau: Kriston	er.ainskey@ai	cadis.	com			Analysis Turnaround Time						Analyses							Т	For	lab use or	ly				
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Submit all results through Cadena at jtomalia@cadenaco.c Level IV Reporting requested.	om. Cadena #	E203631																									
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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-144917-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK

Date Collected: 02/23/21 00:00 Date Received: 02/25/21 08:00 Lab Sample ID: 240-144917-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 15:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 15:07	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 15:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 15:07	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 15:07	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 15:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 130			-		03/02/21 15:07	1
4-Bromofluorobenzene (Surr)	75		47 - 134					03/02/21 15:07	1
Toluene-d8 (Surr)	79		69 - 122					03/02/21 15:07	1
Dibromofluoromethane (Surr)	99		78 - 129					03/02/21 15:07	1

Client Sample ID: MW-104S_022321

Date Collected: 02/23/21 16:30

Matrix: Water

Lab Sample ID: 240-144917-2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/02/21 18:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 133			-		03/02/21 18:40	1
Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 16:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 16:19	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 16:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 16:19	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 16:19	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 16:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		75 - 130			-		03/02/21 16:19	1
4-Bromofluorobenzene (Surr)	67		47 - 134					03/02/21 16:19	1
Toluene-d8 (Surr)	80		69 - 122					03/02/21 16:19	1
Dibromofluoromethane (Surr)	113		78 - 129					03/02/21 16:19	1