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ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Megan Meckley Arcadis US Inc. 28550 Cabot Drive Suite 500 Novi, Michigan 48377 Generated 11/20/2024 12:19:47 PM

JOB DESCRIPTION

Ford LTP

JOB NUMBER

240-214637-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203



Eurofins Cleveland

Job Notes

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Authorization

Generated 11/20/2024 12:19:47 PM

Authorized for release by Michael DelMonico, Project Manager I <u>Michael.DelMonico@et.eurofinsus.com</u> (330)497-9396 Client: Arcadis US Inc. Project/Site: Ford LTP

Laboratory Job ID: 240-214637-1

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Definitions/Glossary

Client: Arcadis US Inc. Job ID: 240-214637-1

Project/Site: Ford LTP

Qualifiers

GC/MS VOA

Qualifier Description

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.
₩	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)
D.: E	

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

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Case Narrative

Client: Arcadis US Inc. Project: Ford LTP

Job ID: 240-214637-1 Eurofins Cleveland

Job Narrative 240-214637-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- · Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 11/9/2024 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 time was 2.0°C.

GC/MS VOA

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

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Job ID: 240-214637-1

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Method Summary

Client: Arcadis US Inc.

Project/Site: Ford LTP

Job ID: 240-214637-1

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

Protocol References:

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

Laboratory References:

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

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Sample Summary

Client: Arcadis US Inc.

Project/Site: Ford LTP

Job ID: 240-214637-1

Lab Sample ID	Sample ID Client Sample ID		Collected	Received	
240-214637-2	MW-160S_110724	Water	11/07/24 13:05	11/09/24 08:00	

Detection Summary

Client: Arcadis US Inc.

Project/Site: Ford LTP

Job ID: 240-214637-1

Client Sample ID: MW-160S_110724

Lab Sample ID: 240-214637-2

No Detections.

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This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Arcadis US Inc. Job ID: 240-214637-1

Project/Site: Ford LTP

Toluene-d8 (Surr)

Dibromofluoromethane (Surr)

Client Sample ID: MW-160S_110724

Lab Sample ID: 240-214637-2 Date Collected: 11/07/24 13:05

107

105

Matrix: Water

11/18/24 02:41

11/18/24 02:41

Date Received:	11/09/24	08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/24 15:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		68 - 127			-		11/13/24 15:45	1

1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/24 15:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		68 - 127					11/13/24 15:45	1
- Method: SW846 8260D - Volat	ile Organic Comp	ounds by G	SC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/24 02:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/24 02:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/24 02:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/24 02:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/24 02:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/24 02:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		62 - 137			-		11/18/24 02:41	1
4-Bromofluorobenzene (Surr)	108		56 ₋ 136					11/18/24 02:41	1

78 - 122

73 - 120

11/20/2024

Surrogate Summary

Client: Arcadis US Inc. Job ID: 240-214637-1

Project/Site: Ford LTP

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

Matrix: Water Prep Type: Total/NA

				Percent Su	rrogate Rec
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-214637-2	MW-160S_110724	103	108	107	105
240-214653-C-23 MS	Matrix Spike	92	96	99	95
240-214653-C-23 MSD	Matrix Spike Duplicate	92	97	100	95
LCS 240-635608/5	Lab Control Sample	92	103	100	96
MB 240-635608/9	Method Blank	96	97	101	96

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

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

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

Matrix: Water Prep Type: Total/NA

		DCA	
Lab Sample ID	Client Sample ID	(68-127)	
240-214637-2	MW-160S_110724	100	
240-214640-B-2 MS	Matrix Spike	90	
240-214640-B-2 MSD	Matrix Spike Duplicate	102	
LCS 240-635039/5	Lab Control Sample	93	
MB 240-635039/7	Method Blank	94	

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

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Client: Arcadis US Inc. Job ID: 240-214637-1

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

Lab Sample ID: MB 240-635608/9

Matrix: Water

Project/Site: Ford LTP

Analysis Batch: 635608

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

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/24 22:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/24 22:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/24 22:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/24 22:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/24 22:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/24 22:19	1

MB MB %Recovery Qualifier Dil Fac Surrogate Limits Prepared Analyzed 1,2-Dichloroethane-d4 (Surr) 62 - 137 11/17/24 22:19 96 4-Bromofluorobenzene (Surr) 97 56 - 136 11/17/24 22:19 Toluene-d8 (Surr) 101 78 - 122 11/17/24 22:19 Dibromofluoromethane (Surr) 96 73 - 120 11/17/24 22:19

Lab Sample ID: LCS 240-635608/5

Matrix: Water

Analysis Batch: 635608

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	20.0	20.8		ug/L		104	63 - 134	
cis-1,2-Dichloroethene	20.0	20.1		ug/L		100	77 - 123	
Tetrachloroethene	20.0	20.7		ug/L		104	76 - 123	
trans-1,2-Dichloroethene	20.0	19.7		ug/L		99	75 - 124	
Trichloroethene	20.0	20.0		ug/L		100	70 - 122	
Vinyl chloride	20.0	16.1		ug/L		81	60 - 144	

LCS LCS Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 92 62 - 137 4-Bromofluorobenzene (Surr) 56 - 136 103 Toluene-d8 (Surr) 100 78 - 122 73 - 120 Dibromofluoromethane (Surr) 96

Analysis Batch: 635608

Lab Sample ID: 240-214653-C-23 MS Client Sample ID: Matrix Spike **Matrix: Water** Prep Type: Total/NA

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	10	U	200	195		ug/L		98	56 - 135	
cis-1,2-Dichloroethene	10	U	200	189		ug/L		94	66 - 128	
Tetrachloroethene	10	U	200	191		ug/L		96	62 - 131	
trans-1,2-Dichloroethene	10	U	200	188		ug/L		94	56 - 136	
Trichloroethene	28		200	217		ug/L		94	61 - 124	
Vinyl chloride	10	U	200	153		ug/L		76	43 - 157	

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		62 - 137
4-Bromofluorobenzene (Surr)	96		56 - 136
Toluene-d8 (Surr)	99		78 - 122

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11/20/2024

Spike

Added

200

200

200

200

200

200

MSD MSD

Qualifier

ug/L

ug/L

ug/L

Result

200

194

195

191

220

156

Client: Arcadis US Inc. Project/Site: Ford LTP

Job ID: 240-214637-1

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

Lab Sample ID: 240-214653-C-23 MS

Matrix: Water

Analysis Batch: 635608

Client Sample ID: Matrix Spike

Prep Type: Total/NA

MS MS

Sample Sample

10 U

10 U

10 U

10 U

Result Qualifier

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

Lab Sample ID: 240-214653-C-23 MSD

Matrix: Water

1,1-Dichloroethene

Tetrachloroethene

cis-1,2-Dichloroethene

trans-1.2-Dichloroethene

Analyte

Analysis Batch: 635608

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

RPD %Rec Unit D %Rec Limits RPD Limit ug/L 100 56 - 135 26 97 66 - 128 ug/L 3 14 ug/L 98 62 - 131 20

56 - 136

61 - 124

43 - 157

95

96

Trichloroethene 28 Vinyl chloride 10 U MSD MSD

Qualifier Surrogate %Recovery Limits 1,2-Dichloroethane-d4 (Surr) 92 62 - 137 97 4-Bromofluorobenzene (Surr) 56 - 136 Toluene-d8 (Surr) 100 78 - 122 Dibromofluoromethane (Surr) 95 73 - 120

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

Lab Sample ID: MB 240-635039/7

Matrix: Water

Analysis Batch: 635039

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Limits

75 - 121

Prep Type: Total/NA

Analyte Result Qualifier RL MDL Unit Analyzed Dil Fac Prepared 1,4-Dioxane 2.0 U 2.0 0.86 ug/L 11/13/24 11:03

MB MB

MR MR

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 94 68 - 127 11/13/24 11:03

Lab Sample ID: LCS 240-635039/5

Analyte

1,4-Dioxane

Matrix: Water Prep Type: Total/NA Analysis Batch: 635039 Spike LCS LCS %Rec

Result

9.76

Qualifier

Unit

ug/L

Added

10.0

LCS LCS

%Recovery Qualifier Surrogate Limits 68 - 127 1,2-Dichloroethane-d4 (Surr) 93

Lab Sample ID: 240-214640-B-2 MS

Matrix: Water

Analysis Batch: 635039

Client Sample ID: Matrix Spike

D

%Rec

98

Prep Type: Total/NA

Sample Sample Spike MS MS %Rec Result Qualifier Added Qualifier Limits Analyte Result Unit %Rec 1,4-Dioxane 2.0 U 10.0 8.14 81 20 - 180 ug/L

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15

15

24

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QC Sample Results

Client: Arcadis US Inc. Job ID: 240-214637-1

Project/Site: Ford LTP

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

%Recovery Qualifier

102

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	90		68 - 127

Lab Sample	ID: 240-214640-B-2	MSD

Matrix: Water

Surrogate

Analysis Batch: 635039

1,2-Dichloroethane-d4 (Surr)

_	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	9.47	-	ug/L		95	20 - 180	15	20
	Med	MeD									

Limits

68 - 127

Prep Type: Total/NA

Client Sample ID: Matrix Spike Duplicate

QC Association Summary

Client: Arcadis US Inc.

Project/Site: Ford LTP

Job ID: 240-214637-1

GC/MS VOA

Analysis Batch: 635039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-214637-2	MW-160S_110724	Total/NA	Water	8260D SIM	
MB 240-635039/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-635039/5	Lab Control Sample	Total/NA	Water	8260D SIM	
240-214640-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-214640-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 635608

Lab Sample	D Client	Sample ID	Prep Type	Matrix	Method	Prep Batch
240-214637-2	MW-16	0S_110724	Total/NA	Water	8260D	
MB 240-6356	08/9 Method	l Blank	Total/NA	Water	8260D	
LCS 240-635	608/5 Lab Co	ntrol Sample	Total/NA	Water	8260D	
240-214653-0	C-23 MS Matrix S	Spike	Total/NA	Water	8260D	
240-214653-0	C-23 MSD Matrix S	Spike Duplicate	Total/NA	Water	8260D	

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Lab Chronicle

Client: Arcadis US Inc. Job ID: 240-214637-1

Project/Site: Ford LTP

Client Sample ID: MW-160S_110724

Lab Sample ID: 240-214637-2 Date Collected: 11/07/24 13:05

Matrix: Water

Date Received: 11/09/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	635608	CS	EET CLE	11/18/24 02:41
Total/NA	Analysis	8260D SIM		1	635039	R5XG	EET CLE	11/13/24 15:45

Laboratory References:

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

Accreditation/Certification Summary

Client: Arcadis US Inc.

Project/Site: Ford LTP

Job ID: 240-214637-1

Laboratory: Eurofins Cleveland

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	02-28-25	
Connecticut	State	PH-0806	12-31-26	
Georgia	State	4062	02-27-25	
Illinois	NELAP	200004	08-31-25	
lowa	State	421	06-01-25	
Kentucky (UST)	State	112225	02-27-25	
Kentucky (WW)	State	KY98016	12-30-24	
Minnesota	NELAP	039-999-348	12-31-24	
New Hampshire	NELAP	225024	09-30-25	
New Jersey	NELAP	OH001	07-03-25	
New York	NELAP	10975	04-02-25	
Ohio VAP	State	ORELAP 4062	02-27-25	
Oregon	NELAP	4062	02-27-25	
Pennsylvania	NELAP	68-00340	08-31-25	
Texas	NELAP	T104704517-22-19	08-31-25	
USDA	US Federal Programs	P330-18-00281	01-05-27	
Virginia	NELAP	460175	09-14-25	
West Virginia DEP	State	210	12-31-24	

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Chain of Custody Record

MICHIGAN 190

Tes	Ar	ne	eri	ca

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763 THE CLADER IN ENVIRONMENTAL TESTING Client Contact Regulatory program: NPDES RCRA Company Name: Arcadis TestAmerica Laboratories, Inc. Client Project Manager: Kris Hinskey Site Contact: Christina Weaver Lab Contact: Mike DelMonico COC No: Address: 28550 Cabot Drive, Suite 500 Telephone: 248-994-2240 Telephone: 248-994-2240 Telephone: 330-497-9396 City/State/Zip: Novi, MI, 48377 1 of 1 COCs Analysis Turnaround Time Email: kristoffer.hinskey@arcadis.com Analyses For lab use only Phone: 248-994-2240 Sampler Name: TAT if different from below Walk-in client Project Name: Ford LTP 3 weeks P (UMM ₹ 2 weeks Lab sampling Project Number: 30206169.0401.03 Method of Shipment/Carrier: 1 week .4-Dioxane 8260D SIM 2 days Vinyl Chloride 8260D PO # US3410018772 Shipping/Tracking No: □ 1 day Job/SDG No TCE 8260D PCE 8260D Sample Specific Notes / HN03 Solid Special Instructions: 豆 Air Sample Identification Sample Date | Sample Time TRIP BLANK Χ G X X 1 Trip Blank 3 VOAs for 8260D 3 VOAs for 8260D SIM 240-214337 COC Possible Heaard Identification Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return to Client Disposal By Lab - Empleand ['lammable in Irritant Poison B Inknown Archive For Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728 Level IV Reporting requested. Relinguished by Date/Time: PH.00 809

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VUA Sample Preservation - Date/Lime VUAs Frozen.
Sample(s) were further preserved in the laboratory Time preserved Preservative(s) added/Lot number(s): were further preserved in the laboratory
20. SAMPLE PRESERVATION
Sample(s) were received with bubble >6 mm in diameter (Notify PM)
**LE CONDITION were received after the recom
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
Concerning
Contacted PM Date by via Verbal Voice Mail Other
Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Was a LL Hg or Me Hg trip blank present?
Were VOAs on the COC? Were aur bubbles >6 mm in any VOA vials? Larger than this. Yes (No) NA
ting laboratory
dyses?
For each sample, does the COC specify preservatives (NN), # of contamers (NN), and said Were correct bottle(s) used for the test(s) indicated?
7 Did all bottles arrive in good condition (Unbroken)? 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
5 Were the custody papers relinquished & signed in the appropriate place? 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
₹ (₹
-Were tamper/custody seals intact and uncompromised?
Yes No NA
be outside of the cooler(s)? If Yes Quantity 769 No
IR GUN# 21 (CF + 0.2°C) Observed Cooler Temp: 18°C Corrected Cooler Temp 7.0°C
let Ice Blue Ice Dry Ice Water
Packing material used. Bubble Wign Foam Plastic Bag None Other
Drop-off Date/Time
xp-UPS_FAS_Waypoint
Client // Codes Site Name Cooler Received on //- 9-24 Onened on //- 9-24
erion Facility
Eurolins - Cleveland Sample Receipt Form/Narrative Login # ;

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Login Container Summary Report

MW-160S_110724	MW-160S_110724	MW-160S_110724	MW-160S_110724	MW-160S_110724	TRIP BLANK_38	Client Sample ID	Temperature readings
240-214637-E-2	240-214637-D-2	240-214637-C-2	240-214637-B-2	240-214637-A-2	240-214637-A-1	<u>Lab ID</u>	
Voa Vial 40ml - Hydrochloric Acıd	Voa Vial 40ml - Hydrochloric Acid	Voa Vial-40ml - Hydrochloric Acid	Voa Vial 40ml - Hydrochloric Acid	Voa Vial 40ml - Hydrochloric Acid	Voa Vial 40ml - Hydrochloric Acid	Container Type	
						Container Preservation Preservation pH Temp Added Lot Number	11

MW-160S_110724

240-214637-G-2

Voa Vial 40ml - Hydrochloric Acid

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240-214637

DATA VERIFICATION REPORT



November 21, 2024

Megan Meckley Arcadis 28550 Cabot Drive Suite 500 Novi, MI US 48377

CADENA project ID: E203728

Project: Ford Livonia Transmission Plant - Soil Gas, Ground Water and Soil

Project number: 30206169.0401.04_WA-03

Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory submittal: 214637-1 Sample date: 2024-11-07

Report received by CADENA: 2024-11-20

Initial Data Verification completed by CADENA: 2024-11-21

Number of Samples:1 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: E203728

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory Submittal: 214637-1

 Sample Name:
 MW-160S_110724

 Lab Sample ID:
 2402146372

 Sample Date:
 11/7/2024

		Sample Date:	11///20	24		
				Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier
GC/MS VOC						
OSW-826	<u>0D</u>					
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	
	Trichloroethene	79-01-6	ND	1.0	ug/l	
	Vinyl chloride	75-01-4	ND	1.0	ug/l	
OSW-826	<u>ODSIM</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 # 240-214637-1

CADENA Verification Report: 2024-11-21

Analyses Performed By: Eurofins Cleveland Barberton, Ohio

Report # 56910R Review Level: Tier III Project: 30206169.0401.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-214637-1 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 ID	Lab ID	Matrix	Sample	Parent Sample	Ana	lysis
Sample 1D	Labib	Collection Dat	Collection Date	Farent Sample	VOC	VOC SIM
MW-160S_110724	240-214637-2	Water	11/07/2024		X	Х

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

Items Reviewed	Rep	orted		mance otable	Not
	No	Yes	No	Yes	Required
Sample receipt condition		Х		Х	
2. Requested analyses and sample results		X		Х	
Master tracking list		X		Х	
4. Methods of analysis		X		Х	
5. Reporting limits		X		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
8. Sample preservation verification (as applicable)		Х		Х	
9. 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	

Note:

Trip Blank provided in the COC (Trip Blank_38) was not collected due to equipment malfunction.

ORGANIC ANALYSIS INTRODUCTION

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

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.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - 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 8260D/8260D-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 continuing 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

Rep	orted			Not Required
No	Yes	No	Yes	Required
C/MS)				
	Х		Х	
	Х		Х	
	Х		Х	
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	No C/MS)	X X X X X X X X X X X X X X X X X X X	Reported Acce No Yes No C/MS) X X X X X X X X X X X X X	No Yes No Yes

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Febin J S

SIGNATURE: Contact

DATE: December 12, 2024

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2024

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

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Definitions/Glossary

Client: Arcadis US Inc.

Job ID: 240-214637-1

Project/Site: Ford LTP

Qualifiers

GC/MS VOA

 Qualifier
 Qualifier Description

 U
 Indicates the analyte was analyzed for but not detected.

Glossary

Cioccary	
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
%R	Percent Recovery

%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

Client Sample Results

Client: Arcadis US Inc.

Job ID: 240-214637-1

Project/Site: Ford LTP

Client Sample ID: MW-160S_110724 Lab Sample ID: 240-214637-2

Date Collected: 11/07/24 13:05 Matrix: Water

Date Received: 11/09/24 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/24 15:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		68 - 127			-		11/13/24 15:45	1
Method: SW846 8260D - Volat	ile Organic Comp	ounds by G	SC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/24 02:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/24 02:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/24 02:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/24 02:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/24 02:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/24 02:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		62 - 137			-		11/18/24 02:41	1
4-Bromofluorobenzene (Surr)	108		56 ₋ 136					11/18/24 02:41	1
Toluene-d8 (Surr)	107		78 - 122					11/18/24 02:41	1
Dibromofluoromethane (Surr)	105		73 - 120					11/18/24 02:41	1