

ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

Ford LTP

JOB NUMBER

240-204914-1

Eurofins Cleveland

Job Notes

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Authorization



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Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Detection Summary	8
Client Sample Results	9
Surrogate Summary	12
QC Sample Results	13
QC Association Summary	17
Lab Chronicle	18
Certification Summary	19
Chain of Custody	20

Definitions/Glossary

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
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)
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

Case Narrative

Client: Arcadis U.S., Inc.
Project: Ford LTP

Job ID: 240-204914-1

Job ID: 240-204914-1

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Job Narrative 240-204914-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample 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 5/22/2024 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 3.4°C.

GC/MS VOA

Method 8260D: The laboratory control sample (LCS) for analytical batch 240-614605 recovered outside control limits for the following analytes: trans-1,2-Dichloroethene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 240-614605 recovered above the upper control limit for 1,1-Dichloroethene and trans-1,2-Dichloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

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Method Summary

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

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



Sample Summary

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-204914-1	TRIP BLANK_96	Water	05/20/24 00:00	05/22/24 08:00
240-204914-2	PW-16-01_052024	Water	05/20/24 10:55	05/22/24 08:00
240-204914-3	MW-68_052024	Water	05/20/24 09:05	05/22/24 08:00

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

Client Sample ID: TRIP BLANK_96

Lab Sample ID: 240-204914-1

No Detections.

Client Sample ID: PW-16-01_052024

Lab Sample ID: 240-204914-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.96	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	57		50	23	ug/L	50		8260D	Total/NA
Vinyl chloride	930		50	23	ug/L	50		8260D	Total/NA

Client Sample ID: MW-68_052024

Lab Sample ID: 240-204914-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.3		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.99	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	4.7		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

Client Sample ID: TRIP BLANK_96

Lab Sample ID: 240-204914-1

Date Collected: 05/20/24 00:00

Matrix: Water

Date Received: 05/22/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/28/24 23:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/28/24 23:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/24 23:31	1
trans-1,2-Dichloroethene	1.0	U **	1.0	0.51	ug/L			05/28/24 23:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/24 23:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/28/24 23:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		62 - 137		05/28/24 23:31	1
4-Bromofluorobenzene (Surr)	95		56 - 136		05/28/24 23:31	1
Toluene-d8 (Surr)	100		78 - 122		05/28/24 23:31	1
Dibromofluoromethane (Surr)	105		73 - 120		05/28/24 23:31	1

Client Sample Results

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

Client Sample ID: PW-16-01_052024

Lab Sample ID: 240-204914-2

Date Collected: 05/20/24 10:55

Matrix: Water

Date Received: 05/22/24 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	0.96	J	2.0	0.86	ug/L			05/28/24 22:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		68 - 127					05/28/24 22:46	1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	50	U	50	25	ug/L			05/29/24 09:36	50
cis-1,2-Dichloroethene	57		50	23	ug/L			05/29/24 09:36	50
Tetrachloroethene	50	U	50	22	ug/L			05/29/24 09:36	50
trans-1,2-Dichloroethene	50	U	50	26	ug/L			05/29/24 09:36	50
Trichloroethene	50	U	50	22	ug/L			05/29/24 09:36	50
Vinyl chloride	930		50	23	ug/L			05/29/24 09:36	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		62 - 137					05/29/24 09:36	50
4-Bromofluorobenzene (Surr)	92		56 - 136					05/29/24 09:36	50
Toluene-d8 (Surr)	100		78 - 122					05/29/24 09:36	50
Dibromofluoromethane (Surr)	104		73 - 120					05/29/24 09:36	50

Client Sample Results

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

Client Sample ID: MW-68_052024

Lab Sample ID: 240-204914-3

Date Collected: 05/20/24 09:05

Matrix: Water

Date Received: 05/22/24 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	2.3		2.0	0.86	ug/L			05/28/24 23:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		68 - 127					05/28/24 23:10	1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/29/24 10:01	1
cis-1,2-Dichloroethene	0.99	J	1.0	0.46	ug/L			05/29/24 10:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/29/24 10:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/29/24 10:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/29/24 10:01	1
Vinyl chloride	4.7		1.0	0.45	ug/L			05/29/24 10:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					05/29/24 10:01	1
4-Bromofluorobenzene (Surr)	91		56 - 136					05/29/24 10:01	1
Toluene-d8 (Surr)	100		78 - 122					05/29/24 10:01	1
Dibromofluoromethane (Surr)	104		73 - 120					05/29/24 10:01	1

Surrogate Summary

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (62-137)	BFB (56-136)	TOL (78-122)	DBFM (73-120)
240-204738-A-11 MS	Matrix Spike	98	97	95	99
240-204738-D-11 MSD	Matrix Spike Duplicate	97	97	96	99
240-204914-1	TRIP BLANK_96	109	95	100	105
240-204914-2	PW-16-01_052024	120	92	100	104
240-204914-2 MS	PW-16-01_052024	106	111	102	100
240-204914-2 MSD	PW-16-01_052024	104	110	101	99
240-204914-3	MW-68_052024	118	91	100	104
LCS 240-614605/4	Lab Control Sample	100	103	101	103
LCS 240-614653/4	Lab Control Sample	106	111	104	101
MB 240-614605/7	Method Blank	103	95	100	103
MB 240-614653/6	Method Blank	116	92	100	102

Surrogate Legend

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

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (68-127)
240-204853-H-4 MS	Matrix Spike	90
240-204853-H-4 MSD	Matrix Spike Duplicate	92
240-204914-2	PW-16-01_052024	91
240-204914-3	MW-68_052024	87
LCS 240-614602/4	Lab Control Sample	87
MB 240-614602/6	Method Blank	88

Surrogate Legend

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

QC Sample Results

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

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

Lab Sample ID: MB 240-614605/7

Matrix: Water

Analysis Batch: 614605

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/28/24 16:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/28/24 16:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/24 16:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/28/24 16:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/24 16:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/28/24 16:16	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	103		62 - 137		05/28/24 16:16	1
4-Bromofluorobenzene (Surr)	95		56 - 136		05/28/24 16:16	1
Toluene-d8 (Surr)	100		78 - 122		05/28/24 16:16	1
Dibromofluoromethane (Surr)	103		73 - 120		05/28/24 16:16	1

Lab Sample ID: LCS 240-614605/4

Matrix: Water

Analysis Batch: 614605

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	25.0	26.6		ug/L		106	77 - 123
Tetrachloroethene	25.0	27.4		ug/L		110	76 - 123
trans-1,2-Dichloroethene	25.0	31.6	*+	ug/L		126	75 - 124
Trichloroethene	25.0	26.5		ug/L		106	70 - 122
Vinyl chloride	12.5	10.9		ug/L		88	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	100		62 - 137
4-Bromofluorobenzene (Surr)	103		56 - 136
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	103		73 - 120

Lab Sample ID: 240-204738-A-11 MS

Matrix: Water

Analysis Batch: 614605

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	25.0	30.7		ug/L		123	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131
trans-1,2-Dichloroethene	1.0	U *+	25.0	30.9		ug/L		124	56 - 136
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124
Vinyl chloride	1.0	U	12.5	10.3		ug/L		83	43 - 157

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	97		56 - 136
Toluene-d8 (Surr)	95		78 - 122

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QC Sample Results

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

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

Lab Sample ID: 240-204738-A-11 MS
Matrix: Water
Analysis Batch: 614605

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

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-204738-D-11 MSD
Matrix: Water
Analysis Batch: 614605

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

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
1,1-Dichloroethene	1.0	U	25.0	31.1		ug/L		124	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	25.9		ug/L		104	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U**	25.0	30.8		ug/L		123	56 - 136	0	15
Trichloroethene	1.0	U	25.0	24.6		ug/L		99	61 - 124	0	15
Vinyl chloride	1.0	U	12.5	10.3		ug/L		83	43 - 157	0	24

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	97		62 - 137
4-Bromofluorobenzene (Surr)	97		56 - 136
Toluene-d8 (Surr)	96		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: MB 240-614653/6
Matrix: Water
Analysis Batch: 614653

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L		05/29/24 05:49	1	
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L		05/29/24 05:49	1	
Tetrachloroethene	1.0	U	1.0	0.44	ug/L		05/29/24 05:49	1	
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L		05/29/24 05:49	1	
Trichloroethene	1.0	U	1.0	0.44	ug/L		05/29/24 05:49	1	
Vinyl chloride	1.0	U	1.0	0.45	ug/L		05/29/24 05:49	1	

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	116		62 - 137		05/29/24 05:49	1
4-Bromofluorobenzene (Surr)	92		56 - 136		05/29/24 05:49	1
Toluene-d8 (Surr)	100		78 - 122		05/29/24 05:49	1
Dibromofluoromethane (Surr)	102		73 - 120		05/29/24 05:49	1

Lab Sample ID: LCS 240-614653/4
Matrix: Water
Analysis Batch: 614653

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec
		Result	Qualifier				Limits
1,1-Dichloroethene	25.0	27.4		ug/L		110	63 - 134
cis-1,2-Dichloroethene	25.0	26.1		ug/L		104	77 - 123
Tetrachloroethene	25.0	26.7		ug/L		107	76 - 123
trans-1,2-Dichloroethene	25.0	26.7		ug/L		107	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122

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QC Sample Results

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

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

Lab Sample ID: LCS 240-614653/4

Matrix: Water

Analysis Batch: 614653

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	12.5	10.6		ug/L		84	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		62 - 137
4-Bromofluorobenzene (Surr)	111		56 - 136
Toluene-d8 (Surr)	104		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120

Lab Sample ID: 240-204914-2 MS

Matrix: Water

Analysis Batch: 614653

Client Sample ID: PW-16-01_052024

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	50	U	1250	1230		ug/L		99	56 - 135
cis-1,2-Dichloroethene	57		1250	1260		ug/L		96	66 - 128
Tetrachloroethene	50	U	1250	1160		ug/L		93	62 - 131
trans-1,2-Dichloroethene	50	U	1250	1220		ug/L		98	56 - 136
Trichloroethene	50	U	1250	1140		ug/L		91	61 - 124
Vinyl chloride	930		625	1270		ug/L		55	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		62 - 137
4-Bromofluorobenzene (Surr)	111		56 - 136
Toluene-d8 (Surr)	102		78 - 122
Dibromofluoromethane (Surr)	100		73 - 120

Lab Sample ID: 240-204914-2 MSD

Matrix: Water

Analysis Batch: 614653

Client Sample ID: PW-16-01_052024

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	50	U	1250	1230		ug/L		98	56 - 135	0	26
cis-1,2-Dichloroethene	57		1250	1270		ug/L		97	66 - 128	1	14
Tetrachloroethene	50	U	1250	1140		ug/L		91	62 - 131	2	20
trans-1,2-Dichloroethene	50	U	1250	1210		ug/L		97	56 - 136	1	15
Trichloroethene	50	U	1250	1120		ug/L		90	61 - 124	2	15
Vinyl chloride	930		625	1220		ug/L		47	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		62 - 137
4-Bromofluorobenzene (Surr)	110		56 - 136
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

QC Sample Results

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

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

Lab Sample ID: MB 240-614602/6
Matrix: Water
Analysis Batch: 614602

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/28/24 20:25	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		68 - 127					05/28/24 20:25	1

Lab Sample ID: LCS 240-614602/4
Matrix: Water
Analysis Batch: 614602

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.92		ug/L		99	75 - 121
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	87		68 - 127				

Lab Sample ID: 240-204853-H-4 MS
Matrix: Water
Analysis Batch: 614602

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	1.2	J	10.0	11.7		ug/L		106	20 - 180
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	90		68 - 127						

Lab Sample ID: 240-204853-H-4 MSD
Matrix: Water
Analysis Batch: 614602

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	1.2	J	10.0	11.0		ug/L		98	20 - 180	6	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	92		68 - 127								

QC Association Summary

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

GC/MS VOA

Analysis Batch: 614602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204914-2	PW-16-01_052024	Total/NA	Water	8260D SIM	
240-204914-3	MW-68_052024	Total/NA	Water	8260D SIM	
MB 240-614602/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-614602/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-204853-H-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-204853-H-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 614605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204914-1	TRIP BLANK_96	Total/NA	Water	8260D	
MB 240-614605/7	Method Blank	Total/NA	Water	8260D	
LCS 240-614605/4	Lab Control Sample	Total/NA	Water	8260D	
240-204738-A-11 MS	Matrix Spike	Total/NA	Water	8260D	
240-204738-D-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 614653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204914-2	PW-16-01_052024	Total/NA	Water	8260D	
240-204914-3	MW-68_052024	Total/NA	Water	8260D	
MB 240-614653/6	Method Blank	Total/NA	Water	8260D	
LCS 240-614653/4	Lab Control Sample	Total/NA	Water	8260D	
240-204914-2 MS	PW-16-01_052024	Total/NA	Water	8260D	
240-204914-2 MSD	PW-16-01_052024	Total/NA	Water	8260D	

Lab Chronicle

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

Client Sample ID: TRIP BLANK_96

Lab Sample ID: 240-204914-1

Date Collected: 05/20/24 00:00

Matrix: Water

Date Received: 05/22/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	614605	CS	EET CLE	05/28/24 23:31

Client Sample ID: PW-16-01_052024

Lab Sample ID: 240-204914-2

Date Collected: 05/20/24 10:55

Matrix: Water

Date Received: 05/22/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		50	614653	TJL2	EET CLE	05/29/24 09:36
Total/NA	Analysis	8260D SIM		1	614602	MDH	EET CLE	05/28/24 22:46

Client Sample ID: MW-68_052024

Lab Sample ID: 240-204914-3

Date Collected: 05/20/24 09:05

Matrix: Water

Date Received: 05/22/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	614653	TJL2	EET CLE	05/29/24 10:01
Total/NA	Analysis	8260D SIM		1	614602	MDH	EET CLE	05/28/24 23:10

Laboratory References:

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

Accreditation/Certification Summary

Client: Arcadis U.S., Inc.
Project/Site: Ford LTP

Job ID: 240-204914-1

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
Georgia	State	4062	02-27-25
Illinois	NELAP	200004	07-31-24
Iowa	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 Jersey	NELAP	OH001	06-30-24
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	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
USDA	US Federal Programs	P330-18-00281	01-05-27
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-24

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

Client Contact		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other										TestAmerica Laboratories, Inc.															
Company Name: Arcadis		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				1 of 1 COCs															
City/State/Zip: Novi, MI, 48377		Email: kristoffer.hinskey@arcadis.com			Analysis Turnaround Time		Analyses					For lab use only															
Phone: 248-994-2240		Sampler Name: <i>Kent Kesper</i>			TAT if different from below							Walk-in client															
Project Name: Ford LTP		Method of Shipment/Carrier:			10 day <input checked="" type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day							Lab sampling															
Project Number: 30206169.0401.03		Shipping/Tracking No:										Job/SDG No:															
PO # US3410018772													Sample Specific Notes / Special Instructions:														
Sample Identification		Sample Date	Sample Time	Matrix			Containers & Preservatives																				
				Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc	NaOH	Uppers	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM		
✓ TRIP BLANK_ <i>916</i>		---	---	1						1							NG	X	X	X	X	X	X			1 Trip Blank	
✓ PW-16-01-052024		5/20/24	1055	6						6							NG	X	X	X	X	X	X	X		3 VOAs for 8260D 3 VOAs for 8260D SIM	
✓ MW-68-052024		5/20/24	0905	6						6							NG	X	X	X	X	X	X	X		+	

Eurofins - Cleveland Sample Receipt Form/Narrative
 Barberion Facility

Login # _____

Cooler unpacked by:
TAMMY ROYER

Client Arcaadis

Site Name _____

Cooler Received on 5-22-24

Opened on _____

FedEx: 1st Grd Exp UPS Waypoint

Client Drop Off _____

Eurofins Courier _____

Other _____

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

Eurofins Cooler # ES Ream Box Client Cooler Box Other _____

Packing material used, Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None _____

1 Cooler temperature upon receipt See Multiple Cooler Form

IR GUN # 18 (CF 0.0 °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

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

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 - Were tamper/custody seals intact and uncompromised? Yes No NA
 - 3 Shippers' packing slip attached to the cooler(s)? Yes No
 - 4 Did custody papers accompany the sample(s)? Yes No
 - 5 Were the custody papers relinquished & signed in the appropriate place? Yes No
 - 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 - 7 Did all bottles arrive in good condition (Unbroken)? Yes No
 - 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
 - 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Y/N
 - 10 Were correct bottle(s) used for the test(s) indicated? Yes No
 - 11 Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No
 12. If yes, Questions 13-17 have been checked at the originating laboratory
 - 13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC439975
 14. Were VOAs on the COC? Yes No
 - 15 Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this Yes No
 - 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered Yes No
 - 17 Was a LL Hg or Me Hg trip blank present? Yes No
- Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
- Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19 SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container
 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 _____

Eurofins - Cleveland Sample Receipt Form/Narrative
 Barberon Facility Login#

Client Arcadis Site Name _____
 Cooler unpacked by: **TAMMY ROYER**

Cooler Received on 5-22-24 Opened on _____
 FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours Drop-off Date/Time _____ Storage Location _____
 Eurofins Cooler # ES Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None _____

1 Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN # 18 (CF) 0.0 °C Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2 Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA
 3 Shippers' packing slip attached to the cooler(s)? Yes No
 4 Did custody papers accompany the sample(s)? Yes No
 5 Were the custody papers relinquished & signed in the appropriate place? Yes No
 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7 Did all bottles arrive in good condition (Unbroken)? Yes No
 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
 10 Were correct bottle(s) used for the test(s) indicated? Yes No
 11 Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No
 If yes, Questions 13-17 have been checked at the originating laboratory

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

13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC439975
 14. Were VOAs on the COC? Yes No
 15 Were air bubbles >6 mm in any VOA vials? Yes No NA
 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered Yes No
 17 Was a LL Hg or Me Hg trip blank present? Yes No

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

18 CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19 SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container
 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 _____

DATA VERIFICATION REPORT



May 31, 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: 30206169.401.03
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 204914-1
Sample date: 2024-05-20
Report received by CADENA: 2024-05-31
Initial Data Verification completed by CADENA: 2024-05-31
Number of Samples:3
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.

The following minor QC exceptions or missing information were noted:

LCS recoveries were outliers biased HIGH for these tests and analytes (or one LCS and the associated LCS/LCSD RPD). All associated client sample results were non-detect for these analytes so were not affected by the high bias and qualification was not required: GCMS VOC QC batch 614605 - trans-1,2-dichloroethylene.

GCMS VOC CCV STANDARD response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

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.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

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>.

Sincerely,

Jim Tomalia, Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	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 contaminants) 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.
E	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 contaminants) 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: 204914-1

Sample Name:	TRIP BLANK_96	PW-16-01_052024	MW-68_052024
Lab Sample ID:	2402049141	2402049142	2402049143
Sample Date:	5/20/2024	5/20/2024	5/20/2024

Analyte	Cas No.	TRIP BLANK_96				PW-16-01_052024				MW-68_052024			
		Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier

GC/MS VOC

OSW-8260D

1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	50	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	57	50	ug/l	---	0.99	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	50	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	50	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	50	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	930	50	ug/l	---	4.7	1.0	ug/l	---

OSW-8260DSIM

1,4-Dioxane	123-91-1					0.96	2.0	ug/l	J	2.3	2.0	ug/l	---
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