

ANALYTICAL REPORT

PREPARED FOR

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Generated 12/1/2023 7:42:18 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195696-1

Eurofins Cleveland

Job Notes

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Authorization



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Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Qualifiers

GC/MS VOA

Qualifier	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.
α	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 US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Job ID: 240-195696-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-195696-1

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 11/17/2023 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 5.3°C

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 595765 recovered above the upper control limit for 1,1-Dichloroethene and Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-200_111523 (240-195696-2), MW-200S_111523 (240-195696-3), MW-201_111523 (240-195696-4) and MW-201S_111523 (240-195696-5).

Method 8260D: No MS/MSD in batch 595765 due to an auto sampler fault: MW-200_111523 (240-195696-2), MW-200S_111523 (240-195696-3), MW-201_111523 (240-195696-4) and MW-201S_111523 (240-195696-5).

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

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 US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195696-1	TRIP BLANK_136	Water	11/15/23 00:00	11/17/23 08:00
240-195696-2	MW-200_111523	Water	11/15/23 09:55	11/17/23 08:00
240-195696-3	MW-200S_111523	Water	11/15/23 10:50	11/17/23 08:00
240-195696-4	MW-201_111523	Water	11/15/23 12:15	11/17/23 08:00
240-195696-5	MW-201S_111523	Water	11/15/23 13:15	11/17/23 08:00
240-195696-6	PW-16-02_111523	Water	11/15/23 15:10	11/17/23 08:00

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

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: TRIP BLANK_136

Lab Sample ID: 240-195696-1

No Detections.

Client Sample ID: MW-200_111523

Lab Sample ID: 240-195696-2

No Detections.

Client Sample ID: MW-200S_111523

Lab Sample ID: 240-195696-3

No Detections.

Client Sample ID: MW-201_111523

Lab Sample ID: 240-195696-4

No Detections.

Client Sample ID: MW-201S_111523

Lab Sample ID: 240-195696-5

No Detections.

Client Sample ID: PW-16-02_111523

Lab Sample ID: 240-195696-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.8		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	14		2.0	0.92	ug/L	2		8260D	Total/NA
Vinyl chloride	65		2.0	0.90	ug/L	2		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: TRIP BLANK_136

Lab Sample ID: 240-195696-1

Date Collected: 11/15/23 00:00

Matrix: Water

Date Received: 11/17/23 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			11/27/23 15:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 15:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 15:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 15:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		62 - 137		11/27/23 15:08	1
4-Bromofluorobenzene (Surr)	97		56 - 136		11/27/23 15:08	1
Toluene-d8 (Surr)	102		78 - 122		11/27/23 15:08	1
Dibromofluoromethane (Surr)	102		73 - 120		11/27/23 15:08	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: MW-200_111523

Lab Sample ID: 240-195696-2

Date Collected: 11/15/23 09:55

Matrix: Water

Date Received: 11/17/23 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			11/29/23 06:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		66 - 120		11/29/23 06:49	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			11/27/23 14:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		11/27/23 14:49	1
4-Bromofluorobenzene (Surr)	93		56 - 136		11/27/23 14:49	1
Toluene-d8 (Surr)	105		78 - 122		11/27/23 14:49	1
Dibromofluoromethane (Surr)	89		73 - 120		11/27/23 14:49	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: MW-200S_111523

Lab Sample ID: 240-195696-3

Date Collected: 11/15/23 10:50

Matrix: Water

Date Received: 11/17/23 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			11/29/23 07:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		66 - 120					11/29/23 07:13	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			11/27/23 15:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 15:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 15:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 15:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137					11/27/23 15:12	1
4-Bromofluorobenzene (Surr)	95		56 - 136					11/27/23 15:12	1
Toluene-d8 (Surr)	106		78 - 122					11/27/23 15:12	1
Dibromofluoromethane (Surr)	86		73 - 120					11/27/23 15:12	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: MW-201_111523

Lab Sample ID: 240-195696-4

Date Collected: 11/15/23 12:15

Matrix: Water

Date Received: 11/17/23 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			11/29/23 07:37	1
Surrogate									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		66 - 120					11/29/23 07:37	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			11/27/23 15:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 15:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 15:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 15:35	1
Surrogate									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		62 - 137					11/27/23 15:35	1
4-Bromofluorobenzene (Surr)	96		56 - 136					11/27/23 15:35	1
Toluene-d8 (Surr)	108		78 - 122					11/27/23 15:35	1
Dibromofluoromethane (Surr)	97		73 - 120					11/27/23 15:35	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: MW-201S_111523

Lab Sample ID: 240-195696-5

Date Collected: 11/15/23 13:15

Matrix: Water

Date Received: 11/17/23 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			11/29/23 08:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		66 - 120					11/29/23 08:01	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			11/27/23 15:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 15:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 15:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 15:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 15:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		62 - 137					11/27/23 15:58	1
4-Bromofluorobenzene (Surr)	90		56 - 136					11/27/23 15:58	1
Toluene-d8 (Surr)	106		78 - 122					11/27/23 15:58	1
Dibromofluoromethane (Surr)	90		73 - 120					11/27/23 15:58	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: PW-16-02_111523

Lab Sample ID: 240-195696-6

Date Collected: 11/15/23 15:10

Matrix: Water

Date Received: 11/17/23 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	2.8		2.0	0.86	ug/L			11/29/23 08:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 120					11/29/23 08:25	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			11/27/23 15:57	2
cis-1,2-Dichloroethene	14		2.0	0.92	ug/L			11/27/23 15:57	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			11/27/23 15:57	2
trans-1,2-Dichloroethene	2.0	U	2.0	1.0	ug/L			11/27/23 15:57	2
Trichloroethene	2.0	U	2.0	0.88	ug/L			11/27/23 15:57	2
Vinyl chloride	65		2.0	0.90	ug/L			11/27/23 15:57	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		62 - 137					11/27/23 15:57	2
4-Bromofluorobenzene (Surr)	99		56 - 136					11/27/23 15:57	2
Toluene-d8 (Surr)	101		78 - 122					11/27/23 15:57	2
Dibromofluoromethane (Surr)	104		73 - 120					11/27/23 15:57	2

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

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)
240-195696-1	TRIP BLANK_136	117	97	102	102
240-195696-2	MW-200_111523	95	93	105	89
240-195696-3	MW-200S_111523	95	95	106	86
240-195696-4	MW-201_111523	99	96	108	97
240-195696-5	MW-201S_111523	93	90	106	90
240-195696-6	PW-16-02_111523	122	99	101	104
LCS 240-595763/4	Lab Control Sample	115	102	102	106
LCS 240-595765/4	Lab Control Sample	83	94	103	86
MB 240-595763/7	Method Blank	117	99	104	104
MB 240-595765/7	Method Blank	94	94	104	88

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 (66-120)
240-195693-D-6 MS	Matrix Spike	101
240-195693-I-6 MSD	Matrix Spike Duplicate	100
240-195696-2	MW-200_111523	97
240-195696-3	MW-200S_111523	95
240-195696-4	MW-201_111523	95
240-195696-5	MW-201S_111523	93
240-195696-6	PW-16-02_111523	94
LCS 240-595985/4	Lab Control Sample	93
MB 240-595985/6	Method Blank	92

Surrogate Legend

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

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

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

Lab Sample ID: MB 240-595763/7
Matrix: Water
Analysis Batch: 595763

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			11/27/23 12:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:16	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	117		62 - 137		11/27/23 12:16	1
4-Bromofluorobenzene (Surr)	99		56 - 136		11/27/23 12:16	1
Toluene-d8 (Surr)	104		78 - 122		11/27/23 12:16	1
Dibromofluoromethane (Surr)	104		73 - 120		11/27/23 12:16	1

Lab Sample ID: LCS 240-595763/4
Matrix: Water
Analysis Batch: 595763

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
1,1-Dichloroethene	25.0	25.2		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.3		ug/L		93	76 - 123
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	9.14		ug/L		73	60 - 144

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	115		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	102		78 - 122
Dibromofluoromethane (Surr)	106		73 - 120

Lab Sample ID: MB 240-595765/7
Matrix: Water
Analysis Batch: 595765

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			11/27/23 12:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:52	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	94		62 - 137		11/27/23 12:52	1
4-Bromofluorobenzene (Surr)	94		56 - 136		11/27/23 12:52	1
Toluene-d8 (Surr)	104		78 - 122		11/27/23 12:52	1

Eurofins Cleveland

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

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

Lab Sample ID: MB 240-595765/7
Matrix: Water
Analysis Batch: 595765

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

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	88		73 - 120		11/27/23 12:52	1

Lab Sample ID: LCS 240-595765/4
Matrix: Water
Analysis Batch: 595765

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	28.8		ug/L		115	77 - 123
Tetrachloroethene	25.0	29.6		ug/L		118	76 - 123
trans-1,2-Dichloroethene	25.0	30.0		ug/L		120	75 - 124
Trichloroethene	25.0	27.3		ug/L		109	70 - 122
Vinyl chloride	12.5	14.6		ug/L		117	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	83		62 - 137
4-Bromofluorobenzene (Surr)	94		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	86		73 - 120

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

Lab Sample ID: MB 240-595985/6
Matrix: Water
Analysis Batch: 595985

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			11/29/23 05:13	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/29/23 05:13	1

Lab Sample ID: LCS 240-595985/4
Matrix: Water
Analysis Batch: 595985

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	10.3		ug/L		103	80 - 122

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	93		66 - 120

Lab Sample ID: 240-195693-D-6 MS
Matrix: Water
Analysis Batch: 595985

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	2.0	U	10.0	10.9		ug/L		109	51 - 153

Eurofins Cleveland

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	101		66 - 120

Lab Sample ID: 240-195693-I-6 MSD
 Matrix: Water
 Analysis Batch: 595985

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

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	100		66 - 120

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

GC/MS VOA

Analysis Batch: 595763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195696-1	TRIP BLANK_136	Total/NA	Water	8260D	
240-195696-6	PW-16-02_111523	Total/NA	Water	8260D	
MB 240-595763/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595763/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195696-2	MW-200_111523	Total/NA	Water	8260D	
240-195696-3	MW-200S_111523	Total/NA	Water	8260D	
240-195696-4	MW-201_111523	Total/NA	Water	8260D	
240-195696-5	MW-201S_111523	Total/NA	Water	8260D	
MB 240-595765/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595765/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195696-2	MW-200_111523	Total/NA	Water	8260D SIM	
240-195696-3	MW-200S_111523	Total/NA	Water	8260D SIM	
240-195696-4	MW-201_111523	Total/NA	Water	8260D SIM	
240-195696-5	MW-201S_111523	Total/NA	Water	8260D SIM	
240-195696-6	PW-16-02_111523	Total/NA	Water	8260D SIM	
MB 240-595985/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595985/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195693-D-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195693-I-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195696-1

Client Sample ID: TRIP BLANK_136

Lab Sample ID: 240-195696-1

Date Collected: 11/15/23 00:00

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595763	LEE	EET CLE	11/27/23 15:08

Client Sample ID: MW-200_111523

Lab Sample ID: 240-195696-2

Date Collected: 11/15/23 09:55

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 14:49
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 06:49

Client Sample ID: MW-200S_111523

Lab Sample ID: 240-195696-3

Date Collected: 11/15/23 10:50

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 15:12
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 07:13

Client Sample ID: MW-201_111523

Lab Sample ID: 240-195696-4

Date Collected: 11/15/23 12:15

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 15:35
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 07:37

Client Sample ID: MW-201S_111523

Lab Sample ID: 240-195696-5

Date Collected: 11/15/23 13:15

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 15:58
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 08:01

Client Sample ID: PW-16-02_111523

Lab Sample ID: 240-195696-6

Date Collected: 11/15/23 15:10

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		2	595763	LEE	EET CLE	11/27/23 15:57
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 08:25

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 - On Site

Job ID: 240-195696-1

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	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Chain of Custody Record



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

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP On-Site Project Number: 301.46655.401.03 PO # 301.46655.401.03		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other		Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kristoffer.hinskey@arcadis.com		Lab Contact: Mike DeMontco Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No: _____ of _____ COCs For lab use only: _____ Walk-in client: _____ Lab sampling: _____ Job/SDG No: _____			
Sampler Name: <i>Kent Kasper</i>		Analysis Turnaround Time TAT if different from below: <input 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		Containers & Preservatives H2SO4 _____ HNO3 _____ HCl _____ NaOH _____ ZnOH _____ Urtes _____ Other: _____		Matrix Solid _____ Sediment _____ Aqueous _____ Air _____		Filtered Sample (Y/N) Composite/C Grab/G _____ 1,1-DCE 8260B _____ cis-1,2-DCE 8260B _____ Trans-1,2-DCE 8260B _____ PCE 8260B _____ TCE 8260B _____ Vinyl Chloride 8260B _____ 1,4-Dioxane 8260B SIM _____		Sample Specific Notes / Special Instructions: 1 Trip Blank 3 VOAs for 8260B 3 VOAs for 8260B SIM	
Sample Identification Sample Date Sample Time TRIP BLANK 136 MW-200-111523 MW-200S-111523 MW-201-111523 MW-201S-111523 PW-16-02-111523		Sample Disposal (A fee may be assessed) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disp		Date/Time: 11/15/23 0955 Date/Time: 11/15/23 1050 Date/Time: 11/15/23 1215 Date/Time: 11/15/23 1315 Date/Time: 11/15/23 1510		Date/Time: 11/15/23 1725 Date/Time: 11/16/23 1200 Date/Time: 11/16/23		Company: Arcadis Company: Arcadis Company: EEA		Received by: <i>Novi Cold Storage</i> Received by: <i>Ally M</i> Received in Laboratory by: <i>Ally M</i>	



240-195696 Chain of Custody

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested.

Special Instructions/QC Requirements & Comments:



Eurofins - Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195696

Client Arcadis Site Name _____ Cooler unpacked by: [Signature]
Cooler Received on 11-17-23 Opened on 11-17-23
FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

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

Eurofins Cooler # EC 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

- Cooler temperature upon receipt See Multiple Cooler Form
IR GUN # 31 (CF +0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
- Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3
 - 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
- Shippers' packing slip attached to the cooler(s)? Yes No
- Did custody papers accompany the sample(s)? Yes No
- Were the custody papers relinquished & signed in the appropriate place? Yes No
- Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
- Did all bottles arrive in good condition (Unbroken)? Yes No
- Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
- For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
- Were correct bottle(s) used for the test(s) indicated? Yes No
- Sufficient quantity received to perform indicated analyses? Yes No
- 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.
- Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC316719
- Were VOAs on the COC? Yes No
- Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes No NA
- Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
- Was a LL Hg or Me Hg trip blank present? Yes No

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

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



December 01, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728

Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil

Project number: 30167538.401.03- onsite groundwater

Event Specific Scope of Work References: Sample COC

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory submittal: 195696-1

Sample date: 2023-11-15

Report received by CADENA: 2023-12-01

Initial Data Verification completed by CADENA: 2023-12-01

Number of Samples:6

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:

GCMS VOC QC batch CCV response outliers and MS/MSD issues 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, 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 Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

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: 195696-1

Analyte	Cas No.	Sample Name: TRIP BLANK_136				MW-200_111523				MW-200S_111523				MW-201_111523				MW-201S_111523				PW-16-02_111523				
		Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid	Report	Valid			
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	
GC/MS VOC																										
<u>OSW-8260D</u>																										
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	14	2.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	65	2.0	ug/l	---	
<u>OSW-8260DSIM</u>																										
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	2.8	2.0	ug/l	---	