

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 8/29/2023 5:45:25 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-190405-1

Eurofins Cleveland

Job Notes

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Authorization



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Authorized for release by
Michael DeMonico, Project Manager I
Michael.DeMonico@et.eurofinsus.com
(330)497-9396



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	14
QC Sample Results	15
QC Association Summary	18
Lab Chronicle	19
Certification Summary	20
Chain of Custody	21

Definitions/Glossary

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

Job ID: 240-190405-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
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 US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-190405-1

Job ID: 240-190405-1

Laboratory: Eurofins Cleveland

Narrative

**Job Narrative
240-190405-1**

Receipt

The samples were received on 8/18/2023 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 0.5°C

GC/MS VOA

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

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

Method Summary

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

Job ID: 240-190405-1

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: 240-190405-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-190405-1	TRIP BLANK_79	Water	08/16/23 00:00	08/18/23 08:00
240-190405-2	MW-32_081623	Water	08/16/23 10:18	08/18/23 08:00
240-190405-3	MW-33_081623	Water	08/16/23 12:21	08/18/23 08:00
240-190405-4	MW-22_081623	Water	08/16/23 13:43	08/18/23 08:00
240-190405-5	MW-66_081623	Water	08/16/23 15:33	08/18/23 08:00

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- 10
- 11
- 12
- 13
- 14

Detection Summary

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

Job ID: 240-190405-1

Client Sample ID: TRIP BLANK_79

Lab Sample ID: 240-190405-1

No Detections.

Client Sample ID: MW-32_081623

Lab Sample ID: 240-190405-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.47	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-33_081623

Lab Sample ID: 240-190405-3

No Detections.

Client Sample ID: MW-22_081623

Lab Sample ID: 240-190405-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	53		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1600	F1	40	18	ug/L	40		8260D	Total/NA

Client Sample ID: MW-66_081623

Lab Sample ID: 240-190405-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.1		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 US Inc
 Project/Site: Ford LTP - On Site

Job ID: 240-190405-1

Client Sample ID: TRIP BLANK_79

Lab Sample ID: 240-190405-1

Date Collected: 08/16/23 00:00

Matrix: Water

Date Received: 08/18/23 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			08/25/23 16:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/23 16:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 16:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/23 16:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 16:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/23 16:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		62 - 137		08/25/23 16:23	1
4-Bromofluorobenzene (Surr)	87		56 - 136		08/25/23 16:23	1
Toluene-d8 (Surr)	101		78 - 122		08/25/23 16:23	1
Dibromofluoromethane (Surr)	105		73 - 120		08/25/23 16:23	1

Client Sample Results

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

Job ID: 240-190405-1

Client Sample ID: MW-32_081623

Lab Sample ID: 240-190405-2

Date Collected: 08/16/23 10:18

Matrix: Water

Date Received: 08/18/23 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			08/25/23 17:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		66 - 120					08/25/23 17:18	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			08/25/23 16:48	1
cis-1,2-Dichloroethene	0.47	J	1.0	0.46	ug/L			08/25/23 16:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 16:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/23 16:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 16:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/23 16:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		62 - 137					08/25/23 16:48	1
4-Bromofluorobenzene (Surr)	89		56 - 136					08/25/23 16:48	1
Toluene-d8 (Surr)	103		78 - 122					08/25/23 16:48	1
Dibromofluoromethane (Surr)	108		73 - 120					08/25/23 16:48	1

Client Sample Results

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

Job ID: 240-190405-1

Client Sample ID: MW-33_081623

Lab Sample ID: 240-190405-3

Date Collected: 08/16/23 12:21

Matrix: Water

Date Received: 08/18/23 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			08/25/23 17:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		66 - 120					08/25/23 17:42	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			08/25/23 17:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/23 17:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 17:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/23 17:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 17:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/23 17:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		62 - 137					08/25/23 17:13	1
4-Bromofluorobenzene (Surr)	87		56 - 136					08/25/23 17:13	1
Toluene-d8 (Surr)	103		78 - 122					08/25/23 17:13	1
Dibromofluoromethane (Surr)	104		73 - 120					08/25/23 17:13	1

Client Sample Results

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

Job ID: 240-190405-1

Client Sample ID: MW-22_081623

Lab Sample ID: 240-190405-4

Date Collected: 08/16/23 13:43

Matrix: Water

Date Received: 08/18/23 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	53		2.0	0.86	ug/L			08/25/23 18:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		66 - 120					08/25/23 18:06	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	40	U	40	20	ug/L			08/25/23 15:57	40
cis-1,2-Dichloroethene	40	U	40	18	ug/L			08/25/23 15:57	40
Tetrachloroethene	40	U	40	18	ug/L			08/25/23 15:57	40
trans-1,2-Dichloroethene	40	U	40	20	ug/L			08/25/23 15:57	40
Trichloroethene	40	U	40	18	ug/L			08/25/23 15:57	40
Vinyl chloride	1600	F1	40	18	ug/L			08/25/23 15:57	40
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		62 - 137					08/25/23 15:57	40
4-Bromofluorobenzene (Surr)	87		56 - 136					08/25/23 15:57	40
Toluene-d8 (Surr)	100		78 - 122					08/25/23 15:57	40
Dibromofluoromethane (Surr)	104		73 - 120					08/25/23 15:57	40

Client Sample Results

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

Job ID: 240-190405-1

Client Sample ID: MW-66_081623

Lab Sample ID: 240-190405-5

Date Collected: 08/16/23 15:33

Matrix: Water

Date Received: 08/18/23 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			08/25/23 18:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		66 - 120					08/25/23 18:30	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			08/25/23 17:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/23 17:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 17:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/23 17:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 17:38	1
Vinyl chloride	1.1		1.0	0.45	ug/L			08/25/23 17:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		62 - 137					08/25/23 17:38	1
4-Bromofluorobenzene (Surr)	87		56 - 136					08/25/23 17:38	1
Toluene-d8 (Surr)	103		78 - 122					08/25/23 17:38	1
Dibromofluoromethane (Surr)	104		73 - 120					08/25/23 17:38	1

Surrogate Summary

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

Job ID: 240-190405-1

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)
240-190405-1	TRIP BLANK_79	113	87	101	105
240-190405-2	MW-32_081623	114	89	103	108
240-190405-3	MW-33_081623	113	87	103	104
240-190405-4	MW-22_081623	112	87	100	104
240-190405-4 MS	MW-22_081623	103	96	107	102
240-190405-4 MSD	MW-22_081623	105	99	106	101
240-190405-5	MW-66_081623	112	87	103	104
LCS 240-585189/4	Lab Control Sample	103	99	107	100
MB 240-585189/7	Method Blank	109	89	103	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 (66-120)
240-190229-C-3 MS	Matrix Spike	111
240-190229-C-3 MSD	Matrix Spike Duplicate	111
240-190405-2	MW-32_081623	106
240-190405-3	MW-33_081623	105
240-190405-4	MW-22_081623	113
240-190405-5	MW-66_081623	105
LCS 240-585153/5	Lab Control Sample	100
MB 240-585153/7	Method Blank	108

Surrogate Legend

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

QC Sample Results

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

Job ID: 240-190405-1

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

Lab Sample ID: MB 240-585189/7

Matrix: Water

Analysis Batch: 585189

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			08/25/23 15:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/23 15:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 15:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/23 15:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/23 15:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/23 15:32	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	109		62 - 137		08/25/23 15:32	1
4-Bromofluorobenzene (Surr)	89		56 - 136		08/25/23 15:32	1
Toluene-d8 (Surr)	103		78 - 122		08/25/23 15:32	1
Dibromofluoromethane (Surr)	102		73 - 120		08/25/23 15:32	1

Lab Sample ID: LCS 240-585189/4

Matrix: Water

Analysis Batch: 585189

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	25.3		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	22.9		ug/L		92	77 - 123
Tetrachloroethene	25.0	25.3		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	23.8		ug/L		95	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	9.00		ug/L		72	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	103		62 - 137
4-Bromofluorobenzene (Surr)	99		56 - 136
Toluene-d8 (Surr)	107		78 - 122
Dibromofluoromethane (Surr)	100		73 - 120

Lab Sample ID: 240-190405-4 MS

Matrix: Water

Analysis Batch: 585189

Client Sample ID: MW-22_081623

Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier		Result	Qualifier				
1,1-Dichloroethene	40	U	1000	1020		ug/L		102	56 - 135
cis-1,2-Dichloroethene	40	U	1000	930		ug/L		93	66 - 128
Tetrachloroethene	40	U	1000	955		ug/L		96	62 - 131
trans-1,2-Dichloroethene	40	U	1000	954		ug/L		95	56 - 136
Trichloroethene	40	U	1000	909		ug/L		91	61 - 124
Vinyl chloride	1600	F1	500	1820		ug/L		51	43 - 157

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	103		62 - 137
4-Bromofluorobenzene (Surr)	96		56 - 136
Toluene-d8 (Surr)	107		78 - 122

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QC Sample Results

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

Job ID: 240-190405-1

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

Lab Sample ID: 240-190405-4 MS
Matrix: Water
Analysis Batch: 585189

Client Sample ID: MW-22_081623
Prep Type: Total/NA

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
Dibromofluoromethane (Surr)	102		73 - 120

Lab Sample ID: 240-190405-4 MSD
Matrix: Water
Analysis Batch: 585189

Client Sample ID: MW-22_081623
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits			
1,1-Dichloroethene	40	U	1000	1030		ug/L		103	56 - 135	1		26
cis-1,2-Dichloroethene	40	U	1000	922		ug/L		92	66 - 128	1		14
Tetrachloroethene	40	U	1000	944		ug/L		94	62 - 131	1		20
trans-1,2-Dichloroethene	40	U	1000	950		ug/L		95	56 - 136	0		15
Trichloroethene	40	U	1000	905		ug/L		90	61 - 124	1		15
Vinyl chloride	1600	F1	500	1760	F1	ug/L		39	43 - 157	3		24

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		62 - 137
4-Bromofluorobenzene (Surr)	99		56 - 136
Toluene-d8 (Surr)	106		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120

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

Lab Sample ID: MB 240-585153/7
Matrix: Water
Analysis Batch: 585153

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/23 12:00	1

	MB	MB							
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
1,2-Dichloroethane-d4 (Surr)	108		66 - 120		08/25/23 12:00	1			

Lab Sample ID: LCS 240-585153/5
Matrix: Water
Analysis Batch: 585153

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

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec
		Result	Qualifier				Limits
1,4-Dioxane	10.0	9.06		ug/L		91	80 - 122

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 120

Lab Sample ID: 240-190229-C-3 MS
Matrix: Water
Analysis Batch: 585153

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

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

Eurofins Cleveland

QC Sample Results

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

Job ID: 240-190405-1

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)	111		66 - 120

Lab Sample ID: 240-190229-C-3 MSD
Matrix: Water
Analysis Batch: 585153

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	10.6		ug/L		106	51 - 153	4	16

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	111		66 - 120

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

QC Association Summary

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

Job ID: 240-190405-1

GC/MS VOA

Analysis Batch: 585153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-190405-2	MW-32_081623	Total/NA	Water	8260D SIM	
240-190405-3	MW-33_081623	Total/NA	Water	8260D SIM	
240-190405-4	MW-22_081623	Total/NA	Water	8260D SIM	
240-190405-5	MW-66_081623	Total/NA	Water	8260D SIM	
MB 240-585153/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-585153/5	Lab Control Sample	Total/NA	Water	8260D SIM	
240-190229-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-190229-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 585189

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-190405-1	TRIP BLANK_79	Total/NA	Water	8260D	
240-190405-2	MW-32_081623	Total/NA	Water	8260D	
240-190405-3	MW-33_081623	Total/NA	Water	8260D	
240-190405-4	MW-22_081623	Total/NA	Water	8260D	
240-190405-5	MW-66_081623	Total/NA	Water	8260D	
MB 240-585189/7	Method Blank	Total/NA	Water	8260D	
LCS 240-585189/4	Lab Control Sample	Total/NA	Water	8260D	
240-190405-4 MS	MW-22_081623	Total/NA	Water	8260D	
240-190405-4 MSD	MW-22_081623	Total/NA	Water	8260D	

Lab Chronicle

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

Job ID: 240-190405-1

Client Sample ID: TRIP BLANK_79

Lab Sample ID: 240-190405-1

Date Collected: 08/16/23 00:00

Matrix: Water

Date Received: 08/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	585189	CDG	EET CLE	08/25/23 16:23

Client Sample ID: MW-32_081623

Lab Sample ID: 240-190405-2

Date Collected: 08/16/23 10:18

Matrix: Water

Date Received: 08/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	585189	CDG	EET CLE	08/25/23 16:48
Total/NA	Analysis	8260D SIM		1	585153	MRL	EET CLE	08/25/23 17:18

Client Sample ID: MW-33_081623

Lab Sample ID: 240-190405-3

Date Collected: 08/16/23 12:21

Matrix: Water

Date Received: 08/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	585189	CDG	EET CLE	08/25/23 17:13
Total/NA	Analysis	8260D SIM		1	585153	MRL	EET CLE	08/25/23 17:42

Client Sample ID: MW-22_081623

Lab Sample ID: 240-190405-4

Date Collected: 08/16/23 13:43

Matrix: Water

Date Received: 08/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		40	585189	CDG	EET CLE	08/25/23 15:57
Total/NA	Analysis	8260D SIM		1	585153	MRL	EET CLE	08/25/23 18:06

Client Sample ID: MW-66_081623

Lab Sample ID: 240-190405-5

Date Collected: 08/16/23 15:33

Matrix: Water

Date Received: 08/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	585189	CDG	EET CLE	08/25/23 17:38
Total/NA	Analysis	8260D SIM		1	585153	MRL	EET CLE	08/25/23 18:30

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: 240-190405-1

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	08-31-23
Virginia	NELAP	460175	09-14-23
West Virginia DEP	State	210	12-31-23

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



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

Regulatory program: DW NPDES RCRA Other

Client Contact: Arcadis
 Address: 28550 Cabot Drive, Suite 500
 City/State/Zip: Novi, MI, 48377
 Phone: 248-994-2240

Client Project Manager: Kris Himskey
 Telephone: 248-994-2240
 Email: kris@himskey@arcadis.com

Sampler Name: Nolan Schenkel
 Method of Shipment/Carrier:
 Shipping/Tracking No:

Site Contact: Christina Weaver
 Telephone: 248-994-2240

Lab Contact: Mike DeMonico
 Telephone: 330-497-9396

TestAmerica Laboratories, Inc.
 COC No: 1 of 1 COCs

For lab use only
 Walk-in client
 Lab sampling
 Job/SDG No:

Sample Specific Notes / Special Instructions:
 1 Trip Blank
 3 VOAs for 8260D
 3 VOAs for 8260D SIM

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives				Filtered Sample (Y/N)	Composite (Grab/C)	GIS-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Analyses																				
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl										NaOH	ZnAc	NaOH	Other:																
TRIP BLANK_ 79	---	----	1																																				
MW-32-081623	8/16/23	10:18	6																																				
MW-33-081623	8/16/23	12:21	6																																				
MW-22-081623	8/16/23	13:43	6																																				
MW-66-081623	8/16/23	15:33	6																																				

Sample Disposal (A fee may be assessed if samples are retained in Lab):
 Return to Client Disposal By Lab Archive For _____ Months

Received by: NOV 1 cold storage
 Received by: [Signature]
 Received in Laboratory by: [Signature]

Company: Arcadis
 Date/Time: 8/16/23 16:50
 Company: Arcadis
 Date/Time: 8/17/23 15:10
 Company: EETA
 Date/Time: 8/17/23 15:10
 Company: EETA

240-190405 Chain of Custody

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Barberton Facility

Client Arcadis

Site Name _____

Cooler unpacked by: _____

Cooler Received on 8-18-23

Opened on 8-18-23

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

1. Cooler temperature upon receipt See Multiple Cooler Form
IR GUN # 22 (CF -0.1 °C) Observed Cooler Temp. 0.6 °C Corrected Cooler Temp. 0.5 °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

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

- 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.
- 13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC312502
- 14. Were VOAs on the COC? Yes No
- 15. Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this.
- 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



August 29, 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: 190405-1

Sample date: 2023-08-16

Report received by CADENA: 2023-08-29

Initial Data Verification completed by CADENA: 2023-08-29

Number of Samples:5

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 sample -004 MS or MSD recoveries but not both or RPD only were outliers for VINYL CHLORIDE so client sample results were not qualified based on this QC outlier alone.

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>.

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: 190405-1

Analyte	Cas No.	Sample Name: TRIP BLANK_79				Sample Name: MW-32_081623				Sample Name: MW-33_081623				Sample Name: MW-22_081623				Sample Name: MW-66_081623			
		Result	Limit	Units	Valid	Result	Limit	Units	Valid	Result	Limit	Units	Valid	Result	Limit	Units	Valid	Result	Limit	Units	Valid
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	40	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.47	1.0	ug/l	J	ND	1.0	ug/l	---	ND	40	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---	ND	1.0	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	40	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1600	40	ug/l	---	1.1	1.0	ug/l	---
<u>OSW-8260DSIM</u>																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	53	2.0	ug/l	---	ND	2.0	ug/l	---