

ANALYTICAL REPORT

PREPARED FOR

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

Generated 8/28/2023 3:33:16 PM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-190325-1

Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



Generated
8/28/2023 3:33:16 PM

Authorized for release by
Ann Maddux, Project Management Assistant I
ann.maddux@et.eurofinsus.com
Designee for
Michael DeIMonico, Project Manager I
Michael.DeIMonico@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	13
QC Sample Results	14
QC Association Summary	17
Lab Chronicle	18
Certification Summary	19
Chain of Custody	20

Definitions/Glossary

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

Job ID: 240-190325-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
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.
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: 240-190325-1

Job ID: 240-190325-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-190325-1

Receipt

The samples were received on 8/17/2023 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 0.3°C

GC/MS VOA

Method 8260D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with analytical batch 240-584983.

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: 240-190325-1

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: 240-190325-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-190325-1	TRIP BLANK_121	Water	08/15/23 00:00	08/17/23 08:00
240-190325-2	MW-211S_081523	Water	08/15/23 09:30	08/17/23 08:00
240-190325-3	MW-212S_081523	Water	08/15/23 11:00	08/17/23 08:00
240-190325-4	MW-213S_081523	Water	08/15/23 12:52	08/17/23 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: 240-190325-1

Client Sample ID: TRIP BLANK_121

Lab Sample ID: 240-190325-1

No Detections.

Client Sample ID: MW-211S_081523

Lab Sample ID: 240-190325-2

No Detections.

Client Sample ID: MW-212S_081523

Lab Sample ID: 240-190325-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.6		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.82	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-213S_081523

Lab Sample ID: 240-190325-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.58	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.48	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cleveland

Client Sample Results

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

Job ID: 240-190325-1

Client Sample ID: TRIP BLANK_121

Lab Sample ID: 240-190325-1

Date Collected: 08/15/23 00:00

Matrix: Water

Date Received: 08/17/23 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			08/23/23 21:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/23 21:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/23 21:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/23 21:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/23 21:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/23 21:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		62 - 137		08/23/23 21:06	1
4-Bromofluorobenzene (Surr)	100		56 - 136		08/23/23 21:06	1
Toluene-d8 (Surr)	98		78 - 122		08/23/23 21:06	1
Dibromofluoromethane (Surr)	110		73 - 120		08/23/23 21:06	1

Client Sample Results

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

Job ID: 240-190325-1

Client Sample ID: MW-211S_081523

Lab Sample ID: 240-190325-2

Date Collected: 08/15/23 09:30

Matrix: Water

Date Received: 08/17/23 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			08/24/23 16:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		66 - 120		08/24/23 16:34	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			08/24/23 10:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/23 10:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 10:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/23 10:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 10:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/23 10:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		62 - 137		08/24/23 10:43	1
4-Bromofluorobenzene (Surr)	96		56 - 136		08/24/23 10:43	1
Toluene-d8 (Surr)	97		78 - 122		08/24/23 10:43	1
Dibromofluoromethane (Surr)	100		73 - 120		08/24/23 10:43	1

Client Sample Results

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

Job ID: 240-190325-1

Client Sample ID: MW-212S_081523

Lab Sample ID: 240-190325-3

Date Collected: 08/15/23 11:00

Matrix: Water

Date Received: 08/17/23 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			08/24/23 16:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		66 - 120					08/24/23 16:58	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			08/24/23 11:09	1
cis-1,2-Dichloroethene	2.6		1.0	0.46	ug/L			08/24/23 11:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 11:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/23 11:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 11:09	1
Vinyl chloride	0.82	J	1.0	0.45	ug/L			08/24/23 11:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		62 - 137					08/24/23 11:09	1
4-Bromofluorobenzene (Surr)	100		56 - 136					08/24/23 11:09	1
Toluene-d8 (Surr)	99		78 - 122					08/24/23 11:09	1
Dibromofluoromethane (Surr)	102		73 - 120					08/24/23 11:09	1

Client Sample Results

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

Job ID: 240-190325-1

Client Sample ID: MW-213S_081523

Lab Sample ID: 240-190325-4

Date Collected: 08/15/23 12:52

Matrix: Water

Date Received: 08/17/23 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			08/24/23 17:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		66 - 120					08/24/23 17:22	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			08/24/23 11:34	1
cis-1,2-Dichloroethene	0.58	J	1.0	0.46	ug/L			08/24/23 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/23 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 11:34	1
Vinyl chloride	0.48	J	1.0	0.45	ug/L			08/24/23 11:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		62 - 137					08/24/23 11:34	1
4-Bromofluorobenzene (Surr)	99		56 - 136					08/24/23 11:34	1
Toluene-d8 (Surr)	97		78 - 122					08/24/23 11:34	1
Dibromofluoromethane (Surr)	102		73 - 120					08/24/23 11:34	1

Surrogate Summary

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

Job ID: 240-190325-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA	BFB	TOL	DBFM
		(62-137)	(56-136)	(78-122)	(73-120)
240-190100-H-10 MS	Matrix Spike	116	99	101	113
240-190100-I-10 MSD	Matrix Spike Duplicate	114	97	99	113
240-190325-1	TRIP BLANK_121	123	100	98	110
240-190325-2	MW-211S_081523	111	96	97	100
240-190325-3	MW-212S_081523	119	100	99	102
240-190325-4	MW-213S_081523	118	99	97	102
LCS 240-584910/5	Lab Control Sample	117	102	101	114
LCS 240-584983/5	Lab Control Sample	113	98	99	107
MB 240-584910/9	Method Blank	119	100	100	112
MB 240-584983/9	Method Blank	116	97	98	108

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

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(66-120)
240-190226-C-2 MS	Matrix Spike	109
240-190226-C-2 MSD	Matrix Spike Duplicate	99
240-190325-2	MW-211S_081523	108
240-190325-3	MW-212S_081523	109
240-190325-4	MW-213S_081523	109
LCS 240-585005/5	Lab Control Sample	112
MB 240-585005/7	Method Blank	106

Surrogate Legend

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

QC Sample Results

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

Job ID: 240-190325-1

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

Lab Sample ID: MB 240-584910/9
Matrix: Water
Analysis Batch: 584910

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			08/23/23 14:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/23 14:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/23 14:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/23 14:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/23 14:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/23 14:56	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	119		62 - 137		08/23/23 14:56	1
4-Bromofluorobenzene (Surr)	100		56 - 136		08/23/23 14:56	1
Toluene-d8 (Surr)	100		78 - 122		08/23/23 14:56	1
Dibromofluoromethane (Surr)	112		73 - 120		08/23/23 14:56	1

Lab Sample ID: LCS 240-584910/5
Matrix: Water
Analysis Batch: 584910

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	20.0	22.5		ug/L		112	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		100	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	21.0		ug/L		105	75 - 124
Trichloroethene	20.0	19.1		ug/L		96	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	117		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	114		73 - 120

Lab Sample ID: 240-190100-H-10 MS
Matrix: Water
Analysis Batch: 584910

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

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier		Result	Qualifier				
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128
trans-1,2-Dichloroethene	1.0	U	20.0	16.5		ug/L		82	56 - 136
Trichloroethene	1.0	U	20.0	13.8		ug/L		69	61 - 124
Vinyl chloride	1.0	U	20.0	16.0		ug/L		80	43 - 157

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	116		62 - 137
4-Bromofluorobenzene (Surr)	99		56 - 136
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	113		73 - 120

Eurofins Cleveland

QC Sample Results

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

Job ID: 240-190325-1

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

Lab Sample ID: 240-190100-I-10 MSD

Matrix: Water
Analysis Batch: 584910

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		
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		86	66 - 128	1	14
trans-1,2-Dichloroethene	1.0	U	20.0	16.3		ug/L		82	56 - 136	1	15
Trichloroethene	1.0	U	20.0	13.8		ug/L		69	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	15.6		ug/L		78	43 - 157	3	24

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	114		62 - 137
4-Bromofluorobenzene (Surr)	97		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	113		73 - 120

Lab Sample ID: MB 240-584983/9

Matrix: Water
Analysis Batch: 584983

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			08/24/23 09:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/23 09:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 09:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/23 09:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/23 09:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/23 09:45	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	116		62 - 137		08/24/23 09:45	1
4-Bromofluorobenzene (Surr)	97		56 - 136		08/24/23 09:45	1
Toluene-d8 (Surr)	98		78 - 122		08/24/23 09:45	1
Dibromofluoromethane (Surr)	108		73 - 120		08/24/23 09:45	1

Lab Sample ID: LCS 240-584983/5

Matrix: Water
Analysis Batch: 584983

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	20.0	24.0		ug/L		120	63 - 134
cis-1,2-Dichloroethene	20.0	20.7		ug/L		103	77 - 123
Tetrachloroethene	20.0	19.5		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	22.0		ug/L		110	75 - 124
Trichloroethene	20.0	19.7		ug/L		99	70 - 122
Vinyl chloride	20.0	17.8		ug/L		89	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	113		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	107		73 - 120

Eurofins Cleveland

QC Sample Results

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

Job ID: 240-190325-1

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

Lab Sample ID: MB 240-585005/7
Matrix: Water
Analysis Batch: 585005

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			08/24/23 10:37	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		66 - 120					08/24/23 10:37	1

Lab Sample ID: LCS 240-585005/5
Matrix: Water
Analysis Batch: 585005

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 %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	112		66 - 120				

Lab Sample ID: 240-190226-C-2 MS
Matrix: Water
Analysis Batch: 585005

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	2.5		10.0	12.5		ug/L		100	51 - 153
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	109		66 - 120						

Lab Sample ID: 240-190226-C-2 MSD
Matrix: Water
Analysis Batch: 585005

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	Limit
1,4-Dioxane	2.5		10.0	12.3		ug/L		98	51 - 153	1	16
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	99		66 - 120								

QC Association Summary

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

Job ID: 240-190325-1

GC/MS VOA

Analysis Batch: 584910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-190325-1	TRIP BLANK_121	Total/NA	Water	8260D	
MB 240-584910/9	Method Blank	Total/NA	Water	8260D	
LCS 240-584910/5	Lab Control Sample	Total/NA	Water	8260D	
240-190100-H-10 MS	Matrix Spike	Total/NA	Water	8260D	
240-190100-I-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 584983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-190325-2	MW-211S_081523	Total/NA	Water	8260D	
240-190325-3	MW-212S_081523	Total/NA	Water	8260D	
240-190325-4	MW-213S_081523	Total/NA	Water	8260D	
MB 240-584983/9	Method Blank	Total/NA	Water	8260D	
LCS 240-584983/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 585005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-190325-2	MW-211S_081523	Total/NA	Water	8260D SIM	
240-190325-3	MW-212S_081523	Total/NA	Water	8260D SIM	
240-190325-4	MW-213S_081523	Total/NA	Water	8260D SIM	
MB 240-585005/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-585005/5	Lab Control Sample	Total/NA	Water	8260D SIM	
240-190226-C-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-190226-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

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

Job ID: 240-190325-1

Client Sample ID: TRIP BLANK_121

Lab Sample ID: 240-190325-1

Date Collected: 08/15/23 00:00

Matrix: Water

Date Received: 08/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	584910	AJS	EET CLE	08/23/23 21:06

Client Sample ID: MW-211S_081523

Lab Sample ID: 240-190325-2

Date Collected: 08/15/23 09:30

Matrix: Water

Date Received: 08/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	584983	AJS	EET CLE	08/24/23 10:43
Total/NA	Analysis	8260D SIM		1	585005	MRL	EET CLE	08/24/23 16:34

Client Sample ID: MW-212S_081523

Lab Sample ID: 240-190325-3

Date Collected: 08/15/23 11:00

Matrix: Water

Date Received: 08/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	584983	AJS	EET CLE	08/24/23 11:09
Total/NA	Analysis	8260D SIM		1	585005	MRL	EET CLE	08/24/23 16:58

Client Sample ID: MW-213S_081523

Lab Sample ID: 240-190325-4

Date Collected: 08/15/23 12:52

Matrix: Water

Date Received: 08/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	584983	AJS	EET CLE	08/24/23 11:34
Total/NA	Analysis	8260D SIM		1	585005	MRL	EET CLE	08/24/23 17:22

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: 240-190325-1

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.

0410-3

TestAmerica Laboratory location: Brighton --- 10448 Cilation 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		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other		Lab Contact: Mike DeMonico Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No: 1 of 1 COCs	
Client Project Manager: Kris Hinsky Telephone: 248-994-2240 Email: kristoffer.hinsky@arcadis.com		Site Contact: Christina Weaver Telephone: 248-994-2240		Analyses Walk-in client Lab sampling Job/SDG No:			
Sampler Name: Nolan Schendel Sommer Guy Method of Shipment/Carrier: Shipping/Tracking No:		ANALYSIS turnaround time 10 day (TAT adjustment 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		Sample Specific Notes / Special Instructions: 1 Trip Blank 3 VOAs for 8260D 3 VOAs for 8260D SIM " " " "			
Sample Identification Sample Date Sample Time TRIP BLANK 121 MW-211S-081523 MW-212S-081523 MW-213S-081523		Matrix Air Aqueous Sediment Solid Other:		Containers & Preservatives H2SO4 HNO3 HCl NaOH ZnAc NaOH Lmpres 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	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Irritant <input type="checkbox"/> Unknown <input type="checkbox"/> Poison B <input type="checkbox"/>		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		240-190325 Chain of Custody			
Relinquished by Nolan Schendel Relinquished by Sam Spivey Relinquished by Jiri Stoe		Company: Arcadis Company: Arcadis Company: EETA		Received by: Novi Cold Storage Received by: J. Stoe Received in Lab by:		Date/Time: 8/15/23 1430 Date/Time: 8/16/23 12:16 Date/Time: 8-17-23 800	

©2008 TestAmerica Laboratories, Inc. All rights reserved. TestAmerica & Design™ are trademarks of TestAmerica Laboratories, Inc.

Eurofins - Cleveland Sample Receipt Form/Narrative Login # : _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: _____
Cooler Received on 8-17-23 Opened on 8-17-23
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

1. Cooler temperature upon receipt See Multiple Cooler Form
IR GUN # 22 (CF _____ °C) Observed Cooler Temp. 0.4 °C Corrected Cooler Temp. 0.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
-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)?
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? Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0041301I 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 _____

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

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: _____

Chain of Custody Record

04103

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

Client Contact				Regulatory program:				Other			
Company Name: Arcadis				Site Contact: Christina Weaver				Lab Contact: Mike DeMonico			
Address: 28550 Cabot Drive, Suite 500				Telephone: 248-994-2240				Telephone: 330-497-9396			
City/State/Zip: Novi, MI, 48377				Email: kristoffer.hinskey@arcadis.com							
Phone: 248-994-2240				Analysis turnaround time				Analyses			
Project Name: Ford LTP On-Site				TAT: if different from below				Walk-in client			
Project Number: 30167538-401.03				10 day				Lab sampling			
PO # 30167538-401.03				3 weeks				Job/SDG No:			
Sample Identification				Containers & Preservatives				Sample Specific Notes / Special Instructions:			
TRIP BLANK_ 121				Matrix				1 Trip Blank			
MW-2115-081523				Sample Date Sample Time				3 VOAs for 8260D			
MW-2125-081523				8/15/23 0930				3 VOAs for 8260D SIM			
MW-2135-081523				8/19/23 1100				"			
				8/19/23 1252				"			
Possible Hazard Identification				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)							
Non-Hazard				Return to Client							
Irritant				Disposal By Lab							
Special Instructions/QC Requirements & Comments:				Archive For 1							
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728				Level IV Reporting requested.							
Relinquished by Nolan Schendel				Date/Time 8/15/23 1430				Company Arcadis			
Relinquished by Jim Spore				Date/Time 8/16/23 1215				Company EETA			
Relinquished by Jim Spore				Date/Time 8/16/23 1216				Company EC			

240-190325 Chain of Custody



Eurofins - Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Arcadis Site Name _____
 Cooler Received on 8-17-23 Opened on 8-17-23
 FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Cooler unpacked by: _____

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 _____ °C) Observed Cooler Temp. 0.4 °C Corrected Cooler Temp. 0.3 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 7
 - 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.
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 # 0041301I Yes No
17. 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



August 28, 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: 190325-1
Sample date: 2023-08-15
Report received by CADENA: 2023-08-28
Initial Data Verification completed by CADENA: 2023-08-28
Number of Samples:4
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 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.

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: 190325-1

Analyte	Cas No.	Sample Name: TRIP BLANK_121				MW-211S_081523				MW-212S_081523				MW-213S_081523			
		Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier
		2401903251				2401903252				2401903253				2401903254			
		8/15/2023				8/15/2023				8/15/2023				8/15/2023			

GC/MS VOC

OSW-8260D

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	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.6	1.0	ug/l	---	0.58	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	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	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.82	1.0	ug/l	J	0.48	1.0	ug/l	J

OSW-8260DSIM

1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---
-------------	----------	--	--	--	--	----	-----	------	-----	----	-----	------	-----	----	-----	------	-----