

Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey ARCADIS US Inc 28550 Cabot Drive Suite 500 Novi, Michigan 48377 Generated 11/13/2023 4:32:55 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194819-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203





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

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Authorized for release by Michael DelMonico, Project Manager I <u>Michael.DelMonico@et.eurofinsus.com</u> (330)497-9396

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Qualifiers

Qualifiers		3
GC/MS VOA		
Qualifier	Qualifier Description	
F1	MS and/or MSD recovery exceeds control limits.	
F2	MS/MSD RPD exceeds control limits	5
S1+	Surrogate recovery exceeds control limits, high biased.	
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	Q
%R	Percent Recovery	0
CFL	Contains Free Liquid	
CFU	Colony Forming Unit	9
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)	13
LOQ	Limit of Quantitation (DoD/DOE)	
MCL	EPA recommended "Maximum Contaminant Level"	
MDA	Minimum Detectable Activity (Radiochemistry)	

Glossary

Glussaly	
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

Job ID: 240-194819-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-194819-1

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 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA

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

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

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

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194819-1	TRIP BLANK_64	Water	11/02/23 00:00	11/04/23 08:00
240-194819-2	MW-156S_110223	Water	11/02/23 13:10	11/04/23 08:00

Detection Summary

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

Client Sample ID: TRIP BLANK_64

No Detections.

Client Sample ID: MW-156S_110223

No Detections.

Job ID: 240-194819-1

Lab Sample ID: 240-194819-1

Lab Sample ID: 240-194819-2

Client Sample ID: TRIP BLANK_64

Date Collected: 11/02/23 00:00 Date Received: 11/04/23 08:00

Method: SW846 8260D - Volati	le Organic Comp	ounds by G	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			11/10/23 13:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137			-		11/10/23 13:43	1
4-Bromofluorobenzene (Surr)	70		56 - 136					11/10/23 13:43	1
Toluene-d8 (Surr)	101		78 - 122					11/10/23 13:43	1
Dibromofluoromethane (Surr)	112		73 - 120					11/10/23 13:43	1

Matrix: Water

Lab Sample ID: 240-194819-1

> **8** 9

Client Sample ID: MW-156S_110223

Date Collected: 11/02/23 13:10 Date Received: 11/04/23 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 19:15	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	100		66 - 120			-		11/10/23 19:15	1	
Method: SW846 8260D - Volati	ile Organic Comp	ounds by G	C/MS							÷.
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 14:06	1	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 14:06	1	
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1	
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 14:06	1	
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1	
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 14:06	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	104		62 - 137			-		11/10/23 14:06	1	
4-Bromofluorobenzene (Surr)	72		56 - 136					11/10/23 14:06	1	
Toluene-d8 (Surr)	100		78 - 122					11/10/23 14:06	1	
Dibromofluoromethane (Surr)	115		73 - 120					11/10/23 14:06	1	- 7

11/13/2023

Lab Sample ID: 240-194819-2 Matrix: Water Prepared Analyzed Dil Fac Prepared Analyzed Dil Fac

BFB

(56-136)

88

79

70

72

81

70

TOL

(78-122)

104

98

101

100

104

98

Percent Surrogate Recovery (Acceptance Limits)

DBFM

(73-120)

106

104

112

115

106

104

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

Client Sample ID

TRIP BLANK_64

MW-156S_110223

Lab Control Sample

Matrix Spike

Method Blank

Matrix Spike Duplicate

Matrix: Water

Lab Sample ID 240-194798-B-8 MSD

240-194819-1

240-194819-2

240-194798-F-8 MS

LCS 240-594185/5

MB 240-594185/9

Surrogate Legend

TOL = Toluene-d8 (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr) BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

Prep Type: Total/NA

Prep Type: Total/NA

DCA

(62-137)

98

97

101

104

96

99

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

Matrix: Water

		DCA	Percent Surrogate Recovery (Acceptance Limits)
Sample ID	Client Sample ID	(66-120)	
94709-B-1 MS	Matrix Spike	81	
194709-B-1 MSD	Matrix Spike Duplicate	153 S1+	
94819-2	MW-156S_110223	100	
0-594170/4	Lab Control Sample	101	
40-594170/6	Method Blank	89	

Surrogate Legend

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

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

-	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 12:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 12:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 12:33	1

	МВ	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		62 - 137		11/10/23 12:33	1
4-Bromofluorobenzene (Surr)	70		56 - 136		11/10/23 12:33	1
Toluene-d8 (Surr)	98		78 - 122		11/10/23 12:33	1
Dibromofluoromethane (Surr)	104		73 - 120		11/10/23 12:33	1

Lab Sample ID: LCS 240-594185/5 Matrix: Water Analysis Batch: 594185

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	21.3		ug/L		107	63 - 134	
cis-1,2-Dichloroethene	20.0	22.3		ug/L		111	77 - 123	
Tetrachloroethene	20.0	21.9		ug/L		109	76 - 123	
trans-1,2-Dichloroethene	20.0	21.4		ug/L		107	75 - 124	
Trichloroethene	20.0	20.7		ug/L		104	70 - 122	
Vinyl chloride	20.0	17.6		ug/L		88	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		62 - 137
4-Bromofluorobenzene (Surr)	81		56 - 136
Toluene-d8 (Surr)	104		78 - 122
Dibromofluoromethane (Surr)	106		73 - 120

Lab Sample ID: 240-194798-B-8 MSD Matrix: Water Analysis Batch: 594185

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	1.0	U	20.0	20.1		ug/L		100	56 - 135	5	26
cis-1,2-Dichloroethene	0.62	J	20.0	21.1		ug/L		102	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.3		ug/L		92	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 136	0	15
Trichloroethene	1.0	U	20.0	18.3		ug/L		91	61 - 124	3	15
Vinyl chloride	2.4		20.0	17.4		ug/L		75	43 - 157	3	24
	MSD	MSD									

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	88		56 - 136
Toluene-d8 (Surr)	104		78 - 122

Job ID: 240-194819-1

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

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

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

10

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

Lab Sample ID: 240-194798 Matrix: Water	-B-8 MSD						Client S	Sample IE): Matrix Spike E Prep Type:	
Analysis Batch: 594185										
	MSD M	SD								
Surrogate	%Recovery Q		Limits							
Dibromofluoromethane (Surr)			73 - 120							
Lab Sample ID: 240-194798	-F-8 MS							Client	Sample ID: Mat	rix Spik
Matrix: Water									Prep Type:	Total/N
Analysis Batch: 594185										
	Sample Sa	mple	Spike	MS	MS				%Rec	
Analyte	Result Q	ualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	1.0 U		20.0	19.1		ug/L		96	56 - 135	
cis-1,2-Dichloroethene	0.62 J		20.0	20.8		ug/L		101	66 - 128	
Tetrachloroethene	1.0 U		20.0	18.6		ug/L		93	62 - 131	
trans-1,2-Dichloroethene	1.0 U		20.0	19.3		ug/L		97	56 - 136	
Trichloroethene	1.0 U		20.0	18.8		ug/L		94	61 - 124	
Vinyl chloride	2.4		20.0	16.8		ug/L		72	43 - 157	
	MS M	s								
Surrogate		ualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	97	-	62 - 137							
4-Bromofluorobenzene (Surr)	79		56 - 136							
Toluene-d8 (Surr)	98		78 - 122							
Dibromofluoromethane (Surr)	104		73 - 120							
Lab Sample ID: MB 240-594		ompour	ds (GC/MS)					Client S	ample ID: Meth	
Lab Sample ID: MB 240-594 Matrix: Water		ompour	ds (GC/MS)					Client S	ample ID: Metho Prep Type:	
Lab Sample ID: MB 240-594 Matrix: Water	170/6	Compour B MB	lds (GC/MS)					Client S		
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170	1170/6 M		ids (GC/MS) _{RL}		MDL Unit		D	Client S		Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 ^{Analyte}	170/6 M Resu	в мв			MDL Unit		_ D		Prep Type:	Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 ^{Analyte}	170/6 M Resu 2.	B MB It Qualifier					_ <u>D</u>		Prep Type: Analyzed	Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	M 170/6 	B MB It Qualifier 0 U B MB	RL 2.0					Prepared	Analyzed 11/10/23 10:32	Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate	M Resu 2 <i>M</i> % <i>R</i> ecover	B MB It Qualifier 0 U B MB ry Qualifier							Analyzed 11/10/23 10:32 Analyzed	Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate	M Resu 2 <i>M</i> % <i>R</i> ecover	B MB It Qualifier 0 U B MB	RL 2.0					Prepared	Analyzed 11/10/23 10:32	Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	M Resu 2 <i>M</i> <i>%Recover</i> 8	B MB It Qualifier 0 U B MB ry Qualifier						Prepared Prepared	Analyzed 11/10/23 10:32 Analyzed	Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59	M Resu 2 <i>M</i> <i>%Recover</i> 8	B MB It Qualifier 0 U B MB ry Qualifier						Prepared Prepared	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32	Total/N Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water	M Resu 2 <i>M</i> <i>%Recover</i> 8	B MB It Qualifier 0 U B MB ry Qualifier						Prepared Prepared	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 EID: Lab Contro	Total/N Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water	M Resu 2 <i>M</i> <i>%Recover</i> 8	B MB It Qualifier 0 U B MB ry Qualifier						Prepared Prepared	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 EID: Lab Contro	Total/N. Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water	M Resu 2 <i>M</i> <i>%Recover</i> 8	B MB It Qualifier 0 U B MB ry Qualifier	RL 2.0 <i>Limits</i> 66 - 120	LCS	0.86 ug/L			Prepared Prepared	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 ID: Lab Contro Prep Type:	Total/N. Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte	M Resu 2 <i>M</i> <i>%Recover</i> 8	B MB It Qualifier 0 U B MB ry Qualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike	LCS	0.86 ug/L		Clier	Prepared Prepared	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 HD: Lab Controo Prep Type: %Rec	Total/N. Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte	1170/6 M Resu 2. M %Recover 8 4170/4	B MB It Qualifier U B MB ry Qualifier 19	RL 2.0 2.0 66 - 120 Spike Added	LCS Result	0.86 ug/L	Unit	Clier	Prepared Prepared It Sample	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 BID: Lab Controo Prep Type: %Rec Limits	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	170/6 M Resu 2. M %Recover 8 4170/4 LCS LC	B MB It Qualifier 0 U B MB ry Qualifier 29	RL 2.0 2.0 66 - 120 66 - 120 4dded 10.0	LCS Result	0.86 ug/L	Unit	Clier	Prepared Prepared It Sample	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 BID: Lab Controo Prep Type: %Rec Limits	Total/N. Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate	LCS LC %Recovery Qu	B MB It Qualifier 0 U B MB ry Qualifier 29	RL 2.0 Limits 66 - 120 Spike Added 10.0 Limits	LCS Result	0.86 ug/L	Unit	Clier	Prepared Prepared It Sample	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 BID: Lab Controo Prep Type: %Rec Limits	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate	170/6 M Resu 2. M %Recover 8 4170/4 LCS LC	B MB It Qualifier 0 U B MB ry Qualifier 29	RL 2.0 2.0 66 - 120 66 - 120 4dded 10.0	LCS Result	0.86 ug/L	Unit	Clier	Prepared Prepared It Sample	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 BID: Lab Controo Prep Type: %Rec Limits	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr)	170/6 M Resu 2 M %Recover 8 4170/4 LCS LC %Recovery Qu 101	B MB It Qualifier 0 U B MB ry Qualifier 29	RL 2.0 Limits 66 - 120 Spike Added 10.0 Limits	LCS Result	0.86 ug/L	Unit	Clier	Prepared Prepared at Sample <u>%Rec</u> 114	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 ID: Lab Contro Prep Type: %Rec Limits 80 - 122	Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-194709	170/6 M Resu 2 M %Recover 8 4170/4 LCS LC %Recovery Qu 101	B MB It Qualifier 0 U B MB ry Qualifier 29	RL 2.0 Limits 66 - 120 Spike Added 10.0 Limits	LCS Result	0.86 ug/L	Unit	Clier	Prepared Prepared at Sample <u>%Rec</u> 114	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 ID: Lab Contro Prep Type: %Rec Limits 80 - 122 Sample ID: Mat	Total/N Dil Fa Dil Fa I Sampl Total/N
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-194709 Matrix: Water	170/6 M Resu 2 M %Recover 8 4170/4 LCS LC %Recovery Qu 101	B MB It Qualifier 0 U B MB ry Qualifier 29	RL 2.0 Limits 66 - 120 Spike Added 10.0 Limits	LCS Result	0.86 ug/L	Unit	Clier	Prepared Prepared at Sample <u>%Rec</u> 114	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 ID: Lab Contro Prep Type: %Rec Limits 80 - 122	Total/N. I Sampl Total/N.
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-194709 Matrix: Water	M Resu 2 M %Recover 8 4170/4 LCS LC %Recovery Qu 101 -B-1 MS	B MB It Qualifier 0 U B MB Y Qualifier 9 CS ualifier	RL 2.0 Limits 66 - 120 Spike Added 10.0 Limits 66 - 120	LCS Result 11.4	0.86 ug/L	Unit	Clier	Prepared Prepared at Sample <u>%Rec</u> 114	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 ID: Lab Contro Prep Type: %Rec Limits 80 - 122 Sample ID: Mat	Total/N, I Sampl Total/N,
1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-59 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	170/6 M Resu 2 M %Recover 8 4170/4 LCS LC %Recovery Qu 101	B MB It Qualifier 0 U B MB y Qualifier 9 CS ualifier	RL 2.0 Limits 66 - 120 Spike Added 10.0 Limits	LCS Result 11.4	0.86 ug/L LCS Qualifier	Unit	Clier	Prepared Prepared It Sample <u>%Rec</u> 114	Analyzed 11/10/23 10:32 Analyzed 11/10/23 10:32 ID: Lab Contro Prep Type: %Rec Limits 80 - 122 Sample ID: Mat Prep Type:	Total/N, I Sampl Total/N,

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

	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	81		66 - 120								
- Lab Sample ID: 240-194709-	B-1 MSD					c	lient Sa	ample IC): Matrix Sp	oike Dup	olicate
Matrix: Water										ype: To	
Analysis Batch: 594170											
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	153	S1+	66 - 120								

GC/MS VOA

LCS 240-594185/5

240-194798-B-8 MSD

240-194798-F-8 MS

Lab Control Sample

Matrix Spike

Matrix Spike Duplicate

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194819-2	MW-156S_110223	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
Analysis Batch: 5941	85				
Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
240-194819-1	TRIP BLANK_64	Total/NA	Water	8260D	
240-194819-2	MW-156S_110223	Total/NA	Water	8260D	
MB 240-594185/9	Method Blank	Total/NA	Water	8260D	

Total/NA

Total/NA

Total/NA

Water

Water

Water

8260D

8260D

8260D

Matrix: Water

Client Sample ID: TRIP BLANK_64

Lab Sample	ID: 240-194819-1
	Matrix: Water

Date Collected: 11/02/23 00:00 Date Received: 11/04/23 08:00

	Batch	Batch		Dilution	Batch		Prepared	
Prep Type Total/NA	Type Analysis	Method 8260D	Run	1	Number 594185	 EET CLE	or Analyzed 11/10/23 13:43	
Client Samp	le ID: MW-1	56S_110223					_ab Sample ID: 240-1	94819-2

Client Sample ID: MW-156S_110223 Date Collected: 11/02/23 13:10

Date Received: 11/04/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	594185	AJS	EET CLE	11/10/23 14:06
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 19:15

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 - Off Site

Laboratory: Eurofins Cleveland

aboratory: Eurofins Clevel accreditations/certifications held by the		ions/certifications are applicable to this report	t	
Authority	Program	Identification Number	Expiration Date	
California	State	2927	02-27-24	
Georgia	State	4062	02-27-24	
Illinois	NELAP	200004	07-31-24	
owa	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.

Tas	Cha Test America I abovetore: Jonotica:: Righton 1008 Ci	Chain of Custody Record		TestAmerica
Client Contact			00	e N 1X 1 V L V J WN 7 14 M V X X X X X X X X X X X X X X X X X X
Company Name: Arcadis		-		TestAmerica Lahoratorias Inc
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis 1 urnaround 11me	Analyses	For lab use only
Project Name: Ford LTP Off-Site	Sampler Name:	TAT if different from below 3 weeks		Walk-in client
Project Number: 30167538.402.04	t/C	()		Lab sampling
PO#30167538.402.04	Shipping/Tracking No:	k (Y / T Grab=	8260D	Job/SDG No:
	Matrix	10928	oride 8 22-DCE	
Sample Identification	Sample Date Sample Time Aducous Sediment	4 ¹ ¹ -DCE Composi Filtered Unbee NaoH NaOH HCI HZO4 HZSO4	cis-1,2-D Trans-1,5 PCE 826 Vinyl Chl 7,4-Droxe	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 64			×	1 Trip Blank
v MW-1563_110223	11-2-73 1310 6	× × × × ×		3 VOAs for 8260D
				3 VUAs for 8260D SIM
Pe				
390 -				
18 c				
of 20				
		240 404849 Chain of Custody		T & A MARK
Possible Hazard Identification Von-Hazard Elammable Skin Irritant	itant i Poison B Unknown	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return to Client	are retained longer than 1 month) Archive For [Months	
Special Instructions/OC Requirements & Comments: Sample Address: 1 2.1 Ου βυς τύρι βος Τ Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631	com. Cadena #E203631			
Reinquished by:	Date		Connany:	Date/Time
\checkmark		11200	Artendes	11-02-23/1500
No Un Schardon		11525	Recompany: Arcad.S	Date/Time.
Jemmer Ely	Hrcades 11/3/23	1245 Received in Laboratory by:	Company: FFFIA	Date/Time: 11(3/23/2740
A Design		NNNN .	i.	
13/20	11/11/13/23	11/3 (23 party 11/1)	DI	000 (V-1
23				

lient	Eurofins – Clevelan Barberton Facility	d Sample Receipt Fo	orm/Narrative		Login # :[S	4819
coler Received on //-4/23 Opened on //-4/23 coler Received on //-4/23 Opened on //-4/23 cedEx.1" Grd Exp UPS FAS Suppoint) Chent Drop Off Eurofins Courier Other receipt After-hours: Dorp-off Dief/Time Storage Location Storage Location Packing material used: Buble-Wrep Foam Plastic Bag None Other Cooler # Cooler # Cooler Temp		1:	0'- 21		Cooler	unpacked by:
eddEx.'P' Grd Exp UPS FAS Suppoint) Client Drop Off Eurofing Counce Other teteript After-hours: Drop-off Date/Time Storage Location unoffns: Cooler # Foam Box Packing material used: Bdble-Werp? Foam Day Client Cooler Box Other COOLANT: Wertle: Bit Day Lee Day Lee None COOLANT: Wertle: CC Corrected Cooler Temp. *C Corrected Cooler Temp. *C Corrected Cooler Temp. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Yes No No Were tamper/custody seals intact and ancompromised? Yes No No Were tamper/custody seals intact and neuropromised? Yes No Shipper' packing gilp stacked to the cooler(s)? Yes No Yes No Were the person(s) who collected the samples (c)? Yes No Were the person(s) who collected the samples (c)? Yes No Yes No Yes No Outal Bottle labels (ID/Date/Time) be reconciled withighte COC? Yes No Yes No Yes No Subjection quantity received to perform indicated analyses? Yes No Yes No Yes No Subdicited quantity received to perform indicated analyses? Yes No No Yes No No Swas vOA thare sample(a) at the corect pil			Manager and Andrew States and Andre	11 11 22	- 11	
steright After-hours: Drop-off Date/Time Storage Location unofins Cooler # C Packing material used: Bable-Werp Foam Plastic Bay None Other COOLANT: Welles Blue Ice Dry Ice Water None Corrected Cooler Temp. COOLANT: Welles Blue Ice Dry Ice Water None Storage Location COOLANT: Welles Blue Ice Dry Ice Water None Storage Location -Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Yes No -Were tamper/custody seals on the outside of the cooler(s)? Yes No -Were tamper/custody seals intact and uncompromised? Yes No Shipper's packing skip attached to the cooler(s)? Yes No Were the custody papers accompany the sample(s)? Yes No Were the custody papers accompany the sample(s)? Yes No Was/were the person(s) who collected the samples clearly identified on the COC? Yes No Did all bottles as rive in good condition (Unbroken)? Yes No Sufficient quantity received to perform indicated analyses? Yes No Sufficient quantity received to perform indicated analyses? Yes No Were Yoa on the COC? Yes No Sufficient quantity received to perform indicated analyses? Yes No Yes Quantity received to perform indicated analys						//
<pre>inrofins Cooler #</pre>			point) Client Drop Off	Eurofins Cou	rier Other	
Pecking material used: Babble Versp. Foam Plastic Bag None Other COOLANT: Wetting None Other Se Multiple Cooler Form IR GUN # (CFC) Observed Cooler Temp*C Corrected Cooler Temp* Corrected Cooler Temp*C Corrected Cooler Temp* Were tamper/custody seals on the outside of the cooler(s)? Yes (No No N				Storage Loc	ation	
COULANT: Weller Blue lee Dry lee Water None Cooler temperature upon receipt See Multiple Cooler Form IR GUN #(CF'C) Observed Cooler Temp'C Corrected Cooler Temp' Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Za No -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/McHg)? -Were tamper/custody seals on the tottle(s) or bottle kits (LLHg/McHg)? -Were tamper/custody seals on the tottle(s) or bottle kits (LLHg/McHg)? -Were tamper/custody seals on the tottle(s) or bottle kits (LLHg/McHg)? -Were tamper/custody seals on the tottle(s) or bottle kits (LLHg/McHg)? -Were tamper/custody seals intact and uncompromised? Shippers' packing sits attacked to the cooler(s)? Did custody papers accompany the sample(s)? Were the custody papers accompany the sample(s)? Could all bottle labels (Dt/Date/Time) be reconciled with the ADPropriet place? Tor cach sample, does the COC? (pecify preervative(Y/N), wf of containers (VN), and apple bype of grab/comp(Y/N)? Of were correct bottle(s) used for the test(s) indicated 3. Sufficient quantity received to perform indicated matyses? 2. Are these work share sample and all listed on the COC? If yes, Questions 13-17 have been checked at the originating laboratory. 3. Were all preserved sample(s) at the correct pH upon receipt? 4. Were VOAs on the COC? 5. Ware air bubbles >6 mm in any VOA vials? 5. Was a U.L Hg or Me Hg trip blank present? 2. Were air bubbles >6 mm in any VOA vials? 5. AMPLE CONDITION mple(s)						
Cooler temperature upon receipt IR GUN #	-			None Oth	er	
IR GUN #			e Dry Ice Wate			
Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Yes No Yes No Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No Yes No Were tamper/custody seals intact and uncompromise? Yes No Yes No Did custody papers accompany the sample(s)? Yes No Yes No Yes No Were tamper/custody seals intact and uncompromise? Yes No Yes No Yes No Did custody papers accompany the sample(s)? Yes No Yes No Yes No Were the person(s) who collected the samples clearly identified on the COC? Yes No Yes No Yes No Old all bottle labels (ID/Date/Time) be reconciled with/the COC? Yes No Yes No Yes No Sufficient quantity received to perform indicated analyses? Yes No Yes No Yes No Were correct bottle(s) used bott the correct pH upon receipt? Yes No Yes No Yes No Yes No Were all preserved sample(s) at the correct pH upon receipt? Yes No Yes No Yes No Yes No Were all preserved in all bitted on the COC?? Yes No Yes No Yes No Yes No Were all preserved sample(s) at the correct pH upon receipt? Yes No Yes No		· ^ ·		See Multiple Co	ooler Form	
•Were the seals on the outside of the cooler(s) signed & dated? The provide that are additional next page •Were tamper/custody seals intet and uncompromised? Yes No Shippers' packing slip strached to the cooler(s)? Yes No Did custody papers accompany the sample(s)? Yes No Were the version(s) who collected the samples clearly identified on the COC? Yes No Out add bottle labels (DD/Date/Time) be reconciled with/the COC? Yes No Could all bottle labels (DD/Date/Time) be reconciled with/the COC? Yes No Sufficient quantity received to perform indicated analyses? Yes No 2. Are these work share samples and all listed on the COC? Yes No 3. Were all preserved sample(s) and for the test(s) indicated? Yes No 3. Were all preserved sample(s) at the correct pH upon receipt? Yes No 4. Were VOAs on the COC? Yes No 5. Were voAs on the COC? Yes No 6. Was a VA trip blank present? Yes No 7. Were voAs on the COC? Yes No 7. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No	IR GUN #	ろ(CF	_°C) Observed Coole	r Temp	_°C Corrected Co	oler Temp°(
- Were the seals on the outside of the cooler(s) signed & dated?	2. Were tamper/custo	dy seals on the outside	of the cooler(s)? If Ye	s Quantity	Tes No	Tests that are pot
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes Mo -Were tamper/custody seals intact and uncompromised? Yes Mo Shippers' packing slip stached to the cooler(s)? Yes Mo Did custody papers accompany the sample(s)? Yes Mo Was/were the person(s) who collected the samples clearly identified on the COC? Yes No Could all bottles arrive in good condition (Uabroken)? Yes No Could all bottle labels (ID/Date/Time) be reconciled with/the COC? Yes No For each sample, does the COC specify preservative(Y/N), # of containers (W), and sample type of grab/comp(P/N)? Were vork share samples and all bitsed on the COC? Yes No I. Sufficient quantity received to perform indicated analyses? Yes No J. Were VoAs on the COC? Yes No J. Were VoAs on the	-Were the seals	on the outside of the co	oler(s) signed & dated?		Yes No NA	
Shippers' packing slip stached to the cooler(s)? Yes No Did custody papers accompany the sample(s)? Yes No Were the custody papers accompany the samples clearly identified on the COC? Yes No Did all bottles arrive in good condition (Unbroken)? Yes No Could all bottles arrive in good condition (Unbroken)? Yes No Could 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 (YAN), # of containers (YAN), and sample type of grab/comp(YAN)? Were vork share samples and all listed on the COC? Yes No Sufficient quantity received to perform indicated analyses? Yes No Are these work share samples and all listed on the COC? Yes No J. Were VOAs on the COC? Yes No Was a LL Hg or Me Hg trip blank	-Were tamper/cu	stody seals on the bottl	e(s) or bottle kits (LLH	g/MeHg)?	Yes No	
Did custody papers accompany the sample(s)? The No Were the custody papers relinquished & signed in the appropriate place? The No Was/were the person(s) who collected the samples clearly identified on the COC? The No Did all bottle labels (ID/Date/Time) be reconciled with the COC? The No Could all bottle labels (ID/Date/Time) be reconciled with the COC? The No No Yes No OWere correct bottle(s) used for the test(s) indicated analyses? Yes No Sufficient quantity received to perform indicated analyses? Yes No Were vork share samples and all listed on the COC? Yes No Were vork share samples at the correct pH upon receipt? Yes No Were vork share sample(s) at the correct pH upon receipt? Yes No Were vork share present in the cooler(s)? Yes No Were air bubbles >6 mm in any VOA vials? Larger than this. Yes Yes No Sea LL Hg or Me Hg trip blank present? Yes No No Was a LL Hg or Me Hg trip blank present? Yes No No Sample(s)	-	•	•		Yes No MA	
Did custody papers accompany the sample(s)? Yes Yes No Were the custody papers accompany the samples clearly identified on the COC? Yes No Did all bottles arrive in good condition (Unbroken)? Yes No Could all bottle labels (DD/bate/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 to 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 Were air bubbles >6 mm in any VOA vials? Yes No Were air bubbles >6 mm in any VOA vials? Yes Yes No Was a VOA trip blank present? Yes Yes Yes No Was a LL Bg or Me Hg trip blank present? yes Yes Yes Yes A. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: Samples processed by: Sample(s)					Yes No	
Was/were the person(a) who collected the samples clearly identified on the COC? Yes No Was/were the person(a) who collected the samples clearly identified on the COC? Yes No Did all bottle sarrive in good condition (Unbroken)? Yes No Could all bottle babels (DD/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 analyses? Yes No 2. Are these work share samples and all listed on the COC? Yes No 3. Were all preserved sample(s) at the correct pH upon receipt? Yes No 4. Were VOAs on the COC? Yes No 5. Were air bubbles >6 mm in any VOA vials? Larger than this. 6. Were air bubbles >6 mm in any VOA vials? Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 6. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: 9.					Yes No	
Did all bottles arrive in good condition (Unbroken)? The 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)? 0. Were correct bottle(s) used for the test(s) indicated? Yes No 1. Sufficient quantity received to perform indicated analyses? Yes No 2. Are these work share samples and all listed on the COC? Yes No 2. Were all preserved sample(s) at the correct pH upon receipt? Yes No 3. Were air bubbles >6 mm in any VOA vials? Yes No 5. Were air bubbles >6 mm in any VOA vials? Yes No 6. Was a VLA trip blank present in the cooler(s)? Trip Blank Lot # Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 7. Was a LL Hg or Me Hg trip blank present? Yes No 8. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: 7. SAMPLE CONDITION were received after the recommended holding time had exp	• •	-		•	Yes No	100
Could all bottle labels (ID/Date/Time) be reconciled with the COC? For each sample, does the COC specify preservative(V/N), # of containers (N), and sample type of grab/comp(V/N)? Were correct bottle(s) used for the test(s) indicated analyses? Sufficient quantity received to perform indicated analyses? Are these work share samples and all listed on the COC? Were all preserved sample(s) at the correct pH upon receipt? Were all preserved sample(s) at the correct pH upon receipt? Were all preserved sample(s) at the correct pH upon receipt? Were all preserved sample(s) at the correct pH upon receipt? Were all preserved sample(s) at the correct pH upon receipt? Were all preserved sample(s)? Were all preserved sample(s)? Were all preserved sample(s)? Were all preserved sample(s)? Were all preserved sample(s)? Was a VOA trip blank present in the cooler(s)? Was a LL Hg or Me Hg trip blank present? Date				ed on the COC?	Yes No	
For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/com#(Y/N)? 0. Were correct bottle(s) used for the test(s) indicated? Yes No 2. Are these work share samples and all listed on the COC? If yes, Questions 13-17 have been checked at the originating laboratory. 3. Were all preserved sample(s) at the correct pH upon receipt? Yes No Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are voAs on the COC? Yes No Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are bubbles >6 mm in any VOA vials? Were are voAs and the cooler(s)? Trip Blank Lot # Yes No Were are bubbles >6 mm in any VOA vials? Were are bubble >6 mm in any VOA vials? Were are voal were received after the recommended holding time had expired. mple(s)			-		Yes No	
0. Were correct bottle(s) used for the test(s) indicated? 1. Sufficient quantity received to perform indicated analyses? 2. Are these work share samples and all listed on the COC? 2. Are these work share samples and all listed on the coreginating laboratory. 3. Were all preserved sample(s) at the correct pH upon receipt? 3. Were VOAs on the COC? 3. Were vair bubbles >6 mm in any VOA vials? 4. Were VOAs on the COC? 5. Were air bubbles >6 mm in any VOA vials? 5. Was a UL Hg or Me Hg trip blank present in the cooler(s)? 5. Trip Blank Lot #Yes No 7. Was a LL Hg or Me Hg trip blank present? 5. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES 5. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES 5. SAMPLE CONDITION 5. Mere received after the recommended holding time had expired. 5. mple(s) were received after the recommended holding time had expired. 5. mple(s) were received with bubble >6 mm in diameter. 5. More received in a broken container. 5. SAMPLE PRESERVATION 5. mple(s) were further preserved in the laboratory. 5. Mare the preserved: Preservative(s) added/Lot number(s): were further preserved in the laboratory. 5. Chain of preservet: Preservative(s) added/Lot number(s):						\bigcirc
				containers (Y/N), a	and sample type of	grab/comp(Y/N)?
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	0			Furofine - Can	ton Sample Receipt I	Multiple Cooler Form	
	ooler De	seering	lion	IR Gun #	Observed	Corrected	Coolant
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WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT



November 17, 2023

Kris Hinskey Arcadis Inc 10559 Citation Ave Suite 100 Brighton, MI 48116

CADENA project ID: E203631 Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater Project number: 30167538.402.04 off-site Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - Cleveland Laboratory submittal: 194819-1 Sample date: 2023-11-02 Report received by CADENA: 2023-11-16 Initial Data Verification completed by CADENA: 2023-11-17 Number of Samples:2 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 SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

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 <u>http://clms.cadenaco.com/index.cfm</u>.

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.
В	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
Е	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than $5x$ (or $10x$ for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than $10x$ the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - Cleveland Laboratory Submittal: 194819-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401948 11/2/20	_ 8191	MW-156 2401948 11/2/20					
	A 1			Report		Valid	D It	Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-8260</u>	<u> </u>									
	1,1-Dichloroethene	75-35-4	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	
	Tetrachloroethene	127-18-4	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	
	Trichloroethene	79-01-6	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	
<u>OSW-8260</u>	DDSIM									
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	



Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194819-1 CADENA Verification Report: 2023-11-17

Analyses Performed By: Eurofins Cleveland Barberton, Ohio

Report # 52118R Review Level: Tier III Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194819-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample	Parant Sampla	Analysis				
Sample ID			Collection Date	Parent Sample	VOC	VOC SIM			
TRIP BLANK_64	240-194819-1	Water	11/02/2023		Х				
MW-156S_110223	240-194819-2	Water	11/02/2023		Х	Х			

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

	Items Reviewed	Rep	orted		mance otable	Not Required
		No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		X	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Х	
7.	Laboratory sample received date		Х		X	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of Quality Assurance or sample problems provided		х		х	
12.	Data Package Completeness and Compliance		Х		Х	

ORGANIC ANALYSIS INTRODUCTION

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

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCI

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Rep	orted		Performance Acceptable				
	No	Yes	No	Yes	Required			
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	C/MS)							
Tier II Validation								
Holding times/Preservation		Х		X				
Tier III Validation		1		-				
System performance and column resolution		Х		Х				
Initial calibration %RSDs		Х		Х				
Continuing calibration RRFs		Х		Х				
Continuing calibration %Ds		Х		Х				
Instrument tune and performance check		Х		Х				
Ion abundance criteria for each instrument used		Х		Х				
Field Duplicate RPD	Х				Х			
Internal standard		Х		Х				
Compound identification and quantitation								
A. Reconstructed ion chromatograms		Х		Х				
B. Quantitation Reports		Х		Х				
C. RT of sample compounds within the established RT windows		Х		Х				
D. Transcription/calculation errors present		Х		X				
E. Reporting limits adjusted to reflect sample dilutions		Х		Х				
Notes:								

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

BASh_MB
December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS



CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



Chain of Custody Record



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

Client Contact	Regula	tory program			n	w		NPDE	16	,	D	CRA			t LLO	2100						-			7118	ΕΑΣΣΗ Ν ΝΥΗΟΝΜΕΝΤΑ	11 31 *
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Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Other	H2SO4	HN03	HC	NaOH ZnAc/	NaOH Linnre	Other	Filtered	Composite-	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE	PCE 8260D	TCE 8260D	Vinyl Chloride	1,4-Dioxane 8260D SIM					Sample Specific Not Special Instruction	
TRIP BLANK_ 64 MW- 1563_ 110223				1	Τ		T		1					۱G			X	X	X	X					┿	1 Trip Blank	
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Special Instructions/QC Requirements & Comments: Sample Address: しこしひ Bゅちてかり Pのらて	-																					onuna					(1996)
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99998 TestAmenca Laboratories Inc. All rights reserved TestAmerica & Design ¹⁶ are trademarks of TestAmerica Laboratories _e Inc.										0		1							l.	~			-		l		<u> </u>
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Client Sample ID: TRIP BLANK_64

Date Collected: 11/02/23 00:00

Date Received: 11/04/23 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared Analyze	d Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137	11/10/23 1	3:43 1
4-Bromofluorobenzene (Surr)	70		56 - 136	11/10/23 1	3:43 1
Toluene-d8 (Surr)	101		78 - 122	11/10/23 1	3:43 1
Dibromofluoromethane (Surr)	112		73 - 120	11/10/23 1	3:43 1

Client Sample ID: MW-156S_110223 Date Collected: 11/02/23 13:10 Date Received: 11/04/23 08:00

Lab Sample ID: 240-194819-2

Matrix: Water

1

1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 19:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		66 - 120			-		11/10/23 19:15	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			11/10/23 14:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 14:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 14:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 14:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		62 - 137			-		11/10/23 14:06	1
4-Bromofluorobenzene (Surr)	72		56 - 136					11/10/23 14:06	1

1,2-Dichloroethane-d4 (Surr)	104	62 - 137	11/10/23 14:06
4-Bromofluorobenzene (Surr)	72	56 - 136	11/10/23 14:06
Toluene-d8 (Surr)	100	78 - 122	11/10/23 14:06
Dibromofluoromethane (Surr)	115	73 - 120	11/10/23 14:06

Matrix: Water

Lab Sample ID: 240-194819-1