

Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey ARCADIS US Inc 28550 Cabot Drive Suite 500 Novi, Michigan 48377 Generated 8/24/2023 12:15:50 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-189963-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203





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Job Notes

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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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RPD

TEF

TEQ

TNTC

Qualifiers		3
GC/MS VOA		
Qualifier	Qualifier Description	
U	Indicates the analyte was analyzed for but not detected.	
Glossary		5
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	0
CNF	Contains No Free Liquid	8
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	9
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)	13
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)	

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Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin)

Too Numerous To Count

Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-189963-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-189963-1

Receipt

The samples were received on 8/11/2023 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 1.1° C and 1.3° 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
240-189963-1	TRIP BLANK_81	Water	08/09/23 00:00	08/11/23 08:00
240-189963-2	MW-159S_080923	Water	08/09/23 09:35	08/11/23 08:00

Client Sample ID: TRIP BLANK_81

No Detections.

Client: ARCADIS US Inc

Project/Site: Ford LTP - Off Site

Client Sample ID: MW-159S_080923

No Detections.

Job ID: 240-189963-1

Lab Sample ID: 240-189963-1

Lab Sample ID: 240-189963-2

Client Sample ID: TRIP BLANK_81

Date Collected: 08/09/23 00:00 Date Received: 08/11/23 08:00

Method: SW846 8260D - Volati	le 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			08/19/23 17:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 17:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 17:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 17:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 17:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 17:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		62 - 137			-		08/19/23 17:13	1
4-Bromofluorobenzene (Surr)	102		56 - 136					08/19/23 17:13	1
Toluene-d8 (Surr)	99		78 - 122					08/19/23 17:13	1
Dibromofluoromethane (Surr)	113		73 - 120					08/19/23 17:13	1

Matrix: Water

Lab Sample ID: 240-189963-1

Eurofins Cleveland

Client Sample ID: MW-159S_080923

Date Collected: 08/09/23 09:35 Date Received: 08/11/23 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			08/17/23 16:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		66 - 120			-		08/17/23 16:36	1
Method: SW846 8260D - Volati	ile Organic Comp	ounds by G	C/MS						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/23 22:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 22:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 22:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 22:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 22:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 22:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		62 - 137			-		08/19/23 22:49	1
4-Bromofluorobenzene (Surr)	105		56 - 136					08/19/23 22:49	1
Toluene-d8 (Surr)	101		78 - 122					08/19/23 22:49	1
Dibromofluoromethane (Surr)	112		73 - 120					08/19/23 22:49	1

8/24/2023

Job ID: 240-189963-1

Lab Sample ID: 240-189963-2 Matrix: Water

BFB

(56-136)

102

105

99

102

100

103

TOL

(78-122)

99

101

99

102

103

108

DCA

(62-137)

111

119

113

111

99

117

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

Client Sample ID

TRIP BLANK_81

Matrix Spike

Method Blank

MW-159S_080923

Lab Control Sample

Matrix Spike Duplicate

Matrix: Water

Lab Sample ID

240-189963-1

240-189963-2

240-189966-G-3 MSD

240-189966-H-3 MS

LCS 240-584461/5

MB 240-584461/9

Surrogate Legend

TOL = Toluene-d8 (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr) BFB = 4-Bromofluorobenzene (Surr) Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

DBFM

(73-120)

113

112

113

103

101

116

12 13

DBFM = Dibromofluoron	nethane (Surr)		
Method: 8260D SIM	I - Volatile Organic Com	pounds (GC/MS)	
Natrix: Water			Prep Type: Total/NA
-			Percent Surrogate Recovery (Acceptance Limits)
		DCA	
Lab Sample ID	Client Sample ID	(66-120)	
240-189963-2	MW-159S_080923	99	
240-189966-B-3 MS	Matrix Spike	97	
240-189966-B-3 MSD	Matrix Spike Duplicate	93	
LCS 240-584182/5	Lab Control Sample	99	
MB 240-584182/7	Method Blank	100	

Surrogate Legend

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

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

Lab Sample ID: MB 240-584461/9

Matrix: Water Analysis Batch: 584461

	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			08/19/23 13:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 13:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 13:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 13:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 13:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 13:47	1

	MB	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			62 - 137		08/19/23 13:47	1
4-Bromofluorobenzene (Surr)	103		56 - 136		08/19/23 13:47	1
Toluene-d8 (Surr)	108		78 - 122		08/19/23 13:47	1
Dibromofluoromethane (Surr)	116		73 - 120		08/19/23 13:47	1

Lab Sample ID: LCS 240-584461/5 Matrix: Water Analysis Batch: 584461

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	24.5		ug/L		123	63 - 134	
cis-1,2-Dichloroethene	20.0	19.2		ug/L		96	77 - 123	
Tetrachloroethene	20.0	20.6		ug/L		103	76 - 123	
trans-1,2-Dichloroethene	20.0	21.5		ug/L		107	75 - 124	
Trichloroethene	20.0	20.1		ug/L		101	70 - 122	
Vinyl chloride	20.0	19.8		ug/L		99	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120

Lab Sample ID: 240-189966-G-3 MSD Matrix: Water Analysis Batch: 584461

	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	23.3		ug/L		116	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	66 - 128	6	14
Tetrachloroethene	1.0	U	20.0	19.5		ug/L		98	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	20.0	21.0		ug/L		105	56 - 136	6	15
Trichloroethene	1.0	U	20.0	19.4		ug/L		97	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	18.4		ug/L		92	43 - 157	6	24

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

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

08/19/23 1	3:47 1	
Client Sample ID: Lab Co	ntrol Sample	

Prep Type: Total/NA

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

10

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

Matrix: Water	-G-3 MSD						Client	Sample IE	: Matrix Spike D Prep Type:	
Analysis Batch: 584461										
	MSD N	ISD								
Surrogate	%Recovery G	ualifier	Limits							
Dibromofluoromethane (Surr)	113		73 - 120							
Lab Sample ID: 240-189966	-H-3 MS							Client	Sample ID: Mati	
Matrix: Water									Prep Type:	Iotal/N
Analysis Batch: 584461	Sample S	ample	Spike	MS	MS				%Rec	
Analyte	Result Q	•	Added		Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene			20.0	22.3	quantor	ug/L		112	56 - 135	
cis-1,2-Dichloroethene	1.0 U		20.0	18.8		ug/L		94	66 - 128	
Tetrachloroethene	1.0 U		20.0	20.3		ug/L		101	62 - 131	
trans-1,2-Dichloroethene	1.0 U		20.0	19.7		ug/L		99	56 - 136	
Trichloroethene	1.0 U		20.0	20.0		ug/L		100	61 - 124	
Vinyl chloride	1.0 U		20.0	17.4		ug/L		87	43 - 157	
	1.0 0		20.0			g/ L		0,		
	MS N									
Surrogate		ualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	111		62 - 137							
4-Bromofluorobenzene (Surr)	102		56 - 136							
Toluene-d8 (Surr)	102		78 - 122							
Lab Sample ID: MB 240-584		Compour	ids (GC/MS)					Client S	ample ID: Metho Prep Type:	
Lab Sample ID: MB 240-584 Matrix: Water		Compour	ids (GC/MS)					Client S	ample ID: Metho Prep Type:	
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182	1182/7 N	1B MB			MDI Unit				Prep Type:	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte	1182/7 Res	1B MB ult Qualifier	RL		MDL Unit		D	Client S	Prep Type: Analyzed	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte	1182/7 Res	1B MB ult Qualifier 2.0 U			MDL Unit		D		Prep Type:	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte	1182/7 	1B MB ult Qualifier 2.0 U 1B MB	RL				_ <u>D</u>		Prep Type: Analyzed	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate	1182/7 Res 2 %Recove	IB MB ult Qualifier 2.0 U IB MB ery Qualifier	RL 2.0 Limits				D		Analyzed 08/17/23 10:38 Analyzed	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate	1182/7 Res 2 %Recove	1B MB ult Qualifier 2.0 U 1B MB					<u>D</u>	Prepared	Prep Type: Analyzed 08/17/23 10:38	Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	1182/7 Res 2 %Recove 1	IB MB ult Qualifier 2.0 U IB MB ery Qualifier	RL 2.0 Limits					Prepared Prepared	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58	1182/7 Res 2 %Recove 1	IB MB ult Qualifier 2.0 U IB MB ery Qualifier	RL 2.0 Limits					Prepared Prepared	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control	Total/N. Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water	1182/7 Res 2 %Recove 1	IB MB ult Qualifier 2.0 U IB MB ery Qualifier	RL 2.0 Limits					Prepared Prepared	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane	1182/7 Res 2 %Recove 1	IB MB ult Qualifier 2.0 U IB MB ery Qualifier	RL 2.0 2.0 66 - 120		0.86 ug/L			Prepared Prepared	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 OB/17/23 10:38 DE: Lab Control Prep Type:	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182	1182/7 Res 2 %Recove 1	IB MB ult Qualifier 2.0 U IB MB ery Qualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike	LCS	0.86 ug/L	Unit	Clie	Prepared Prepared	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water	1182/7 Res 2 %Recove 1	IB MB ult Qualifier 2.0 U IB MB ery Qualifier	RL 2.0 2.0 66 - 120	LCS	0.86 ug/L	- Unit ug/L		Prepared Prepared	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 08/17/23 10:38 ID: Lab Control Prep Type: %Rec	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte	1182/7 1182/7 Res 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	IB MB ult Qualifier 2.0 U IB MB ary Qualifier	RL 2.0 2.0 66 - 120 Spike Added	LCS Result	0.86 ug/L		Clie	Prepared Prepared nt Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane	1182/7 	1B MB ult Qualifier 2.0 U 1B MB rry Qualifier 00	RL 2.0 2.0 66 - 120 66 - 120 4dded 10.0	LCS Result	0.86 ug/L		Clie	Prepared Prepared nt Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate	LCS L %Recovery C	IB MB ult Qualifier 2.0 U IB MB ary Qualifier	RL 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 	LCS Result	0.86 ug/L		Clie	Prepared Prepared nt Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate	1182/7 	1B MB ult Qualifier 2.0 U 1B MB rry Qualifier 00	RL 2.0 2.0 66 - 120 66 - 120 4dded 10.0	LCS Result	0.86 ug/L		Clie	Prepared Prepared nt Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits	Total/N/ Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr)	LCS L %Recovery G 99	1B MB ult Qualifier 2.0 U 1B MB rry Qualifier 00	RL 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 	LCS Result	0.86 ug/L		Clie	Prepared Prepared nt Sample %Rec 98	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits 80 - 122	Total/N, Dil Fa I Sampl Total/N,
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-189966	LCS L %Recovery G 99	1B MB ult Qualifier 2.0 U 1B MB rry Qualifier 00	RL 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 	LCS Result	0.86 ug/L		Clie	Prepared Prepared nt Sample %Rec 98	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits 80 - 122 Sample ID: Matt	Total/N/ Dil Fa Dil Fa I Sample Total/N/
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-189966 Matrix: Water	LCS L %Recovery G 99	1B MB ult Qualifier 2.0 U 1B MB rry Qualifier 00	RL 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 	LCS Result	0.86 ug/L		Clie	Prepared Prepared nt Sample %Rec 98	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits 80 - 122	Total/N/ Dil Fa Dil Fa I Sample Total/N/
Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane	LCS L %Recovery G 99	AB MB ult Qualifier 2.0 U AB MB Ary Qualifier 00 CS Qualifier	RL 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 	LCS Result 9.77	0.86 ug/L		Clie	Prepared Prepared nt Sample %Rec 98	Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 08/17/23 10:38 ID: Lab Control Prep Type: %Rec Limits 80 - 122 Sample ID: Matt	Total/N/ Dil Fa Dil Fa I Sample Total/N/
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-189966 Matrix: Water	1182/7 1182/7 1 182/7 1 1 1 1 1 1 1 1 1 1 1 1 1	AB MB ult Qualifier 2.0 U AB MB ery Qualifier 00 CS Qualifier CS Qualifier	RL 2.0 Limits 66 - 120 Spike Added 10.0 Limits 66 - 120	LCS Result 9.77	0.86 ug/L LCS Qualifier		Clie	Prepared Prepared nt Sample 9 98 Client	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 DE: Lab Control Prep Type: %Rec Limits 80 - 122 Sample ID: Mature Prep Type:	Total/N/ Dil Fa Dil Fa I Sample Total/N/

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

	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	97		66 - 120								
Lab Sample ID: 240-189966-	B-3 MSD					c	Client Sa	ample IC): Matrix Sp	oike Dur	olicate
Matrix: Water								-	Prep 1	Type: To	tal/NA
Analysis Batch: 584182											
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dioxane	2.0	U	10.0	9.51		ug/L		95	51 _ 153	3	16
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	93		66 - 120								

Eurofins Cleveland

8260D

8260D

Water

Water

GC/MS VOA

240-189966-G-3 MSD

240-189966-H-3 MS

Matrix Spike Duplicate

Matrix Spike

Analysis I	Batch: 58	34182
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-189963-2	MW-159S_080923	Total/NA	Water	8260D SIM	
MB 240-584182/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-584182/5	Lab Control Sample	Total/NA	Water	8260D SIM	
240-189966-B-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-189966-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Bato
240-189963-1	TRIP BLANK_81	Total/NA	Water	8260D	
240-189963-2	MW-159S_080923	Total/NA	Water	8260D	
MB 240-584461/9	Method Blank	Total/NA	Water	8260D	
LCS 240-584461/5	Lab Control Sample	Total/NA	Water	8260D	

Total/NA

Total/NA

Matrix: Water

Matrix: Water

Lab Sample ID: 240-189963-1

Client Sample ID: TRIP BLANK_81 Date Collected: 08/09/23 00:00

Dute	concercu.	00/03/20 00.00
Date	Received:	08/11/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D			584461	AJS	EET CLE	08/19/23 17:13

Client Sample ID: MW-159S_080923 Date Collected: 08/09/23 09:35

Date Received: 08/11/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	584461	AJS	EET CLE	08/19/23 22:49
Total/NA	Analysis	8260D SIM		1	584182	MRL	EET CLE	08/17/23 16:36

Laboratory References:

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

12 13

Accreditation/Certification Summary

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

13

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	
lowa	State	State 421		
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.

MICHIGAN		Chain	Chain of Custody Record	Record						TestAmerica	Ö
	TestAmerica Laboratory location: Brighton	1	10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763	3righton, MI 48116	/ 810-229	2763			1	THE VERSENCE MANAGEMENT	4. Te di Imula
Client Contact Commony Name - Accordia	Regulatory program:	MO	NPDES	RCRA	Other						
	Client Project Manager: Kris Hinskey	nskey	Site Contact: Christina Weaver	ina Weaver		ILab Cont	ict: Mike I	Lab Contact: Mike DelMonico		TestAmerica Laboratories, Inc. ICOC No-	ries, Inc.
Address: 28550 Cabot Drive, Suite 500											
Clty/State/Zip: Novi, MI, 48377	l elephone: 246-994-2240		[Telephone: 248-994-2240	-2240		Telephon	Telephone: 330-497-9396	9396			COC
Physics 748,004 3740	Email: kristoffer.hinskey@arcadis.com	dis.com	Analysis Turnaround Time	ound Time				Analyses		hlu	3
r nunc: 240-774-240	Samuler Name.		TAT if different from below	T						n-8-1	
Project Name: Ford LTP Off-Site	1 Port 1	1200-		3 weeks	15					Walk-in client	2-16%
Project Number: 30167538.402.04	Method of Shipment/Carrier:	when	Tu day	<i>x</i>	9.	C	_			Lab sampling	Sector 1
PO#30167538.402.04	Shipping/Tracking No:		5	2 days 1 day		_				Job/SDG No:	
		Matrix	Containers & Preservative		_			8 əbi		A DESCRIPTION OF A DESC	
Sample Identification	Sample Date Sample Time	Alr Aqueous Sediment Solid Other:	Suve NªOH HCI H/O3 H32O¢	Filtered S. Unpres Other:	Composite 1,1-DCE 8	OG-S, f-sio	CE 8560	TCE 82601 Vinyl Chlor Nexol		Sample Specific Notes / Special Instructions:	tes / lls:
P TRIP BLANK_		-		Z	X U	××	××			1 Trip Blank	
* MUI-1595 380922	x/a/22 1935	~	~	N	X	1	د د	X		3 VOAs for 8260D	
)				2	2		3 VUAS IOI 820UU	MIN
8 of 2											
								_			
								_	1		
				240-189963 Chain of Custody	n of Cu	stody					
					+	-					
Possible Hazard Identification	_		Samule Dismosal (A fee may be access	ad if came						
Von-Hazard Flammable Skin Irritant	Poison B	Unknown	Return to Cli	Return to Client + Disposal By Lab + Archive For Mo	al By Lab		Archive Fo		ntn) Months		
Special Instructions/OC Requirements & Comments: Sample Addreas: 34 92 0 35 cc/cm 54 Submit all results through Cadena at fromalia@cadenaco.com, Cadena #E203631	cion Statena #E203631										
Level IV Reporting requested.											
Relinquished by Rent Keyner	Company Company	Dauedinne:/	1620 Received by	Jov Con	D	Storec	2	Company	dis	Date/Time: Date	16.32
Relinquished by:	Company	Darle/Tipne:	1239 Received	ed y	07			Company	1	1/24	5
Relinquished by:	Company:	Date/Time:	1734 Melve	e (in 1. aboratory by:	C		Ŭ	Company:			
		colorio 1			2			3		S	CHIC
V Reduction and the second second reserved. For A fight reserved, second reserved, inc. Version results (Compared Version and Ve Version and Version and Versio				2							
/202											

Page 18 of 23

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :
Barberton Facility
Client ARCADISSite NameCooler unpacked by:
Cooler Received on 8-11-23 Opened on 8-11-23 VV Kah
FedEx: 1 st Grd Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location
Eurofins Cooler # 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
IR GUN # (CF°C) Observed Cooler Temp °C Corrected Cooler Temp °C
 Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Yes No Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Were tamper/custody seals intact and uncompromised? Shippers' packing slip attached to the cooler(s)? Did custody papers accompany the sample(s)?
 Were the custody papers relinquished & signed in the appropriate place? Was/were the person(s) who collected the samples clearly identified on the COC?
7. Did all bottles arrive in good condition (Unbroken)?
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?
9. For each sample, does the COC specify preservatives (VN), # of containers (VN), and sample type of grab/comp(V/N)?
10. Were correct bottle(s) used for the test(s) indicated?
11. Sufficient quantity received to perform indicated analyses?
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 N(NA) pH Strip Lot# HC312502
14. Were VOAs on the COC?
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 # Yes No
17. Was a LL Hg or Me Hg trip blank present?Yes No
Contacted PM Date by via Verbal Voice Mail Other
Concerning
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by:
19. SAMPLE CONDITION
Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)
20. SAMPLE PRESERVATION
Sample(s) were further preserved in the laboratory.
Sample(s) were further preserved in the laboratory. Time preserved: Preservative(s) added/Lot number(s):
VOA Sample Preservation - Date/Time VOAs Frozen:

Login #:_

	escription	IR Gun #	Observed	Corrected	Coolant (Circle)
	rcle)	(Circle)	Temp °C	Temp °C	Welke She ke by h
EC Client	Box Other	IR GUN 0; 22	1.2		Water None
to Clieni	Box Other		1.4	1.3	Nigher None
IC Client	Box Other	IR GUN #:			Water None
EC Client	Sex Other	IR GUN #:			Welter Blue Ice Byle Weter Blane
IC Client	Box Other	IR GUN #:			Wellice Blee Ice Bylo Weller Nete
IC Clent	Box Other	IR GUN #:			Welice Blue ice Bylc Water Mone
EC Client	Box Other	IR GUN #:			Welice Blue Ice Bylo Water Nege
EC Client	Bex Other	IR GUN #:			Wellice Sheelice Byla Wellic Mane
IC Client	Box Other	IR GUN #:			Wellice Dive Ice Bylci Water Name
IC Cleat	Box Other	IR GUN #:			Welice Sive ice Bylcs Water Name
BC Client	Ben Olher	IR GUN #:			Wellice Shire Ice Byte Water Hone
IC Clerk	Bez Other	IR GUN #:			Weitce She too Byte Water Make
IC Cleat	Ben Other	IR GUN #:			Wetter Shee Sco Byte Water Mane
BC Cleat	Ben Olher	IR GUN #:			Wellice Nee Ice Byle Water Mage
BC Clent	Bex Other	IR GUN #:			Wet ice Noe Ice Byte Water Note
SC Client	Ben Olher	IR GON #:			Wet Ice Blue Ice Byte Water Mane
BC Client	Ben Other	IR GUN #:			Wellice Blue lice Brylie Weley Mane
BC Client	Bax Other	IR GUN #:			Wellice Sive Ice Bryke
BC Client	Ben Other	IR GUN #:			Wellice Blue Ice Bryte Water Mane
EC Client	Box Other	11 GUN 6:			Wellice Sive Ice Bryles Water Mane
BC Clent	Box Other	R GUN 5:			Wellce She Ice Dyke Weler Hene
EC Client	Box Other	R CUN 6:			Wellice Sheelice Bryke Winter Mane
EC Client	Ben Ölher	IR GUN #:			Welton Blue Ice . By to Writer Mann
IC Clair	Sex Other	IR GUN #:			Wellice Blue Ice Dry to
ec client	Jex Other	11: GWN #:			Wellico Bloo Ico Bryto Weller Bloop
IC Cleat	les Other	R OW 0:			Wet too Bloo fee By to
IC Clent	Box Other	R GIN #:			Wellice She ice Bryle
IC Clent	Box Other	IR GUN #:			Weljce Blue Ice Brytes
	Box Other	R GIN #:			Wet too Blue Ico Bry Ice
	Box Other	IR GUN #:			Water None Wat Ico Shee Ico Dry Ice
	Ben Ölher	IR GUN #:			Weber Nepe Wet Ice She Ice Dry Ice
	Bex Other	IR GUN #:			Water Net Co Dry Ice
		IR GUN 0:			Water Nese Wellice Shielice Brylice
	Box Other	IR GUN #:			Water Hone Wetten Mustice Brytes
Clent	Box Other			See Temp	Weler Neer

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

MICHIGAN	Chair	Chain of Custody Record		TestAmerica
	TestAmerica Laboratory location: Brighton 10448 Citat	10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763	2763	Tell's Extend on an University of A. 15 (Const.
Client Contact	Regulatory program: DW	NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Ilinskey	Slte Contact: Christina Weaver	Lab Contact: Mike De Monico	TestAmerica Laboratories, Inc.
Address: 28550 Cabot Drive, Suite 500	0162 100 016 1.1.1.1			
City/State/Zhp: Novi, MI, 48377	I eleptrose: 248-994-2240		Telephone: 330–497–9396	1 of 1 COCs
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Luraround Line	Analyses	For lab use only
Project Name: Ford LTP Off-Site	1 1.	ent from b		Walk-in client
Project Number: 30167538,402.04	Method of Shipment/Carrier:	(N		Lab sampling
PO#30167538.402.04	Shipping/Tracking No:	Grab	8260	Job/SDG No:
	Matrix	13-	nide 8 D DCE	Contraction of the Contraction
Sample Identification	Sonnpie Date Sample Time Advent	1'1-DCE 8 Combains Elitered 2: Differed 2: Differed 2: NaOH Sava NaOH HAOH HAOJ HISO4	cis-1,2-DC Trans-1,2- PCE 8260 TCE 8260 Vinyl Chloi 7,4-Dioxen	Sample Specific Notes / Special Instructions:
& TRIP BLANK_ XI				1 Trip Blank
MW-1595-080923	8/9/23 0935 6	6 NGX	XXXXXX	3 VOAs for 8260D 3 VOAs for 8260D 3 VOAs for 8260D SIM
bade 51 of 53 Kelinquished by Kelinquished by Kelinqui	Date Time Date Time Date Time	240-189963 Chain of Custody 240-189963 Chain of Custody 240-189963 Chain of Custody Return to Client :> Disposal By Lab Return to Client :> Disposal By Lab Return to Client :> Disposal By Lab Archive For Mo	tody Archive For Months Company: Company:	
the second secon		(23) 11 - (MM)		YULLY CRETTED

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :
Barberton Facility
Client ARCADIS Site Name Cooler unpacked by:
Cooler Received on 8-11-23 Opened on 8-11-23 (V) Koh
FedEx: 1st Grd Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location
Eurofins Cooler # 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 # (CF °C) Observed Cooler Temp °C Corrected Cooler Temp °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity (Yes) No
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? -Were tamper/custody seals intact and uncompromised? -Were tamp
3. Shippers' packing slip attached to the cooler(s)? VOAs
4. Did custody papers accompany the sample(s)? Vesy No Oil and Grease
5. Were the custody papers relinquished & signed in the appropriate place?
6. Was/were the person(s) who collected the samples clearly identified on the COC?
7. Did all bottles arrive in good condition (Unbroken)?
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?
9. For each sample, does the COC specify preservatives (YN), # of containers (VN), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated?
11. Sufficient quantity received to perform indicated analyses?
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 N(NA) pH Strip Lot# HC312502
14. Were VOAs on the COC?
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 # Yes No
17. Was a LL Hg or Me Hg trip blank present?Yes No
Contacted PM Date by via Verbal Voice Mail Other
Concerning
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES D 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)
Sample(s) were further preserved in the laboratory. Time preserved: Preservative(s) added/Lot number(s):
VOA Sample Preservation - Date/Time VOAs Frozen:

5

14

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BC Client Box Othe	IR GIM 6:			Wellice Blue lice Bylie Water Blace
BC Client Box Othe	IR GUN #:			Wellice Blue Ice Byte Water Mane
BC Client Box Othe	IR GUN #:			Wellice She ice Byte
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BC Client Bex Olhe				Weltce Blue Ice Bry to Water Name
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WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT



August 24, 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: 189963-1 Sample date: 2023-08-09 Report received by CADENA: 2023-08-24 Initial Data Verification completed by CADENA: 2023-08-24 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.

There were no significant QC anomalies or exceptions to report.

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 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: 189963-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BL/ 2401899 8/9/202	9631			MW-159 2401899 8/9/202	9632	23	
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-8260</u>	<u>DC</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 # 240-189963-1 CADENA Verification Report: 2023-08-24

Analyses Performed By: Eurofins Cleveland Barberton, Ohio

Report # 51134R Review Level: Tier III Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-189963-1 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	Barant Sampla	Ana	ysis
Sample ID		Matrix	Collection Date	Parent Sample	VOC	VOC SIM
TRIP BLANK_81	240-189963-1	Water	08/09/2023		Х	
MW-159S_080923	240-189963-2	Water	08/09/2023		Х	Х

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		x		x	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		X	
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 Methods 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 HCl

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.

6. Compound Identification

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

All identified compounds met the specified criteria.

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 VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Rep	orted		rmance eptable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GO	C/MS)				
Tier II Validation					
Holding times/Preservation		Х		X	
Tier III Validation					1
System performance and column resolution		Х		X	
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		X	
Field Duplicate RPD	Х				Х
Internal standard		Х		X	
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

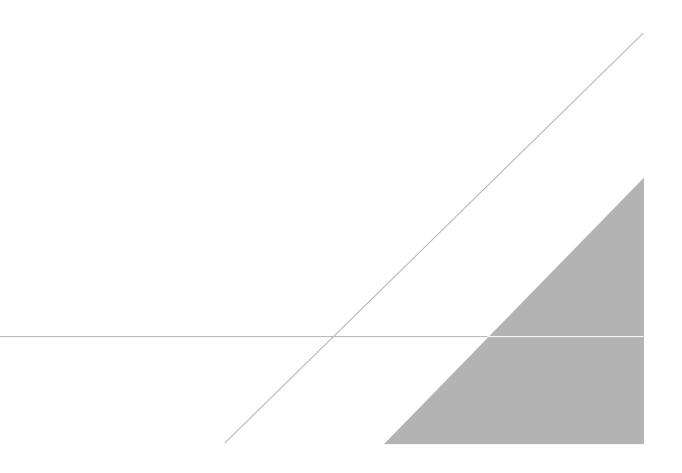
VALIDATION PERFORMED BY:	Pruthvi Kumar C
SIGNATURE:	Open
DATE:	September 13, 2023
PEER REVIEW:	Andrew Korycinski

DATE: September 14, 2023

arcadis.com

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



MIC	ŀ	H	G	A	N	I
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Chain of Custody Record



Company Name: Arcadis	Client Project	Manager: Kris	Hinsk	ey			Site	Con	tact:	Chri	stina \	Veave	r			L	ab Co	ntact	: Mike	Dell	Monic	0		FestAmerica Labor COC No:	tories
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Chain of Custody Record



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Client Sample ID: TRIP BLANK_81

Date Collected: 08/09/23 00:00

Date Received: 08/11/23 08:00

Method: SW846 8260D - Volatile	Organia Compoundo by CC/MS
	Ordanic 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			08/19/23 17:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 17:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 17:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 17:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 17:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 17:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Surrogale	%Recovery Qualifier	Linnis	Prepareo	Analyzed	Dirrac	
1,2-Dichloroethane-d4 (Surr)	111	62 - 137		08/19/23 17:13	1	
4-Bromofluorobenzene (Surr)	102	56 - 136		08/19/23 17:13	1	
Toluene-d8 (Surr)	99	78 - 122		08/19/23 17:13	1	
Dibromofluoromethane (Surr)	113	73 - 120		08/19/23 17:13	1	

Client Sample ID: MW-159S_080923 Date Collected: 08/09/23 09:35 Date Received: 08/11/23 08:00

Dibromofluoromethane (Surr)

Lab Sample ID: 240-189963-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/17/23 16:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		66 - 120			-		08/17/23 16:36	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/23 22:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 22:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 22:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 22:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 22:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 22:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		62 - 137			-		08/19/23 22:49	1
4-Bromofluorobenzene (Surr)	105		56 - 136					08/19/23 22:49	1
Toluene-d8 (Surr)	101		78 - 122					08/19/23 22:49	1

73 - 120

112

08/19/23 22:49

1

Job ID: 240-189963-1

Lab Sample ID: 240-189963-1 Matrix: Water