

Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey ARCADIS U.S., Inc. 28550 Cabot Drive Suite 500 Novi Michigan 48377 Generated 11/22/2022 7:52:22 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176069-1

Eurofins Canton 180 S. Van Buren Avenue Barberton OH 44203



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Qualifiers

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Qualifier Qualifier Description Indicates the analyte was analyzed for but not detected. Indicates the analyte was analyzed for but not detected. Blosser Indicates the analyte was analyzed for but not detected. Blosser These commonly used abbroviations 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 Indicates a Contains Free Liquid SPL Contains Free Liquid Indicates and the contains free Liquid OPE Duplicate Error Ratio (normalized absolute difference) Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample Indicates a Dilution, Re-analysis, Re-extraction, or addition (DDI/DCE) Inition Opeacitable Aco	Qualifiers		3
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EQ Toxicity Equivalent Quotient (Dioxin)	TEF		
	TEQ		
	TNTC		

Job ID: 240-176069-1

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-176069-1

Receipt

The samples were received on 11/9/2022 9:45 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 0.4°C and 2.5°C

GC/MS VOA

Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

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

Method Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176069-1	TRIP BLANK_102	Water	11/07/22 00:00	11/09/22 09:45
240-176069-2	MW-121S_110722	Water	11/07/22 14:28	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_102

No Detections.

Client Sample ID: MW-121S_110722

No Detections.

Job ID: 240-176069-1

Lab Sample ID: 240-176069-1

Lab Sample ID: 240-176069-2

Client Sample ID: TRIP BLANK_102 Date Collected: 11/07/22 00:00 Date Received: 11/09/22 09:45

Lab Sample ID: 240-176069-1

Matrix: Water

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Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		62 - 137					11/16/22 19:48	1
4-Bromofluorobenzene (Surr)	80		56 - 136					11/16/22 19:48	1
Toluene-d8 (Surr)	94		78 - 122					11/16/22 19:48	1
Dibromofluoromethane (Surr)	99		73 - 120					11/16/22 19:48	1

Client Sample ID: MW-121S_110722 Date Collected: 11/07/22 14:28 Date Received: 11/09/22 09:45

Job ID: 240-176069-1

Lab Sample ID: 240-176069-2 Matrix: Water

5 6 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 15:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120					11/15/22 15:04	1
Method: SW846 8260D - Vo	latile Organic	Compound	ds bv GC/MS						
Analyte	-	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 17:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137					11/16/22 17:33	1
4-Bromofluorobenzene (Surr)	93		56 - 136					11/16/22 17:33	1
Toluene-d8 (Surr)	100		78 - 122					11/16/22 17:33	1
Dibromofluoromethane (Surr)	102		73 - 120					11/16/22 17:33	1

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Surrogate Summary

BFB

(56-136)

90

92

80

93

92

90

86

92

84

90

DCA

(62-137)

91

93

98

94

86

85

89

84

96

90

Lab Sample ID

240-176069-1

240-176069-2

240-176069-2 MS

240-176069-2 MSD

LCS 240-552188/5

LCS 240-552229/5

MB 240-552188/8

MB 240-552229/8

Surrogate Legend

TOL = Toluene-d8 (Surr)

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

DBFM = Dibromofluoromethane (Surr)

240-176036-F-4 MS

240-176036-F-4 MSD

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

Client Sample ID

TRIP BLANK 102

MW-121S 110722

MW-121S_110722

MW-121S_110722

Lab Control Sample

Lab Control Sample

Method Blank

Method Blank

Matrix Spike Duplicate

Matrix Spike

				2
M	S		Prep Type: Total/NA	
Pe	ercent Surro	ogate Recove	ry (Acceptance Limits)	
	TOL	DBFM		_
6)	(78-122)	(73-120)		5
	94	92		
	97	92		
	94	99		
	100	102		
	99	92		
	99	93		8
	93	91		
	100	93		9
	94	97		
	98	100		
•				12

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

			Percent Surrogate Recovery (Acceptance Limits)	
		DCA		
Lab Sample ID	Client Sample ID	(66-120)		
240-176069-2	MW-121S_110722	92		-
LCS 240-551914/3	Lab Control Sample	108		
MB 240-551914/4	Method Blank	111		
0				
Surrogate Legend				

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

11/22/2022

Prep Type: Total/NA

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

Lab Sample ID: MB 240-552188/8 Matrix: Water

Analysis Batch: 552188

il Fac
1
1
1
1
1
1

	MB	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137		11/16/22 11:48	1
4-Bromofluorobenzene (Surr)	84		56 - 136		11/16/22 11:48	1
Toluene-d8 (Surr)	94		78 - 122		11/16/22 11:48	1
Dibromofluoromethane (Surr)	97		73 - 120		11/16/22 11:48	1

Lab Sample ID: LCS 240-552188/5 Matrix: Water Analysis Batch: 552188

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	18.2		ug/L		91	63 - 134	
cis-1,2-Dichloroethene	20.0	18.0		ug/L		90	77 - 123	
Tetrachloroethene	20.0	20.0		ug/L		100	76 - 123	
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124	
Trichloroethene	20.0	19.1		ug/L		96	70 - 122	
Vinyl chloride	20.0	17.0		ug/L		85	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		62 - 137
4-Bromofluorobenzene (Surr)	86		56 - 136
Toluene-d8 (Surr)	93		78 - 122
Dibromofluoromethane (Surr)	91		73 - 120

Lab Sample ID: 240-176036-F-4 MS **Matrix: Water** Analysis Batch: 552188

-	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	6.3	U	125	105		ug/L		84	56 - 135
cis-1,2-Dichloroethene	43		125	163		ug/L		96	66 - 128
Tetrachloroethene	6.3	U	125	113		ug/L		91	62 - 131
trans-1,2-Dichloroethene	6.3	U	125	104		ug/L		83	56 - 136
Trichloroethene	6.3	U	125	110		ug/L		88	61 - 124
Vinyl chloride	94		125	189		ug/L		76	43 - 157
	MS	MS							
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	91		62 - 137						
4-Bromofluorobenzene (Surr)	90		56 - 136						
Toluene-d8 (Surr)	94		78 - 122						

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

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Client Sample ID: Matrix Spike

Prep Type: Total/NA

QC Sample Results

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

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

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Lab Sample ID: 240-176036-F-4 MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA Analysis Batch: 552188 MS MS Surrogate %Recovery Qualifier Limits Dibromofluoromethane (Surr) 92 73 - 120 Lab Sample ID: 240-176036-F-4 MSD **Client Sample ID: Matrix Spike Duplicate** Matrix: Water Prep Type: Total/NA Analysis Batch: 552188 Sample Sample Spike MSD MSD %Rec RPD **Result Qualifier** Added Limits RPD Limit Analyte **Result Qualifier** Unit D %Rec 6.3 U 1,1-Dichloroethene 125 108 ug/L 86 56 - 135 3 26 ug/L cis-1,2-Dichloroethene 43 125 161 94 66 - 128 14 1 Tetrachloroethene 6.3 U 125 124 ug/L 99 62 - 131 9 20 trans-1,2-Dichloroethene 6.3 U 125 108 87 56 - 136 15 ug/L 4 Trichloroethene 6.3 U 125 116 ug/L 93 61 - 124 6 15 Vinyl chloride 94 125 203 ug/L 87 43 - 157 7 24 MSD MSD %Recovery Qualifier Surrogate Limits 1,2-Dichloroethane-d4 (Surr) 93 62 - 137 4-Bromofluorobenzene (Surr) 92 56 - 136 Toluene-d8 (Surr) 97 78 - 122 Dibromofluoromethane (Surr) 92 73 - 120

Lab Sample ID: MB 240-552229/8 **Matrix: Water** Analysis Batch: 552229

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1
	МВ	MB							

Surrogate	%Recovery Q	Qualifier Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90	62 - 13	7	11/16/22 13:35	1
4-Bromofluorobenzene (Surr)	90	56 - 13	6	11/16/22 13:35	1
Toluene-d8 (Surr)	98	78 - 12	2	11/16/22 13:35	1
Dibromofluoromethane (Surr)	100	73 - 12	0	11/16/22 13:35	1

Lab Sample ID: LCS 240-552229/5 **Matrix: Water** Analysis Batch: 552229

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result (Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134	
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123	
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123	
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124	
Trichloroethene	25.0	25.3		ug/L		101	70 - 122	

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Prep Type: Total/NA

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QC Sample Results

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

Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 552229	552229/5					Clie	ent Sar	nple ID	: Lab Control Sample Prep Type: Total/NA
-			Spike	LCS	LCS				%Rec
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits
Vinyl chloride			25.0	26.0		ug/L		104	60 - 144
	LCS	LCS							
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	84		62 - 137						
4-Bromofluorobenzene (Surr)	92		56 - 136						
Toluene-d8 (Surr)	100		78 - 122						
Dibromofluoromethane (Surr)	93		73 - 120						

Lab Sample ID: 240-176069-2 MS Matrix: Water Analysis Batch: 552229

-	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157
						•			

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	86		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-2 MSD Matrix: Water Analysis Batch: 552229

Analysis Datch. 552225											
	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	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24
	Med	Men									

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Prep Type: Total/NA

Client Sample ID: MW-121S_110722

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5 6

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QC Sample Results

Job ID: 240-176069-1

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

Lab Sample ID: MB 240-55 Matrix: Water	51914/4						U	lient S	sam	ple ID: Methoo Prep Type: To	
Analysis Batch: 551914											
	MB	MB									
Analyte	Result	Qualifier	RL	MD	L Unit		D	Prepar	ed	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.8	6 ug/L					11/15/22 09:20	1
	MB	MB									
Surrogate	%Recovery	Qualifier	Limits					Prepar	red	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			66 - 120							11/15/22 09:20	1
	551914/3					Clie	ent S	ample) ID:	Lab Control S	Sample
Lab Sample ID: LCS 240-5 Matrix: Water	551914/3					Clie	ent S	ample) ID:	Lab Control S Prep Type: To	
Lab Sample ID: LCS 240-5 Matrix: Water	551914/3		Spike	LCS LO	cs	Clie	ent S	ample	e ID:		
Lab Sample ID: LCS 240-5 Matrix: Water Analysis Batch: 551914	551914/3		Spike Added	LCS LO Result Q		Clie		ample		Prep Type: To	
Lab Sample ID: LCS 240-5 Matrix: Water Analysis Batch: 551914 Analyte	551914/3		•	-				D %R		Prep Type: To %Rec	
Lab Sample ID: LCS 240-5 Matrix: Water Analysis Batch: 551914 Analyte	551914/3 		Added	Result Q		Unit		D %R	ec _	Prep Type: To %Rec Limits	
Lab Sample ID: LCS 240-5 Matrix: Water Analysis Batch: 551914 Analyte 1,4-Dioxane Surrogate			Added	Result Q		Unit		D %R	ec _	Prep Type: To %Rec Limits	

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID 240-176069-2	Client Sample ID MW-121S_110722	Prep Type Total/NA	Matrix Water	Method 8260D SIM	Prep Batch
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552188

Lab Sample ID 240-176069-1	Client Sample ID TRIP BLANK_102	Prep Type Total/NA	Matrix Water	Method 8260D	Prep Batch
MB 240-552188/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552188/5	Lab Control Sample	Total/NA	Water	8260D	
240-176036-F-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176036-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 552229

Lab Sample ID 240-176069-2	Client Sample ID MW-121S_110722	Prep Type Total/NA	Matrix Water	Method 8260D	Prep Batch	1
MB 240-552229/8	Method Blank	Total/NA	Water	8260D		
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D		
240-176069-2 MS	MW-121S_110722	Total/NA	Water	8260D		
240-176069-2 MSD	MW-121S_110722	Total/NA	Water	8260D		

Matrix: Water

Lab Sample ID: 240-176069-1

Client Sample ID: TRIP BLANK_102 Date Collected: 11/07/22 00:00 Date Received: 11/09/22 09:45

	Batch	Batch		Dilution	Batch			Prepared	
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed	
Total/NA	Analysis	8260D		1	552188	AJS	EET CAN	11/16/22 19:48	
lient Sam	ple ID: MW	-121S 11072	2				Lab	Sample ID: 2	40-176069-2
Date Collecte	d: 11/07/22 1	4:28							Matrix: Wate
	d: 11/07/22 1 d: 11/09/22 0								Matrix: Wate
				Dilution	Batch			Prepared	Matrix: Wate
ate Receive	d: 11/09/22 0	9:45	Run	Dilution Factor		Analyst	Lab	Prepared or Analyzed	Matrix: Wate
	d: 11/09/22 0 Batch	9:45 Batch	Run				Lab EET CAN	•	Matrix: Wate

Laboratory References:

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

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Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site

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Laboratory: Eurofins Canton

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	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
llinois	NELAP	200004	07-31-23
owa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
<i>d</i> innesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Dhio	State	8303	02-27-23
Dhio VAP	State	CL0024	02-27-23
Dregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
√irginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
Vest Virginia DEP	State	210	12-31-22

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Перепис: Линисти Поли Перепис: Перепи: Переп: Перепи: Пе	Interferent	S article EAD	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	TestAmerica Laboratories, Inc. COC No:
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УЗДОЛ. С.М. гайнантийнан П.М. гайнан П	Планителитиали Польки Планители Польки		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
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the of ETA 11-8-22 943 Norman 1990 LETAC 191	20 EETA 11-8-22 943 Name 1990 EFTAC 1991	with the	Date/Time WD/DL Date/Time	Received by: NoDVI / Loved Received by:	Company:	122
	dorationes, Inc.	0	1(-8-2C		5	Date Trop of the and t

Curofins - Canton Sample Receipt Form/Narrative	Login # :7606
Barbertop Facility	Cooler unpacked by:
lient Ave q di 3 Site Name	
ooler Received on 11.9.22 Opened on 11.9.	12 Jam Kogle
edEx: 1 st Grd (Exp UPS FAS Clipper Client Drop Off Euro	ofins Courier Other X V
Receipt After-hours: Drop-off Date/TimeS	Storage Location
Burofins Cooler # Foam Box Client Cooler Box	Other
Packing material used Bubble Wrap Foam Plastic Bag No	one Other
COOLANT: Wet Ice Blue Ice Dry Ice Water No	one
	See Multiple Cooler Form
	Corrected Cooler Temp°C
	Corrected Copler Temp°C
Were tamper/custody seals on the outside of the cooler(s)? If Yes Quan	ntity IEac Yes No Tests that are set
-Were the seals on the outside of the cooler(s) signed & dated?	YE NO NA checked for pH by
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeH	
-Were tamper/custody seals intact and uncompromised?	Yes No NA VOAs
. Shippers' packing slip attached to the cooler(s)?	Off and Great
. Did custody papers accompany the sample(s)?	Ye No TOC
Were the custody papers relinquished & signed in the appropriate place?	
. Was/were the person(s) who collected the samples clearly identified on t	
. Did all bottles arrive in good condition (Unbroken)?	No
Could all bottle labels (ID/Date/Time) be reconciled with the COC?	The No
. For each sample, does the COC specify preservatives (N/N), # of contain	
0. Were correct bottle(s) used for the test(s) indicated?	Yes No
1. Sufficient quantity received to perform indicated analyses?	CT of No.
2. 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.	
3. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC2467
 4. Were VOAs on the COC? 5. Were air bubbles >6 mm in any VOA vials? Larger than this 	
 Were all bubbles >0 him in any VOA vals? Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 	
 Was a VOA trip blank present in the coord (s)? Trip blank Lot w Was a LL Hg or Me Hg trip blank present? 	Yes No
Contacted PM Date by	via Verbal Voice Mail Other
Concerning	
8. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES addition	onal next page Samples processed by:
9. SAMPLE CONDITION	
	ommended holding time had expired.
9. SAMPLE CONDITION Sample(s)	ommended holding time had expired. were received in a broken container.
ample(s) were received after the received	_ were received in a broken container.
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Login	#	176069
LUgin	W	110124

	Eurofins - Canton	Sample Receipt Mu	Itiple Cooler Form	
Cooler Description	IR Gun #	Observed	Corrected	Coolant
(Circle)	(Circle)	Temp %	Temp °C	(Circle)
Le Client Box Other	H-13 H-16	2.5	25	Wellice) Blue lice Dry Ice
TA Client Box Other	H-13 /R-15	0.4	AU	Wet Ice Blue Ice Dry Ice
	IR-13 IR-16	01	0.9	Wellice Sivelice Drylice
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TA Client Box Other	IR-13 IR-15			Wellice Blue Ice Dry Ice
TA Client Box Other	IR-13 IR-15			Water None Wetice Stue Ice Dry Ice
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TA Client Box Other	R-13 R-16			Water None Wellice - Blue Ice Dry Ice
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WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

4 498 - 11

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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 Angela Gard, Project Management Assistant II <u>Angela.Gard@et.eurofinsus.com</u> Designee for Michael DelMonico, Project Manager I <u>Michael.DelMonico@et.eurofinsus.com</u> (330)497-9396

DATA VERIFICATION REPORT



November 22, 2022

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: 30146655.402.04 off-site Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - Barberton Laboratory submittal: 176069-1 Sample date: 2022-11-07 Report received by CADENA: 2022-11-22 Initial Data Verification completed by CADENA: 2022-11-22 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, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

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 - Barberton Laboratory Submittal: 176069-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401760 11/7/20)691	2		MW-122 2401760 11/7/20	 0692	22	
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-826</u>	<u>0D</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-826</u>	<u>ODSIM</u>									
	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 # 240-176069-1 CADENA Verification Report: 2022-11-22

Analyses Performed By: TestAmerica North Canton, Ohio

Report # 47744R Review Level: Tier III Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176069-1 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 Collection			Ana	lysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM
TRIP BLANK_102	240-176069-1	Water	11/07/22		Х	
MW-121S_110722	240-176069-2	Water	11/07/22		Х	Х

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

Items Reviewed	Rep	orted		mance ptable	Not Required
	No	Yes	No	Yes	Requireu
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		Х	
5. Reporting limits		Х		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
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	

DATA REVIEW

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 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		rmance ptable	Not Required
	No	Yes	No	Yes	Requireu
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	C/MS)				
Tier II Validation					
Holding times/Preservation		Х		X	
Tier III Validation					
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	
lon 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		Х	
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:	Hrishikesh Upadhyaya	
	Δ	

SIGNATURE:

Curindialued

DATE: November 30, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

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 Project	Manager: Kris	Hins	kev			1	Site C	ontac	et: Ch	ristin	a We	aver		_	- 1	Lah (Conta	ct: M	ike D	elMo	nico		TestAmerica Laborato
Address: 28550 Cabot Drive, Suite 500																								
City/State/Zip: Novi, MI, 48377	Telephone: 248							Telep									1 elep	ohone	: 330-					1 of 1 CC
Phone: 248-994-2240	Email: kristofi	er.hinskey@ar	cadis	.com				A	nalysi	is Tur	narou	und T	ime		-	-			T	1	Anal	yses	5	For lab use only
	Sampler Name							TAT	differe	ent from														Walk-in client
Project Name: Ford LTP Off-Site	Sanar Method of Ship	itta	Sz	200	ic	N	er	10	day		3 wa 2 wa								1					Lab sampling
Project Number: 30146655.402.04	Method of Ship	ment/Carrier:		1						1	1 w 2 da			2	e l			8					N N N N N N N N N N N N N N N N N N N	
PO # 30146655.402.04	Shipping/Track	ing No:	_								l da			Sample (Y / N)	Grab	_	8260B	8260B			10901		608	Job/SDG No:
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			Г		Ŧ	Τ			T	Τ				ed Sa	osite	E 8	S-DC	1.2-1	1260	2605	- Poly		oxan	Sample Specific No
Sample Identification	Sample Date	Sample Time	Â	Aqueous	Sediment	Solid Other:		H2SO4	HUO	NaOH	ZnAc/	Unpres	Other:	Filtered	Composite=C / Grab	1,1-DCE 8260B	cis-1,2-DCE	Trans-1,2-DCE	PCE 8260B	TCE 8260B	Vinul Chloride \$260B		1,4-Dioxane 8260B	Special Instructio
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Possible Hazard Identification		1	_				-	Sai	mple l	Dispos	sal (A	A fee r	nay be a	assesse	ed if s	ampl	es ar	e reta	incd	ongei	r thar		onth)	
Non-Hazard Flammable Special Instructions/QC Requirements & Comm	Skin Irritant Poise	on B	Uni	known					Re	ctum t	o Clie	nt	V D						Archiv			-	Months	
Sample Address:	ents:													\sim										
Submit all results through Cadena at jtomal	ia@cadenaco.com, Cadena #	#E203631		$\left \right $	17	11	0	F	30	25	TÙ	5	. (YO	81	5		S	た					
Level IV Reporting requested. Relinguished by:	Company:		_	_	_								_	_						Ic	_			
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Client Sample ID: TRIP BLANK_102

Date Collected: 11/07/22 00:00

Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Org	anic 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			11/16/22 19:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		62 - 137		11/16/22 19:48	1
4-Bromofluorobenzene (Surr)	80		56 - 136		11/16/22 19:48	1
Toluene-d8 (Surr)	94		78 - 122		11/16/22 19:48	1
Dibromofluoromethane (Surr)	99		73 - 120		11/16/22 19:48	1

Client Sample ID: MW-121S_110722 Date Collected: 11/07/22 14:28 Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS) Analyte Result Qualifier MDL Unit RL D Prepared Analyzed Dil Fac 1,4-Dioxane 2.0 U 2.0 0.86 ug/L 11/15/22 15:04 1 %Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 11/15/22 15:04 92 66 - 120 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			11/16/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 17:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1 2-Dichloroethane-d4 (Surr)			62 - 137			-		11/16/22 17:33	1

1,2-Dichloroethane-d4 (Surr)	94	62 - 137	11/16/22 17:33 1	
4-Bromofluorobenzene (Surr)	93	56 - 136	11/16/22 17:33 1	
Toluene-d8 (Surr)	100	78 - 122	11/16/22 17:33 1	
Dibromofluoromethane (Surr)	102	73 - 120	11/16/22 17:33 1	

Job ID: 240-176069-1

Lab Sample ID: 240-176069-1 Matrix: Water

Lab Sample ID: 240-176069-2

Matrix: Water