

**Environment Testing** 

# **ANALYTICAL REPORT**

## PREPARED FOR

Attn: Kristoffer Hinskey ARCADIS U.S., Inc. 28550 Cabot Drive Suite 500 Novi, Michigan 48377 Generated 3/29/2023 6:43:50 AM

## JOB DESCRIPTION

Ford LTP - Off Site

## **JOB NUMBER**

240-182158-1

Eurofins Canton 180 S. Van Buren Avenue Barberton OH 44203





## **Eurofins Canton**

### Job Notes

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### Authorization

your

Authorized for release by Michael DelMonico, Project Manager I <u>Michael.DelMonico@et.eurofinsus.com</u> (330)497-9396 Generated 3/29/2023 6:43:50 AM

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Qualifiers		3
GC/MS VOA		
Qualifier	Qualifier Description	
U	Indicates the analyte was analyzed for but not detected.	5
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	0
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)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	
TEF	Toxicity Equivalent Factor (Dioxin)	
TEO	Tevisity Free Jonations (Disvin)	

- TEQ Toxicity Equivalent Quotient (Dioxin)
- TNTC Too Numerous To Count

#### Job ID: 240-182158-1

#### Laboratory: Eurofins Canton

#### Narrative

Job Narrative 240-182158-1

#### Receipt

The samples were received on 3/17/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.8°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 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
240-182158-1	TRIP BLANK_89	Water	03/15/23 00:00	03/17/23 08:00
240-182158-2	MW-151S_031523	Water	03/15/23 15:13	03/17/23 08:00

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

#### Client Sample ID: TRIP BLANK\_89

No Detections.

### Client Sample ID: MW-151S\_031523

This Detection Summary does not include radiochemical test results.

No Detections.

**Eurofins Canton** 

### Client Sample ID: TRIP BLANK\_89

Date Collected: 03/15/23 00:00 Date Received: 03/17/23 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			03/24/23 15:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/24/23 15:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 15:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/24/23 15:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 15:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/24/23 15:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137			-		03/24/23 15:22	1
4-Bromofluorobenzene (Surr)	88		56 - 136					03/24/23 15:22	1
Toluene-d8 (Surr)	96		78 - 122					03/24/23 15:22	1
Dibromofluoromethane (Surr)	97		73 - 120					03/24/23 15:22	1

## Lab Sample ID: 240-182158-1

Matrix: Water

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#### Client Sample ID: MW-151S\_031523

Date Collected: 03/15/23 15:13 Date Received: 03/17/23 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			03/20/23 18:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		66 - 120			-		03/20/23 18:16	1
Method: SW846 8260D - Volati	ile Organic Comp	ounds by G	C/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/24/23 20:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/24/23 20:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 20:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/24/23 20:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 20:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/24/23 20:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		62 - 137			-		03/24/23 20:23	1
4-Bromofluorobenzene (Surr)	85		56 - 136					03/24/23 20:23	1
Toluene-d8 (Surr)	96		78 - 122					03/24/23 20:23	1
Dibromofluoromethane (Surr)	98		73 - 120					03/24/23 20:23	1

3/29/2023

Job ID: 240-182158-1

#### Lab Sample ID: 240-182158-2 Matrix: Water

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

#### Matrix: Water

#### Prep Type: Total/NA

Prep Type: Total/NA

				Percent Su	rrogate Rec
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-182158-1	TRIP BLANK_89	100	88	96	97
240-182158-2	MW-151S_031523	102	85	96	98
240-182160-E-2 MSD	Matrix Spike Duplicate	93	101	100	93
240-182160-F-2 MS	Matrix Spike	94	98	100	96
LCS 240-566639/4	Lab Control Sample	95	101	98	96
MB 240-566639/7	Method Blank	99	90	97	97
Surrogate Legend					
DCA = 1,2-Dichloroetha	ane-d4 (Surr)				
BFB = 4-Bromofluorobe	enzene (Surr)				
TOL = Toluene-d8 (Suri	r)				

DBFM = Dibromofluoromethane (Surr)

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

#### Matrix: Water

			Deveent Surregete Becquery (Acceptance Limite)	
		DCA	Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	(66-120)		1
240-182158-2	MW-151S_031523	85		
240-182162-C-5 MSD	Matrix Spike Duplicate	95		
240-182162-F-5 MS	Matrix Spike	82		
LCS 240-566034/4	Lab Control Sample	86		
MB 240-566034/6	Method Blank	83		

#### Surrogate Legend

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

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

#### Matrix: Water Analysis Batch: 566639

MB	MB							
Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1.0	U	1.0	0.49	ug/L			03/24/23 14:07	1
1.0	U	1.0	0.46	ug/L			03/24/23 14:07	1
1.0	U	1.0	0.44	ug/L			03/24/23 14:07	1
1.0	U	1.0	0.51	ug/L			03/24/23 14:07	1
1.0	U	1.0	0.44	ug/L			03/24/23 14:07	1
1.0	U	1.0	0.45	ug/L			03/24/23 14:07	1
	Result           1.0           1.0           1.0           1.0           1.0           1.0           1.0           1.0	MB         MB           Result         Qualifier           1.0         U           1.0         U	Result         Qualifier         RL           1.0         U         1.0           1.0         U         1.0	Result         Qualifier         RL         MDL           1.0         U         1.0         0.49           1.0         U         1.0         0.46           1.0         U         1.0         0.44           1.0         U         1.0         0.51           1.0         U         1.0         0.51           1.0         U         1.0         0.44	Result         Qualifier         RL         MDL         Unit           1.0         U         1.0         0.49         ug/L           1.0         U         1.0         0.49         ug/L           1.0         U         1.0         0.44         ug/L           1.0         U         1.0         0.44         ug/L           1.0         U         1.0         0.44         ug/L           1.0         U         1.0         0.51         ug/L           1.0         U         1.0         0.44         ug/L	Result         Qualifier         RL         MDL         Unit         D           1.0         U         1.0         0.49         ug/L         ug/L           1.0         U         1.0         0.46         ug/L         ug/L           1.0         U         1.0         0.44         ug/L         ug/L           1.0         U         1.0         0.51         ug/L         ug/L           1.0         U         1.0         0.44         ug/L         ug/L	Result         Qualifier         RL         MDL         Unit         D         Prepared           1.0         U         1.0         0.49         ug/L         ug	Result         Qualifier         RL         MDL         Unit         D         Prepared         Analyzed           1.0         U         1.0         0.49         ug/L         03/24/23 14:07           1.0         U         1.0         0.46         ug/L         03/24/23 14:07           1.0         U         1.0         0.44         ug/L         03/24/23 14:07           1.0         U         1.0         0.44         ug/L         03/24/23 14:07           1.0         U         1.0         0.51         ug/L         03/24/23 14:07           1.0         U         1.0         0.51         ug/L         03/24/23 14:07           1.0         U         1.0         0.54         ug/L         03/24/23 14:07

	MB	МВ					
Surrogate	%Recovery	Qualifier	Limits	Pi	repared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		62 - 137			03/24/23 14:07	1
4-Bromofluorobenzene (Surr)	90		56 - 136			03/24/23 14:07	1
Toluene-d8 (Surr)	97		78 - 122			03/24/23 14:07	1
Dibromofluoromethane (Surr)	97		73 - 120			03/24/23 14:07	1

#### Lab Sample ID: LCS 240-566639/4 Matrix: Water Analysis Batch: 566639

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	25.0	25.2		ug/L		101	63 - 134	
cis-1,2-Dichloroethene	25.0	24.7		ug/L		99	77 - 123	
Tetrachloroethene	25.0	26.9		ug/L		107	76 - 123	
trans-1,2-Dichloroethene	25.0	24.3		ug/L		97	75 - 124	
Trichloroethene	25.0	24.5		ug/L		98	70 - 122	
Vinyl chloride	12.5	9.88		ug/L		79	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	101		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	96		73 - 120

#### Lab Sample ID: 240-182160-E-2 MSD Matrix: Water Analysis Batch: 566639

Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1.0	U	25.0	22.6		ug/L		90	56 - 135	3	26
1.0	U	25.0	22.7		ug/L		91	66 - 128	1	14
1.0	U	25.0	23.6		ug/L		94	62 - 131	1	20
1.0	U	25.0	22.1		ug/L		89	56 - 136	3	15
1.0	U	25.0	22.1		ug/L		88	61 - 124	2	15
1.0	U	12.5	8.47		ug/L		68	43 - 157	6	24
	Result 1.0 1.0 1.0 1.0 1.0	Sample         Sample           Result         Qualifier           1.0         U           1.0         U	Result         Qualifier         Added           1.0         U         25.0           1.0         U         25.0	Result         Qualifier         Added         Result           1.0         U         25.0         22.6           1.0         U         25.0         22.7           1.0         U         25.0         23.6           1.0         U         25.0         23.6           1.0         U         25.0         22.1           1.0         U         25.0         22.1	Result         Qualifier         Added         Result         Qualifier           1.0         U         25.0         22.6         Qualifier           1.0         U         25.0         22.7         Qualifier           1.0         U         25.0         23.6         Qualifier           1.0         U         25.0         22.1         Qualifier           1.0         U         25.0         22.1         Qualifier	Result         Qualifier         Added         Result         Qualifier         Unit           1.0         U         25.0         22.6         ug/L           1.0         U         25.0         22.7         ug/L           1.0         U         25.0         23.6         ug/L           1.0         U         25.0         23.6         ug/L           1.0         U         25.0         22.1         ug/L           1.0         U         25.0         22.1         ug/L	Result         Qualifier         Added         Result         Qualifier         Unit         D           1.0         U         25.0         22.6         ug/L         ug/L         D           1.0         U         25.0         22.7         ug/L         U         D           1.0         U         25.0         23.6         ug/L         D         D           1.0         U         25.0         23.6         ug/L         D         D         D           1.0         U         25.0         22.1         ug/L         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D         D	Result         Qualifier         Added         Result         Qualifier         Unit         D         %Rec           1.0         U         25.0         22.6         ug/L         90         90           1.0         U         25.0         22.7         ug/L         91           1.0         U         25.0         23.6         ug/L         94           1.0         U         25.0         22.1         ug/L         89           1.0         U         25.0         22.1         ug/L         88	Result         Qualifier         Added         Result         Qualifier         Unit         D         %Rec         Limits           1.0         U         25.0         22.6         ug/L         90         56 - 135           1.0         U         25.0         22.7         ug/L         91         66 - 128           1.0         U         25.0         23.6         ug/L         94         62 - 131           1.0         U         25.0         22.1         ug/L         89         56 - 136           1.0         U         25.0         22.1         ug/L         88         61 - 124	Result         Qualifier         Added         Result         Qualifier         Unit         D         %Rec         Limits         RPD           1.0         U         25.0         22.6         ug/L         90         56 - 135         3           1.0         U         25.0         22.7         ug/L         91         66 - 128         1           1.0         U         25.0         23.6         ug/L         94         62 - 131         1           1.0         U         25.0         22.1         ug/L         89         56 - 136         3           1.0         U         25.0         22.1         ug/L         88         61 - 124         2

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	101		56 - 136
Toluene-d8 (Surr)	100		78 - 122

Client Sample ID: Lab Control Sample

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

Prep Type: Total/NA

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

Matrix: Water	-E-2 MSD							Client	Sample II	): Matrix Spike Prep Type		
Analysis Batch: 566639												
	MSD	MSD										
Surrogate	%Recovery	Qualifi	ier	Limits								
Dibromofluoromethane (Surr)	93			73 - 120								
Lab Sample ID: 240-182160 Matrix: Water	-F-2 MS								Client	Sample ID: Ma Prep Type		
Analysis Batch: 566639												
	Sample	Sample	e	Spike	MS	MS				%Rec		
Analyte	Result	Qualifi	er	Added	Result	Qualifier	Unit	D	%Rec	Limits		
1,1-Dichloroethene	1.0	U		25.0	23.2		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U		25.0	22.8		ug/L		91	66 - 128		
Tetrachloroethene	1.0	U		25.0	23.8		ug/L		95	62 - 131		
trans-1,2-Dichloroethene	1.0	U		25.0	22.8		ug/L		91	56 - 136		
Trichloroethene	1.0	U		25.0	22.6		ug/L		90	61 - 124		
Vinyl chloride	1.0	U		12.5	8.97		ug/L		72	43 _ 157		
	MS	мs										
Surrogate		Qualifi	ier	Limits								
1,2-Dichloroethane-d4 (Surr)				62 - 137								
4-Bromofluorobenzene (Surr)	98			56 - 136								
Toluene-d8 (Surr)	100			78 - 122								
Dibromofluoromethane (Surr)	96			73 - 120								
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566		Com	npoun	ds (GC/M	S)				Client S	ample ID: Meth		
ethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water				ds (GC/M	S)				Client S	ample ID: Meth Prep Type		
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034	034/6	MB M	ЛВ					_		Ргер Туре	: Total/	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte	034/6	MB N sult C	//B Qualifier		RL	MDL Unit		D	Client S	Prep Type Analyzed	: Total/ Dil	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte	034/6	MB M	//B Qualifier			MDL Unit		D		Ргер Туре	: Total/ Dil	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte	034/6	MB N sult C	/IB Qualifier		RL			D		Prep Type Analyzed	: Total/ Dil	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane	034/6	MB M sult Q 2.0 U MB M	/IB Qualifier	Limits	<b>RL</b>					Prep Type Analyzed	: Total/ Dil	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate	2034/6	MB M sult Q 2.0 U MB M	//B Qualifier J //B		<b>RL</b>				Prepared	Analyzed           03/20/23 13:24	Dil	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water	2034/6 	MB N sult Q 2.0 U MB N very Q	//B Qualifier J //B	Limits	<b>RL</b>				Prepared Prepared	Analyzed 03/20/23 13:24 Analyzed	: Total/ 	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water	2034/6 	MB N sult Q 2.0 U MB N very Q	//B Qualifier J //B	Limits	<b>RL</b> 2.0	0.86 ug/L			Prepared Prepared	Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           EID: Lab Control	: Total/ 	/N
Iethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034	2034/6 	MB N sult Q 2.0 U MB N very Q	//B Qualifier J //B	Limits	<b>RL</b> 2.0				Prepared Prepared	Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           EID: Lab Control	: Total/ 	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034	2034/6 	MB N sult Q 2.0 U MB N very Q	//B Qualifier J //B		RL 2.0 0 LCS Result	0.86 ug/L LCS Qualifier	Unit		Prepared Prepared	Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           03/20/23 13:24           03/20/23 13:24           Prep Type	: Total/ 	/N I Fa
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034 Analyte	2034/6 	MB N sult Q 2.0 U MB N very Q	//B Qualifier J //B	<i>Limits</i> 66 - 12	RL 2.0 0	0.86 ug/L LCS Qualifier	- Unit ug/L	Clier	Prepared Prepared	Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           03/20/23 13:24           BID: Lab Contro           Prep Type           %Rec	: Total/ 	/N   Fa
Method: 8260D SIM - Vol         Lab Sample ID: MB 240-566         Matrix: Water         Analysis Batch: 566034         Analyte         1,4-Dioxane         Surrogate         1,2-Dichloroethane-d4 (Surr)         Lab Sample ID: LCS 240-56         Matrix: Water         Analysis Batch: 566034	2034/6 	MB M sult Q 2.0 U MB M very Q 83	//B Qualifier J //B		RL 2.0 0 LCS Result	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample	Prep Type Analyzed 03/20/23 13:24 Analyzed 03/20/23 13:24 ID: Lab Contro Prep Type %Rec Limits	: Total/ 	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane	034/6 	MB M sult Q 2.0 U MB M very Q 83	IB Qualifier J Qualifier		RL 2.0 0 LCS Result	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample	Prep Type Analyzed 03/20/23 13:24 Analyzed 03/20/23 13:24 ID: Lab Contro Prep Type %Rec Limits	: Total/ 	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate	034/6 	MB M sult Q 2.0 U MB M very Q 83	IB Qualifier J Qualifier		RL 2.0 0 LCS Result	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample	Prep Type Analyzed 03/20/23 13:24 Analyzed 03/20/23 13:24 ID: Lab Contro Prep Type %Rec Limits	: Total/ 	/N I Fa
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	2034/6 Recov 6034/4 LCS LCS 86	MB M sult Q 2.0 U MB M very Q 83	IB Qualifier J Qualifier		RL 2.0 0 LCS Result	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample %Rec 119	Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           ElD: Lab Control           Prep Type           %Rec           Limits           80 - 122	: Total/  DI DI Sam : Total/	/N I Fa I Fa
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-182162	2034/6 Recov 6034/4 LCS LCS 86	MB M sult Q 2.0 U MB M very Q 83	IB Qualifier J Qualifier		RL 2.0 0 LCS Result	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample %Rec 119	Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           ID: Lab Contro           Prep Type           %Rec           Limits           80 - 122           D: Matrix Spike	: Total/  DI Sam : Total/ 	/N
lethod: 8260D SIM - Vol Lab Sample ID: MB 240-566 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water Analysis Batch: 566034 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-182162 Matrix: Water	2034/6 Recov 6034/4 LCS LCS 86	MB M sult Q 2.0 U MB M very Q 83	IB Qualifier J Qualifier		RL 2.0 0 LCS Result	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample %Rec 119	Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           Analyzed           03/20/23 13:24           ElD: Lab Control           Prep Type           %Rec           Limits           80 - 122	: Total/  DI Sam : Total/ 	/N I Fa I Fa
Analyte 1.4-Dioxane Surrogate 1.2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-56 Matrix: Water	2034/6 Re %Recov 6034/4 LCS %Recovery 86 -C-5 MSD	MB M sult Q 2.0 U MB N very Q 83	IB Qualifier J Rualifier		RL           2.0           0           LCS           Result           11.9	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample %Rec 119	Prep Type Analyzed O3/20/23 13:24 Analyzed O3/20/23 13:24 D1: Lab Contro Prep Type %Rec Limits 80 - 122 C: Matrix Spike Prep Type	: Total/   DI Sam : Total/   Duplic : Total/	/N
Aethod: 8260D SIM - Vol         Lab Sample ID: MB 240-566         Matrix: Water         Analysis Batch: 566034         Analyte         1,4-Dioxane         Surrogate         1,2-Dichloroethane-d4 (Surr)         Lab Sample ID: LCS 240-56         Matrix: Water         Analyte         1,4-Dioxane         Surrogate         1,2-Dichloroethane-d4 (Surr)         Lab Sample ID: LCS 240-56         Matrix: Water         Analyte         1,4-Dioxane         Surrogate         1,2-Dichloroethane-d4 (Surr)         Lab Sample ID: 240-182162         Matrix: Water	2034/6 Recov 6034/4 LCS LCS 86	MB M sult Q 2.0 U MB M very Q 83 LCS Qualifi	IB Qualifier J Raulifier		RL 2.0 0 LCS Result 11.9 MSD	0.86 ug/L LCS Qualifier		Clier	Prepared Prepared nt Sample %Rec 119 Sample IE	Prep Type Analyzed 03/20/23 13:24 Analyzed 03/20/23 13:24 D: Lab Contro Prep Type %Rec Limits 80 - 122 C: Matrix Spike Prep Type %Rec	: Total/ <u>Dil</u>  DI Sam : Total/  Duplic : Total/	/N/ I Fa I Fa I Fa

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

	MSD	MSD								
Surrogate	%Recovery	Qualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	95		66 - 120							
- Lab Sample ID: 240-182162-	F-5 MS							Client	Sample ID: Matri	ix Spike
Matrix: Water									Prep Type: 1	fotal/NA
Analysis Batch: 566034										
	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	
	MS	MS								
Surrogate	%Recovery	Qualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	82		66 - 120							

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### GC/MS VOA Analysis Batch: 566034

Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MW-151S_031523	Total/NA	Water	8260D SIM	
Method Blank	Total/NA	Water	8260D SIM	
Lab Control Sample	Total/NA	Water	8260D SIM	
Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
Matrix Spike	Total/NA	Water	8260D SIM	
	_ Method Blank Lab Control Sample Matrix Spike Duplicate	Method Blank Total/NA Lab Control Sample Total/NA Matrix Spike Duplicate Total/NA	Method Blank     Total/NA     Water       Lab Control Sample     Total/NA     Water       Matrix Spike Duplicate     Total/NA     Water	Method BlankTotal/NAWater8260D SIMLab Control SampleTotal/NAWater8260D SIMMatrix Spike DuplicateTotal/NAWater8260D SIM

Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
240-182158-1	TRIP BLANK_89	Total/NA	Water	8260D	
240-182158-2	MW-151S_031523	Total/NA	Water	8260D	
MB 240-566639/7	Method Blank	Total/NA	Water	8260D	
LCS 240-566639/4	Lab Control Sample	Total/NA	Water	8260D	
240-182160-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-182160-F-2 MS	Matrix Spike	Total/NA	Water	8260D	

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Matrix: Water

Matrix: Water

Lab Sample ID: 240-182158-1

## Client Sample ID: TRIP BLANK\_89 Date Collected: 03/15/23 00:00

Date	conecteu.	03/13/23	00.00
Date	Received:	03/17/23	08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D			566639	BAJ	EET CAN	03/24/23 15:22

#### Client Sample ID: MW-151S\_031523 Date Collected: 03/15/23 15:13

Date Received: 03/17/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	566639	BAJ	EET CAN	03/24/23 20:23
Total/NA	Analysis	8260D SIM		1	566034	BAJ	EET CAN	03/20/23 18:16

#### Laboratory References:

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

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### Accreditation/Certification Summary

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

#### Laboratory: Eurofins Canton

aboratory: Eurofins Can I accreditations/certifications held by the		ons/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	02-28-24	
Illinois	NELAP	200004	07-31-23	
lowa	State	421	06-01-23	
Kentucky (UST)	State	112225	02-27-23 *	
Kentucky (WW)	State	KY98016	12-31-23	
Michigan	State	9135	02-27-23 *	
Minnesota	NELAP	039-999-348	12-31-23	
Minnesota (Petrofund)	State	3506	08-01-23	
New Jersey	NELAP	OH001	06-30-23	
New York	NELAP	10975	04-01-23	
Ohio	State	8303	02-27-24	
Ohio VAP	State	ORELAP 4062	02-27-24	
Oregon	NELAP	4062	02-28-24	
Pennsylvania	NELAP	68-00340	08-31-23	
Texas	NELAP	T104704517-22-17	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.

Materia     Regulatory program:     DW       500     Telephone: 248-094-3240     Telephone: 248-094-3240       Email: kristoffer. Minikey@arcadis.com     Email: kristoffer. Minikey@arcadis.com       Sampler Najhe:     Materia       Advector     Shipping/Tracking. No:       Matrix     Advector       Advector     Advector	Спецен         Редиссия разлики:         Разлики разлики:         Совин:         Совин:         Совин:         Палинисти на пробление         Палинисти	Relations         DW         MODE         RCM         One           Implementation         Implementation         Implementation         Implementation         Implementation           Implementation         Implementation         Implementation         Implementation         Implementation         Implementation           Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation         Implementation <td< th=""><th></th><th>nerica</th><th>ghton –</th><th>200/1</th><th>ighton, MI 48116 / 810-</th><th>229-2763</th><th></th><th></th><th></th><th>THE LEADER IN ENVIRONMENTAL TESTING</th></td<>		nerica	ghton –	200/1	ighton, MI 48116 / 810-	229-2763				THE LEADER IN ENVIRONMENTAL TESTING
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TEMENA COMPANY COULDS DEVENTING IT TO RECEIPED TO COLOR COMPANY COMPANY BACTIME 3/15/23 17	3/4/23 Martin B. C. Particle 3 1- 20 mg	12 EENA 3/4/2 MManduly 3/ 2723	man	Company.	Date Time: SIL6/23	=	Iby (JUU) A	50		Company	EEM	0
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Eurofins - Canton Sample Receipt Form/Narrative Lo	gin # :
Barberton Facility	
Client Arcod	Cooler unpacked by:
Cooler Received on <u>3-17-23</u> Opened on <u>3-17-23</u>	1 anduly
FedEx: 1st Grd Exp UPS FAS Glipper Client Drop Off Eurofins Court	ier Other
Receipt After-hours: Drop-off Date/Time Storage Lo	ocation
Eurofins Cooler # 2017C Foam Box Client Cooler Box Other	
Packing material used: Bubble Wrap Foam Plastic Bag None O	ther
COOLANT: Wet Ice Blue Ice Dry Ice Water None	
1. Cooler temperature upon receipt	
	Cooler Temp. $( \cdot ) \circ C$
	i Cooler Temp. °C i Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes No Tests that are not
-Were the seals on the outside of the cooler(s) signed & dated? -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yee No NA checked for pH by
-Were tamper/custody seals on the bottle(s) of bottle kits (LEHg/Werg): -Were tamper/custody seals intact and uncompromised?	Yes No NA Receiving:
3. Shippers' packing slip attached to the cooler(s)?	Yes No VOAs
4. Did custody papers accompany the sample(s)?	Yes No Oil and Grease
5. Were the custody papers relinquished & signed in the appropriate place?	Yas No TOC
6. Was/were the person(s) who collected the samples clearly identified on the COC	
7. Did all bottles arrive in good condition (Unbroken)?	No No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Y s No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N)	N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated?	YEN No
11. Sufficient quantity received to perform indicated analyses?	Tes No
12. Are these work share samples and all listed on the COC?	Tes No
If yes, Questions 13-17 have been checked at the originating laboratory. 13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No Na pH Strip Lot# HC293086
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? Larger than this.	Mes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yel No
17. Was a LL Hg or Me Hg trip blank present?	Yes No
Contacted PM Date by via V	Verbal Voice Mail Other
	verbai voice Mair Ouler
Concerning	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next	t page Samples processed by:
19. SAMPLE CONDITION	
Sample(s) were received after the recommend	ded holding time had expired.
Sample(s) were received with bubble were	>6 mm in diameter. (Notify PM)
20. SAMPLE PRESERVATION	
Sample(s)	were further preserved in the laboratory.
Sample(s)         Time preserved:       Preservative(s) added/Lot number(s):	-
VOA Sample Preservation - Date/Time VOAs Frozen:	

## **DATA VERIFICATION REPORT**



March 29, 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 - Barberton Laboratory submittal: 182158-1 Sample date: 2023-03-15 Report received by CADENA: 2023-03-29 Initial Data Verification completed by CADENA: 2023-03-29 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 - Barberton Laboratory Submittal: 182158-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401822 3/15/20	 1581			MW-152 2401822 3/15/20	 1582	23	
				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 # 240-182158-1 CADENA Verification Report: 2023-03-29

Analyses Performed By: Eurofins North Canton, Ohio

Report # 49193R Review Level: Tier III Project: 30167538.601.01

### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-182158-1 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_89	240-182158-1	Water	03/15/23		х	
-	MW-151S_031523	240-182158-2	Water	03/15/23		Х	Х

#### DATA REVIEW

#### ANALYTICAL DATA PACKAGE DOCUMENTATION

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

Items Reviewed	Repo	Reported Performance Acceptable		Not	
	No	Yes	No	Yes	Required
1. Sample receipt condition		Х		Х	
2. Requested analyses and sample results		Х		Х	
3. Master tracking list		Х		Х	
4. Methods of analysis		Х		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		x		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	Perfo Acce	Not Required	
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	C/MS)				
Tier II Validation					
Holding times/Preservation		Х		X	
Tier III Validation					·
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	
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:	Dilip Kumar
SIGNATURE:	Perting
DATE:	April 03, 2023

PEER REVIEW: Andrew Korycinski

DATE: April 03, 2023

## NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS



# CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS





#### **Chain of Custody Record**



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

Client Contact	Regula	tory program:	:		DW		NF	PDES	1	RC	RA	5	Othe	97								
Company Name: Arcadis	Client Project	Managan Vala	1.Timela				las C-	- 4 4 - 1	Ch.J.					-			N 411				=	TestAmerica Laboratories,
ddress: 28550 Cabot Drive, Suite 500	Client Project	Manager: Kris	HIRSKO	ey.		ſ	are Co	ntact:	Christ	ina w	eaver				Lab Co	ntact	Mike	DelN	lonica			COC No:
1-10 194 St. I was comm	Telephone: 248	-994-2240				1	eleph	one: 24	18-994	2240					Teleph	one: 3	30-497	-939	6			
ty/State/Zip: Novi, MI, 48377	Email: kristoff	fer.hinskey@ar	cadis.c	om			An	alysis 1	Urbar	ound	Line							A	alyse	8		1 of 1 COCs For lab use only
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				N	latrix		Ca	ontainer	ns & Pr	eserva	lives	- 5	I	826	W	Ä	8		orid	Pue		
Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment Solid	Other	H2SO4	HCI	NaOH	Unpres	Other:	Filtered	Composi	1,1-DCE 8260B	cis-1,2-DCE 82608	Irans-1,2-DCE 82608	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM		Sample Specific Notes / Special Instructions:
TRIP BLANK_ Q A			T	1				1				N				-			-			1 Trip Blank
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03/29/2023

### Client Sample ID: TRIP BLANK\_89

#### Date Collected: 03/15/23 00:00

Date Received: 03/17/23 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/24/23 15:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/24/23 15:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 15:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/24/23 15:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 15:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/24/23 15:22	1
Surrogate	%Recoverv	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Surrogale	%Recovery	Quaimer	Linnis		Prepareo	Analyzeu	Diirac	
1,2-Dichloroethane-d4 (Surr)	100		62 - 137	-		03/24/23 15:22	1	
4-Bromofluorobenzene (Surr)	88		56 - 136			03/24/23 15:22	1	
Toluene-d8 (Surr)	96		78 - 122			03/24/23 15:22	1	
Dibromofluoromethane (Surr)	97		73 - 120			03/24/23 15:22	1	

#### Client Sample ID: MW-151S\_031523 Date Collected: 03/15/23 15:13 Date Received: 03/17/23 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			03/20/23 18:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		66 - 120					03/20/23 18:16	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/24/23 20:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/24/23 20:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 20:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/24/23 20:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/24/23 20:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/24/23 20:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1 2-Dichloroethane-d4 (Surr)	102		62 - 137			-		03/24/23 20.23	1

<b>J</b>	· · · · · · · · · · · · · · · · · · ·			
1,2-Dichloroethane-d4 (Surr)	102	62 - 137	 03/24/23 20:23	1
4-Bromofluorobenzene (Surr)	85	56 - 136	03/24/23 20:23	1
Toluene-d8 (Surr)	96	78 - 122	03/24/23 20:23	1
Dibromofluoromethane (Surr)	98	73 - 120	03/24/23 20:23	1

### Lab Sample ID: 240-182158-1 **Matrix: Water**

### Lab Sample ID: 240-182158-2

Matrix: Water