

# ANALYTICAL REPORT

## PREPARED FOR

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## JOB DESCRIPTION

Ford LTP - Off Site

## JOB NUMBER

240-195694-1

# Eurofins Cleveland

## Job Notes

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## Authorization



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# Definitions/Glossary

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

Job ID: 240-195694-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

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

Job ID: 240-195694-1

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## Job ID: 240-195694-1

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### Laboratory: Eurofins Cleveland

#### Narrative

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#### Job Narrative 240-195694-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

#### Receipt

The samples were received on 11/17/2023 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 5.3°C

#### GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 595765 recovered above the upper control limit for 1,1-Dichloroethene and Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: MW-73SR\_111523 (240-195694-3).

Method 8260D: No MS/MSD in batch 595765 due to an auto sampler fault: MW-73SR\_111523 (240-195694-3).

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

# Method Summary

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

Job ID: 240-195694-1

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

**Protocol References:**

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

**Laboratory References:**

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



# Sample Summary

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

Job ID: 240-195694-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195694-1	TRIP BLANK_29	Water	11/15/23 00:00	11/17/23 08:00
240-195694-2	MW-73D_111523	Water	11/15/23 12:47	11/17/23 08:00
240-195694-3	MW-73SR_111523	Water	11/15/23 13:43	11/17/23 08:00

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Detection Summary

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

Job ID: 240-195694-1

## Client Sample ID: TRIP BLANK\_29

Lab Sample ID: 240-195694-1

No Detections.

## Client Sample ID: MW-73D\_111523

Lab Sample ID: 240-195694-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA

## Client Sample ID: MW-73SR\_111523

Lab Sample ID: 240-195694-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.4		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.47	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

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

Job ID: 240-195694-1

**Client Sample ID: TRIP BLANK\_29**

**Lab Sample ID: 240-195694-1**

**Date Collected: 11/15/23 00:00**

**Matrix: Water**

**Date Received: 11/17/23 08:00**

**Method: SW846 8260D - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 13:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 13:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 13:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		62 - 137		11/27/23 13:54	1
4-Bromofluorobenzene (Surr)	97		56 - 136		11/27/23 13:54	1
Toluene-d8 (Surr)	102		78 - 122		11/27/23 13:54	1
Dibromofluoromethane (Surr)	104		73 - 120		11/27/23 13:54	1

# Client Sample Results

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

Job ID: 240-195694-1

**Client Sample ID: MW-73D\_111523**

**Lab Sample ID: 240-195694-2**

Date Collected: 11/15/23 12:47

Matrix: Water

Date Received: 11/17/23 08:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.0		2.0	0.86	ug/L			11/29/23 02:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		66 - 120					11/29/23 02:25	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			11/27/23 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		62 - 137					11/27/23 14:19	1
4-Bromofluorobenzene (Surr)	94		56 - 136					11/27/23 14:19	1
Toluene-d8 (Surr)	100		78 - 122					11/27/23 14:19	1
Dibromofluoromethane (Surr)	103		73 - 120					11/27/23 14:19	1

# Client Sample Results

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

Job ID: 240-195694-1

**Client Sample ID: MW-73SR\_111523**

**Lab Sample ID: 240-195694-3**

Date Collected: 11/15/23 13:43

Matrix: Water

Date Received: 11/17/23 08:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:37	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	95		66 - 120					11/29/23 05:37	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			11/27/23 13:39	1
<b>cis-1,2-Dichloroethene</b>	<b>2.4</b>		1.0	0.46	ug/L			11/27/23 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
<b>Vinyl chloride</b>	<b>0.47</b>	<b>J</b>	1.0	0.45	ug/L			11/27/23 13:39	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	95		62 - 137					11/27/23 13:39	1
4-Bromofluorobenzene (Surr)	99		56 - 136					11/27/23 13:39	1
Toluene-d8 (Surr)	108		78 - 122					11/27/23 13:39	1
Dibromofluoromethane (Surr)	85		73 - 120					11/27/23 13:39	1

# Surrogate Summary

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

Job ID: 240-195694-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (62-137)	BFB (56-136)	TOL (78-122)	DBFM (73-120)
240-195694-1	TRIP BLANK_29	122	97	102	104
240-195694-2	MW-73D_111523	119	94	100	103
240-195694-3	MW-73SR_111523	95	99	108	85
LCS 240-595763/4	Lab Control Sample	115	102	102	106
LCS 240-595765/4	Lab Control Sample	83	94	103	86
MB 240-595763/7	Method Blank	117	99	104	104
MB 240-595765/7	Method Blank	94	94	104	88

### Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)  
 BFB = 4-Bromofluorobenzene (Surr)  
 TOL = Toluene-d8 (Surr)  
 DBFM = Dibromofluoromethane (Surr)

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (66-120)
240-195542-G-2 MS	Matrix Spike	97
240-195542-J-2 MSD	Matrix Spike Duplicate	98
240-195693-D-6 MS	Matrix Spike	101
240-195693-I-6 MSD	Matrix Spike Duplicate	100
240-195694-2	MW-73D_111523	97
240-195694-3	MW-73SR_111523	95
LCS 240-595979/4	Lab Control Sample	98
LCS 240-595985/4	Lab Control Sample	93
MB 240-595979/6	Method Blank	96
MB 240-595985/6	Method Blank	92

### Surrogate Legend

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

# QC Sample Results

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

Job ID: 240-195694-1

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

**Lab Sample ID: MB 240-595763/7**  
**Matrix: Water**  
**Analysis Batch: 595763**

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 12:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:16	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	117		62 - 137		11/27/23 12:16	1
4-Bromofluorobenzene (Surr)	99		56 - 136		11/27/23 12:16	1
Toluene-d8 (Surr)	104		78 - 122		11/27/23 12:16	1
Dibromofluoromethane (Surr)	104		73 - 120		11/27/23 12:16	1

**Lab Sample ID: LCS 240-595763/4**  
**Matrix: Water**  
**Analysis Batch: 595763**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
1,1-Dichloroethene	25.0	25.2		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.3		ug/L		93	76 - 123
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	9.14		ug/L		73	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	115		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	102		78 - 122
Dibromofluoromethane (Surr)	106		73 - 120

**Lab Sample ID: MB 240-595765/7**  
**Matrix: Water**  
**Analysis Batch: 595765**

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 12:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:52	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	94		62 - 137		11/27/23 12:52	1
4-Bromofluorobenzene (Surr)	94		56 - 136		11/27/23 12:52	1
Toluene-d8 (Surr)	104		78 - 122		11/27/23 12:52	1

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# QC Sample Results

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

Job ID: 240-195694-1

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

Lab Sample ID: MB 240-595765/7  
Matrix: Water  
Analysis Batch: 595765

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

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	88		73 - 120		11/27/23 12:52	1

Lab Sample ID: LCS 240-595765/4  
Matrix: Water  
Analysis Batch: 595765

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	28.8		ug/L		115	77 - 123
Tetrachloroethene	25.0	29.6		ug/L		118	76 - 123
trans-1,2-Dichloroethene	25.0	30.0		ug/L		120	75 - 124
Trichloroethene	25.0	27.3		ug/L		109	70 - 122
Vinyl chloride	12.5	14.6		ug/L		117	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		62 - 137
4-Bromofluorobenzene (Surr)	94		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	86		73 - 120

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

Lab Sample ID: MB 240-595979/6  
Matrix: Water  
Analysis Batch: 595979

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 17:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		66 - 120		11/28/23 17:37	1

Lab Sample ID: LCS 240-595979/4  
Matrix: Water  
Analysis Batch: 595979

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 120

Lab Sample ID: 240-195542-G-2 MS  
Matrix: Water  
Analysis Batch: 595979

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.7		10.0	14.0		ug/L		112	51 - 153

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# QC Sample Results

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

Job ID: 240-195694-1

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

	<i>MS</i>	<i>MS</i>	
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	97		66 - 120

**Lab Sample ID: 240-195542-J-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 595979**

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

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,4-Dioxane	2.7		10.0	14.8		ug/L		121	51 - 153	6	16

	<i>MSD</i>	<i>MSD</i>	
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	98		66 - 120

**Lab Sample ID: MB 240-595985/6**  
**Matrix: Water**  
**Analysis Batch: 595985**

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

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:13	1

	<i>MB</i>	<i>MB</i>		<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>			
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/29/23 05:13	1

**Lab Sample ID: LCS 240-595985/4**  
**Matrix: Water**  
**Analysis Batch: 595985**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

	<i>LCS</i>	<i>LCS</i>	
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	93		66 - 120

**Lab Sample ID: 240-195693-D-6 MS**  
**Matrix: Water**  
**Analysis Batch: 595985**

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

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

	<i>MS</i>	<i>MS</i>	
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	101		66 - 120

**Lab Sample ID: 240-195693-I-6 MSD**  
**Matrix: Water**  
**Analysis Batch: 595985**

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

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Eurofins Cleveland

# QC Sample Results

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

Job ID: 240-195694-1

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

Lab Sample ID: 240-195693-I-6 MSD  
Matrix: Water  
Analysis Batch: 595985

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

<i>Surrogate</i>	<i>MSD</i>	<i>MSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
1,2-Dichloroethane-d4 (Surr)	100		66 - 120

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



# QC Association Summary

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

Job ID: 240-195694-1

## GC/MS VOA

### Analysis Batch: 595763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-1	TRIP BLANK_29	Total/NA	Water	8260D	
240-195694-2	MW-73D_111523	Total/NA	Water	8260D	
MB 240-595763/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595763/4	Lab Control Sample	Total/NA	Water	8260D	

### Analysis Batch: 595765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-3	MW-73SR_111523	Total/NA	Water	8260D	
MB 240-595765/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595765/4	Lab Control Sample	Total/NA	Water	8260D	

### Analysis Batch: 595979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-2	MW-73D_111523	Total/NA	Water	8260D SIM	
MB 240-595979/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595979/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195542-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195542-J-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

### Analysis Batch: 595985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-3	MW-73SR_111523	Total/NA	Water	8260D SIM	
MB 240-595985/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595985/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195693-D-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195693-I-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

# Lab Chronicle

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

Job ID: 240-195694-1

**Client Sample ID: TRIP BLANK\_29**

**Lab Sample ID: 240-195694-1**

Date Collected: 11/15/23 00:00

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595763	LEE	EET CLE	11/27/23 13:54

**Client Sample ID: MW-73D\_111523**

**Lab Sample ID: 240-195694-2**

Date Collected: 11/15/23 12:47

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595763	LEE	EET CLE	11/27/23 14:19
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/29/23 02:25

**Client Sample ID: MW-73SR\_111523**

**Lab Sample ID: 240-195694-3**

Date Collected: 11/15/23 13:43

Matrix: Water

Date Received: 11/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 13:39
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 05:37

**Laboratory References:**

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

# Accreditation/Certification Summary

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

Job ID: 240-195694-1

## Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.


Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

4.2/5.3

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

Client Contact		Regulatory program:		Site Contact: Christina Weaver		Lab Contact: Mike DelMontico		TestAmerica Laboratories, Inc.	
Company Name: Arcadis		DW NPDES RCRA Other		Telephone: 248-994-2240		Telephone: 330-497-9396		COC No:	
Address: 28550 Cabot Drive, Suite 500		Client Project Manager: Kris Hinskey		Telephone: 248-994-2293		Analyses		1 of 1 COCs	
City/State/Zip: Novi, MI, 48377		Email: kristoffer.hinskey@arcadis.com		Analysis Turnaround Time		1,4-Dioxane 8260B SIM		For lab use only	
Project Name: Ford LTP Off-Site		Sampler Name: Nolan Schende 1		TAT: if different from below		Vinyl Chloride 8260B		Walk-in client	
Project Number: 30146655.402.04		Method of Shipment/Carrier:		10 day		PCE 8260B		Lab sampling	
PO # 30146655.402.04		Shipping/Tracking No:		3 weeks		Trans-1,2-DCE 8260B		Job/SDG No:	
				2 weeks		cis-1,2-DCE 8260B			
				1 week		1,1-DCE 8260B			
				2 days		Composite=C / Grab=G			
				1 day		Filtered Sample (Y/N)			
Sample Identification		Matrix		Containers & Preservatives		Other		Sample Specific Notes / Special Instructions:	
Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	Other:		
TRIP BLANK_29	---	1				HCl	Unpres	1 Trip Blank	
MW-737D-111523	11/15/23 1247	6				HNO3	ZnAc/NaOH	3 VOAs for 8260B	
MW-735R-111523	11/15/23 1343	6				H2SO4	NaOH	3 VOAs for 8260B SIM	
 240-195694 Chain of Custody									
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Unknown									
Special Instructions/OC Requirements & Comments: Sample Address: <b>Beldon Row</b> Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.									
Relinquished by: Nolan Schende 1		Company: Arcadis		Date/Time: 11-16-23/0745		Received by: MOM Cold Storage		Company: Arcadis	
Relinquished by: Summer Day		Company: Arcadis		Date/Time: 11/16/23 1220		Received by: Jilly Mc		Company: EEA	
Relinquished by: Jilly Mc		Company: EEA		Date/Time: 11/16/23		Received in Laboratory by: [Signature]		Company: EC	



Client Arcadis Site Name \_\_\_\_\_ Cooler unpacked by: [Signature]  
Cooler Received on 11-17-23 Opened on 11-17-23  
FedEx: 1<sup>st</sup> Grd  Exp  UPS  FAS  Waypoint  Client Drop Off  Eurofins Courier  Other

Receipt After-hours: Drop-off Date/Time \_\_\_\_\_ Storage Location \_\_\_\_\_

Eurofins Cooler # EC Foam Box  Client Cooler  Box  Other \_\_\_\_\_  
Packing material used: Bubble Wrap Foam  Plastic Bag  None  Other \_\_\_\_\_  
COOLANT: Wet Ice Blue Ice  Dry Ice  Water  None

1. Cooler temperature upon receipt  See Multiple Cooler Form  
IR GUN # 21 (CF 70.2 °C) Observed Cooler Temp. \_\_\_\_\_ °C Corrected Cooler Temp. \_\_\_\_\_ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 Yes No  
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA  
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA  
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No Yes
4. Did custody papers accompany the sample(s)? Yes No Yes
5. Were the custody papers relinquished & signed in the appropriate place? Yes No Yes
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No Yes
7. Did all bottles arrive in good condition (Unbroken)? Yes No Yes
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No Yes
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No Yes
10. Were correct bottle(s) used for the test(s) indicated? Yes No Yes
11. Sufficient quantity received to perform indicated analyses? Yes No Yes
12. Are these work share samples and all listed on the COC? Yes No Yes  
 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# HC316719
14. Were VOAs on the COC? Yes No Yes
15. Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes NA NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # \_\_\_\_\_ Yes No Yes
17. Was a LL Hg or Me Hg trip blank present? Yes No Yes

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

Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal Voice Mail Other \_\_\_\_\_  
Concerning \_\_\_\_\_

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES  additional next page Samples processed by: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

19. SAMPLE CONDITION  
Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
Sample(s) \_\_\_\_\_ were received in a broken container.  
Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION  
Sample(s) \_\_\_\_\_ were further preserved in the laboratory.  
Time preserved: \_\_\_\_\_ Preservative(s) added/Lot number(s): \_\_\_\_\_  
VOA Sample Preservation - Date/Time VOAs Frozen: \_\_\_\_\_



Login #: 195694

Eurofins - Canton Sample Receipt Multiple Cooler Form							
Cooler Description (Circle)				IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC	Client	Box	Other	IR GUN #: 22	1.8	2.9	Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: 22	1.6	2.7	Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: 22	2.4	3.5	Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice
EC	Client	Box	Other	IR GUN #: _____			Wet Ice Water None Dry Ice

See Temperature Excursion Form

# DATA VERIFICATION REPORT



December 01, 2023

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

CADENA project ID: E203631  
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater  
Project number: 30167538.402.04 off-site  
Event Specific Scope of Work References: Sample COC  
Laboratory: Eurofins Environment Testing LLC - Cleveland  
Laboratory submittal: 195694-1  
Sample date: 2023-11-15  
Report received by CADENA: 2023-12-01  
Initial Data Verification completed by CADENA: 2023-12-01  
Number of Samples:3  
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.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

## CADENA Valid Qualifiers

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



# Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory Submittal: 195694-1

<b>Sample Name:</b>	TRIP BLANK_29	MW-73D_111523	MW-73SR_111523
<b>Lab Sample ID:</b>	2401956941	2401956942	2401956943
<b>Sample Date:</b>	11/15/2023	11/15/2023	11/15/2023

Analyte	Cas No.	TRIP BLANK_29				MW-73D_111523				MW-73SR_111523			
		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
<b>GC/MS VOC</b>													
<u>OSW-8260D</u>													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.4	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.47	1.0	ug/l	J
<u>OSW-8260DSIM</u>													
1,4-Dioxane	123-91-1					3.0	2.0	ug/l	---	ND	2.0	ug/l	---

# Ford Motor Company – Livonia Transmission Project

## Data Review

### Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195694-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:  
Eurofins Cleveland  
Barberton, Ohio

Report # 52168R  
Review Level: Tier III  
Project: 30167538.402.02

## DATA REVIEW

### SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195694-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_29	240-195694-1	Water	11/15/2023		X	
MW-73D_111523	240-195694-2	Water	11/15/2023		X	X
MW-73SR_111523	240-195694-3	Water	11/15/2023		X	X

## DATA REVIEW

### ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

## 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.

## DATA REVIEW

### VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

#### 1. Holding Times

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

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

All samples were analyzed within the specified holding time criteria.

#### 2. Mass Spectrometer Tuning

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

System performance and column resolution were acceptable.

#### 3. Calibration

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

##### 3.1 Initial Calibration

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

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

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

##### 3.2 Continuing Calibration

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

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
MW-73SR_111523	Continuous Calibration Verification %D	1,1-Dichloroethene	+30.5%
		Vinyl chloride	+21%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01 <sup>1</sup>	Non-detect	R
		Detect	J
RRF >0.05 or RRF >0.01 <sup>1</sup>	Non-detect	No Action	

## DATA REVIEW

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

<sup>1</sup>RRF of 0.01 only applies to compounds which are typically poor responding compounds

### 4. Internal Standard Performance

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

All internal standard responses were within control limits.

### 5. Field Duplicate Analysis

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

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

### 6. Compound Identification

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

All identified compounds met the specified criteria.

### 7. System Performance and Overall Assessment

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

## DATA REVIEW

### DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
<b>GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)</b>					
<b>Tier II Validation</b>					
Holding times/Preservation		X		X	
<b>Tier III Validation</b>					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference



## DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

**CHAIN OF CUSTODY  
CORRECTED SAMPLE ANALYSIS DATA  
SHEETS**



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

Client Contact			Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other																		TestAmerica Laboratories, Inc.																
Company Name: Arcadis			Client Project Manager: Kris Hinskey						Site Contact: Christina Weaver						Lab Contact: Mike DelMonico						COC No:																
Address: 28550 Cabot Drive, Suite 500			Telephone: 248-994-2240						Telephone: 248-994-2293						Telephone: 330-497-9396						1 of 1 COCs																
City/State/Zip: Novi, MI, 48377			Email: kristoffer.hinskey@arcadis.com						Analysis Turnaround Time						Analyses						For lab use only																
Phone: 248-994-2240			Sampler Name: Nolan Schendel						TAT if different from below						Filtered Sample (Y/N) Composite=C / Grab=G 1,1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM						Walk-in client																
Project Name: Ford LTP Off-Site			Method of Shipment/Carrier:						<input checked="" type="checkbox"/> 10 day <input type="checkbox"/> 3 weeks <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day												Lab sampling																
Project Number: 30146655.402.04			Shipping/Tracking No:						Matrix						Containers & Preservatives						Job/SDG No:																
PO # 30146655.402.04			Sample Identification			Sample Date		Sample Time		Air		Aqueous		Sediment		Solid		Other:		H2SO4		HNO3		HCl		NaOH		ZnAc		NaOH		Unpres		Other:		Sample Specific Notes / Special Instructions:	
✓ TRIP BLANK_29						---		1												1												1 Trip Blank					
✓ MW-73D-111523			11/15/23			1247		6												6												3 VOAs for 8260B 3 VOAs for 8260B SIM					
✓ MW-73SR-111523			11/15/23			1343		6												6												↓					

Chain of Custody Record

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

<b>Client Contact</b>		<b>Regulatory program:</b> DW NPDES RCRA Other	
Company Name: Arcadis		TestAmerica Laboratories, Inc.	
Address: 28550 Cabot Drive, Suite 500		Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver
City/State/Zip: Novi, MI, 48377		Telephone: 248-994-2240	Telephone: 248-994-2293
Phone: 248-994-2240		Telephone: 330-497-9396	
Project Name: Ford LTP Off-Site		Lab Contact: Mike DelMonico	
Project Number: 30146655.402.04		COC No:	
PO # 30146655.402.04		1 of 1 COCs	
Email: kristoffer.hinskey@arcadis.com		For lab use only	
Sampler Name: Nolan Schendei		Walk-in client	
Method of Shipment/Carrier:		Lab sampling	
Shipping/Tracking No:		Job/SDG No:	
Sample Identification		Sample Specific Notes / Special Instructions:	

Sample Identification	Sample Date	Sample Time	Matrix					Containers & Preservatives					Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses										Sample Specific Notes / Special Instructions:		
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc			NaOH	Unpres	Other:	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM			
TRIP BLANK_29	---	---	1					1						NG	X	X	X	X	X	X							1 Trip Blank
MW-73D-111523	11/15/23	1247	6					6						NG	X	X	X	X	X	X	X						3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-73SR-111523	11/15/23	1343	6					6						NG	X	X	X	X	X	X	X						↓



<b>Possible Hazard Identification</b>	<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown	<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months

**Special Instructions/QC Requirements & Comments:**  
 Sample Address: Beldon Row  
 Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631  
 Level IV Reporting requested.

Relinquished by: Nolan Schendei	Company: Arcadis	Date/Time: 11-16-23/0745	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 11-16-23/0745
Relinquished by: Summer Key	Company: Arcadis	Date/Time: 11/16/23 1220	Received by: [Signature]	Company: EENA	Date/Time: 11/16/23
Relinquished by: [Signature]	Company: EENA	Date/Time: 11/16/23	Received in Laboratory by: [Signature]	Company: EC	Date/Time: 11-17-23 800

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# Client Sample Results

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

Job ID: 240-195694-1

**Client Sample ID: TRIP BLANK\_29**

**Lab Sample ID: 240-195694-1**

Date Collected: 11/15/23 00:00

Matrix: Water

Date Received: 11/17/23 08:00

**Method: SW846 8260D - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 13:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 13:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 13:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		62 - 137		11/27/23 13:54	1
4-Bromofluorobenzene (Surr)	97		56 - 136		11/27/23 13:54	1
Toluene-d8 (Surr)	102		78 - 122		11/27/23 13:54	1
Dibromofluoromethane (Surr)	104		73 - 120		11/27/23 13:54	1

**Client Sample ID: MW-73D\_111523**

**Lab Sample ID: 240-195694-2**

Date Collected: 11/15/23 12:47

Matrix: Water

Date Received: 11/17/23 08:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.0		2.0	0.86	ug/L			11/29/23 02:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		66 - 120		11/29/23 02:25	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			11/27/23 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		62 - 137		11/27/23 14:19	1
4-Bromofluorobenzene (Surr)	94		56 - 136		11/27/23 14:19	1
Toluene-d8 (Surr)	100		78 - 122		11/27/23 14:19	1
Dibromofluoromethane (Surr)	103		73 - 120		11/27/23 14:19	1

**Client Sample ID: MW-73SR\_111523**

**Lab Sample ID: 240-195694-3**

Date Collected: 11/15/23 13:43

Matrix: Water

Date Received: 11/17/23 08:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		66 - 120		11/29/23 05:37	1

# Client Sample Results

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

Job ID: 240-195694-1

**Client Sample ID: MW-73SR\_111523**

**Lab Sample ID: 240-195694-3**

Date Collected: 11/15/23 13:43

Matrix: Water

Date Received: 11/17/23 08:00

**Method: SW846 8260D - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	✓ UJ	1.0	0.49	ug/L			11/27/23 13:39	1
<b>cis-1,2-Dichloroethene</b>	<b>2.4</b>		1.0	0.46	ug/L			11/27/23 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
<b>Vinyl chloride</b>	<b>0.47</b>	✗ J	1.0	0.45	ug/L			11/27/23 13:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		11/27/23 13:39	1
4-Bromofluorobenzene (Surr)	99		56 - 136		11/27/23 13:39	1
Toluene-d8 (Surr)	108		78 - 122		11/27/23 13:39	1
Dibromofluoromethane (Surr)	85		73 - 120		11/27/23 13:39	1