

ANALYTICAL REPORT

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Laboratory Job ID: 240-113312-1
Client Project/Site: Ford LTP Livonia MI - E203631

For:
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Attn: Kristoffer Hinskey



Authorized for release by:
6/11/2019 4:04:28 PM

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Job ID: 240-113312-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-113312-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 5/25/2019 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.0° C and 4.0° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-136S_052219 (240-113312-1), MW-83S_052219 (240-113312-2), MW-83_052219 (240-113312-3) and TRIP BLANK (240-113312-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/04/2019 and 06/05/2019.

The continuing calibration verification (CCV) associated with batch 384267 recovered above the upper control limit for Vinyl Chloride. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following samples are impacted: MW-136S_052219 (240-113312-1), MW-83S_052219 (240-113312-2), MW-83_052219 (240-113312-3) and (240-113326-A-1).

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-136S_052219 (240-113312-1), MW-83S_052219 (240-113312-2) and MW-83_052219 (240-113312-3) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 05/31/2019.

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Job ID: 240-113312-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-113312-1	MW-136S_052219	Water	05/22/19 12:00	05/25/19 10:00	
240-113312-2	MW-83S_052219	Water	05/22/19 10:18	05/25/19 10:00	
240-113312-3	MW-83_052219	Water	05/22/19 09:32	05/25/19 10:00	
240-113312-4	TRIP BLANK	Water	05/22/19 00:00	05/25/19 10:00	

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

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Client Sample ID: MW-136S_052219

Lab Sample ID: 240-113312-1

No Detections.

Client Sample ID: MW-83S_052219

Lab Sample ID: 240-113312-2

No Detections.

Client Sample ID: MW-83_052219

Lab Sample ID: 240-113312-3

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-113312-4

No Detections.

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

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Client Sample ID: MW-136S_052219

Lab Sample ID: 240-113312-1

Date Collected: 05/22/19 12:00

Matrix: Water

Date Received: 05/25/19 10:00

Method: 8260B 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			05/31/19 15:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125					05/31/19 15:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/04/19 00:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/04/19 00:02	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/04/19 00:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/04/19 00:02	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/04/19 00:02	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/04/19 00:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 121					06/04/19 00:02	1
4-Bromofluorobenzene (Surr)	90		59 - 120					06/04/19 00:02	1
Toluene-d8 (Surr)	102		70 - 123					06/04/19 00:02	1
Dibromofluoromethane (Surr)	105		75 - 128					06/04/19 00:02	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Client Sample ID: MW-83S_052219

Lab Sample ID: 240-113312-2

Date Collected: 05/22/19 10:18

Matrix: Water

Date Received: 05/25/19 10:00

Method: 8260B 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	-		05/31/19 15:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 125		05/31/19 15:48	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/04/19 00:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		06/04/19 00:25	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/04/19 00:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/04/19 00:25	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/04/19 00:25	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		06/04/19 00:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 121		06/04/19 00:25	1
4-Bromofluorobenzene (Surr)	91		59 - 120		06/04/19 00:25	1
Toluene-d8 (Surr)	103		70 - 123		06/04/19 00:25	1
Dibromofluoromethane (Surr)	103		75 - 128		06/04/19 00:25	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Client Sample ID: MW-83_052219

Lab Sample ID: 240-113312-3

Date Collected: 05/22/19 09:32

Matrix: Water

Date Received: 05/25/19 10:00

Method: 8260B 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	-		05/31/19 16:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		63 - 125		05/31/19 16:12	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/04/19 00:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		06/04/19 00:47	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		06/04/19 00:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		06/04/19 00:47	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		06/04/19 00:47	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		06/04/19 00:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 121		06/04/19 00:47	1
4-Bromofluorobenzene (Surr)	94		59 - 120		06/04/19 00:47	1
Toluene-d8 (Surr)	104		70 - 123		06/04/19 00:47	1
Dibromofluoromethane (Surr)	104		75 - 128		06/04/19 00:47	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-113312-4

Date Collected: 05/22/19 00:00

Matrix: Water

Date Received: 05/25/19 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/05/19 22:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/05/19 22:46	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/05/19 22:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/05/19 22:46	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/05/19 22:46	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/05/19 22:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 121		06/05/19 22:46	1
4-Bromofluorobenzene (Surr)	94		59 - 120		06/05/19 22:46	1
Toluene-d8 (Surr)	99		70 - 123		06/05/19 22:46	1
Dibromofluoromethane (Surr)	105		75 - 128		06/05/19 22:46	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (70-121)	BFB (59-120)	TOL (70-123)	DBFM (75-128)
190-19807-B-1 MSD	Matrix Spike Duplicate	86	103	96	95
190-19807-C-1 MS	Matrix Spike	80	95	91	88
240-113312-1	MW-136S_052219	96	90	102	105
240-113312-2	MW-83S_052219	95	91	103	103
240-113312-3	MW-83_052219	97	94	104	104
240-113312-4	TRIP BLANK	97	94	99	105
240-113326-E-1 MSD	Matrix Spike Duplicate	88	94	95	89
240-113326-F-1 MS	Matrix Spike	84	96	96	89
LCS 240-384267/4	Lab Control Sample	91	107	106	101
LCS 240-384605/4	Lab Control Sample	89	109	103	95
MB 240-384267/6	Method Blank	95	91	100	105
MB 240-384605/6	Method Blank	94	99	99	102

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(63-125)
240-113312-1	MW-136S_052219	106
240-113312-2	MW-83S_052219	104
240-113312-3	MW-83_052219	108
240-113406-C-1 MS	Matrix Spike	110
240-113406-C-1 MSD	Matrix Spike Duplicate	110
LCS 240-383941/4	Lab Control Sample	105
MB 240-383941/5	Method Blank	109

Surrogate Legend

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

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

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

Lab Sample ID: MB 240-384267/6
Matrix: Water
Analysis Batch: 384267

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/03/19 22:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/03/19 22:11	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/03/19 22:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/03/19 22:11	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/03/19 22:11	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/03/19 22:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 121		06/03/19 22:11	1
4-Bromofluorobenzene (Surr)	91		59 - 120		06/03/19 22:11	1
Toluene-d8 (Surr)	100		70 - 123		06/03/19 22:11	1
Dibromofluoromethane (Surr)	105		75 - 128		06/03/19 22:11	1

Lab Sample ID: LCS 240-384267/4
Matrix: Water
Analysis Batch: 384267

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	10.0	11.7		ug/L		117	65 - 139
cis-1,2-Dichloroethene	10.0	11.3		ug/L		113	76 - 128
Tetrachloroethene	10.0	9.27		ug/L		93	74 - 130
trans-1,2-Dichloroethene	10.0	11.2		ug/L		112	78 - 133
Trichloroethene	10.0	9.49		ug/L		95	76 - 125
Vinyl chloride	10.0	12.7		ug/L		127	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		70 - 121
4-Bromofluorobenzene (Surr)	107		59 - 120
Toluene-d8 (Surr)	106		70 - 123
Dibromofluoromethane (Surr)	101		75 - 128

Lab Sample ID: 240-113326-E-1 MSD
Matrix: Water
Analysis Batch: 384267

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	10.0	9.78		ug/L		98	53 - 140	11	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.81		ug/L		98	64 - 130	11	21
Tetrachloroethene	1.0	U	10.0	7.38		ug/L		74	51 - 136	1	23
trans-1,2-Dichloroethene	1.0	U	10.0	9.41		ug/L		94	68 - 133	10	24
Trichloroethene	1.0	U	10.0	7.74		ug/L		77	55 - 131	4	23
Vinyl chloride	1.0	U	10.0	10.7		ug/L		107	43 - 154	1	29

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		70 - 121
4-Bromofluorobenzene (Surr)	94		59 - 120
Toluene-d8 (Surr)	95		70 - 123

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

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

Lab Sample ID: 240-113326-E-1 MSD
Matrix: Water
Analysis Batch: 384267

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

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	89		75 - 128

Lab Sample ID: 240-113326-F-1 MS
Matrix: Water
Analysis Batch: 384267

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
1,1-Dichloroethene	1.0	U	10.0	8.75		ug/L		88	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	8.82		ug/L		88	64 - 130
Tetrachloroethene	1.0	U	10.0	7.31		ug/L		73	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	8.53		ug/L		85	68 - 133
Trichloroethene	1.0	U	10.0	7.40		ug/L		74	55 - 131
Vinyl chloride	1.0	U	10.0	10.5		ug/L		105	43 - 154

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		70 - 121
4-Bromofluorobenzene (Surr)	96		59 - 120
Toluene-d8 (Surr)	96		70 - 123
Dibromofluoromethane (Surr)	89		75 - 128

Lab Sample ID: MB 240-384605/6
Matrix: Water
Analysis Batch: 384605

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/05/19 14:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/05/19 14:38	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/05/19 14:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/05/19 14:38	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/05/19 14:38	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/05/19 14:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 121		06/05/19 14:38	1
4-Bromofluorobenzene (Surr)	99		59 - 120		06/05/19 14:38	1
Toluene-d8 (Surr)	99		70 - 123		06/05/19 14:38	1
Dibromofluoromethane (Surr)	102		75 - 128		06/05/19 14:38	1

Lab Sample ID: LCS 240-384605/4
Matrix: Water
Analysis Batch: 384605

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	10.0	9.57		ug/L		96	65 - 139
cis-1,2-Dichloroethene	10.0	9.94		ug/L		99	76 - 128
Tetrachloroethene	10.0	9.26		ug/L		93	74 - 130
trans-1,2-Dichloroethene	10.0	9.92		ug/L		99	78 - 133
Trichloroethene	10.0	9.57		ug/L		96	76 - 125

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

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

Lab Sample ID: LCS 240-384605/4

Matrix: Water

Analysis Batch: 384605

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	8.55		ug/L		85	58 - 143
Surrogate							
	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	89		70 - 121				
4-Bromofluorobenzene (Surr)	109		59 - 120				
Toluene-d8 (Surr)	103		70 - 123				
Dibromofluoromethane (Surr)	95		75 - 128				

Lab Sample ID: 190-19807-B-1 MSD

Matrix: Water

Analysis Batch: 384605

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	67	U	667	598		ug/L		90	53 - 140	16	35
cis-1,2-Dichloroethene	630		667	1220		ug/L		89	64 - 130	6	21
Tetrachloroethene	67	U	667	574		ug/L		86	51 - 136	17	23
trans-1,2-Dichloroethene	67	U	667	643		ug/L		97	68 - 133	15	24
Trichloroethene	98		667	634		ug/L		80	55 - 131	4	23
Vinyl chloride	67	U F2	667	471	F2	ug/L		71	43 - 154	40	29
Surrogate											
	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	86		70 - 121								
4-Bromofluorobenzene (Surr)	103		59 - 120								
Toluene-d8 (Surr)	96		70 - 123								
Dibromofluoromethane (Surr)	95		75 - 128								

Lab Sample ID: 190-19807-C-1 MS

Matrix: Water

Analysis Batch: 384605

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
1,1-Dichloroethene	67	U	667	508		ug/L		76	53 - 140
cis-1,2-Dichloroethene	630		667	1150		ug/L		79	64 - 130
Tetrachloroethene	67	U	667	485		ug/L		73	51 - 136
trans-1,2-Dichloroethene	67	U	667	554		ug/L		83	68 - 133
Trichloroethene	98		667	609		ug/L		77	55 - 131
Vinyl chloride	67	U F2	667	314		ug/L		47	43 - 154
Surrogate									
	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	80		70 - 121						
4-Bromofluorobenzene (Surr)	95		59 - 120						
Toluene-d8 (Surr)	91		70 - 123						
Dibromofluoromethane (Surr)	88		75 - 128						

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

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

Lab Sample ID: MB 240-383941/5
Matrix: Water
Analysis Batch: 383941

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			05/31/19 13:44	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		63 - 125					05/31/19 13:44	1

Lab Sample ID: LCS 240-383941/4
Matrix: Water
Analysis Batch: 383941

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	12.3		ug/L		123	59 - 131
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	105		63 - 125				

Lab Sample ID: 240-113406-C-1 MS
Matrix: Water
Analysis Batch: 383941

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	2.0	U F2	10.0	8.52		ug/L		85	52 - 129
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	110		63 - 125						

Lab Sample ID: 240-113406-C-1 MSD
Matrix: Water
Analysis Batch: 383941

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U F2	10.0	12.2	F2	ug/L		122	52 - 129	36	13
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	110		63 - 125								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

GC/MS VOA

Analysis Batch: 383941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-113312-1	MW-136S_052219	Total/NA	Water	8260B SIM	
240-113312-2	MW-83S_052219	Total/NA	Water	8260B SIM	
240-113312-3	MW-83_052219	Total/NA	Water	8260B SIM	
MB 240-383941/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-383941/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-113406-C-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-113406-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 384267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-113312-1	MW-136S_052219	Total/NA	Water	8260B	
240-113312-2	MW-83S_052219	Total/NA	Water	8260B	
240-113312-3	MW-83_052219	Total/NA	Water	8260B	
MB 240-384267/6	Method Blank	Total/NA	Water	8260B	
LCS 240-384267/4	Lab Control Sample	Total/NA	Water	8260B	
240-113326-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-113326-F-1 MS	Matrix Spike	Total/NA	Water	8260B	

Analysis Batch: 384605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-113312-4	TRIP BLANK	Total/NA	Water	8260B	
MB 240-384605/6	Method Blank	Total/NA	Water	8260B	
LCS 240-384605/4	Lab Control Sample	Total/NA	Water	8260B	
190-19807-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
190-19807-C-1 MS	Matrix Spike	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Client Sample ID: MW-136S_052219

Lab Sample ID: 240-113312-1

Date Collected: 05/22/19 12:00

Matrix: Water

Date Received: 05/25/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	384267	06/04/19 00:02	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	383941	05/31/19 15:23	SAM	TAL CAN

Client Sample ID: MW-83S_052219

Lab Sample ID: 240-113312-2

Date Collected: 05/22/19 10:18

Matrix: Water

Date Received: 05/25/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	384267	06/04/19 00:25	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	383941	05/31/19 15:48	SAM	TAL CAN

Client Sample ID: MW-83_052219

Lab Sample ID: 240-113312-3

Date Collected: 05/22/19 09:32

Matrix: Water

Date Received: 05/25/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	384267	06/04/19 00:47	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	383941	05/31/19 16:12	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-113312-4

Date Collected: 05/22/19 00:00

Matrix: Water

Date Received: 05/25/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	384605	06/05/19 22:46	LEE	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-113312-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Illinois	NELAP	5	200004	07-31-19 *
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19 *
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

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

4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Client Information
 Company: ARCADIS U.S. Inc
 Address: 28550 Cabot Drive Suite 500
 City: Novi
 State, Zip: MI, 48377
 Phone:
 Email: Caitlin.O'Neill@arcadis.com
 Project Name: Ford LTP Livonia MI - E203631
 Site: Ford LTP

Sampler: S. Turner
Lab PM: DellMontico, Michael
E-Mail: michael.delmontico@testamericainc.com

Carrier Tracking No(s): COC No: 240-60548-25803.8
 Page: 1 of 7
 Page 8 of 13
 Job #:

Due Date Requested:
TAT Requested (days): 10
PO #: MI001454.0004.00002
WO #: MH094248-9002-00002
Cadena #: E203631
Project #: 24015353
SSOW#:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Swell, Overstabil, etc)	Field Filtered Sample (Yes or No)	Performance (S/M/S/D) (Yes or No)	8260B, 8260B_SIM	8260B - VOCs (Short List)	Total Number of Containers	Special Instructions/Note:
MW-1365-052219	5/22/19	1200	G	Water	XX	XX	3	3	6	
MW-835-052219	5/22/19	1018	G	Water	XX	XX	3	3	6	
MW-83-052219	5/22/19	0932	G	Water	XX	XX	3	3	6	
Trip blank				Water			- X X		1	Trip blank
				Water						
				Water						
				Water						
				Water						
				Water						
				Water						
				Water						



Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Unknown Radiological
 Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by:
Relinquished by: S. Turner
Relinquished by: John M. Miller
Relinquished by:
 Custody Seal No.:
 Custody Seal No.:
 Cooler Temperature(s) °C and Other Remarks:

Received by:	Date/Time:	Company:
Novi Cold Storage	5/22/19 1830	Arcadis
Received by:	5-24-19 0811	Company
Received by:	5-25-19 1000	Company



TestAmerica Canton Sample Receipt Form/Narrative

Login # : 113312

Canton Facility

Client Arcadis

Site Name

Cooler unpacked by:

Cooler Received on 5-25-19

Opened on 5-25-19 1000

Ryan Cribley

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # 714 Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap, Foam, Plastic Bag, None, Other
COOLANT: Wet Ice, Blue Ice, Dry Ice, Water, None

- 1. Cooler temperature upon receipt
IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
IR GUN #36 (CF +0.7°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No
- Were the seals on the outside of the cooler(s) signed & dated? total Yes No NA
- Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
- Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

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

Contacted PM Date by via Verbal Voice Mail Other

Concerning

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Ryan

18. 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)

19. 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:

TestAmerica Canton Sample Receipt Multiple Cooler Form										
Cooler Description (Circle)				IR Gun # (Circle)		Observed Temp °C	Corrected Temp °C	Coolant (Circle)		
<u>TA</u>	Client	Box	Other	<u>IR-B</u>	#36	4.2	4.0	<u>Wet Ice</u>	Blue Ice	Dry Ice
								Water	None	
<u>TA</u>	Client	Box	Other	<u>IR-B</u>	#36	3.2	3.0	<u>Wet Ice</u>	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	
TA	Client	Box	Other	IR-B	#36			Wet Ice	Blue Ice	Dry Ice
								Water	None	

See Temperature Excursion Form