

ANALYTICAL REPORT

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Tel: (330)497-9396

Laboratory Job ID: 240-111137-1

Client Project/Site: Ford LTP Livonia MI - E203631

For:

ARCADIS U.S., Inc.
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Attn: Kristoffer Hinskey



Authorized for release by:
4/30/2019 10:57:37 AM

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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: 240-111137-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
U	Indicates the analyte was analyzed for but not detected.
X	Surrogate is outside control limits

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: 240-111137-1

Job ID: 240-111137-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-111137-1

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 4/18/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-189S_041619 (240-111137-1), MW-189_041619 (240-111137-2), DUP-07_041619 (240-111137-3) and TRIP BLANK (240-111137-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/25/2019.

1,2-Dichloroethane-d4 (Surr) failed the surrogate recovery criteria high for MW-189S_041619 (240-111137-1), MW-189_041619 (240-111137-2), and DUP-07_041619 (240-111137-3).

1,2-Dichloroethane-d4 (Surr) and Dibromofluoromethane (Surr) failed the surrogate recovery criteria high for TRIP BLANK (240-111137-4). Refer to the QC report for details.

Surrogate recovery for the following samples were outside the upper control limit: MW-189S_041619 (240-111137-1), MW-189_041619 (240-111137-2), DUP-07_041619 (240-111137-3) and TRIP BLANK (240-111137-4). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

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

Case Narrative

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

Job ID: 240-111137-1

Job ID: 240-111137-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-189S_041619 (240-111137-1), MW-189_041619 (240-111137-2) and DUP-07_041619 (240-111137-3) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 04/22/2019 and 04/23/2019.

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: 240-111137-1

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: 240-111137-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-111137-1	MW-189S_041619	Water	04/16/19 14:55	04/18/19 09:15
240-111137-2	MW-189_041619	Water	04/16/19 16:15	04/18/19 09:15
240-111137-3	DUP-07_041619	Water	04/16/19 00:00	04/18/19 09:15
240-111137-4	TRIP BLANK	Water	04/16/19 00:00	04/18/19 09:15

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- 11
- 12
- 13
- 14

Detection Summary

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

Job ID: 240-111137-1

Client Sample ID: MW-189S_041619

Lab Sample ID: 240-111137-1

No Detections.

Client Sample ID: MW-189_041619

Lab Sample ID: 240-111137-2

No Detections.

Client Sample ID: DUP-07_041619

Lab Sample ID: 240-111137-3

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-111137-4

No Detections.

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- 13
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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: 240-111137-1

Client Sample ID: MW-189S_041619

Lab Sample ID: 240-111137-1

Date Collected: 04/16/19 14:55

Matrix: Water

Date Received: 04/18/19 09:15

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	-		04/22/19 21:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 125		04/22/19 21:40	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	-		04/25/19 15:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		04/25/19 15:24	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		04/25/19 15:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		04/25/19 15:24	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		04/25/19 15:24	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		04/25/19 15:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	125	X	70 - 121		04/25/19 15:24	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/25/19 15:24	1
Toluene-d8 (Surr)	90		70 - 123		04/25/19 15:24	1
Dibromofluoromethane (Surr)	126		75 - 128		04/25/19 15:24	1

Client Sample Results

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

Job ID: 240-111137-1

Client Sample ID: MW-189_041619

Lab Sample ID: 240-111137-2

Date Collected: 04/16/19 16:15

Matrix: Water

Date Received: 04/18/19 09:15

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	-		04/23/19 14:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 125		04/23/19 14:43	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	-		04/25/19 15:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		04/25/19 15:48	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		04/25/19 15:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		04/25/19 15:48	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		04/25/19 15:48	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		04/25/19 15:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	124	X	70 - 121		04/25/19 15:48	1
4-Bromofluorobenzene (Surr)	79		59 - 120		04/25/19 15:48	1
Toluene-d8 (Surr)	89		70 - 123		04/25/19 15:48	1
Dibromofluoromethane (Surr)	124		75 - 128		04/25/19 15:48	1

Client Sample Results

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

Job ID: 240-111137-1

Client Sample ID: DUP-07_041619

Lab Sample ID: 240-111137-3

Date Collected: 04/16/19 00:00

Matrix: Water

Date Received: 04/18/19 09:15

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			04/23/19 15:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 125		04/23/19 15:08	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			04/25/19 16:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/25/19 16:13	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/25/19 16:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/25/19 16:13	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/25/19 16:13	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/25/19 16:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122	X	70 - 121		04/25/19 16:13	1
4-Bromofluorobenzene (Surr)	76		59 - 120		04/25/19 16:13	1
Toluene-d8 (Surr)	86		70 - 123		04/25/19 16:13	1
Dibromofluoromethane (Surr)	125		75 - 128		04/25/19 16:13	1

Client Sample Results

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

Job ID: 240-111137-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-111137-4

Date Collected: 04/16/19 00:00

Matrix: Water

Date Received: 04/18/19 09:15

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			04/25/19 16:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/25/19 16:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/25/19 16:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/25/19 16:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/25/19 16:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/25/19 16:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	126	X	70 - 121		04/25/19 16:36	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/25/19 16:36	1
Toluene-d8 (Surr)	91		70 - 123		04/25/19 16:36	1
Dibromofluoromethane (Surr)	131	X	75 - 128		04/25/19 16:36	1

Surrogate Summary

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

Job ID: 240-111137-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (70-121)	BFB (59-120)	TOL (70-123)	DBFM (75-128)
240-111137-1	MW-189S_041619	125 X	78	90	126
240-111137-2	MW-189_041619	124 X	79	89	124
240-111137-3	DUP-07_041619	122 X	76	86	125
240-111137-4	TRIP BLANK	126 X	78	91	131 X
240-111170-A-12 MS	Matrix Spike	100	107	102	102
240-111170-A-12 MSD	Matrix Spike Duplicate	101	107	102	101
LCS 240-378215/4	Lab Control Sample	96	108	101	99
MB 240-378215/6	Method Blank	119	80	89	115

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)
240-111040-D-3 MS	Matrix Spike	103
240-111040-D-3 MSD	Matrix Spike Duplicate	105
240-111137-1	MW-189S_041619	103
240-111137-2	MW-189_041619	102
240-111137-3	DUP-07_041619	102
240-111296-C-5 MS	Matrix Spike	103
240-111296-C-5 MSD	Matrix Spike Duplicate	102
LCS 240-377588/4	Lab Control Sample	95
LCS 240-377781/4	Lab Control Sample	100
MB 240-377588/5	Method Blank	99
MB 240-377781/5	Method Blank	103

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: 240-111137-1

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

Lab Sample ID: MB 240-378215/6
Matrix: Water
Analysis Batch: 378215

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			04/25/19 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/25/19 13:09	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/25/19 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/25/19 13:09	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/25/19 13:09	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/25/19 13:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		70 - 121		04/25/19 13:09	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/25/19 13:09	1
Toluene-d8 (Surr)	89		70 - 123		04/25/19 13:09	1
Dibromofluoromethane (Surr)	115		75 - 128		04/25/19 13:09	1

Lab Sample ID: LCS 240-378215/4
Matrix: Water
Analysis Batch: 378215

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	10.1		ug/L		101	65 - 139
cis-1,2-Dichloroethene	10.0	9.66		ug/L		97	76 - 128
Tetrachloroethene	10.0	10.7		ug/L		107	74 - 130
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	78 - 133
Trichloroethene	10.0	9.72		ug/L		97	76 - 125
Vinyl chloride	10.0	9.30		ug/L		93	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		70 - 121
4-Bromofluorobenzene (Surr)	108		59 - 120
Toluene-d8 (Surr)	101		70 - 123
Dibromofluoromethane (Surr)	99		75 - 128

Lab Sample ID: 240-111170-A-12 MS
Matrix: Water
Analysis Batch: 378215

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	5.0	U	50.0	52.2		ug/L		104	53 - 140
cis-1,2-Dichloroethene	18		50.0	64.7		ug/L		92	64 - 130
Tetrachloroethene	5.0	U	50.0	55.3		ug/L		111	51 - 136
trans-1,2-Dichloroethene	1.3	J	50.0	54.0		ug/L		105	68 - 133
Trichloroethene	130	F1	50.0	150	F1	ug/L		44	55 - 131
Vinyl chloride	5.0	U	50.0	46.6		ug/L		93	43 - 154

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		70 - 121
4-Bromofluorobenzene (Surr)	107		59 - 120
Toluene-d8 (Surr)	102		70 - 123

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-111137-1

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

Lab Sample ID: 240-111170-A-12 MS
Matrix: Water
Analysis Batch: 378215

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

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	102		75 - 128

Lab Sample ID: 240-111170-A-12 MSD
Matrix: Water
Analysis Batch: 378215

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

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
1,1-Dichloroethene	5.0	U	50.0	50.9		ug/L		102	53 - 140	3	35	
cis-1,2-Dichloroethene	18		50.0	64.2		ug/L		92	64 - 130	1	21	
Tetrachloroethene	5.0	U	50.0	54.7		ug/L		109	51 - 136	1	23	
trans-1,2-Dichloroethene	1.3	J	50.0	53.1		ug/L		104	68 - 133	2	24	
Trichloroethene	130	F1	50.0	149	F1	ug/L		43	55 - 131	0	23	
Vinyl chloride	5.0	U	50.0	44.1		ug/L		88	43 - 154	5	29	

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	101		70 - 121
4-Bromofluorobenzene (Surr)	107		59 - 120
Toluene-d8 (Surr)	102		70 - 123
Dibromofluoromethane (Surr)	101		75 - 128

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

Lab Sample ID: MB 240-377588/5
Matrix: Water
Analysis Batch: 377588

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/22/19 11:51	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	99		63 - 125		04/22/19 11:51	1

Lab Sample ID: LCS 240-377588/4
Matrix: Water
Analysis Batch: 377588

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

Analyte	Spike	LCS LCS		Unit	D	%Rec	%Rec.
		Result	Qualifier				
1,4-Dioxane	10.0	10.5		ug/L		105	59 - 131

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	95		63 - 125

Lab Sample ID: 240-111040-D-3 MS
Matrix: Water
Analysis Batch: 377588

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

Analyte	Sample	Sample	Spike	MS MS		Unit	D	%Rec	%Rec.
	Result	Qualifier		Result	Qualifier				
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	52 - 129

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-111137-1

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

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		63 - 125

Lab Sample ID: 240-111040-D-3 MSD
Matrix: Water
Analysis Batch: 377588

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	10.0	11.2		ug/L		112	52 - 129	1	13

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		63 - 125

Lab Sample ID: MB 240-377781/5
Matrix: Water
Analysis Batch: 377781

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			04/23/19 12:09	1

	MB	MB		Prepared	Analyzed	Dil Fac
Surrogate	%Recovery	Qualifier	Limits			
1,2-Dichloroethane-d4 (Surr)	103		63 - 125		04/23/19 12:09	1

Lab Sample ID: LCS 240-377781/4
Matrix: Water
Analysis Batch: 377781

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	11.3		ug/L		113	59 - 131

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		63 - 125

Lab Sample ID: 240-111296-C-5 MS
Matrix: Water
Analysis Batch: 377781

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	10.0	10.6		ug/L		106	52 - 129

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		63 - 125

Lab Sample ID: 240-111296-C-5 MSD
Matrix: Water
Analysis Batch: 377781

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	10.0	10.4		ug/L		104	52 - 129	2	13

QC Sample Results

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

Job ID: 240-111137-1

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

Lab Sample ID: 240-111296-C-5 MSD
Matrix: Water
Analysis Batch: 377781

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

<i>Surrogate</i>	<i>MSD</i> <i>%Recovery</i>	<i>MSD</i> <i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	102		63 - 125

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QC Association Summary

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

Job ID: 240-111137-1

GC/MS VOA

Analysis Batch: 377588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111137-1	MW-189S_041619	Total/NA	Water	8260B SIM	
MB 240-377588/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-377588/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-111040-D-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-111040-D-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 377781

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111137-2	MW-189_041619	Total/NA	Water	8260B SIM	
240-111137-3	DUP-07_041619	Total/NA	Water	8260B SIM	
MB 240-377781/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-377781/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-111296-C-5 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-111296-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 378215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111137-1	MW-189S_041619	Total/NA	Water	8260B	
240-111137-2	MW-189_041619	Total/NA	Water	8260B	
240-111137-3	DUP-07_041619	Total/NA	Water	8260B	
240-111137-4	TRIP BLANK	Total/NA	Water	8260B	
MB 240-378215/6	Method Blank	Total/NA	Water	8260B	
LCS 240-378215/4	Lab Control Sample	Total/NA	Water	8260B	
240-111170-A-12 MS	Matrix Spike	Total/NA	Water	8260B	
240-111170-A-12 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

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

Job ID: 240-111137-1

Client Sample ID: MW-189S_041619

Lab Sample ID: 240-111137-1

Date Collected: 04/16/19 14:55

Matrix: Water

Date Received: 04/18/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	378215	04/25/19 15:24	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	377588	04/22/19 21:40	SAM	TAL CAN

Client Sample ID: MW-189_041619

Lab Sample ID: 240-111137-2

Date Collected: 04/16/19 16:15

Matrix: Water

Date Received: 04/18/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	378215	04/25/19 15:48	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	377781	04/23/19 14:43	SAM	TAL CAN

Client Sample ID: DUP-07_041619

Lab Sample ID: 240-111137-3

Date Collected: 04/16/19 00:00

Matrix: Water

Date Received: 04/18/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	378215	04/25/19 16:13	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	377781	04/23/19 15:08	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-111137-4

Date Collected: 04/16/19 00:00

Matrix: Water

Date Received: 04/18/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	378215	04/25/19 16:36	LRW	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: 240-111137-1

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
Kansas	NELAP	7	E-10336	04-30-19 *
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	09-06-19
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.

Eurofins TestAmerica, Canton

TestAmerica Michigan
 10448 Citation Drive
 Suite 200
 Brighton, MI 48116
 Phone: 810.229.2763 Fax:

MICHIGAN
 190

Chain of Custody Record
 3.9.3.0

287899

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING
 TestAmerica Laboratories, Inc.
 TAL-8210 (07/13)

Regulatory Program: DW NPDES RCRA Other:

Client Contact
 Company Name: **ARCADIS**
 Address: **2850 CATER DR ST 500**
 City/State/Zip: **Novi, MI 48377**
 Phone: **248-944-2240**
 Fax:
 Project Name: **FEDLP**
 Site: **LIVONIA MI**
 PO # **MICOLYS 1.5003**

Project Manager: **KRIS HINSKEY**
 Tel/Fax: **248-944-2240**
 Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below: **8 DAY**
 2 weeks 10 (TR)
 1 week
 2 days
 1 day

Site Contact: **CATIN GJELL** Date: **4-16-19**
 Lab Contact: **MIKE DELMAY** Carrier:
 COC No: _____ of _____ COCs
 Sampler:
 For Lab Use Only:
 Walk-in Client:
 Lab Sampling:
 Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:
MW-189S-041619	4-16-19	1455	G	GW	6	N	N	HCL ✓ TRANS, 1/2-DCE ✓ CIS-1,2-DCE ✓ PCB ✓ TCG ✓ VINYL CHLORIDE ✓ 1,4-DIOXAN ✓
MW-189-041619	4-16-19	1615	G	GW	6	N	N	
DUP-07-041619	4-16-19	-	G	GW	6	N	N	
TRIP BLANK	-	-	-	W	1	N	N	



Preservation Used: 1= Ice, 2= HE, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Special Instructions/QC Requirements & Comments: **ADMIT ALL RESULTS THROUGH CADEVA AT JIM.TAMM@CADEVA.COM**
CADEVA HELIOSIS LEVEL IV REPORTING

Relinquished by:	Relinquished Date:	Received by:	Received Date:	Company:	Corrd:	Therm ID No.:
SHAUTEL JANSEN	4-16-19	NEVI COO STERKS	4-16-19	ARCADIS		4-16-19 / 1930
KACAW BRIGGS	4-17-19	Jemi Harle	4-17-19	E-TAC		4-17-19 830
Jemi Harle	4-17-19	Jemi Harle	4-18-19	E-TAC		4-18-19 915

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TestAmerica Canton Sample Receipt Form/Narrative

Login # : 111137

Canton Facility

Client Arcadis Site Name
Cooler Received on 4/18/19 Opened on 4/18/19
FedEx: 1st (Gnd) Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by: [Signature]

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

TestAmerica Cooler # [Blank] Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap (circled) Foam (circled) Plastic Bag (circled) None Other
COOLANT: Wet Ice (circled) Blue Ice Dry Ice Water None

- 1. Cooler temperature upon receipt IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. 3.2 °C Corrected Cooler Temp. 3.0 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
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
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? Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #
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: JR

Did not receive trip blank on COC [Signature]

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: