

ANALYTICAL REPORT

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Laboratory Job ID: 240-112502-1
Client Project/Site: Ford LTP Livonia MI - E203631

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



Authorized for release by:
5/28/2019 2:58:01 PM

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

Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Method Summary	6
Sample Summary	7
Detection Summary	8
Client Sample Results	9
Surrogate Summary	13
QC Sample Results	14
QC Association Summary	17
Lab Chronicle	18
Certification Summary	19
Chain of Custody	20



Definitions/Glossary

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

Job ID: 240-112502-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
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: 240-112502-1

Job ID: 240-112502-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-112502-1

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 5/11/2019 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-73SR_050819 (240-112502-1), MW-73D_050819 (240-112502-2), MW-72S_050819 (240-112502-3) and TRIP BLANK (240-112502-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/21/2019.

1,2-Dichloroethane-d4 (Surr) failed the surrogate recovery criteria high for MW-72S_050819 (240-112502-3). Refer to the QC report for details.

Surrogate recovery for the following sample was outside the upper control limit: MW-72S_050819 (240-112502-3). 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.

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-73SR_050819 (240-112502-1), MW-73D_050819 (240-112502-2) and MW-72S_050819 (240-112502-3) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 05/14/2019.

Case Narrative

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

Job ID: 240-112502-1

Job ID: 240-112502-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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

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

Method Summary

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

Job ID: 240-112502-1

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: 240-112502-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Assest ID
240-112502-1	MW-73SR_050819	Water	05/08/19 15:45	05/11/19 10:10	
240-112502-2	MW-73D_050819	Water	05/08/19 13:55	05/11/19 10:10	
240-112502-3	MW-72S_050819	Water	05/08/19 11:54	05/11/19 10:10	
240-112502-4	TRIP BLANK	Water	05/08/19 00:00	05/11/19 10:10	

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- 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: 240-112502-1

Client Sample ID: MW-73SR_050819

Lab Sample ID: 240-112502-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.8		1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: MW-73D_050819

Lab Sample ID: 240-112502-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.3		2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MW-72S_050819

Lab Sample ID: 240-112502-3

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-112502-4

No Detections.

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: 240-112502-1

Client Sample ID: MW-73SR_050819

Lab Sample ID: 240-112502-1

Date Collected: 05/08/19 15:45

Matrix: Water

Date Received: 05/11/19 10:10

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			05/14/19 21:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		63 - 125		05/14/19 21:51	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			05/21/19 04:52	1
cis-1,2-Dichloroethene	1.8		1.0	0.16	ug/L			05/21/19 04:52	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			05/21/19 04:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			05/21/19 04:52	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			05/21/19 04:52	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			05/21/19 04:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 121		05/21/19 04:52	1
4-Bromofluorobenzene (Surr)	83		59 - 120		05/21/19 04:52	1
Toluene-d8 (Surr)	85		70 - 123		05/21/19 04:52	1
Dibromofluoromethane (Surr)	94		75 - 128		05/21/19 04:52	1

Client Sample Results

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

Job ID: 240-112502-1

Client Sample ID: MW-73D_050819

Lab Sample ID: 240-112502-2

Date Collected: 05/08/19 13:55

Matrix: Water

Date Received: 05/11/19 10:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.3		2.0	0.86	ug/L			05/14/19 22:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		63 - 125		05/14/19 22:17	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			05/21/19 05:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			05/21/19 05:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			05/21/19 05:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			05/21/19 05:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			05/21/19 05:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			05/21/19 05:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		70 - 121		05/21/19 05:14	1
4-Bromofluorobenzene (Surr)	86		59 - 120		05/21/19 05:14	1
Toluene-d8 (Surr)	90		70 - 123		05/21/19 05:14	1
Dibromofluoromethane (Surr)	101		75 - 128		05/21/19 05:14	1

Client Sample Results

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

Job ID: 240-112502-1

Client Sample ID: MW-72S_050819

Lab Sample ID: 240-112502-3

Date Collected: 05/08/19 11:54

Matrix: Water

Date Received: 05/11/19 10:10

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	-		05/14/19 22:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		63 - 125					05/14/19 22:42	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	-		05/21/19 05:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		05/21/19 05:37	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		05/21/19 05:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		05/21/19 05:37	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		05/21/19 05:37	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		05/21/19 05:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122	X	70 - 121					05/21/19 05:37	1
4-Bromofluorobenzene (Surr)	87		59 - 120					05/21/19 05:37	1
Toluene-d8 (Surr)	96		70 - 123					05/21/19 05:37	1
Dibromofluoromethane (Surr)	110		75 - 128					05/21/19 05:37	1

Client Sample Results

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

Job ID: 240-112502-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-112502-4

Date Collected: 05/08/19 00:00

Matrix: Water

Date Received: 05/11/19 10:10

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			05/21/19 05:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			05/21/19 05:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			05/21/19 05:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			05/21/19 05:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			05/21/19 05:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			05/21/19 05:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		05/21/19 05:59	1
4-Bromofluorobenzene (Surr)	82		59 - 120		05/21/19 05:59	1
Toluene-d8 (Surr)	89		70 - 123		05/21/19 05:59	1
Dibromofluoromethane (Surr)	108		75 - 128		05/21/19 05:59	1

Surrogate Summary

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

Job ID: 240-112502-1

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)
240-112495-E-2 MS	Matrix Spike	107	98	95	98
240-112495-H-2 MSD	Matrix Spike Duplicate	108	94	91	102
240-112502-1	MW-73SR_050819	105	83	85	94
240-112502-2	MW-73D_050819	110	86	90	101
240-112502-3	MW-72S_050819	122 X	87	96	110
240-112502-4	TRIP BLANK	113	82	89	108
LCS 240-382193/4	Lab Control Sample	115	98	96	103
MB 240-382193/6	Method Blank	119	89	92	111

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)
240-112366-C-18 MS	Matrix Spike	112
240-112366-C-18 MSD	Matrix Spike Duplicate	111
240-112502-1	MW-73SR_050819	112
240-112502-2	MW-73D_050819	111
240-112502-3	MW-72S_050819	110
LCS 240-381265/4	Lab Control Sample	106
MB 240-381265/5	Method Blank	106

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: 240-112502-1

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

Lab Sample ID: MB 240-382193/6
Matrix: Water
Analysis Batch: 382193

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			05/20/19 23:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			05/20/19 23:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			05/20/19 23:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			05/20/19 23:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			05/20/19 23:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			05/20/19 23:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		70 - 121		05/20/19 23:42	1
4-Bromofluorobenzene (Surr)	89		59 - 120		05/20/19 23:42	1
Toluene-d8 (Surr)	92		70 - 123		05/20/19 23:42	1
Dibromofluoromethane (Surr)	111		75 - 128		05/20/19 23:42	1

Lab Sample ID: LCS 240-382193/4
Matrix: Water
Analysis Batch: 382193

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	10.8		ug/L		108	65 - 139
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	76 - 128
Tetrachloroethene	10.0	9.32		ug/L		93	74 - 130
trans-1,2-Dichloroethene	10.0	10.5		ug/L		105	78 - 133
Trichloroethene	10.0	9.54		ug/L		95	76 - 125
Vinyl chloride	10.0	10.4		ug/L		104	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	115		70 - 121
4-Bromofluorobenzene (Surr)	98		59 - 120
Toluene-d8 (Surr)	96		70 - 123
Dibromofluoromethane (Surr)	103		75 - 128

Lab Sample ID: 240-112495-E-2 MS
Matrix: Water
Analysis Batch: 382193

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	8.56		ug/L		86	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	9.59		ug/L		96	64 - 130
Tetrachloroethene	1.0	U	10.0	8.50		ug/L		85	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	8.94		ug/L		89	68 - 133
Trichloroethene	1.0	U	10.0	8.74		ug/L		87	55 - 131
Vinyl chloride	1.0	U	10.0	7.43		ug/L		74	43 - 154

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	107		70 - 121
4-Bromofluorobenzene (Surr)	98		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: 240-112502-1

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

Lab Sample ID: 240-112495-E-2 MS
Matrix: Water
Analysis Batch: 382193

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

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	98		75 - 128

Lab Sample ID: 240-112495-H-2 MSD
Matrix: Water
Analysis Batch: 382193

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	10.7		ug/L		107	53 - 140	22	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.66		ug/L		97	64 - 130	1	21
Tetrachloroethene	1.0	U	10.0	8.26		ug/L		83	51 - 136	3	23
trans-1,2-Dichloroethene	1.0	U	10.0	10.0		ug/L		100	68 - 133	12	24
Trichloroethene	1.0	U	10.0	8.48		ug/L		85	55 - 131	3	23
Vinyl chloride	1.0	U	10.0	9.26		ug/L		93	43 - 154	22	29

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		70 - 121
4-Bromofluorobenzene (Surr)	94		59 - 120
Toluene-d8 (Surr)	91		70 - 123
Dibromofluoromethane (Surr)	102		75 - 128

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

Lab Sample ID: MB 240-381265/5
Matrix: Water
Analysis Batch: 381265

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			05/14/19 16:01	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125		05/14/19 16:01	1

Lab Sample ID: LCS 240-381265/4
Matrix: Water
Analysis Batch: 381265

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	10.6		ug/L		106	59 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		63 - 125

Lab Sample ID: 240-112366-C-18 MS
Matrix: Water
Analysis Batch: 381265

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	2.3		10.0	13.3		ug/L		110	52 - 129

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-112502-1

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

<i>Surrogate</i>	<i>MS</i> <i>%Recovery</i>	<i>MS</i> <i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	112		63 - 125

Lab Sample ID: 240-112366-C-18 MSD
Matrix: Water
Analysis Batch: 381265

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

<i>Analyte</i>	<i>Sample</i> <i>Result</i>	<i>Sample</i> <i>Qualifier</i>	<i>Spike</i> <i>Added</i>	<i>MSD</i> <i>Result</i>	<i>MSD</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i> <i>Limits</i>	<i>RPD</i>	<i>RPD</i> <i>Limit</i>
1,4-Dioxane	2.3		10.0	11.7		ug/L		94	52 - 129	12	13

<i>Surrogate</i>	<i>MSD</i> <i>%Recovery</i>	<i>MSD</i> <i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	111		63 - 125

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

QC Association Summary

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

Job ID: 240-112502-1

GC/MS VOA

Analysis Batch: 381265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-112502-1	MW-73SR_050819	Total/NA	Water	8260B SIM	
240-112502-2	MW-73D_050819	Total/NA	Water	8260B SIM	
240-112502-3	MW-72S_050819	Total/NA	Water	8260B SIM	
MB 240-381265/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-381265/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-112366-C-18 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-112366-C-18 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 382193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-112502-1	MW-73SR_050819	Total/NA	Water	8260B	
240-112502-2	MW-73D_050819	Total/NA	Water	8260B	
240-112502-3	MW-72S_050819	Total/NA	Water	8260B	
240-112502-4	TRIP BLANK	Total/NA	Water	8260B	
MB 240-382193/6	Method Blank	Total/NA	Water	8260B	
LCS 240-382193/4	Lab Control Sample	Total/NA	Water	8260B	
240-112495-E-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-112495-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

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

Job ID: 240-112502-1

Client Sample ID: MW-73SR_050819

Lab Sample ID: 240-112502-1

Date Collected: 05/08/19 15:45

Matrix: Water

Date Received: 05/11/19 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	382193	05/21/19 04:52	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	381265	05/14/19 21:51	SAM	TAL CAN

Client Sample ID: MW-73D_050819

Lab Sample ID: 240-112502-2

Date Collected: 05/08/19 13:55

Matrix: Water

Date Received: 05/11/19 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	382193	05/21/19 05:14	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	381265	05/14/19 22:17	SAM	TAL CAN

Client Sample ID: MW-72S_050819

Lab Sample ID: 240-112502-3

Date Collected: 05/08/19 11:54

Matrix: Water

Date Received: 05/11/19 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	382193	05/21/19 05:37	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	381265	05/14/19 22:42	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-112502-4

Date Collected: 05/08/19 00:00

Matrix: Water

Date Received: 05/11/19 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	382193	05/21/19 05:59	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: 240-112502-1

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	04-30-20
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	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 Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
 Telephone: 248-994-2240
 Email: kristoffer.hinskey@arcadis.com

Site Contact: Caitlin O'Neill
 Telephone: 248-722-2411

Lab Contact: Mike DelMonico
 Telephone: 330-497-9396

Company Name: Arcadis
 Address: 28550 Cabot Drive, Suite 500
 City/State/Zip: Novi, MI, 48377
 Phone: 248-994-2240

Project Name: Ford LTP
 Project Number: M1001454.0004.00003
 PO # M1001454.0004.00003

Method of Shipment/Carrier:
 Shipping/Tracking No:

Analysis Turnaround Time
 TAT if different from below:
 3 weeks
 2 weeks
 1 week
 2 days
 1 day

10 day

Container & Preservatives
 HCl NaOH ZnOH Umpres Other:

Sample Identification	Sample Date	Sample Time	Matrix				Filtered Sample (Y/N)	Composite=C / Grab=C	Analyses						Sample Specific Notes / Special Instructions:				
			Air	Aqueous	Sediment	Solid			H2SO4	HNO3	HCl	NaOH	ZnOH	Umpres		Other:	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B
MW-73SR-050819	5/8/19	1545	X					NG	X	X	X	X	X	X	X	X	X		
MW-73D-050819	5/8/19	1355	X					NG	X	X	X	X	X	X	X	X	X		
MW-72S-050819	5/8/19	1154	X					NG	X	X	X	X	X	X	X	X	X		
MW-72-050819 ST Trip blank	5/8/19	---	X					---	X	X	X	X	X	X	X	X	X		Trip blank



Possible Hazard Identification
 Non-Hazard Irritant 5th Irritant Poison B Unknown

Special Instructions/OC Requirements & Comments:
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal By Lab Archive For _____ Months

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
<i>[Signature]</i>	Arcadis	5/8/19 1830	Novi Cold Storage	Arcadis	5/8/19 1830
<i>[Signature]</i>	ARCADIS	5/10/19 1445	<i>[Signature]</i>	ETAL	5/10/19 1445
<i>[Signature]</i>	ETAL	5/10/19 1425	<i>[Signature]</i>	<i>[Signature]</i>	5-11-19 1010



TestAmerica Canton Sample Receipt Form/Narrative

Login # : 112502

Canton Facility

Client Arcadis Site Name Cooler unpacked by:
Cooler Received on 5-11-19 Opened on 5-11-19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # 7A 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. 2.0 °C Corrected Cooler Temp. 1.8 °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 1 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
-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
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 Larger than this.
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 5834001VP 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: Martin

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: