

ANALYTICAL REPORT

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Laboratory Job ID: 240-119811-1
Client Project/Site: Ford LTP Livonia MI - E203728

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



Authorized for release by:
10/16/2019 11:43:39 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 - E203728

Job ID: 240-119811-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	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 - E203728

Job ID: 240-119811-1

Job ID: 240-119811-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-119811-1

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 10/2/2019 8:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-124_093019 (240-119811-1) and TRIP BLANK (240-119811-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/12/2019.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Sample MW-124_093019 (240-119811-1) was analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The sample was analyzed on 10/07/2019.

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

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 - E203728

Job ID: 240-119811-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-119811-1	MW-124_093019	Water	09/30/19 13:57	10/02/19 08:50	
240-119811-2	TRIP BLANK	Water	09/30/19 00:00	10/02/19 08:50	

- 1
- 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 - E203728

Job ID: 240-119811-1

Client Sample ID: MW-124_093019

Lab Sample ID: 240-119811-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.1		1.0	0.16	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.24	J	1.0	0.19	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-119811-2

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 - E203728

Job ID: 240-119811-1

Client Sample ID: MW-124_093019

Lab Sample ID: 240-119811-1

Date Collected: 09/30/19 13:57

Matrix: Water

Date Received: 10/02/19 08:50

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	-		10/07/19 21:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 125		10/07/19 21:30	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	-		10/12/19 18:57	1
cis-1,2-Dichloroethene	2.1		1.0	0.16	ug/L			10/12/19 18:57	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/12/19 18:57	1
trans-1,2-Dichloroethene	0.24	J	1.0	0.19	ug/L			10/12/19 18:57	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/12/19 18:57	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/12/19 18:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		59 - 120		10/12/19 18:57	1
Dibromofluoromethane (Surr)	88		75 - 128		10/12/19 18:57	1
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		10/12/19 18:57	1
Toluene-d8 (Surr)	99		70 - 123		10/12/19 18:57	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-119811-2

Date Collected: 09/30/19 00:00

Matrix: Water

Date Received: 10/02/19 08:50

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			10/12/19 19:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/12/19 19:19	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/12/19 19:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/12/19 19:19	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/12/19 19:19	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/12/19 19:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		59 - 120		10/12/19 19:19	1
Dibromofluoromethane (Surr)	86		75 - 128		10/12/19 19:19	1
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		10/12/19 19:19	1
Toluene-d8 (Surr)	103		70 - 123		10/12/19 19:19	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	DCA	TOL
		(59-120)	(75-128)	(70-121)	(70-123)
240-119811-1	MW-124_093019	93	88	113	99
240-119811-2	TRIP BLANK	96	86	114	103
240-119813-H-3 MS	Matrix Spike	99	95	118	101
240-119813-I-3 MSD	Matrix Spike Duplicate	103	91	114	101
LCS 240-405419/4	Lab Control Sample	97	89	113	100
MB 240-405419/6	Method Blank	93	87	110	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

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

TOL = Toluene-d8 (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)
240-119753-A-3 MS	Matrix Spike	104
240-119753-A-3 MSD	Matrix Spike Duplicate	105
240-119811-1	MW-124_093019	102
LCS 240-404405/4	Lab Control Sample	100
MB 240-404405/5	Method Blank	101

Surrogate Legend

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

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

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

Lab Sample ID: MB 240-405419/6
Matrix: Water
Analysis Batch: 405419

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			10/12/19 13:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/12/19 13:24	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/12/19 13:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/12/19 13:24	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/12/19 13:24	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/12/19 13:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		59 - 120		10/12/19 13:24	1
Dibromofluoromethane (Surr)	87		75 - 128		10/12/19 13:24	1
1,2-Dichloroethane-d4 (Surr)	110		70 - 121		10/12/19 13:24	1
Toluene-d8 (Surr)	97		70 - 123		10/12/19 13:24	1

Lab Sample ID: LCS 240-405419/4
Matrix: Water
Analysis Batch: 405419

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.4		ug/L		104	69 - 134
1,1,1,2-Tetrachloroethane	10.0	13.3		ug/L		133	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.17		ug/L		82	50 - 156
1,1,2-Trichloroethane	10.0	11.3		ug/L		113	78 - 133
1,1-Dichloroethane	10.0	10.6		ug/L		106	75 - 133
1,1-Dichloroethene	10.0	9.02		ug/L		90	65 - 139
1,2,4-Trichlorobenzene	10.0	8.76		ug/L		88	42 - 133
1,2,4-Trimethylbenzene	10.0	11.7		ug/L		117	74 - 120
1,2-Dibromo-3-Chloropropane	10.0	8.00		ug/L		80	46 - 132
1,2-Dibromoethane	10.0	10.8		ug/L		108	77 - 123
1,2-Dichlorobenzene	10.0	10.2		ug/L		102	78 - 120
1,2-Dichloroethane	10.0	11.9		ug/L		119	71 - 135
1,2-Dichloropropane	10.0	10.9		ug/L		109	78 - 133
1,3,5-Trimethylbenzene	10.0	11.4		ug/L		114	75 - 121
1,3-Dichlorobenzene	10.0	10.4		ug/L		104	78 - 120
1,4-Dichlorobenzene	10.0	10.4		ug/L		104	78 - 120
2-Butanone (MEK)	20.0	27.3		ug/L		136	39 - 163
2-Hexanone	20.0	26.2		ug/L		131	43 - 148
4-Methyl-2-pentanone (MIBK)	20.0	23.9		ug/L		120	49 - 143
Acetone	20.0	28.5		ug/L		143	21 - 162
Benzene	10.0	10.4		ug/L		104	80 - 123
Bromodichloromethane	10.0	10.8		ug/L		108	77 - 125
Bromoform	10.0	8.54		ug/L		85	49 - 141
Bromomethane	10.0	7.50		ug/L		75	41 - 175
Carbon disulfide	10.0	8.30		ug/L		83	60 - 138
Carbon tetrachloride	10.0	9.82		ug/L		98	63 - 140
Chlorobenzene	10.0	10.6		ug/L		106	80 - 121
Chloroethane	10.0	8.34		ug/L		83	33 - 173
Chloroform	10.0	10.6		ug/L		106	79 - 127

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

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

Lab Sample ID: LCS 240-405419/4
Matrix: Water
Analysis Batch: 405419

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloromethane	10.0	7.32		ug/L		73	54 - 143
cis-1,2-Dichloroethene	10.0	9.90		ug/L		99	76 - 128
cis-1,3-Dichloropropene	10.0	9.68		ug/L		97	64 - 132
Cyclohexane	10.0	11.1		ug/L		111	58 - 145
Dibromochloromethane	10.0	9.07		ug/L		91	70 - 132
Dichlorodifluoromethane	10.0	5.17		ug/L		52	29 - 148
Diethyl ether	10.0	10.2		ug/L		102	70 - 146
Ethylbenzene	10.0	10.8		ug/L		108	80 - 120
Isopropylbenzene	10.0	10.4		ug/L		104	74 - 120
Methyl acetate	20.0	25.3		ug/L		127	52 - 145
Methyl tert-butyl ether	10.0	10.1		ug/L		101	51 - 133
Methylcyclohexane	10.0	10.0		ug/L		100	60 - 125
Methylene Chloride	10.0	10.1		ug/L		101	70 - 134
Styrene	10.0	10.1		ug/L		101	79 - 120
Tetrachloroethene	10.0	9.77		ug/L		98	74 - 130
Toluene	10.0	10.9		ug/L		109	78 - 129
trans-1,2-Dichloroethene	10.0	9.45		ug/L		94	78 - 133
trans-1,3-Dichloropropene	10.0	10.4		ug/L		104	55 - 128
Trichloroethene	10.0	8.90		ug/L		89	76 - 125
Trichlorofluoromethane	10.0	8.27		ug/L		83	51 - 164
Vinyl chloride	10.0	7.40		ug/L		74	58 - 143
Xylenes, Total	20.0	20.6		ug/L		103	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		59 - 120
Dibromofluoromethane (Surr)	89		75 - 128
1,2-Dichloroethane-d4 (Surr)	113		70 - 121
Toluene-d8 (Surr)	100		70 - 123

Lab Sample ID: 240-119813-H-3 MS
Matrix: Water
Analysis Batch: 405419

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
1,1,1-Trichloroethane	1.0	U F2	10.0	6.71		ug/L		67	51 - 138
1,1,2,2-Tetrachloroethane	1.0	U	10.0	10.2		ug/L		102	60 - 137
1,1,2-Trichloroethane	1.0	U	10.0	8.20		ug/L		82	76 - 132
1,1-Dichloroethane	1.0	U	10.0	8.02		ug/L		80	63 - 136
1,1-Dichloroethene	1.0	U F2	10.0	5.38		ug/L		54	53 - 140
1,2,4-Trichlorobenzene	1.0	U	10.0	5.82		ug/L		58	30 - 126
1,2,4-Trimethylbenzene	1.0	U	10.0	8.21		ug/L		82	62 - 120
1,2-Dichlorobenzene	1.0	U	10.0	7.52		ug/L		75	64 - 120
1,2-Dichloroethane	1.0	U	10.0	9.26		ug/L		93	65 - 135
1,2-Dichloropropane	1.0	U	10.0	7.59		ug/L		76	70 - 132
1,3,5-Trimethylbenzene	1.0	U F2	10.0	7.75		ug/L		77	64 - 120
1,3-Dichlorobenzene	1.0	U	10.0	7.64		ug/L		76	62 - 120
1,4-Dichlorobenzene	1.0	U	10.0	7.40		ug/L		74	63 - 120
2-Butanone (MEK)	10	U	20.0	16.3		ug/L		81	37 - 156

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

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

Lab Sample ID: 240-119813-H-3 MS

Matrix: Water

Analysis Batch: 405419

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Result	Qualifier				
2-Hexanone	10	U	20.0	18.0		ug/L		90	42 - 150
4-Methyl-2-pentanone (MIBK)	10	U	20.0	16.3		ug/L		82	44 - 143
Acetone	10	U	20.0	18.3		ug/L		92	10 - 168
Benzene	1.0	U F2	10.0	7.16		ug/L		72	71 - 122
Bromodichloromethane	1.0	U	10.0	7.30		ug/L		73	64 - 125
Bromoform	1.0	U	10.0	5.58		ug/L		56	44 - 129
Bromomethane	1.0	U F2	10.0	4.91		ug/L		49	19 - 187
Carbon disulfide	5.0	U F2	10.0	5.21		ug/L		52	43 - 144
Carbon tetrachloride	1.0	U F2	10.0	5.94		ug/L		59	41 - 143
Chlorobenzene	1.0	U	10.0	7.53		ug/L		75	70 - 123
Chloroethane	1.0	U F2	10.0	5.68		ug/L		57	11 - 189
Chloroform	1.0	U	10.0	7.95		ug/L		79	68 - 130
Chloromethane	1.0	U F2	10.0	4.97		ug/L		50	31 - 154
cis-1,2-Dichloroethene	1.0	U	10.0	7.95		ug/L		79	64 - 130
cis-1,3-Dichloropropene	1.0	U	10.0	6.28		ug/L		63	48 - 127
Dibromochloromethane	1.0	U	10.0	6.44		ug/L		64	60 - 129
Dichlorodifluoromethane	1.0	U F2	10.0	3.13		ug/L		31	28 - 136
Ethylbenzene	1.0	U	10.0	7.18		ug/L		72	66 - 120
Isopropylbenzene	1.0	U	10.0	6.93		ug/L		69	59 - 120
Methyl tert-butyl ether	1.0	U	10.0	8.02		ug/L		80	41 - 136
Methylene Chloride	5.0	U	10.0	7.83		ug/L		78	61 - 130
Styrene	1.0	U	10.0	7.35		ug/L		74	68 - 120
Tetrachloroethene	1.0	U F2	10.0	5.39		ug/L		54	51 - 136
Toluene	1.0	U	10.0	7.85		ug/L		79	62 - 132
trans-1,2-Dichloroethene	1.0	U F2	10.0	6.84		ug/L		68	68 - 133
trans-1,3-Dichloropropene	1.0	U	10.0	6.54		ug/L		65	40 - 125
Trichloroethene	1.0	U	10.0	5.81		ug/L		58	55 - 131
Trichlorofluoromethane	1.0	U F2	10.0	5.18		ug/L		52	37 - 174
Vinyl chloride	1.0	U F2	10.0	4.64		ug/L		46	43 - 154
Xylenes, Total	2.0	U	20.0	14.6		ug/L		73	67 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	99		59 - 120
Dibromofluoromethane (Surr)	95		75 - 128
1,2-Dichloroethane-d4 (Surr)	118		70 - 121
Toluene-d8 (Surr)	101		70 - 123

Lab Sample ID: 240-119813-I-3 MSD

Matrix: Water

Analysis Batch: 405419

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier						
1,1,1-Trichloroethane	1.0	U F2	10.0	8.89	F2	ug/L		89	51 - 138	28	27
1,1,1,2-Tetrachloroethane	1.0	U	10.0	11.7		ug/L		117	60 - 137	14	31
1,1,2-Trichloroethane	1.0	U	10.0	10.1		ug/L		101	76 - 132	21	25
1,1-Dichloroethane	1.0	U	10.0	10.1		ug/L		101	63 - 136	23	23
1,1-Dichloroethene	1.0	U F2	10.0	7.97	F2	ug/L		80	53 - 140	39	35
1,2,4-Trichlorobenzene	1.0	U	10.0	8.16		ug/L		82	30 - 126	34	35

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

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

Lab Sample ID: 240-119813-I-3 MSD

Matrix: Water

Analysis Batch: 405419

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
1,2,4-Trimethylbenzene	1.0	U	10.0	10.3		ug/L		103	62 - 120	22	27
1,2-Dichlorobenzene	1.0	U	10.0	9.12		ug/L		91	64 - 120	19	30
1,2-Dichloroethane	1.0	U	10.0	10.8		ug/L		108	65 - 135	15	24
1,2-Dichloropropane	1.0	U	10.0	9.71		ug/L		97	70 - 132	24	26
1,3,5-Trimethylbenzene	1.0	U F2	10.0	10.2	F2	ug/L		102	64 - 120	27	23
1,3-Dichlorobenzene	1.0	U	10.0	8.92		ug/L		89	62 - 120	15	31
1,4-Dichlorobenzene	1.0	U	10.0	9.30		ug/L		93	63 - 120	23	28
2-Butanone (MEK)	10	U	20.0	20.5		ug/L		102	37 - 156	23	35
2-Hexanone	10	U	20.0	22.9		ug/L		115	42 - 150	24	35
4-Methyl-2-pentanone (MIBK)	10	U	20.0	20.2		ug/L		101	44 - 143	21	35
Acetone	10	U	20.0	22.0		ug/L		110	10 - 168	18	35
Benzene	1.0	U F2	10.0	9.00	F2	ug/L		90	71 - 122	23	22
Bromodichloromethane	1.0	U	10.0	9.03		ug/L		90	64 - 125	21	27
Bromoform	1.0	U	10.0	7.13		ug/L		71	44 - 129	24	28
Bromomethane	1.0	U F2	10.0	7.22	F2	ug/L		72	19 - 187	38	35
Carbon disulfide	5.0	U F2	10.0	7.34	F2	ug/L		73	43 - 144	34	33
Carbon tetrachloride	1.0	U F2	10.0	8.45	F2	ug/L		84	41 - 143	35	30
Chlorobenzene	1.0	U	10.0	9.03		ug/L		90	70 - 123	18	23
Chloroethane	1.0	U F2	10.0	8.86	F2	ug/L		89	11 - 189	44	35
Chloroform	1.0	U	10.0	9.69		ug/L		97	68 - 130	20	23
Chloromethane	1.0	U F2	10.0	7.64	F2	ug/L		76	31 - 154	42	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.21		ug/L		92	64 - 130	15	21
cis-1,3-Dichloropropene	1.0	U	10.0	7.77		ug/L		78	48 - 127	21	30
Dibromochloromethane	1.0	U	10.0	8.28		ug/L		83	60 - 129	25	26
Dichlorodifluoromethane	1.0	U F2	10.0	4.78	F2	ug/L		48	28 - 136	42	35
Ethylbenzene	1.0	U	10.0	8.94		ug/L		89	66 - 120	22	24
Isopropylbenzene	1.0	U	10.0	9.36		ug/L		94	59 - 120	30	31
Methyl tert-butyl ether	1.0	U	10.0	9.95		ug/L		100	41 - 136	22	29
Methylene Chloride	5.0	U	10.0	9.57		ug/L		96	61 - 130	20	29
Styrene	1.0	U	10.0	8.58		ug/L		86	68 - 120	15	26
Tetrachloroethene	1.0	U F2	10.0	7.78	F2	ug/L		78	51 - 136	36	23
Toluene	1.0	U	10.0	9.69		ug/L		97	62 - 132	21	23
trans-1,2-Dichloroethene	1.0	U F2	10.0	8.79	F2	ug/L		88	68 - 133	25	24
trans-1,3-Dichloropropene	1.0	U	10.0	8.34		ug/L		83	40 - 125	24	27
Trichloroethene	1.0	U	10.0	7.20		ug/L		72	55 - 131	21	23
Trichlorofluoromethane	1.0	U F2	10.0	8.23	F2	ug/L		82	37 - 174	45	35
Vinyl chloride	1.0	U F2	10.0	7.43	F2	ug/L		74	43 - 154	46	29
Xylenes, Total	2.0	U	20.0	18.3		ug/L		91	67 - 120	22	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		59 - 120
Dibromofluoromethane (Surr)	91		75 - 128
1,2-Dichloroethane-d4 (Surr)	114		70 - 121
Toluene-d8 (Surr)	101		70 - 123

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

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

Lab Sample ID: MB 240-404405/5
Matrix: Water
Analysis Batch: 404405

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			10/07/19 12:46	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		63 - 125					10/07/19 12:46	1

Lab Sample ID: LCS 240-404405/4
Matrix: Water
Analysis Batch: 404405

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	11.8		ug/L		118	59 - 131
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	100		63 - 125				

Lab Sample ID: 240-119753-A-3 MS
Matrix: Water
Analysis Batch: 404405

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	1.1	J	10.0	11.0		ug/L		99	52 - 129
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	104		63 - 125						

Lab Sample ID: 240-119753-A-3 MSD
Matrix: Water
Analysis Batch: 404405

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	1.1	J	10.0	10.6		ug/L		95	52 - 129	4	13
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	105		63 - 125								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

GC/MS VOA

Analysis Batch: 404405

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119811-1	MW-124_093019	Total/NA	Water	8260B SIM	
MB 240-404405/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-404405/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119753-A-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-119753-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 405419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119811-1	MW-124_093019	Total/NA	Water	8260B	
240-119811-2	TRIP BLANK	Total/NA	Water	8260B	
MB 240-405419/6	Method Blank	Total/NA	Water	8260B	
LCS 240-405419/4	Lab Control Sample	Total/NA	Water	8260B	
240-119813-H-3 MS	Matrix Spike	Total/NA	Water	8260B	
240-119813-I-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119811-1

Client Sample ID: MW-124_093019

Lab Sample ID: 240-119811-1

Date Collected: 09/30/19 13:57

Matrix: Water

Date Received: 10/02/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405419	10/12/19 18:57	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	404405	10/07/19 21:30	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-119811-2

Date Collected: 09/30/19 00:00

Matrix: Water

Date Received: 10/02/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405419	10/12/19 19:19	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 - E203728

Job ID: 240-119811-1

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 11981
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: [Signature]
Cooler Received on 10-02-19 Opened on 10-02-19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____
Receipt After-hours: Drop-off Date/Time _____ **Storage Location** _____

TestAmerica Cooler # 14 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

- Cooler temperature upon receipt See Multiple Cooler Form
IR GUN# IR-10 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
- 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? 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
- Shippers' packing slip attached to the cooler(s)? Yes No
- Did custody papers accompany the sample(s)? Yes No
- Were the custody papers relinquished & signed in the appropriate place? Yes No
- Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
- Did all bottles arrive in good condition (Unbroken)? Yes No
- Could all bottle labels be reconciled with the COC? Yes No
- Were correct bottle(s) used for the test(s) indicated? Yes No
- Sufficient quantity received to perform indicated analyses? Yes No
- Are these work share samples? Yes No
If yes, Questions 12-16 have been checked at the originating laboratory.
- Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC991818
- Were VOAs on the COC? Yes No
- Were air bubbles >6 mm in any VOA vials? Yes No NA ← Larger than this.
- Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # NA Yes No
- 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: M.S.

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: _____

WI-NC-099

