

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
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Tel: (330)497-9396

Laboratory Job ID: 240-119411-1

Client Project/Site: Ford LTP Livonia MI - E203728

For:

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



Authorized for release by:
10/9/2019 3:02:31 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 - E203728

Job ID: 240-119411-1

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: 240-119411-1

Job ID: 240-119411-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-119411-1

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 9/25/2019 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.0° C and 3.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-14_092319 (240-119411-1), MW-9_092319 (240-119411-2), MW-24_092319 (240-119411-3) and TRIP BLANK (1) (240-119411-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/02/2019 and 10/03/2019.

1,1,2-Trichloro-1,2,2-trifluoroethane, Cyclohexane and Methylcyclohexane exceeded the RPD limit for the MSD of sample MW-24_092319MSD (240-119411-3) in batch 240-403880.

Refer to the QC report for details.

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-14_092319 (240-119411-1), MW-9_092319 (240-119411-2) and MW-24_092319 (240-119411-3) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 10/01/2019.

Case Narrative

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

Job ID: 240-119411-1

Job ID: 240-119411-1 (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 - E203728

Job ID: 240-119411-1

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: 240-119411-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-119411-1	MW-14_092319	Water	09/23/19 12:30	09/25/19 08:40	
240-119411-2	MW-9_092319	Water	09/23/19 14:20	09/25/19 08:40	
240-119411-3	MW-24_092319	Water	09/23/19 16:28	09/25/19 08:40	
240-119411-4	TRIP BLANK (1)	Water	09/23/19 00:00	09/25/19 08:40	

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- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

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

Job ID: 240-119411-1

Client Sample ID: MW-14_092319

Lab Sample ID: 240-119411-1

No Detections.

Client Sample ID: MW-9_092319

Lab Sample ID: 240-119411-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	0.98	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-24_092319

Lab Sample ID: 240-119411-3

No Detections.

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119411-4

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 - E203728

Job ID: 240-119411-1

Client Sample ID: MW-14_092319

Lab Sample ID: 240-119411-1

Date Collected: 09/23/19 12:30

Matrix: Water

Date Received: 09/25/19 08:40

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			10/01/19 18:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	73		63 - 125		10/01/19 18:39	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			10/02/19 22:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/02/19 22:35	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/02/19 22:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/19 22:35	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/02/19 22:35	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/02/19 22:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	78		59 - 120		10/02/19 22:35	1
Dibromofluoromethane (Surr)	117		75 - 128		10/02/19 22:35	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 121		10/02/19 22:35	1
Toluene-d8 (Surr)	92		70 - 123		10/02/19 22:35	1

Client Sample Results

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

Job ID: 240-119411-1

Client Sample ID: MW-9_092319

Lab Sample ID: 240-119411-2

Date Collected: 09/23/19 14:20

Matrix: Water

Date Received: 09/25/19 08:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.2		2.0	0.86	ug/L			10/01/19 19:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	76		63 - 125		10/01/19 19:04	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			10/02/19 22:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/02/19 22:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/02/19 22:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/19 22:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/02/19 22:59	1
Vinyl chloride	0.98	J	1.0	0.20	ug/L			10/02/19 22:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	76		59 - 120		10/02/19 22:59	1
Dibromofluoromethane (Surr)	119		75 - 128		10/02/19 22:59	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 121		10/02/19 22:59	1
Toluene-d8 (Surr)	90		70 - 123		10/02/19 22:59	1

Client Sample Results

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

Job ID: 240-119411-1

Client Sample ID: MW-24_092319

Lab Sample ID: 240-119411-3

Date Collected: 09/23/19 16:28

Matrix: Water

Date Received: 09/25/19 08:40

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			10/01/19 19:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	72		63 - 125		10/01/19 19:29	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			10/03/19 16:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/03/19 16:48	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/03/19 16:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/03/19 16:48	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/03/19 16:48	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/03/19 16:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		59 - 120		10/03/19 16:48	1
Dibromofluoromethane (Surr)	84		75 - 128		10/03/19 16:48	1
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		10/03/19 16:48	1
Toluene-d8 (Surr)	99		70 - 123		10/03/19 16:48	1

Client Sample Results

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

Job ID: 240-119411-1

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119411-4

Date Collected: 09/23/19 00:00

Matrix: Water

Date Received: 09/25/19 08:40

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			10/03/19 17:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/03/19 17:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/03/19 17:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/03/19 17:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/03/19 17:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/03/19 17:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		59 - 120		10/03/19 17:10	1
Dibromofluoromethane (Surr)	89		75 - 128		10/03/19 17:10	1
1,2-Dichloroethane-d4 (Surr)	118		70 - 121		10/03/19 17:10	1
Toluene-d8 (Surr)	102		70 - 123		10/03/19 17:10	1

Surrogate Summary

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

Job ID: 240-119411-1

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)			
		BFB (59-120)	DBFM (75-128)	DCA (70-121)	TOL (70-123)
240-119411-1	MW-14_092319	78	117	99	92
240-119411-2	MW-9_092319	76	119	102	90
240-119411-2 MS	MW-9_092319	98	105	84	99
240-119411-2 MSD	MW-9_092319	96	105	81	97
240-119411-3	MW-24_092319	98	84	113	99
240-119411-3 MS	MW-24_092319	97	89	119	99
240-119411-3 MSD	MW-24_092319	103	87	115	98
240-119411-4	TRIP BLANK (1)	103	89	118	102
LCS 240-403677/4	Lab Control Sample	98	102	82	97
LCS 240-403880/4	Lab Control Sample	100	88	117	100
MB 240-403677/7	Method Blank	79	111	96	91
MB 240-403880/6	Method Blank	96	81	110	93

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)
240-119409-A-1 MS	Matrix Spike	76
240-119409-A-1 MSD	Matrix Spike Duplicate	74
240-119411-1	MW-14_092319	73
240-119411-2	MW-9_092319	76
240-119411-3	MW-24_092319	72
LCS 240-403399/4	Lab Control Sample	80
MB 240-403399/5	Method Blank	76

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: 240-119411-1

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

Lab Sample ID: MB 240-403677/7

Matrix: Water

Analysis Batch: 403677

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			10/02/19 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/02/19 14:57	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/02/19 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/19 14:57	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/02/19 14:57	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/02/19 14:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		59 - 120		10/02/19 14:57	1
Dibromofluoromethane (Surr)	111		75 - 128		10/02/19 14:57	1
1,2-Dichloroethane-d4 (Surr)	96		70 - 121		10/02/19 14:57	1
Toluene-d8 (Surr)	91		70 - 123		10/02/19 14:57	1

Lab Sample ID: LCS 240-403677/4

Matrix: Water

Analysis Batch: 403677

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	10.1		ug/L		101	69 - 134
1,1,1,2,2-Tetrachloroethane	10.0	9.99		ug/L		100	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	12.7		ug/L		127	50 - 156
1,1,2-Trichloroethane	10.0	10.0		ug/L		100	78 - 133
1,1-Dichloroethane	10.0	9.89		ug/L		99	75 - 133
1,1-Dichloroethene	10.0	10.9		ug/L		109	65 - 139
1,2,4-Trichlorobenzene	10.0	9.64		ug/L		96	42 - 133
1,2,4-Trimethylbenzene	10.0	8.87		ug/L		89	74 - 120
1,2-Dibromo-3-Chloropropane	10.0	10.5		ug/L		105	46 - 132
1,2-Dibromoethane	10.0	10.2		ug/L		102	77 - 123
1,2-Dichlorobenzene	10.0	10.1		ug/L		101	78 - 120
1,2-Dichloroethane	10.0	9.20		ug/L		92	71 - 135
1,2-Dichloropropane	10.0	10.5		ug/L		105	78 - 133
1,3,5-Trimethylbenzene	10.0	8.90		ug/L		89	75 - 121
1,3-Dichlorobenzene	10.0	9.97		ug/L		100	78 - 120
1,4-Dichlorobenzene	10.0	9.56		ug/L		96	78 - 120
2-Butanone (MEK)	20.0	20.8		ug/L		104	39 - 163
2-Hexanone	20.0	19.8		ug/L		99	43 - 148
4-Methyl-2-pentanone (MIBK)	20.0	21.6		ug/L		108	49 - 143
Acetone	20.0	19.8		ug/L		99	21 - 162
Benzene	10.0	10.4		ug/L		104	80 - 123
Bromodichloromethane	10.0	10.3		ug/L		103	77 - 125
Bromoform	10.0	11.2		ug/L		112	49 - 141
Bromomethane	10.0	6.93		ug/L		69	41 - 175
Carbon disulfide	10.0	11.0		ug/L		110	60 - 138
Carbon tetrachloride	10.0	10.4		ug/L		104	63 - 140
Chlorobenzene	10.0	10.1		ug/L		101	80 - 121
Chloroethane	10.0	6.09		ug/L		61	33 - 173
Chloroform	10.0	9.82		ug/L		98	79 - 127

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: LCS 240-403677/4
Matrix: Water
Analysis Batch: 403677

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	6.24		ug/L		62	54 - 143
cis-1,2-Dichloroethene	10.0	10.9		ug/L		109	76 - 128
cis-1,3-Dichloropropene	10.0	10.9		ug/L		109	64 - 132
Cyclohexane	10.0	10.8		ug/L		108	58 - 145
Dibromochloromethane	10.0	10.8		ug/L		108	70 - 132
Dichlorodifluoromethane	10.0	7.08		ug/L		71	29 - 148
Diethyl ether	10.0	10.1		ug/L		101	70 - 146
Ethylbenzene	10.0	10.6		ug/L		106	80 - 120
Isopropylbenzene	10.0	10.4		ug/L		104	74 - 120
Methyl acetate	20.0	21.5		ug/L		108	52 - 145
Methyl tert-butyl ether	10.0	9.93		ug/L		99	51 - 133
Methylcyclohexane	10.0	10.9		ug/L		109	60 - 125
Methylene Chloride	10.0	10.8		ug/L		108	70 - 134
Styrene	10.0	10.8		ug/L		108	79 - 120
Tetrachloroethene	10.0	10.7		ug/L		107	74 - 130
Toluene	10.0	10.1		ug/L		101	78 - 129
trans-1,2-Dichloroethene	10.0	10.9		ug/L		109	78 - 133
trans-1,3-Dichloropropene	10.0	9.03		ug/L		90	55 - 128
Trichloroethene	10.0	11.6		ug/L		116	76 - 125
Trichlorofluoromethane	10.0	8.46		ug/L		85	51 - 164
Vinyl chloride	10.0	6.45		ug/L		65	58 - 143
Xylenes, Total	20.0	21.6		ug/L		108	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		59 - 120
Dibromofluoromethane (Surr)	102		75 - 128
1,2-Dichloroethane-d4 (Surr)	82		70 - 121
Toluene-d8 (Surr)	97		70 - 123

Lab Sample ID: 240-119411-2 MS
Matrix: Water
Analysis Batch: 403677

Client Sample ID: MW-9_092319
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	10.0	9.85		ug/L		99	51 - 138
1,1,1,2-Tetrachloroethane	1.0	U	10.0	9.49		ug/L		95	60 - 137
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	11.5		ug/L		115	31 - 156
1,1,2-Trichloroethane	1.0	U	10.0	10.1		ug/L		101	76 - 132
1,1-Dichloroethane	1.0	U	10.0	9.69		ug/L		97	63 - 136
1,1-Dichloroethene	1.0	U	10.0	10.3		ug/L		103	53 - 140
1,2,4-Trichlorobenzene	1.0	U	10.0	8.19		ug/L		82	30 - 126
1,2,4-Trimethylbenzene	1.0	U	10.0	8.04		ug/L		80	62 - 120
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	9.72		ug/L		97	38 - 124
1,2-Dibromoethane	1.0	U	10.0	10.4		ug/L		104	71 - 123
1,2-Dichlorobenzene	1.0	U	10.0	8.82		ug/L		88	64 - 120
1,2-Dichloroethane	1.0	U	10.0	9.45		ug/L		94	65 - 135
1,2-Dichloropropane	1.0	U	10.0	10.0		ug/L		100	70 - 132
1,3,5-Trimethylbenzene	1.0	U	10.0	8.04		ug/L		80	64 - 120

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: 240-119411-2 MS

Matrix: Water

Analysis Batch: 403677

Client Sample ID: MW-9_092319

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Added	Result				
1,3-Dichlorobenzene	1.0	U	10.0	8.86		ug/L		89	62 - 120
1,4-Dichlorobenzene	1.0	U	10.0	8.48		ug/L		85	63 - 120
2-Butanone (MEK)	10	U	20.0	21.7		ug/L		109	37 - 156
2-Hexanone	10	U	20.0	21.2		ug/L		106	42 - 150
4-Methyl-2-pentanone (MIBK)	10	U	20.0	22.4		ug/L		112	44 - 143
Acetone	10	U	20.0	21.3		ug/L		106	10 - 168
Benzene	1.0	U	10.0	9.76		ug/L		98	71 - 122
Bromodichloromethane	1.0	U	10.0	10.0		ug/L		100	64 - 125
Bromoform	1.0	U	10.0	11.7		ug/L		117	44 - 129
Bromomethane	1.0	U	10.0	5.73		ug/L		57	19 - 187
Carbon disulfide	5.0	U	10.0	10.3		ug/L		103	43 - 144
Carbon tetrachloride	1.0	U	10.0	10.1		ug/L		101	41 - 143
Chlorobenzene	1.0	U	10.0	9.83		ug/L		98	70 - 123
Chloroethane	1.0	U	10.0	4.95		ug/L		49	11 - 189
Chloroform	1.0	U	10.0	9.65		ug/L		97	68 - 130
Chloromethane	1.0	U	10.0	6.02		ug/L		60	31 - 154
cis-1,2-Dichloroethene	1.0	U	10.0	10.5		ug/L		105	64 - 130
cis-1,3-Dichloropropene	1.0	U	10.0	9.42		ug/L		94	48 - 127
Cyclohexane	1.0	U	10.0	9.24		ug/L		92	42 - 135
Dibromochloromethane	1.0	U	10.0	10.4		ug/L		104	60 - 129
Dichlorodifluoromethane	1.0	U	10.0	6.41		ug/L		64	28 - 136
Diethyl ether	1.0	U	10.0	9.94		ug/L		99	65 - 134
Ethylbenzene	1.0	U	10.0	10.2		ug/L		102	66 - 120
Isopropylbenzene	1.0	U	10.0	9.61		ug/L		96	59 - 120
Methyl acetate	10	U	20.0	18.7		ug/L		93	41 - 142
Methyl tert-butyl ether	1.0	U	10.0	9.49		ug/L		95	41 - 136
Methylcyclohexane	1.0	U	10.0	9.38		ug/L		94	37 - 123
Methylene Chloride	5.0	U	10.0	11.0		ug/L		110	61 - 130
Styrene	1.0	U	10.0	10.4		ug/L		104	68 - 120
Tetrachloroethene	1.0	U	10.0	10.3		ug/L		103	51 - 136
Toluene	1.0	U	10.0	9.77		ug/L		98	62 - 132
trans-1,2-Dichloroethene	1.0	U	10.0	10.8		ug/L		108	68 - 133
trans-1,3-Dichloropropene	1.0	U	10.0	9.01		ug/L		90	40 - 125
Trichloroethene	1.0	U	10.0	10.7		ug/L		107	55 - 131
Trichlorofluoromethane	1.0	U	10.0	7.97		ug/L		80	37 - 174
Vinyl chloride	0.98	J	10.0	6.92		ug/L		59	43 - 154
Xylenes, Total	2.0	U	20.0	20.2		ug/L		101	67 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		59 - 120
Dibromofluoromethane (Surr)	105		75 - 128
1,2-Dichloroethane-d4 (Surr)	84		70 - 121
Toluene-d8 (Surr)	99		70 - 123

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: 240-119411-2 MSD

Matrix: Water

Analysis Batch: 403677

Client Sample ID: MW-9_092319

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	1.0	U	10.0	9.54		ug/L		95	51 - 138	3	27
1,1,2,2-Tetrachloroethane	1.0	U	10.0	9.75		ug/L		97	60 - 137	3	31
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	10.9		ug/L		109	31 - 156	5	35
1,1,2-Trichloroethane	1.0	U	10.0	10.2		ug/L		102	76 - 132	2	25
1,1-Dichloroethane	1.0	U	10.0	9.40		ug/L		94	63 - 136	3	23
1,1-Dichloroethene	1.0	U	10.0	10.2		ug/L		102	53 - 140	0	35
1,2,4-Trichlorobenzene	1.0	U	10.0	8.90		ug/L		89	30 - 126	8	35
1,2,4-Trimethylbenzene	1.0	U	10.0	8.03		ug/L		80	62 - 120	0	27
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	10.7		ug/L		107	38 - 124	10	35
1,2-Dibromoethane	1.0	U	10.0	10.5		ug/L		105	71 - 123	0	27
1,2-Dichlorobenzene	1.0	U	10.0	9.21		ug/L		92	64 - 120	4	30
1,2-Dichloroethane	1.0	U	10.0	9.19		ug/L		92	65 - 135	3	24
1,2-Dichloropropane	1.0	U	10.0	9.78		ug/L		98	70 - 132	2	26
1,3,5-Trimethylbenzene	1.0	U	10.0	8.10		ug/L		81	64 - 120	1	23
1,3-Dichlorobenzene	1.0	U	10.0	8.97		ug/L		90	62 - 120	1	31
1,4-Dichlorobenzene	1.0	U	10.0	9.00		ug/L		90	63 - 120	6	28
2-Butanone (MEK)	10	U	20.0	19.9		ug/L		99	37 - 156	9	35
2-Hexanone	10	U	20.0	22.2		ug/L		111	42 - 150	4	35
4-Methyl-2-pentanone (MIBK)	10	U	20.0	22.7		ug/L		113	44 - 143	1	35
Acetone	10	U	20.0	19.1		ug/L		95	10 - 168	11	35
Benzene	1.0	U	10.0	9.98		ug/L		100	71 - 122	2	22
Bromodichloromethane	1.0	U	10.0	10.2		ug/L		102	64 - 125	2	27
Bromoform	1.0	U	10.0	11.6		ug/L		116	44 - 129	1	28
Bromomethane	1.0	U	10.0	5.51		ug/L		55	19 - 187	4	35
Carbon disulfide	5.0	U	10.0	10.6		ug/L		106	43 - 144	3	33
Carbon tetrachloride	1.0	U	10.0	10.4		ug/L		104	41 - 143	3	30
Chlorobenzene	1.0	U	10.0	9.69		ug/L		97	70 - 123	1	23
Chloroethane	1.0	U	10.0	5.01		ug/L		50	11 - 189	1	35
Chloroform	1.0	U	10.0	9.51		ug/L		95	68 - 130	1	23
Chloromethane	1.0	U	10.0	6.33		ug/L		63	31 - 154	5	35
cis-1,2-Dichloroethene	1.0	U	10.0	10.2		ug/L		102	64 - 130	3	21
cis-1,3-Dichloropropene	1.0	U	10.0	9.64		ug/L		96	48 - 127	2	30
Cyclohexane	1.0	U	10.0	9.43		ug/L		94	42 - 135	2	35
Dibromochloromethane	1.0	U	10.0	10.6		ug/L		106	60 - 129	2	26
Dichlorodifluoromethane	1.0	U	10.0	6.35		ug/L		63	28 - 136	1	35
Diethyl ether	1.0	U	10.0	9.92		ug/L		99	65 - 134	0	33
Ethylbenzene	1.0	U	10.0	10.3		ug/L		103	66 - 120	0	24
Isopropylbenzene	1.0	U	10.0	9.72		ug/L		97	59 - 120	1	31
Methyl acetate	10	U	20.0	19.6		ug/L		98	41 - 142	5	35
Methyl tert-butyl ether	1.0	U	10.0	9.67		ug/L		97	41 - 136	2	29
Methylcyclohexane	1.0	U	10.0	9.51		ug/L		95	37 - 123	1	35
Methylene Chloride	5.0	U	10.0	11.0		ug/L		110	61 - 130	0	29
Styrene	1.0	U	10.0	10.3		ug/L		103	68 - 120	1	26
Tetrachloroethene	1.0	U	10.0	9.89		ug/L		99	51 - 136	4	23
Toluene	1.0	U	10.0	9.82		ug/L		98	62 - 132	0	23
trans-1,2-Dichloroethene	1.0	U	10.0	10.9		ug/L		109	68 - 133	1	24
trans-1,3-Dichloropropene	1.0	U	10.0	8.94		ug/L		89	40 - 125	1	27
Trichloroethene	1.0	U	10.0	10.9		ug/L		109	55 - 131	2	23

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: 240-119411-2 MSD

Client Sample ID: MW-9_092319

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 403677

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichlorofluoromethane	1.0	U	10.0	7.86		ug/L		79	37 - 174	1	35
Vinyl chloride	0.98	J	10.0	7.13		ug/L		61	43 - 154	3	29
Xylenes, Total	2.0	U	20.0	20.3		ug/L		102	67 - 120	0	25
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	96		59 - 120								
Dibromofluoromethane (Surr)	105		75 - 128								
1,2-Dichloroethane-d4 (Surr)	81		70 - 121								
Toluene-d8 (Surr)	97		70 - 123								

Lab Sample ID: MB 240-403880/6

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 403880

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			10/03/19 10:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/03/19 10:31	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/03/19 10:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/03/19 10:31	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/03/19 10:31	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/03/19 10:31	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		59 - 120					10/03/19 10:31	1
Dibromofluoromethane (Surr)	81		75 - 128					10/03/19 10:31	1
1,2-Dichloroethane-d4 (Surr)	110		70 - 121					10/03/19 10:31	1
Toluene-d8 (Surr)	93		70 - 123					10/03/19 10:31	1

Lab Sample ID: LCS 240-403880/4

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 403880

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.0		ug/L		100	69 - 134
1,1,2,2-Tetrachloroethane	10.0	11.3		ug/L		113	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.07		ug/L		81	50 - 156
1,1,2-Trichloroethane	10.0	10.5		ug/L		105	78 - 133
1,1-Dichloroethane	10.0	11.0		ug/L		110	75 - 133
1,1-Dichloroethene	10.0	9.66		ug/L		97	65 - 139
1,2,4-Trichlorobenzene	10.0	7.87		ug/L		79	42 - 133
1,2,4-Trimethylbenzene	10.0	10.5		ug/L		105	74 - 120
1,2-Dibromo-3-Chloropropane	10.0	7.57		ug/L		76	46 - 132
1,2-Dibromoethane	10.0	10.3		ug/L		103	77 - 123
1,2-Dichlorobenzene	10.0	9.30		ug/L		93	78 - 120
1,2-Dichloroethane	10.0	12.1		ug/L		121	71 - 135
1,2-Dichloropropane	10.0	11.1		ug/L		111	78 - 133
1,3,5-Trimethylbenzene	10.0	10.4		ug/L		104	75 - 121

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: LCS 240-403880/4

Matrix: Water

Analysis Batch: 403880

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	10.0	9.49		ug/L		95	78 - 120
1,4-Dichlorobenzene	10.0	9.52		ug/L		95	78 - 120
2-Butanone (MEK)	20.0	23.1		ug/L		116	39 - 163
2-Hexanone	20.0	24.4		ug/L		122	43 - 148
4-Methyl-2-pentanone (MIBK)	20.0	23.4		ug/L		117	49 - 143
Acetone	20.0	21.8		ug/L		109	21 - 162
Benzene	10.0	10.3		ug/L		103	80 - 123
Bromodichloromethane	10.0	10.7		ug/L		107	77 - 125
Bromoform	10.0	8.07		ug/L		81	49 - 141
Bromomethane	10.0	7.45		ug/L		75	41 - 175
Carbon disulfide	10.0	8.26		ug/L		83	60 - 138
Carbon tetrachloride	10.0	9.47		ug/L		95	63 - 140
Chlorobenzene	10.0	10.1		ug/L		101	80 - 121
Chloroethane	10.0	8.12		ug/L		81	33 - 173
Chloroform	10.0	10.6		ug/L		106	79 - 127
Chloromethane	10.0	7.48		ug/L		75	54 - 143
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	76 - 128
cis-1,3-Dichloropropene	10.0	9.96		ug/L		100	64 - 132
Cyclohexane	10.0	10.2		ug/L		102	58 - 145
Dibromochloromethane	10.0	9.11		ug/L		91	70 - 132
Dichlorodifluoromethane	10.0	6.44		ug/L		64	29 - 148
Diethyl ether	10.0	11.6		ug/L		116	70 - 146
Ethylbenzene	10.0	9.96		ug/L		100	80 - 120
Isopropylbenzene	10.0	9.77		ug/L		98	74 - 120
Methyl acetate	20.0	27.6		ug/L		138	52 - 145
Methyl tert-butyl ether	10.0	10.5		ug/L		105	51 - 133
Methylcyclohexane	10.0	9.25		ug/L		93	60 - 125
Methylene Chloride	10.0	10.1		ug/L		101	70 - 134
Styrene	10.0	9.94		ug/L		99	79 - 120
Tetrachloroethene	10.0	9.00		ug/L		90	74 - 130
Toluene	10.0	10.5		ug/L		105	78 - 129
trans-1,2-Dichloroethene	10.0	10.1		ug/L		101	78 - 133
trans-1,3-Dichloropropene	10.0	10.1		ug/L		101	55 - 128
Trichloroethene	10.0	9.30		ug/L		93	76 - 125
Trichlorofluoromethane	10.0	8.34		ug/L		83	51 - 164
Vinyl chloride	10.0	7.29		ug/L		73	58 - 143
Xylenes, Total	20.0	19.4		ug/L		97	80 - 120

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	100		59 - 120
Dibromofluoromethane (Surr)	88		75 - 128
1,2-Dichloroethane-d4 (Surr)	117		70 - 121
Toluene-d8 (Surr)	100		70 - 123

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: 240-119411-3 MS

Matrix: Water

Analysis Batch: 403880

Client Sample ID: MW-24_092319

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
1,1,1-Trichloroethane	1.0	U	10.0	7.77		ug/L		78	51 - 138
1,1,1,2-Tetrachloroethane	1.0	U	10.0	10.7		ug/L		107	60 - 137
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U F2	10.0	4.12		ug/L		41	31 - 156
1,1,2-Trichloroethane	1.0	U	10.0	8.94		ug/L		89	76 - 132
1,1-Dichloroethane	1.0	U	10.0	8.96		ug/L		90	63 - 136
1,1-Dichloroethene	1.0	U	10.0	6.81		ug/L		68	53 - 140
1,2,4-Trichlorobenzene	1.0	U	10.0	5.64		ug/L		56	30 - 126
1,2,4-Trimethylbenzene	1.0	U	10.0	7.56		ug/L		76	62 - 120
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	6.32		ug/L		63	38 - 124
1,2-Dibromoethane	1.0	U	10.0	8.88		ug/L		89	71 - 123
1,2-Dichlorobenzene	1.0	U	10.0	7.05		ug/L		71	64 - 120
1,2-Dichloroethane	1.0	U	10.0	10.0		ug/L		100	65 - 135
1,2-Dichloropropane	1.0	U	10.0	9.02		ug/L		90	70 - 132
1,3,5-Trimethylbenzene	1.0	U	10.0	7.20		ug/L		72	64 - 120
1,3-Dichlorobenzene	1.0	U	10.0	6.84		ug/L		68	62 - 120
1,4-Dichlorobenzene	1.0	U	10.0	6.83		ug/L		68	63 - 120
2-Butanone (MEK)	10	U	20.0	18.3		ug/L		92	37 - 156
2-Hexanone	10	U	20.0	20.7		ug/L		104	42 - 150
4-Methyl-2-pentanone (MIBK)	10	U	20.0	19.4		ug/L		97	44 - 143
Acetone	10	U	20.0	21.2		ug/L		106	10 - 168
Benzene	1.0	U	10.0	8.19		ug/L		82	71 - 122
Bromodichloromethane	1.0	U	10.0	8.16		ug/L		82	64 - 125
Bromoform	1.0	U	10.0	5.73		ug/L		57	44 - 129
Bromomethane	1.0	U	10.0	6.24		ug/L		62	19 - 187
Carbon disulfide	5.0	U	10.0	5.53		ug/L		55	43 - 144
Carbon tetrachloride	1.0	U	10.0	6.92		ug/L		69	41 - 143
Chlorobenzene	1.0	U	10.0	7.62		ug/L		76	70 - 123
Chloroethane	1.0	U	10.0	7.57		ug/L		76	11 - 189
Chloroform	1.0	U	10.0	8.64		ug/L		86	68 - 130
Chloromethane	1.0	U	10.0	6.68		ug/L		67	31 - 154
cis-1,2-Dichloroethene	1.0	U	10.0	8.29		ug/L		83	64 - 130
cis-1,3-Dichloropropene	1.0	U	10.0	6.92		ug/L		69	48 - 127
Cyclohexane	1.0	U F2	10.0	5.20		ug/L		52	42 - 135
Dibromochloromethane	1.0	U	10.0	7.13		ug/L		71	60 - 129
Dichlorodifluoromethane	1.0	U	10.0	4.14		ug/L		41	28 - 136
Diethyl ether	1.0	U	10.0	9.79		ug/L		98	65 - 134
Ethylbenzene	1.0	U	10.0	6.91		ug/L		69	66 - 120
Isopropylbenzene	1.0	U	10.0	6.78		ug/L		68	59 - 120
Methyl acetate	10	U	20.0	16.9		ug/L		85	41 - 142
Methyl tert-butyl ether	1.0	U	10.0	9.03		ug/L		90	41 - 136
Methylcyclohexane	1.0	U F2	10.0	4.49		ug/L		45	37 - 123
Methylene Chloride	5.0	U	10.0	8.99		ug/L		90	61 - 130
Styrene	1.0	U	10.0	6.85		ug/L		69	68 - 120
Tetrachloroethene	1.0	U	10.0	6.13		ug/L		61	51 - 136
Toluene	1.0	U	10.0	8.02		ug/L		80	62 - 132
trans-1,2-Dichloroethene	1.0	U	10.0	7.53		ug/L		75	68 - 133
trans-1,3-Dichloropropene	1.0	U	10.0	7.38		ug/L		74	40 - 125
Trichloroethene	1.0	U	10.0	6.46		ug/L		65	55 - 131

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: 240-119411-3 MS

Matrix: Water

Analysis Batch: 403880

Client Sample ID: MW-24_092319

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier					Limits
Trichlorofluoromethane	1.0	U	10.0	5.41		ug/L		54	37 - 174	
Vinyl chloride	1.0	U	10.0	6.39		ug/L		64	43 - 154	
Xylenes, Total	2.0	U	20.0	14.3		ug/L		72	67 - 120	
MS MS										
Surrogate	%Recovery	Qualifier	Limits							
4-Bromofluorobenzene (Surr)	97		59 - 120							
Dibromofluoromethane (Surr)	89		75 - 128							
1,2-Dichloroethane-d4 (Surr)	119		70 - 121							
Toluene-d8 (Surr)	99		70 - 123							

Lab Sample ID: 240-119411-3 MSD

Matrix: Water

Analysis Batch: 403880

Client Sample ID: MW-24_092319

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier		Result	Qualifier						
1,1,1-Trichloroethane	1.0	U	10.0	8.01		ug/L		80	51 - 138	3	27
1,1,2,2-Tetrachloroethane	1.0	U	10.0	11.7		ug/L		117	60 - 137	8	31
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U F2	10.0	6.14	F2	ug/L		61	31 - 156	39	35
1,1,2-Trichloroethane	1.0	U	10.0	9.76		ug/L		98	76 - 132	9	25
1,1-Dichloroethane	1.0	U	10.0	9.38		ug/L		94	63 - 136	5	23
1,1-Dichloroethene	1.0	U	10.0	7.37		ug/L		74	53 - 140	8	35
1,2,4-Trichlorobenzene	1.0	U	10.0	6.80		ug/L		68	30 - 126	19	35
1,2,4-Trimethylbenzene	1.0	U	10.0	8.79		ug/L		88	62 - 120	15	27
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	7.73		ug/L		77	38 - 124	20	35
1,2-Dibromoethane	1.0	U	10.0	9.00		ug/L		90	71 - 123	1	27
1,2-Dichlorobenzene	1.0	U	10.0	8.11		ug/L		81	64 - 120	14	30
1,2-Dichloroethane	1.0	U	10.0	11.1		ug/L		111	65 - 135	10	24
1,2-Dichloropropane	1.0	U	10.0	9.90		ug/L		99	70 - 132	9	26
1,3,5-Trimethylbenzene	1.0	U	10.0	8.73		ug/L		87	64 - 120	19	23
1,3-Dichlorobenzene	1.0	U	10.0	8.09		ug/L		81	62 - 120	17	31
1,4-Dichlorobenzene	1.0	U	10.0	7.98		ug/L		80	63 - 120	16	28
2-Butanone (MEK)	10	U	20.0	21.3		ug/L		107	37 - 156	15	35
2-Hexanone	10	U	20.0	21.8		ug/L		109	42 - 150	5	35
4-Methyl-2-pentanone (MIBK)	10	U	20.0	21.7		ug/L		109	44 - 143	11	35
Acetone	10	U	20.0	24.8		ug/L		124	10 - 168	16	35
Benzene	1.0	U	10.0	8.50		ug/L		85	71 - 122	4	22
Bromodichloromethane	1.0	U	10.0	8.72		ug/L		87	64 - 125	7	27
Bromoform	1.0	U	10.0	6.58		ug/L		66	44 - 129	14	28
Bromomethane	1.0	U	10.0	6.63		ug/L		66	19 - 187	6	35
Carbon disulfide	5.0	U	10.0	6.06		ug/L		61	43 - 144	9	33
Carbon tetrachloride	1.0	U	10.0	7.58		ug/L		76	41 - 143	9	30
Chlorobenzene	1.0	U	10.0	7.79		ug/L		78	70 - 123	2	23
Chloroethane	1.0	U	10.0	7.54		ug/L		75	11 - 189	0	35
Chloroform	1.0	U	10.0	9.22		ug/L		92	68 - 130	7	23
Chloromethane	1.0	U	10.0	7.05		ug/L		71	31 - 154	5	35
cis-1,2-Dichloroethene	1.0	U	10.0	8.49		ug/L		85	64 - 130	2	21
cis-1,3-Dichloropropene	1.0	U	10.0	7.62		ug/L		76	48 - 127	10	30
Cyclohexane	1.0	U F2	10.0	7.74	F2	ug/L		77	42 - 135	39	35

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: 240-119411-3 MSD
Matrix: Water
Analysis Batch: 403880

Client Sample ID: MW-24_092319
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	1.0	U	10.0	7.64		ug/L		76	60 - 129	7	26
Dichlorodifluoromethane	1.0	U	10.0	5.00		ug/L		50	28 - 136	19	35
Diethyl ether	1.0	U	10.0	10.1		ug/L		101	65 - 134	3	33
Ethylbenzene	1.0	U	10.0	7.63		ug/L		76	66 - 120	10	24
Isopropylbenzene	1.0	U	10.0	7.50		ug/L		75	59 - 120	10	31
Methyl acetate	10	U	20.0	19.4		ug/L		97	41 - 142	14	35
Methyl tert-butyl ether	1.0	U	10.0	10.1		ug/L		101	41 - 136	12	29
Methylcyclohexane	1.0	U F2	10.0	6.52	F2	ug/L		65	37 - 123	37	35
Methylene Chloride	5.0	U	10.0	9.40		ug/L		94	61 - 130	4	29
Styrene	1.0	U	10.0	7.44		ug/L		74	68 - 120	8	26
Tetrachloroethene	1.0	U	10.0	6.42		ug/L		64	51 - 136	5	23
Toluene	1.0	U	10.0	8.36		ug/L		84	62 - 132	4	23
trans-1,2-Dichloroethene	1.0	U	10.0	7.83		ug/L		78	68 - 133	4	24
trans-1,3-Dichloropropene	1.0	U	10.0	7.85		ug/L		78	40 - 125	6	27
Trichloroethene	1.0	U	10.0	6.89		ug/L		69	55 - 131	6	23
Trichlorofluoromethane	1.0	U	10.0	6.27		ug/L		63	37 - 174	15	35
Vinyl chloride	1.0	U	10.0	6.77		ug/L		68	43 - 154	6	29
Xylenes, Total	2.0	U	20.0	15.2		ug/L		76	67 - 120	6	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		59 - 120
Dibromofluoromethane (Surr)	87		75 - 128
1,2-Dichloroethane-d4 (Surr)	115		70 - 121
Toluene-d8 (Surr)	98		70 - 123

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

Lab Sample ID: MB 240-403399/5
Matrix: Water
Analysis Batch: 403399

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			10/01/19 12:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	76		63 - 125		10/01/19 12:21	1

Lab Sample ID: LCS 240-403399/4
Matrix: Water
Analysis Batch: 403399

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)	80		63 - 125

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119411-1

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

Lab Sample ID: 240-119409-A-1 MS
Matrix: Water
Analysis Batch: 403399

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	11.8		ug/L		118	52 - 129
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	76		63 - 125						

Lab Sample ID: 240-119409-A-1 MSD
Matrix: Water
Analysis Batch: 403399

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	12.2		ug/L		122	52 - 129	3	13
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	74		63 - 125								



QC Association Summary

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

Job ID: 240-119411-1

GC/MS VOA

Analysis Batch: 403399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119411-1	MW-14_092319	Total/NA	Water	8260B SIM	
240-119411-2	MW-9_092319	Total/NA	Water	8260B SIM	
240-119411-3	MW-24_092319	Total/NA	Water	8260B SIM	
MB 240-403399/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-403399/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119409-A-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-119409-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 403677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119411-1	MW-14_092319	Total/NA	Water	8260B	
240-119411-2	MW-9_092319	Total/NA	Water	8260B	
MB 240-403677/7	Method Blank	Total/NA	Water	8260B	
LCS 240-403677/4	Lab Control Sample	Total/NA	Water	8260B	
240-119411-2 MS	MW-9_092319	Total/NA	Water	8260B	
240-119411-2 MSD	MW-9_092319	Total/NA	Water	8260B	

Analysis Batch: 403880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119411-3	MW-24_092319	Total/NA	Water	8260B	
240-119411-4	TRIP BLANK (1)	Total/NA	Water	8260B	
MB 240-403880/6	Method Blank	Total/NA	Water	8260B	
LCS 240-403880/4	Lab Control Sample	Total/NA	Water	8260B	
240-119411-3 MS	MW-24_092319	Total/NA	Water	8260B	
240-119411-3 MSD	MW-24_092319	Total/NA	Water	8260B	

Lab Chronicle

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

Job ID: 240-119411-1

Client Sample ID: MW-14_092319

Lab Sample ID: 240-119411-1

Date Collected: 09/23/19 12:30

Matrix: Water

Date Received: 09/25/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403677	10/02/19 22:35	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	403399	10/01/19 18:39	SAM	TAL CAN

Client Sample ID: MW-9_092319

Lab Sample ID: 240-119411-2

Date Collected: 09/23/19 14:20

Matrix: Water

Date Received: 09/25/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403677	10/02/19 22:59	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	403399	10/01/19 19:04	SAM	TAL CAN

Client Sample ID: MW-24_092319

Lab Sample ID: 240-119411-3

Date Collected: 09/23/19 16:28

Matrix: Water

Date Received: 09/25/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403880	10/03/19 16:48	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	403399	10/01/19 19:29	SAM	TAL CAN

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119411-4

Date Collected: 09/23/19 00:00

Matrix: Water

Date Received: 09/25/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403880	10/03/19 17:10	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: 240-119411-1

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

Chain of Custody Record

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 Hinsky**
 Telephone: 248-994-2240
 Email: kristoffer.hinsky@arcadis.com

Site Contact: **Rachel Bielak**
 Telephone: 244-946-6331

Lab Contact: **Mike DeMontico**
 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: M1001454.0004.0001B
 PO # M1001454.0004.0001B

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

Method of Shipment/Carrier:
 Shipping/Tracking No:

Company: Arcadis
 Date/Time: 9/23/19 12:30
 Company: Arcadis
 Date/Time: 9/23/19 14:20
 Company: Arcadis
 Date/Time: 9/23/19 16:28
 Company: Arcadis
 Date/Time: 9/24/19 11:30

Sample Identification

Sample Identification	Sample Date	Sample Time	Matrix						Filtered Sample (Y/N)	Composite (C/Grab)	Analyses	COCs	Sample Specific Notes / Special Instructions
			Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives					
MW-14-092319	9/23/19	12:30	X										
MW-9-092319	9/23/19	14:20	X										
MW-24-092319	9/23/19	16:28	X										
Trip Blank (1)													

1,4-Dioxane 8260B SIM
 VOCs 8260B

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal By Lab Archive For _____ Months

Possible Hazard Identification
 Non-Hazard Flammable Irritant Poison B Unknown

Special Instructions/OC Requirements & Comments:
 Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203728
 Level IV Reporting.

Relinquished by: **Melissa Weaver** Arcadis
 Date/Time: 9/23/19 16:50
 Received by: **Julian McElroy**
 Date/Time: 9/23/19 17:30
 Relinquished by: **Rachel Bielak** Arcadis
 Date/Time: 9/24/19 11:30
 Received in Laboratory by: **Debi Heil**
 Date/Time: 9/24/19 8:00
 Company: **ETA**



Eurofins TestAmerica Canton Sample Receipt Form/Narrative

Login # : 119411

Canton Facility

Client ETA Michigan Site Name _____
Cooler Received on 9/25/19 Opened on 9/25/19
FedEx: 1st Gro Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Cooler unpacked by:
Gil Brown

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

TestAmerica Cooler # ETA 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? Larger than this. Yes No NA
- Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01255010 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:
RL

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: _____

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form							
Cooler Description (Circle)	IR Gun # (Circle)		Observed Temp °C	Corrected Temp °C	Coolant (Circle)		
	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11	2.6	3.3	Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11	1.3	2.0	Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	
TA Client Box Other	IR-10	IR-11			Wet Ice	Blue Ice	Dry Ice
TA Client Box Other	IR-10	IR-11			Water	None	

See Temperature Excursion Form