

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton
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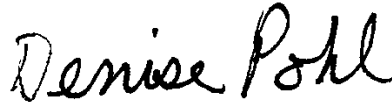
TestAmerica Job ID: 240-91428-1

Client Project/Site: Ford LTP Livonia MI - E203631

For:

ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
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Attn: Kristoffer Hinskey



Authorized for release by:
2/22/2018 4:26:33 PM

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

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Definitions/Glossary

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

TestAmerica Job ID: 240-91428-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

TestAmerica Job ID: 240-91428-1

Job ID: 240-91428-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-91428-1

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.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. 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 TestAmerica and its client.

RECEIPT

The samples were received on 2/13/2018 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-79S_020818 (240-91428-1), MW-79D_020818 (240-91428-2), MW-84_020818 (240-91428-3), MW-86_020818 (240-91428-4), MW-87_020818 (240-91428-5), MW-85_020818 (240-91428-6), MW-83_020818 (240-91428-7), MW-80S_020818 (240-91428-8), MW-78_020818 (240-91428-9), MW-77_020818 (240-91428-10) and TRIP BLANK (240-91428-11) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 02/16/2018.

1,4-Dioxane failed the recovery criteria high for LCS 240-315090/4.

2-Butanone (MEK), Dibromochloromethane and Diethyl ether failed the recovery criteria high for LCS 240-315091/5. Refer to the QC report for details.

Bromomethane failed the recovery criteria high for the MS of sample 240-91441-2 in batch 240-315091.

Method(s) 8260B: The laboratory control sample (LCS) for analytical batch 240-315090 recovered outside control limits for the following

Case Narrative

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

TestAmerica Job ID: 240-91428-1

Job ID: 240-91428-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

analyte: 1,4-Dioxane. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data has been reported: MW-79S_020818 (240-91428-1), MW-79D_020818 (240-91428-2), MW-84_020818 (240-91428-3), MW-86_020818 (240-91428-4), MW-87_020818 (240-91428-5), MW-85_020818 (240-91428-6), MW-83_020818 (240-91428-7), MW-80S_020818 (240-91428-8) and (LCS 240-315090/4).

Method(s) 8260B: The laboratory control sample (LCS) for analytical batch 240-315091 recovered outside control limits for multiple analytes. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported: MW-78_020818 (240-91428-9), MW-77_020818 (240-91428-10), TRIP BLANK (240-91428-11) and (LCS 240-315091/5).

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-79S_020818 (240-91428-1), MW-79D_020818 (240-91428-2), MW-84_020818 (240-91428-3), MW-86_020818 (240-91428-4), MW-87_020818 (240-91428-5), MW-85_020818 (240-91428-6), MW-83_020818 (240-91428-7), MW-80S_020818 (240-91428-8), MW-78_020818 (240-91428-9), MW-77_020818 (240-91428-10) and TRIP BLANK (240-91428-11) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 02/16/2018, 02/17/2018 and 02/19/2018.

Method(s) 8260B SIM: The pH is greater than 2 for the following sample: MW-85_020818 (240-91428-6[MSD]).

No additional 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 - E203631

TestAmerica Job ID: 240-91428-1

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

Protocol References:

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

Laboratory References:

TAL CAN = 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

TestAmerica Job ID: 240-91428-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-91428-1	MW-79S_020818	Water	02/08/18 10:46	02/13/18 14:55
240-91428-2	MW-79D_020818	Water	02/08/18 11:40	02/13/18 14:55
240-91428-3	MW-84_020818	Water	02/08/18 12:55	02/13/18 14:55
240-91428-4	MW-86_020818	Water	02/08/18 13:45	02/13/18 14:55
240-91428-5	MW-87_020818	Water	02/08/18 15:05	02/13/18 14:55
240-91428-6	MW-85_020818	Water	02/08/18 10:27	02/13/18 14:55
240-91428-7	MW-83_020818	Water	02/08/18 12:22	02/13/18 14:55
240-91428-8	MW-80S_020818	Water	02/08/18 13:47	02/13/18 14:55
240-91428-9	MW-78_020818	Water	02/08/18 15:27	02/13/18 14:55
240-91428-10	MW-77_020818	Water	02/08/18 16:17	02/13/18 14:55
240-91428-11	TRIP BLANK	Water	02/08/18 00:00	02/13/18 14:55



Detection Summary

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-79S_020818

Lab Sample ID: 240-91428-1

No Detections.

Client Sample ID: MW-79D_020818

Lab Sample ID: 240-91428-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.9		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-84_020818

Lab Sample ID: 240-91428-3

No Detections.

Client Sample ID: MW-86_020818

Lab Sample ID: 240-91428-4

No Detections.

Client Sample ID: MW-87_020818

Lab Sample ID: 240-91428-5

No Detections.

Client Sample ID: MW-85_020818

Lab Sample ID: 240-91428-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.41	J	2.0	0.24	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	5.5		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-83_020818

Lab Sample ID: 240-91428-7

No Detections.

Client Sample ID: MW-80S_020818

Lab Sample ID: 240-91428-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.33	J	2.0	0.24	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	2.9		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-78_020818

Lab Sample ID: 240-91428-9

No Detections.

Client Sample ID: MW-77_020818

Lab Sample ID: 240-91428-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.66	J	1.0	0.30	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-91428-11

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-79S_020818

Lab Sample ID: 240-91428-1

Date Collected: 02/08/18 10:46

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/16/18 23:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		63 - 125					02/16/18 23:41	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 19:25	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 19:25	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 19:25	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 19:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 19:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		69 - 120					02/16/18 19:25	1
Dibromofluoromethane (Surr)	91		69 - 124					02/16/18 19:25	1
1,2-Dichloroethane-d4 (Surr)	92		61 - 138					02/16/18 19:25	1
Toluene-d8 (Surr)	95		73 - 120					02/16/18 19:25	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-79D_020818

Lab Sample ID: 240-91428-2

Date Collected: 02/08/18 11:40

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/17/18 00:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		63 - 125					02/17/18 00:06	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 19:48	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 19:48	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 19:48	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 19:48	1
Vinyl chloride	1.9		1.0	0.45	ug/L			02/16/18 19:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		69 - 120					02/16/18 19:48	1
Dibromofluoromethane (Surr)	91		69 - 124					02/16/18 19:48	1
1,2-Dichloroethane-d4 (Surr)	98		61 - 138					02/16/18 19:48	1
Toluene-d8 (Surr)	96		73 - 120					02/16/18 19:48	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-84_020818

Lab Sample ID: 240-91428-3

Date Collected: 02/08/18 12:55

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/19/18 12:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		63 - 125					02/19/18 12:30	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 20:10	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 20:10	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 20:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 20:10	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 20:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 20:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		69 - 120					02/16/18 20:10	1
Dibromofluoromethane (Surr)	97		69 - 124					02/16/18 20:10	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/16/18 20:10	1
Toluene-d8 (Surr)	99		73 - 120					02/16/18 20:10	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-86_020818

Lab Sample ID: 240-91428-4

Date Collected: 02/08/18 13:45

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/19/18 12:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125					02/19/18 12:55	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 20:32	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 20:32	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 20:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 20:32	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 20:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 20:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		69 - 120					02/16/18 20:32	1
Dibromofluoromethane (Surr)	102		69 - 124					02/16/18 20:32	1
1,2-Dichloroethane-d4 (Surr)	92		61 - 138					02/16/18 20:32	1
Toluene-d8 (Surr)	97		73 - 120					02/16/18 20:32	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-87_020818

Lab Sample ID: 240-91428-5

Date Collected: 02/08/18 15:05

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/19/18 13:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		63 - 125					02/19/18 13:20	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 20:54	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 20:54	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 20:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 20:54	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 20:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 20:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		69 - 120					02/16/18 20:54	1
Dibromofluoromethane (Surr)	96		69 - 124					02/16/18 20:54	1
1,2-Dichloroethane-d4 (Surr)	97		61 - 138					02/16/18 20:54	1
Toluene-d8 (Surr)	96		73 - 120					02/16/18 20:54	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-85_020818

Lab Sample ID: 240-91428-6

Date Collected: 02/08/18 10:27

Matrix: Water

Date Received: 02/13/18 14:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.41	J	2.0	0.24	ug/L			02/19/18 13:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 125					02/19/18 13:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 21:17	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 21:17	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 21:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 21:17	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 21:17	1
Vinyl chloride	5.5		1.0	0.45	ug/L			02/16/18 21:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		69 - 120					02/16/18 21:17	1
Dibromofluoromethane (Surr)	91		69 - 124					02/16/18 21:17	1
1,2-Dichloroethane-d4 (Surr)	91		61 - 138					02/16/18 21:17	1
Toluene-d8 (Surr)	99		73 - 120					02/16/18 21:17	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-83_020818

Lab Sample ID: 240-91428-7

Date Collected: 02/08/18 12:22

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/19/18 15:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		63 - 125					02/19/18 15:02	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 22:45	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 22:45	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 22:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 22:45	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 22:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 22:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		69 - 120					02/16/18 22:45	1
Dibromofluoromethane (Surr)	96		69 - 124					02/16/18 22:45	1
1,2-Dichloroethane-d4 (Surr)	94		61 - 138					02/16/18 22:45	1
Toluene-d8 (Surr)	97		73 - 120					02/16/18 22:45	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-80S_020818

Lab Sample ID: 240-91428-8

Date Collected: 02/08/18 13:47

Matrix: Water

Date Received: 02/13/18 14:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.33	J	2.0	0.24	ug/L			02/19/18 15:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 125					02/19/18 15:27	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 23:08	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 23:08	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 23:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 23:08	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 23:08	1
Vinyl chloride	2.9		1.0	0.45	ug/L			02/16/18 23:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		69 - 120					02/16/18 23:08	1
Dibromofluoromethane (Surr)	98		69 - 124					02/16/18 23:08	1
1,2-Dichloroethane-d4 (Surr)	98		61 - 138					02/16/18 23:08	1
Toluene-d8 (Surr)	96		73 - 120					02/16/18 23:08	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-78_020818

Lab Sample ID: 240-91428-9

Date Collected: 02/08/18 15:27

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/19/18 15:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		63 - 125					02/19/18 15:52	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 15:23	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 15:23	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 15:23	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 15:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	77		69 - 120					02/16/18 15:23	1
Dibromofluoromethane (Surr)	104		69 - 124					02/16/18 15:23	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/16/18 15:23	1
Toluene-d8 (Surr)	78		73 - 120					02/16/18 15:23	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-77_020818

Lab Sample ID: 240-91428-10

Date Collected: 02/08/18 16:17

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/19/18 16:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		63 - 125					02/19/18 16:17	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.66	J	1.0	0.30	ug/L			02/16/18 15:46	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 15:46	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 15:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 15:46	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 15:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 15:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	70		69 - 120					02/16/18 15:46	1
Dibromofluoromethane (Surr)	104		69 - 124					02/16/18 15:46	1
1,2-Dichloroethane-d4 (Surr)	94		61 - 138					02/16/18 15:46	1
Toluene-d8 (Surr)	77		73 - 120					02/16/18 15:46	1

Client Sample Results

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-91428-11

Date Collected: 02/08/18 00:00

Matrix: Water

Date Received: 02/13/18 14:55

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	0.24	ug/L			02/19/18 12:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		63 - 125					02/19/18 12:04	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 16:09	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 16:09	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 16:09	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 16:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	78		69 - 120					02/16/18 16:09	1
Dibromofluoromethane (Surr)	105		69 - 124					02/16/18 16:09	1
1,2-Dichloroethane-d4 (Surr)	94		61 - 138					02/16/18 16:09	1
Toluene-d8 (Surr)	77		73 - 120					02/16/18 16:09	1

Surrogate Summary

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

TestAmerica Job ID: 240-91428-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		BFB (69-120)	DBFM (69-124)	DCA (61-138)	TOL (73-120)
240-91428-1	MW-79S_020818	88	91	92	95
240-91428-2	MW-79D_020818	86	91	98	96
240-91428-3	MW-84_020818	91	97	93	99
240-91428-4	MW-86_020818	92	102	92	97
240-91428-5	MW-87_020818	86	96	97	96
240-91428-6	MW-85_020818	88	91	91	99
240-91428-6 MS	MW-85_020818	90	91	98	99
240-91428-6 MSD	MW-85_020818	91	94	97	99
240-91428-7	MW-83_020818	90	96	94	97
240-91428-8	MW-80S_020818	86	98	98	96
240-91428-9	MW-78_020818	77	104	93	78
240-91428-10	MW-77_020818	70	104	94	77
240-91428-11	TRIP BLANK	78	105	94	77
240-91441-D-2 MS	Matrix Spike	97	93	86	85
240-91441-E-2 MSD	Matrix Spike Duplicate	91	94	83	84
LCS 240-315090/4	Lab Control Sample	91	95	93	98
LCS 240-315091/5	Lab Control Sample	95	93	86	85
MB 240-315090/6	Method Blank	90	102	97	97
MB 240-315091/7	Method Blank	76	100	89	78

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

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (63-125)
240-91334-F-7 MS	Matrix Spike	110
240-91334-F-7 MSD	Matrix Spike Duplicate	116
240-91428-1	MW-79S_020818	114
240-91428-2	MW-79D_020818	110
240-91428-3	MW-84_020818	93
240-91428-4	MW-86_020818	106
240-91428-5	MW-87_020818	92
240-91428-6	MW-85_020818	103
240-91428-6 MS	MW-85_020818	94
240-91428-6 MSD	MW-85_020818	103
240-91428-7	MW-83_020818	100
240-91428-8	MW-80S_020818	103
240-91428-9	MW-78_020818	105
240-91428-10	MW-77_020818	98
240-91428-11	TRIP BLANK	97
LCS 240-315121/4	Lab Control Sample	104
LCS 240-315270/4	Lab Control Sample	104

TestAmerica Canton

Surrogate Summary

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

TestAmerica Job ID: 240-91428-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (63-125)
MB 240-315121/5	Method Blank	109
MB 240-315270/5	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (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 (10-150)
MRL 240-315121/6	Lab Control Sample	108

Surrogate Legend

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

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: MB 240-315090/6
Matrix: Water
Analysis Batch: 315090

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 14:27	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 14:27	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 14:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 14:27	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 14:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 14:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		69 - 120		02/16/18 14:27	1
Dibromofluoromethane (Surr)	102		69 - 124		02/16/18 14:27	1
1,2-Dichloroethane-d4 (Surr)	97		61 - 138		02/16/18 14:27	1
Toluene-d8 (Surr)	97		73 - 120		02/16/18 14:27	1

Lab Sample ID: LCS 240-315090/4
Matrix: Water
Analysis Batch: 315090

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	25.2		ug/L		126	35 - 131
Benzene	10.0	9.39		ug/L		94	79 - 120
Bromodichloromethane	10.0	10.3		ug/L		103	79 - 125
Bromoform	10.0	9.86		ug/L		99	55 - 145
Bromomethane	10.0	8.12		ug/L		81	17 - 158
2-Butanone (MEK)	20.0	23.8		ug/L		119	43 - 149
Carbon disulfide	10.0	9.62		ug/L		96	49 - 141
Carbon tetrachloride	10.0	10.8		ug/L		108	55 - 171
Chlorobenzene	10.0	10.8		ug/L		108	80 - 120
Chloroethane	10.0	5.46		ug/L		55	10 - 149
Chloroform	10.0	10.1		ug/L		101	80 - 120
Chloromethane	10.0	7.66		ug/L		77	59 - 124
cis-1,2-Dichloroethene	10.0	9.56		ug/L		96	77 - 120
cis-1,3-Dichloropropene	10.0	10.4		ug/L		104	75 - 120
Cyclohexane	10.0	8.50		ug/L		85	66 - 135
Dibromochloromethane	10.0	10.8		ug/L		108	64 - 129
1,2-Dibromo-3-Chloropropane	10.0	7.82		ug/L		78	50 - 130
1,2-Dibromoethane	10.0	10.8		ug/L		108	80 - 120
1,2-Dichlorobenzene	10.0	9.44		ug/L		94	80 - 120
1,3-Dichlorobenzene	10.0	9.39		ug/L		94	80 - 120
1,4-Dichlorobenzene	10.0	9.62		ug/L		96	80 - 120
Dichlorodifluoromethane	10.0	8.49		ug/L		85	42 - 141
1,1-Dichloroethane	10.0	9.57		ug/L		96	74 - 120
1,2-Dichloroethane	10.0	11.3		ug/L		113	68 - 133
1,1-Dichloroethene	10.0	10.4		ug/L		104	65 - 127
1,2-Dichloropropane	10.0	9.78		ug/L		98	78 - 127
Diethyl ether	10.0	10.5		ug/L		105	72 - 125
Ethylbenzene	10.0	10.4		ug/L		104	80 - 120
2-Hexanone	20.0	22.3		ug/L		111	28 - 169
Isopropylbenzene	10.0	9.98		ug/L		100	80 - 128

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: LCS 240-315090/4
Matrix: Water
Analysis Batch: 315090

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	16.6		ug/L		83	63 - 137
Methylcyclohexane	10.0	8.77		ug/L		88	63 - 141
Methylene Chloride	10.0	9.53		ug/L		95	64 - 140
4-Methyl-2-pentanone (MIBK)	20.0	20.3		ug/L		101	53 - 144
Methyl tert-butyl ether	10.0	9.53		ug/L		95	73 - 120
Styrene	10.0	10.2		ug/L		102	80 - 121
1,1,2,2-Tetrachloroethane	10.0	9.44		ug/L		94	58 - 122
Tetrachloroethene	10.0	10.3		ug/L		103	80 - 122
Toluene	10.0	10.2		ug/L		102	78 - 120
trans-1,2-Dichloroethene	10.0	9.99		ug/L		100	74 - 124
trans-1,3-Dichloropropene	10.0	9.65		ug/L		97	67 - 120
1,2,4-Trichlorobenzene	10.0	7.72		ug/L		77	34 - 141
1,1,1-Trichloroethane	10.0	10.4		ug/L		104	64 - 147
1,1,2-Trichloroethane	10.0	10.5		ug/L		105	76 - 121
Trichloroethene	10.0	10.2		ug/L		102	76 - 124
Trichlorofluoromethane	10.0	9.94		ug/L		99	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	11.5		ug/L		115	65 - 144
1,2,4-Trimethylbenzene	10.0	9.38		ug/L		94	80 - 120
1,3,5-Trimethylbenzene	10.0	9.34		ug/L		93	79 - 120
Vinyl chloride	10.0	8.36		ug/L		84	65 - 124
Xylenes, Total	20.0	20.4		ug/L		102	80 - 120
1,4-Dioxane	200	283	*	ug/L		141	35 - 134

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	91		69 - 120
Dibromofluoromethane (Surr)	95		69 - 124
1,2-Dichloroethane-d4 (Surr)	93		61 - 138
Toluene-d8 (Surr)	98		73 - 120

Lab Sample ID: 240-91428-6 MS
Matrix: Water
Analysis Batch: 315090

Client Sample ID: MW-85_020818
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	10	U	20.0	11.6		ug/L		58	19 - 133
Benzene	1.0	U	10.0	8.64		ug/L		86	69 - 127
Bromodichloromethane	1.0	U	10.0	8.81		ug/L		88	75 - 128
Bromoform	1.0	U	10.0	7.85		ug/L		78	61 - 135
Bromomethane	1.0	U	10.0	5.88		ug/L		59	10 - 148
2-Butanone (MEK)	10	U	20.0	17.6		ug/L		88	34 - 153
Carbon disulfide	5.0	U	10.0	8.66		ug/L		87	46 - 143
Carbon tetrachloride	1.0	U	10.0	10.3		ug/L		103	53 - 175
Chlorobenzene	1.0	U	10.0	9.67		ug/L		97	76 - 120
Chloroethane	1.0	U	10.0	4.00		ug/L		40	10 - 141
Chloroform	1.0	U	10.0	9.39		ug/L		94	74 - 125
Chloromethane	1.0	U	10.0	7.41		ug/L		74	34 - 127
cis-1,2-Dichloroethene	1.0	U	10.0	8.54		ug/L		85	69 - 127

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: 240-91428-6 MS

Matrix: Water

Analysis Batch: 315090

Client Sample ID: MW-85_020818

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	1.0	U	10.0	8.48		ug/L		85	68 - 120
Cyclohexane	1.0	U	10.0	8.21		ug/L		82	56 - 135
Dibromochloromethane	1.0	U	10.0	9.09		ug/L		91	62 - 131
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	7.22		ug/L		72	48 - 130
1,2-Dibromoethane	1.0	U	10.0	9.81		ug/L		98	73 - 121
1,2-Dichlorobenzene	1.0	U	10.0	8.34		ug/L		83	70 - 120
1,3-Dichlorobenzene	1.0	U	10.0	8.34		ug/L		83	71 - 120
1,4-Dichlorobenzene	1.0	U	10.0	8.49		ug/L		85	72 - 120
Dichlorodifluoromethane	1.0	U	10.0	9.11		ug/L		91	45 - 130
1,1-Dichloroethane	1.0	U	10.0	8.89		ug/L		89	69 - 122
1,2-Dichloroethane	1.0	U	10.0	10.1		ug/L		101	64 - 138
1,1-Dichloroethene	1.0	U	10.0	9.98		ug/L		100	62 - 127
1,2-Dichloropropane	1.0	U	10.0	9.08		ug/L		91	72 - 131
Diethyl ether	2.0	U	10.0	9.14		ug/L		91	65 - 124
Ethylbenzene	1.0	U	10.0	9.21		ug/L		92	72 - 121
2-Hexanone	10	U	20.0	18.9		ug/L		95	21 - 184
Isopropylbenzene	1.0	U	10.0	8.82		ug/L		88	70 - 132
Methyl acetate	10	U	20.0	13.2		ug/L		66	52 - 139
Methylcyclohexane	1.0	U	10.0	8.48		ug/L		85	46 - 139
Methylene Chloride	5.0	U	10.0	8.01		ug/L		80	52 - 137
4-Methyl-2-pentanone (MIBK)	10	U	20.0	17.2		ug/L		86	53 - 147
Methyl tert-butyl ether	1.0	U	10.0	8.41		ug/L		84	67 - 125
Styrene	1.0	U	10.0	8.65		ug/L		86	74 - 125
1,1,2,2-Tetrachloroethane	1.0	U	10.0	8.97		ug/L		90	51 - 123
Tetrachloroethene	1.0	U	10.0	9.46		ug/L		95	69 - 126
Toluene	1.0	U	10.0	9.33		ug/L		93	69 - 125
trans-1,2-Dichloroethene	1.0	U	10.0	9.52		ug/L		95	66 - 131
trans-1,3-Dichloropropene	1.0	U	10.0	8.48		ug/L		85	59 - 120
1,2,4-Trichlorobenzene	1.0	U	10.0	7.06		ug/L		71	26 - 138
1,1,1-Trichloroethane	1.0	U	10.0	9.98		ug/L		100	57 - 156
1,1,2-Trichloroethane	1.0	U	10.0	9.46		ug/L		95	68 - 127
Trichloroethene	1.0	U	10.0	9.43		ug/L		94	68 - 129
Trichlorofluoromethane	1.0	U	10.0	9.05		ug/L		91	28 - 172
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	11.4		ug/L		114	58 - 137
1,2,4-Trimethylbenzene	1.0	U	10.0	8.40		ug/L		84	64 - 120
1,3,5-Trimethylbenzene	1.0	U	10.0	8.49		ug/L		85	67 - 120
Vinyl chloride	5.5		10.0	12.7		ug/L		72	55 - 123
Xylenes, Total	2.0	U	20.0	17.9		ug/L		89	71 - 122
1,4-Dioxane	50	U *	200	117		ug/L		58	13 - 155

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		69 - 120
Dibromofluoromethane (Surr)	91		69 - 124
1,2-Dichloroethane-d4 (Surr)	98		61 - 138
Toluene-d8 (Surr)	99		73 - 120

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: 240-91428-6 MSD

Matrix: Water

Analysis Batch: 315090

Client Sample ID: MW-85_020818

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	10	U	20.0	12.8		ug/L		64	19 - 133	10	35
Benzene	1.0	U	10.0	8.35		ug/L		83	69 - 127	3	10
Bromodichloromethane	1.0	U	10.0	9.00		ug/L		90	75 - 128	2	13
Bromoform	1.0	U	10.0	8.21		ug/L		82	61 - 135	5	13
Bromomethane	1.0	U	10.0	6.71		ug/L		67	10 - 148	13	35
2-Butanone (MEK)	10	U	20.0	16.9		ug/L		85	34 - 153	4	23
Carbon disulfide	5.0	U	10.0	8.92		ug/L		89	46 - 143	3	18
Carbon tetrachloride	1.0	U	10.0	9.72		ug/L		97	53 - 175	6	17
Chlorobenzene	1.0	U	10.0	9.60		ug/L		96	76 - 120	1	12
Chloroethane	1.0	U	10.0	4.16		ug/L		42	10 - 141	4	35
Chloroform	1.0	U	10.0	9.33		ug/L		93	74 - 125	1	11
Chloromethane	1.0	U	10.0	6.93		ug/L		69	34 - 127	7	25
cis-1,2-Dichloroethene	1.0	U	10.0	8.85		ug/L		88	69 - 127	4	11
cis-1,3-Dichloropropene	1.0	U	10.0	8.01		ug/L		80	68 - 120	6	13
Cyclohexane	1.0	U	10.0	7.23		ug/L		72	56 - 135	13	35
Dibromochloromethane	1.0	U	10.0	9.38		ug/L		94	62 - 131	3	15
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	7.84		ug/L		78	48 - 130	8	31
1,2-Dibromoethane	1.0	U	10.0	9.67		ug/L		97	73 - 121	1	12
1,2-Dichlorobenzene	1.0	U	10.0	8.87		ug/L		89	70 - 120	6	19
1,3-Dichlorobenzene	1.0	U	10.0	8.69		ug/L		87	71 - 120	4	18
1,4-Dichlorobenzene	1.0	U	10.0	8.61		ug/L		86	72 - 120	1	17
Dichlorodifluoromethane	1.0	U	10.0	8.03		ug/L		80	45 - 130	13	34
1,1-Dichloroethane	1.0	U	10.0	8.99		ug/L		90	69 - 122	1	11
1,2-Dichloroethane	1.0	U	10.0	10.4		ug/L		104	64 - 138	3	11
1,1-Dichloroethene	1.0	U	10.0	9.38		ug/L		94	62 - 127	6	14
1,2-Dichloropropane	1.0	U	10.0	8.38		ug/L		84	72 - 131	8	12
Diethyl ether	2.0	U	10.0	9.78		ug/L		98	65 - 124	7	11
Ethylbenzene	1.0	U	10.0	9.36		ug/L		94	72 - 121	2	15
2-Hexanone	10	U	20.0	19.3		ug/L		97	21 - 184	2	12
Isopropylbenzene	1.0	U	10.0	8.98		ug/L		90	70 - 132	2	16
Methyl acetate	10	U	20.0	14.1		ug/L		71	52 - 139	7	14
Methylcyclohexane	1.0	U	10.0	7.10		ug/L		71	46 - 139	18	35
Methylene Chloride	5.0	U	10.0	8.29		ug/L		83	52 - 137	3	12
4-Methyl-2-pentanone (MIBK)	10	U	20.0	17.6		ug/L		88	53 - 147	3	16
Methyl tert-butyl ether	1.0	U	10.0	8.76		ug/L		88	67 - 125	4	12
Styrene	1.0	U	10.0	8.89		ug/L		89	74 - 125	3	14
1,1,2,2-Tetrachloroethane	1.0	U	10.0	9.17		ug/L		92	51 - 123	2	17
Tetrachloroethene	1.0	U	10.0	8.93		ug/L		89	69 - 126	6	18
Toluene	1.0	U	10.0	9.35		ug/L		93	69 - 125	0	14
trans-1,2-Dichloroethene	1.0	U	10.0	9.22		ug/L		92	66 - 131	3	11
trans-1,3-Dichloropropene	1.0	U	10.0	7.77		ug/L		78	59 - 120	9	14
1,2,4-Trichlorobenzene	1.0	U	10.0	7.88		ug/L		79	26 - 138	11	35
1,1,1-Trichloroethane	1.0	U	10.0	9.66		ug/L		97	57 - 156	3	13
1,1,2-Trichloroethane	1.0	U	10.0	9.33		ug/L		93	68 - 127	1	11
Trichloroethene	1.0	U	10.0	8.44		ug/L		84	68 - 129	11	12
Trichlorofluoromethane	1.0	U	10.0	10.4		ug/L		104	28 - 172	14	26
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	10.3		ug/L		103	58 - 137	10	35

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: 240-91428-6 MSD
Matrix: Water
Analysis Batch: 315090

Client Sample ID: MW-85_020818
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	8.58		ug/L		86	64 - 120	2	22
1,3,5-Trimethylbenzene	1.0	U	10.0	8.49		ug/L		85	67 - 120	0	25
Vinyl chloride	5.5		10.0	13.0		ug/L		75	55 - 123	2	12
Xylenes, Total	2.0	U	20.0	18.2		ug/L		91	71 - 122	2	14
1,4-Dioxane	50	U *	200	124		ug/L		62	13 - 155	6	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	91		69 - 120
Dibromofluoromethane (Surr)	94		69 - 124
1,2-Dichloroethane-d4 (Surr)	97		61 - 138
Toluene-d8 (Surr)	99		73 - 120

Lab Sample ID: MB 240-315091/7
Matrix: Water
Analysis Batch: 315091

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 14:57	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/16/18 14:57	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/16/18 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/16/18 14:57	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/16/18 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/16/18 14:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	76		69 - 120		02/16/18 14:57	1
Dibromofluoromethane (Surr)	100		69 - 124		02/16/18 14:57	1
1,2-Dichloroethane-d4 (Surr)	89		61 - 138		02/16/18 14:57	1
Toluene-d8 (Surr)	78		73 - 120		02/16/18 14:57	1

Lab Sample ID: LCS 240-315091/5
Matrix: Water
Analysis Batch: 315091

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	24.7		ug/L		123	35 - 131
Benzene	10.0	10.8		ug/L		108	79 - 120
Bromodichloromethane	10.0	11.5		ug/L		115	79 - 125
Bromoform	10.0	13.3		ug/L		133	55 - 145
Bromomethane	10.0	12.5		ug/L		125	17 - 158
2-Butanone (MEK)	20.0	32.7	*	ug/L		164	43 - 149
Carbon disulfide	10.0	10.2		ug/L		102	49 - 141
Carbon tetrachloride	10.0	13.3		ug/L		133	55 - 171
Chlorobenzene	10.0	11.1		ug/L		111	80 - 120
Chloroethane	10.0	8.98		ug/L		90	10 - 149
Chloroform	10.0	11.4		ug/L		114	80 - 120
Chloromethane	10.0	8.50		ug/L		85	59 - 124
cis-1,2-Dichloroethene	10.0	11.1		ug/L		111	77 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: LCS 240-315091/5

Matrix: Water

Analysis Batch: 315091

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	10.0	9.68		ug/L		97	75 - 120
Cyclohexane	10.0	13.2		ug/L		132	66 - 135
Dibromochloromethane	10.0	13.3	*	ug/L		133	64 - 129
1,2-Dibromo-3-Chloropropane	10.0	9.43		ug/L		94	50 - 130
1,2-Dibromoethane	10.0	11.9		ug/L		119	80 - 120
1,2-Dichlorobenzene	10.0	9.62		ug/L		96	80 - 120
1,3-Dichlorobenzene	10.0	9.82		ug/L		98	80 - 120
1,4-Dichlorobenzene	10.0	9.61		ug/L		96	80 - 120
Dichlorodifluoromethane	10.0	12.5		ug/L		125	42 - 141
1,1-Dichloroethane	10.0	11.1		ug/L		111	74 - 120
1,2-Dichloroethane	10.0	11.6		ug/L		116	68 - 133
1,1-Dichloroethene	10.0	10.9		ug/L		109	65 - 127
1,2-Dichloropropane	10.0	11.2		ug/L		112	78 - 127
Diethyl ether	10.0	14.2	*	ug/L		142	72 - 125
Ethylbenzene	10.0	10.6		ug/L		106	80 - 120
2-Hexanone	20.0	28.7		ug/L		143	28 - 169
Isopropylbenzene	10.0	10.5		ug/L		105	80 - 128
Methyl acetate	20.0	27.4		ug/L		137	63 - 137
Methylcyclohexane	10.0	10.8		ug/L		108	63 - 141
Methylene Chloride	10.0	11.0		ug/L		110	64 - 140
4-Methyl-2-pentanone (MIBK)	20.0	23.8		ug/L		119	53 - 144
Methyl tert-butyl ether	10.0	7.93		ug/L		79	73 - 120
Styrene	10.0	11.1		ug/L		111	80 - 121
1,1,2,2-Tetrachloroethane	10.0	10.8		ug/L		108	58 - 122
Tetrachloroethene	10.0	12.1		ug/L		121	80 - 122
Toluene	10.0	10.6		ug/L		106	78 - 120
trans-1,2-Dichloroethene	10.0	11.9		ug/L		119	74 - 124
trans-1,3-Dichloropropene	10.0	9.26		ug/L		93	67 - 120
1,2,4-Trichlorobenzene	10.0	6.66		ug/L		67	34 - 141
1,1,1-Trichloroethane	10.0	11.8		ug/L		118	64 - 147
1,1,2-Trichloroethane	10.0	11.4		ug/L		114	76 - 121
Trichloroethene	10.0	11.0		ug/L		110	76 - 124
Trichlorofluoromethane	10.0	15.8		ug/L		158	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	14.1		ug/L		141	65 - 144
1,2,4-Trimethylbenzene	10.0	9.64		ug/L		96	80 - 120
1,3,5-Trimethylbenzene	10.0	9.93		ug/L		99	79 - 120
Vinyl chloride	10.0	8.61		ug/L		86	65 - 124
Xylenes, Total	20.0	21.5		ug/L		108	80 - 120
1,4-Dioxane	200	166		ug/L		83	35 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		69 - 120
Dibromofluoromethane (Surr)	93		69 - 124
1,2-Dichloroethane-d4 (Surr)	86		61 - 138
Toluene-d8 (Surr)	85		73 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: 240-91441-D-2 MS

Matrix: Water

Analysis Batch: 315091

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier				
Acetone	10	U	20.0	21.1		ug/L		106	19 - 133
Benzene	1.0	U	10.0	9.91		ug/L		99	69 - 127
Bromodichloromethane	1.0	U	10.0	10.8		ug/L		108	75 - 128
Bromoform	1.0	U	10.0	11.9		ug/L		119	61 - 135
Bromomethane	1.0	U F1	10.0	15.2	F1	ug/L		152	10 - 148
2-Butanone (MEK)	10	U *	20.0	26.7		ug/L		133	34 - 153
Carbon disulfide	5.0	U	10.0	10.3		ug/L		103	46 - 143
Carbon tetrachloride	1.0	U	10.0	13.0		ug/L		130	53 - 175
Chlorobenzene	1.0	U	10.0	10.1		ug/L		101	76 - 120
Chloroethane	1.0	U	10.0	12.5		ug/L		125	10 - 141
Chloroform	1.0	U	10.0	10.5		ug/L		105	74 - 125
Chloromethane	1.0	U	10.0	8.72		ug/L		87	34 - 127
cis-1,2-Dichloroethene	0.41	J	10.0	10.7		ug/L		103	69 - 127
cis-1,3-Dichloropropene	1.0	U	10.0	8.11		ug/L		81	68 - 120
Cyclohexane	1.0	U	10.0	12.4		ug/L		124	56 - 135
Dibromochloromethane	1.0	U *	10.0	12.2		ug/L		122	62 - 131
1,2-Dichlorobenzene	1.0	U	10.0	8.96		ug/L		90	70 - 120
1,3-Dichlorobenzene	1.0	U	10.0	8.87		ug/L		89	71 - 120
1,4-Dichlorobenzene	1.0	U	10.0	8.90		ug/L		89	72 - 120
Dichlorodifluoromethane	1.0	U	10.0	12.8		ug/L		128	45 - 130
1,1-Dichloroethane	1.0	U	10.0	10.2		ug/L		102	69 - 122
1,2-Dichloroethane	1.0	U	10.0	10.5		ug/L		105	64 - 138
1,1-Dichloroethene	1.0	U	10.0	10.9		ug/L		109	62 - 127
1,2-Dichloropropane	1.0	U	10.0	10.2		ug/L		102	72 - 131
Ethylbenzene	1.0	U	10.0	9.74		ug/L		97	72 - 121
2-Hexanone	10	U	20.0	23.0		ug/L		115	21 - 184
Isopropylbenzene	1.0	U	10.0	9.50		ug/L		95	70 - 132
Methyl acetate	10	U	20.0	22.0		ug/L		110	52 - 139
Methylcyclohexane	1.0	U	10.0	9.84		ug/L		98	46 - 139
Methylene Chloride	5.0	U	10.0	10.2		ug/L		102	52 - 137
4-Methyl-2-pentanone (MIBK)	10	U	20.0	19.1		ug/L		96	53 - 147
Methyl tert-butyl ether	1.0	U	10.0	6.86		ug/L		69	67 - 125
Styrene	1.0	U	10.0	10.2		ug/L		102	74 - 125
1,1,2,2-Tetrachloroethane	1.0	U	10.0	9.03		ug/L		90	51 - 123
Tetrachloroethene	1.0	U	10.0	11.1		ug/L		111	69 - 126
Toluene	1.0	U	10.0	9.92		ug/L		99	69 - 125
trans-1,2-Dichloroethene	1.0	U	10.0	11.0		ug/L		110	66 - 131
trans-1,3-Dichloropropene	1.0	U	10.0	8.21		ug/L		82	59 - 120
1,2,4-Trichlorobenzene	1.0	U	10.0	5.78		ug/L		58	26 - 138
1,1,1-Trichloroethane	1.0	U	10.0	10.7		ug/L		107	57 - 156
1,1,2-Trichloroethane	1.0	U	10.0	10.8		ug/L		108	68 - 127
Trichloroethene	1.0	U	10.0	10.1		ug/L		101	68 - 129
Trichlorofluoromethane	1.0	U	10.0	17.2		ug/L		172	28 - 172
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	13.7		ug/L		137	58 - 137
Vinyl chloride	0.81	J	10.0	10.0		ug/L		92	55 - 123
Xylenes, Total	2.0	U	20.0	19.4		ug/L		97	71 - 122

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: 240-91441-D-2 MS
Matrix: Water
Analysis Batch: 315091

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

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		69 - 120
Dibromofluoromethane (Surr)	93		69 - 124
1,2-Dichloroethane-d4 (Surr)	86		61 - 138
Toluene-d8 (Surr)	85		73 - 120

Lab Sample ID: 240-91441-E-2 MSD
Matrix: Water
Analysis Batch: 315091

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
Acetone	10	U	20.0	21.8		ug/L		109	19 - 133	3	35
Benzene	1.0	U	10.0	9.27		ug/L		93	69 - 127	7	10
Bromodichloromethane	1.0	U	10.0	9.89		ug/L		99	75 - 128	9	13
Bromoform	1.0	U	10.0	11.3		ug/L		113	61 - 135	5	13
Bromomethane	1.0	U F1	10.0	13.0		ug/L		130	10 - 148	15	35
2-Butanone (MEK)	10	U *	20.0	27.2		ug/L		136	34 - 153	2	23
Carbon disulfide	5.0	U	10.0	8.98		ug/L		90	46 - 143	14	18
Carbon tetrachloride	1.0	U	10.0	11.5		ug/L		115	53 - 175	12	17
Chlorobenzene	1.0	U	10.0	9.41		ug/L		94	76 - 120	7	12
Chloroethane	1.0	U	10.0	9.50		ug/L		95	10 - 141	27	35
Chloroform	1.0	U	10.0	9.97		ug/L		100	74 - 125	5	11
Chloromethane	1.0	U	10.0	8.08		ug/L		81	34 - 127	8	25
cis-1,2-Dichloroethene	0.41	J	10.0	10.0		ug/L		96	69 - 127	7	11
cis-1,3-Dichloropropene	1.0	U	10.0	7.54		ug/L		75	68 - 120	7	13
Cyclohexane	1.0	U	10.0	11.1		ug/L		111	56 - 135	11	35
Dibromochloromethane	1.0	U *	10.0	11.8		ug/L		118	62 - 131	3	15
1,2-Dichlorobenzene	1.0	U	10.0	8.26		ug/L		83	70 - 120	8	19
1,3-Dichlorobenzene	1.0	U	10.0	8.35		ug/L		83	71 - 120	6	18
1,4-Dichlorobenzene	1.0	U	10.0	8.34		ug/L		83	72 - 120	7	17
Dichlorodifluoromethane	1.0	U	10.0	11.8		ug/L		118	45 - 130	9	34
1,1-Dichloroethane	1.0	U	10.0	9.63		ug/L		96	69 - 122	6	11
1,2-Dichloroethane	1.0	U	10.0	10.2		ug/L		102	64 - 138	3	11
1,1-Dichloroethene	1.0	U	10.0	9.79		ug/L		98	62 - 127	11	14
1,2-Dichloropropane	1.0	U	10.0	9.47		ug/L		95	72 - 131	8	12
Ethylbenzene	1.0	U	10.0	9.16		ug/L		92	72 - 121	6	15
2-Hexanone	10	U	20.0	25.1		ug/L		126	21 - 184	9	12
Isopropylbenzene	1.0	U	10.0	8.68		ug/L		87	70 - 132	9	16
Methyl acetate	10	U	20.0	23.0		ug/L		115	52 - 139	4	14
Methylcyclohexane	1.0	U	10.0	9.11		ug/L		91	46 - 139	8	35
Methylene Chloride	5.0	U	10.0	9.36		ug/L		94	52 - 137	9	12
4-Methyl-2-pentanone (MIBK)	10	U	20.0	21.0		ug/L		105	53 - 147	9	16
Methyl tert-butyl ether	1.0	U	10.0	6.76		ug/L		68	67 - 125	2	12
Styrene	1.0	U	10.0	9.58		ug/L		96	74 - 125	6	14
1,1,2,2-Tetrachloroethane	1.0	U	10.0	9.26		ug/L		93	51 - 123	2	17
Tetrachloroethene	1.0	U	10.0	10.1		ug/L		101	69 - 126	10	18
Toluene	1.0	U	10.0	9.28		ug/L		93	69 - 125	7	14
trans-1,2-Dichloroethene	1.0	U	10.0	10.3		ug/L		103	66 - 131	7	11
trans-1,3-Dichloropropene	1.0	U	10.0	7.87		ug/L		79	59 - 120	4	14

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: 240-91441-E-2 MSD

Matrix: Water

Analysis Batch: 315091

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-Trichlorobenzene	1.0	U	10.0	5.80		ug/L		58	26 - 138	0	35
1,1,1-Trichloroethane	1.0	U	10.0	9.96		ug/L		100	57 - 156	7	13
1,1,2-Trichloroethane	1.0	U	10.0	10.3		ug/L		103	68 - 127	5	11
Trichloroethene	1.0	U	10.0	9.89		ug/L		99	68 - 129	2	12
Trichlorofluoromethane	1.0	U	10.0	15.1		ug/L		151	28 - 172	13	26
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	11.9		ug/L		119	58 - 137	14	35
Vinyl chloride	0.81	J	10.0	9.25		ug/L		84	55 - 123	8	12
Xylenes, Total	2.0	U	20.0	17.9		ug/L		89	71 - 122	8	14

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	91		69 - 120
Dibromofluoromethane (Surr)	94		69 - 124
1,2-Dichloroethane-d4 (Surr)	83		61 - 138
Toluene-d8 (Surr)	84		73 - 120

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

Lab Sample ID: MB 240-315121/5

Matrix: Water

Analysis Batch: 315121

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	0.24	ug/L			02/16/18 14:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		63 - 125		02/16/18 14:27	1

Lab Sample ID: LCS 240-315121/4

Matrix: Water

Analysis Batch: 315121

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	8.85		ug/L		88	59 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		63 - 125

Lab Sample ID: MRL 240-315121/6

Matrix: Water

Analysis Batch: 315121

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	0.00100	0.000714	J	ng/uL		71	10 - 150

Surrogate	MRL %Recovery	MRL Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		10 - 150

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

Lab Sample ID: 240-91334-F-7 MS
Matrix: Water
Analysis Batch: 315121

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	13		10.0	19.3		ug/L		67	52 - 129
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	110		63 - 125						

Lab Sample ID: 240-91334-F-7 MSD
Matrix: Water
Analysis Batch: 315121

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	13		10.0	19.9		ug/L		73	52 - 129	3	13
Surrogate	%Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	116		63 - 125								

Lab Sample ID: MB 240-315270/5
Matrix: Water
Analysis Batch: 315270

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	0.24	ug/L			02/19/18 11:14	1
Surrogate	%Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac			
1,2-Dichloroethane-d4 (Surr)	92		63 - 125		02/19/18 11:14	1			

Lab Sample ID: LCS 240-315270/4
Matrix: Water
Analysis Batch: 315270

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	8.86		ug/L		89	59 - 131
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	104		63 - 125				

Lab Sample ID: 240-91428-6 MS
Matrix: Water
Analysis Batch: 315270

Client Sample ID: MW-85_020818
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	0.41	J	10.0	10.5		ug/L		101	52 - 129
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	94		63 - 125						

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91428-1

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

Lab Sample ID: 240-91428-6 MSD
Matrix: Water
Analysis Batch: 315270

Client Sample ID: MW-85_020818
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	0.41	J	10.0	9.34		ug/L		89	52 - 129	12	13
Surrogate	%Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	103		63 - 125								

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QC Association Summary

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

TestAmerica Job ID: 240-91428-1

GC/MS VOA

Analysis Batch: 315090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91428-1	MW-79S_020818	Total/NA	Water	8260B	
240-91428-2	MW-79D_020818	Total/NA	Water	8260B	
240-91428-3	MW-84_020818	Total/NA	Water	8260B	
240-91428-4	MW-86_020818	Total/NA	Water	8260B	
240-91428-5	MW-87_020818	Total/NA	Water	8260B	
240-91428-6	MW-85_020818	Total/NA	Water	8260B	
240-91428-7	MW-83_020818	Total/NA	Water	8260B	
240-91428-8	MW-80S_020818	Total/NA	Water	8260B	
MB 240-315090/6	Method Blank	Total/NA	Water	8260B	
LCS 240-315090/4	Lab Control Sample	Total/NA	Water	8260B	
240-91428-6 MS	MW-85_020818	Total/NA	Water	8260B	
240-91428-6 MSD	MW-85_020818	Total/NA	Water	8260B	

Analysis Batch: 315091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91428-9	MW-78_020818	Total/NA	Water	8260B	
240-91428-10	MW-77_020818	Total/NA	Water	8260B	
240-91428-11	TRIP BLANK	Total/NA	Water	8260B	
MB 240-315091/7	Method Blank	Total/NA	Water	8260B	
LCS 240-315091/5	Lab Control Sample	Total/NA	Water	8260B	
240-91441-D-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-91441-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 315121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91428-1	MW-79S_020818	Total/NA	Water	8260B SIM	
240-91428-2	MW-79D_020818	Total/NA	Water	8260B SIM	
MB 240-315121/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-315121/4	Lab Control Sample	Total/NA	Water	8260B SIM	
MRL 240-315121/6	Lab Control Sample	Total/NA	Water	8260B SIM	
240-91334-F-7 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-91334-F-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 315270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91428-3	MW-84_020818	Total/NA	Water	8260B SIM	
240-91428-4	MW-86_020818	Total/NA	Water	8260B SIM	
240-91428-5	MW-87_020818	Total/NA	Water	8260B SIM	
240-91428-6	MW-85_020818	Total/NA	Water	8260B SIM	
240-91428-7	MW-83_020818	Total/NA	Water	8260B SIM	
240-91428-8	MW-80S_020818	Total/NA	Water	8260B SIM	
240-91428-9	MW-78_020818	Total/NA	Water	8260B SIM	
240-91428-10	MW-77_020818	Total/NA	Water	8260B SIM	
240-91428-11	TRIP BLANK	Total/NA	Water	8260B SIM	
MB 240-315270/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-315270/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-91428-6 MS	MW-85_020818	Total/NA	Water	8260B SIM	
240-91428-6 MSD	MW-85_020818	Total/NA	Water	8260B SIM	

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-79S_020818

Lab Sample ID: 240-91428-1

Date Collected: 02/08/18 10:46

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 19:25	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315121	02/16/18 23:41	TJL2	TAL CAN

Client Sample ID: MW-79D_020818

Lab Sample ID: 240-91428-2

Date Collected: 02/08/18 11:40

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 19:48	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315121	02/17/18 00:06	TJL2	TAL CAN

Client Sample ID: MW-84_020818

Lab Sample ID: 240-91428-3

Date Collected: 02/08/18 12:55

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 20:10	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 12:30	SAM	TAL CAN

Client Sample ID: MW-86_020818

Lab Sample ID: 240-91428-4

Date Collected: 02/08/18 13:45

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 20:32	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 12:55	SAM	TAL CAN

Client Sample ID: MW-87_020818

Lab Sample ID: 240-91428-5

Date Collected: 02/08/18 15:05

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 20:54	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 13:20	SAM	TAL CAN

Client Sample ID: MW-85_020818

Lab Sample ID: 240-91428-6

Date Collected: 02/08/18 10:27

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 21:17	LRW	TAL CAN

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-91428-1

Client Sample ID: MW-85_020818

Lab Sample ID: 240-91428-6

Date Collected: 02/08/18 10:27

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 13:46	SAM	TAL CAN

Client Sample ID: MW-83_020818

Lab Sample ID: 240-91428-7

Date Collected: 02/08/18 12:22

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 22:45	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 15:02	SAM	TAL CAN

Client Sample ID: MW-80S_020818

Lab Sample ID: 240-91428-8

Date Collected: 02/08/18 13:47

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315090	02/16/18 23:08	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 15:27	SAM	TAL CAN

Client Sample ID: MW-78_020818

Lab Sample ID: 240-91428-9

Date Collected: 02/08/18 15:27

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315091	02/16/18 15:23	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 15:52	SAM	TAL CAN

Client Sample ID: MW-77_020818

Lab Sample ID: 240-91428-10

Date Collected: 02/08/18 16:17

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315091	02/16/18 15:46	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 16:17	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-91428-11

Date Collected: 02/08/18 00:00

Matrix: Water

Date Received: 02/13/18 14:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	315091	02/16/18 16:09	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315270	02/19/18 12:04	SAM	TAL CAN

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-91428-1

Laboratory References:

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

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Accreditation/Certification Summary

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

TestAmerica Job ID: 240-91428-1

Laboratory: 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	02-23-18 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18 *
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18 *
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

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

TestAmerica Canton Sample Receipt Form/Narrative

Login #: 01426

Canton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 2-13-18 Opened on 2-13-18

BOP

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

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

TestAmerica Cooler # 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 See Multiple Cooler Form

IR GUN# IR-8 (CF -0.3 °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.1 °C

IR GUN #36 (CF +0.3 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

IR GUN # 627 (CF -1.3 °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

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC730269

13. Were VOAs on the COC? Yes No

14. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA

15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 8729240143 Yes No

16. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM Date by via Verbal Voice Mail Other

Concerning

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

17. 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)

18. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):