

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton
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North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-99857-1

Client Project/Site: Ford LTP Livonia MI - E203728

For:

ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey



Authorized for release by:
8/28/2018 9:59:56 AM

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

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Definitions/Glossary

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

TestAmerica Job ID: 240-99857-1

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.
F2	MS/MSD RPD exceeds control 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 - E203728

TestAmerica Job ID: 240-99857-1

Job ID: 240-99857-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-99857-1

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 8/14/2018 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.4° C, 1.8° C and 3.6° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-33_080918 (240-99857-1), MW-20_080918 (240-99857-2), MW-10_080918 (240-99857-3), MW-19_081018 (240-99857-4), MW-34_081018 (240-99857-5) and MW-2_081018 (240-99857-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 08/21/2018, 08/22/2018 and 08/23/2018.

Samples MW-10_080918 (240-99857-3)[142.86X] and MW-2_081018 (240-99857-6)[142.86X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-33_080918 (240-99857-1), MW-20_080918 (240-99857-2), MW-10_080918 (240-99857-3), MW-19_081018 (240-99857-4), MW-34_081018 (240-99857-5) and MW-2_081018 (240-99857-6) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 08/20/2018.

1,4-Dioxane exceeded the RPD limit for the MSD of sample MW-10_080918MSD (240-99857-3) in batch 240-341631. Refer to the QC

Case Narrative

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

TestAmerica Job ID: 240-99857-1

Job ID: 240-99857-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

report for details.

No additional 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

TestAmerica Job ID: 240-99857-1

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 = 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

TestAmerica Job ID: 240-99857-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-99857-1	MW-33_080918	Water	08/09/18 14:30	08/14/18 09:10
240-99857-2	MW-20_080918	Water	08/09/18 16:25	08/14/18 09:10
240-99857-3	MW-10_080918	Water	08/09/18 17:40	08/14/18 09:10
240-99857-4	MW-19_081018	Water	08/10/18 09:30	08/14/18 09:10
240-99857-5	MW-34_081018	Water	08/10/18 11:16	08/14/18 09:10
240-99857-6	MW-2_081018	Water	08/10/18 13:15	08/14/18 09:10

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Detection Summary

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-33_080918

Lab Sample ID: 240-99857-1

No Detections.

Client Sample ID: MW-20_080918

Lab Sample ID: 240-99857-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	6.9	J	10	5.4	ug/L	1		8260B	Total/NA
4-Methyl-2-pentanone (MIBK)	0.63	J	10	0.42	ug/L	1		8260B	Total/NA

Client Sample ID: MW-10_080918

Lab Sample ID: 240-99857-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.8	F2	2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	2300		140	29	ug/L	142.86		8260B	Total/NA

Client Sample ID: MW-19_081018

Lab Sample ID: 240-99857-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	130		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Acetone	5.6	J	10	5.4	ug/L	1		8260B	Total/NA
2-Butanone (MEK)	1.3	J	10	1.2	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	1.0		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	4.7		1.0	0.17	ug/L	1		8260B	Total/NA
1,2-Dichloroethane	0.48	J	1.0	0.21	ug/L	1		8260B	Total/NA
2-Hexanone	1.1	J	10	0.54	ug/L	1		8260B	Total/NA
4-Methyl-2-pentanone (MIBK)	0.87	J	10	0.42	ug/L	1		8260B	Total/NA
1,2,4-Trichlorobenzene	0.26	J	1.0	0.26	ug/L	1		8260B	Total/NA
Trichloroethene	1.0		1.0	0.10	ug/L	1		8260B	Total/NA
1,4-Dioxane	130		50	13	ug/L	1		8260B	Total/NA

Client Sample ID: MW-34_081018

Lab Sample ID: 240-99857-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	7.6		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	0.33	J	1.0	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	1.1		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-2_081018

Lab Sample ID: 240-99857-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.1		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	2300		140	23	ug/L	142.86		8260B	Total/NA
trans-1,2-Dichloroethene	510		140	27	ug/L	142.86		8260B	Total/NA
Vinyl chloride	170		140	29	ug/L	142.86		8260B	Total/NA

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 - E203728

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-33_080918

Lab Sample ID: 240-99857-1

Date Collected: 08/09/18 14:30

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/18 19:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 125					08/20/18 19:44	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			08/21/18 23:15	1
Benzene	1.0	U	1.0	0.13	ug/L			08/21/18 23:15	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/21/18 23:15	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/21/18 23:15	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/21/18 23:15	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/21/18 23:15	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/21/18 23:15	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/21/18 23:15	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/21/18 23:15	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/21/18 23:15	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/21/18 23:15	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/21/18 23:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			08/21/18 23:15	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/21/18 23:15	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/21/18 23:15	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/21/18 23:15	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/21/18 23:15	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/21/18 23:15	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/21/18 23:15	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/21/18 23:15	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/21/18 23:15	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/21/18 23:15	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/21/18 23:15	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/21/18 23:15	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/21/18 23:15	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/21/18 23:15	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/21/18 23:15	1
2-Hexanone	10	U	10	0.54	ug/L			08/21/18 23:15	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/21/18 23:15	1
Methyl acetate	10	U	10	1.7	ug/L			08/21/18 23:15	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/21/18 23:15	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/21/18 23:15	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/21/18 23:15	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/21/18 23:15	1
Styrene	1.0	U	1.0	0.10	ug/L			08/21/18 23:15	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/21/18 23:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/21/18 23:15	1
Toluene	1.0	U	1.0	0.14	ug/L			08/21/18 23:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/21/18 23:15	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/21/18 23:15	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/21/18 23:15	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/21/18 23:15	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/21/18 23:15	1

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-33_080918

Lab Sample ID: 240-99857-1

Date Collected: 08/09/18 14:30

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/21/18 23:15	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/21/18 23:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/21/18 23:15	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/21/18 23:15	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/21/18 23:15	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/21/18 23:15	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/21/18 23:15	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/21/18 23:15	1
1,4-Dioxane	50	U	50	13	ug/L			08/21/18 23:15	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/21/18 23:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		69 - 120		08/21/18 23:15	1
Dibromofluoromethane (Surr)	109		69 - 124		08/21/18 23:15	1
1,2-Dichloroethane-d4 (Surr)	110		61 - 138		08/21/18 23:15	1
Toluene-d8 (Surr)	101		73 - 120		08/21/18 23:15	1

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-20_080918

Lab Sample ID: 240-99857-2

Date Collected: 08/09/18 16:25

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/18 20:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125					08/20/18 20:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	6.9	J	10	5.4	ug/L			08/21/18 23:38	1
Benzene	1.0	U	1.0	0.13	ug/L			08/21/18 23:38	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/21/18 23:38	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/21/18 23:38	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/21/18 23:38	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/21/18 23:38	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/21/18 23:38	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/21/18 23:38	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/21/18 23:38	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/21/18 23:38	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/21/18 23:38	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/21/18 23:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			08/21/18 23:38	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/21/18 23:38	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/21/18 23:38	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/21/18 23:38	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/21/18 23:38	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/21/18 23:38	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/21/18 23:38	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/21/18 23:38	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/21/18 23:38	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/21/18 23:38	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/21/18 23:38	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/21/18 23:38	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/21/18 23:38	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/21/18 23:38	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/21/18 23:38	1
2-Hexanone	10	U	10	0.54	ug/L			08/21/18 23:38	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/21/18 23:38	1
Methyl acetate	10	U	10	1.7	ug/L			08/21/18 23:38	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/21/18 23:38	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/21/18 23:38	1
4-Methyl-2-pentanone (MIBK)	0.63	J	10	0.42	ug/L			08/21/18 23:38	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/21/18 23:38	1
Styrene	1.0	U	1.0	0.10	ug/L			08/21/18 23:38	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/21/18 23:38	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/21/18 23:38	1
Toluene	1.0	U	1.0	0.14	ug/L			08/21/18 23:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/21/18 23:38	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/21/18 23:38	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/21/18 23:38	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/21/18 23:38	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/21/18 23:38	1

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-20_080918

Lab Sample ID: 240-99857-2

Date Collected: 08/09/18 16:25

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/21/18 23:38	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/21/18 23:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/21/18 23:38	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/21/18 23:38	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/21/18 23:38	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/21/18 23:38	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/21/18 23:38	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/21/18 23:38	1
1,4-Dioxane	50	U	50	13	ug/L			08/21/18 23:38	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/21/18 23:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		69 - 120		08/21/18 23:38	1
Dibromofluoromethane (Surr)	113		69 - 124		08/21/18 23:38	1
1,2-Dichloroethane-d4 (Surr)	104		61 - 138		08/21/18 23:38	1
Toluene-d8 (Surr)	100		73 - 120		08/21/18 23:38	1

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-10_080918

Lab Sample ID: 240-99857-3

Date Collected: 08/09/18 17:40

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.8	F2	2.0	0.86	ug/L			08/20/18 20:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 125					08/20/18 20:33	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	1400	U	1400	770	ug/L			08/22/18 00:00	142.86
Benzene	140	U	140	19	ug/L			08/22/18 00:00	142.86
Bromodichloromethane	140	U	140	24	ug/L			08/22/18 00:00	142.86
Bromoform	140	U	140	110	ug/L			08/22/18 00:00	142.86
Bromomethane	140	U	140	60	ug/L			08/22/18 00:00	142.86
2-Butanone (MEK)	1400	U	1400	170	ug/L			08/22/18 00:00	142.86
Carbon disulfide	710	U	710	40	ug/L			08/22/18 00:00	142.86
Carbon tetrachloride	140	U	140	37	ug/L			08/22/18 00:00	142.86
Chlorobenzene	140	U	140	20	ug/L			08/22/18 00:00	142.86
Chloroethane	140	U	140	120	ug/L			08/22/18 00:00	142.86
Chloroform	140	U	140	19	ug/L			08/22/18 00:00	142.86
Chloromethane	140	U	140	29	ug/L			08/22/18 00:00	142.86
cis-1,2-Dichloroethene	140	U	140	23	ug/L			08/22/18 00:00	142.86
cis-1,3-Dichloropropene	140	U	140	87	ug/L			08/22/18 00:00	142.86
Cyclohexane	140	U	140	34	ug/L			08/22/18 00:00	142.86
Dibromochloromethane	140	U	140	56	ug/L			08/22/18 00:00	142.86
1,2-Dibromo-3-Chloropropane	140	U	140	130	ug/L			08/22/18 00:00	142.86
1,2-Dibromoethane	140	U	140	17	ug/L			08/22/18 00:00	142.86
1,2-Dichlorobenzene	140	U	140	21	ug/L			08/22/18 00:00	142.86
1,3-Dichlorobenzene	140	U	140	21	ug/L			08/22/18 00:00	142.86
1,4-Dichlorobenzene	140	U	140	23	ug/L			08/22/18 00:00	142.86
Dichlorodifluoromethane	140	U	140	50	ug/L			08/22/18 00:00	142.86
1,1-Dichloroethane	140	U	140	24	ug/L			08/22/18 00:00	142.86
1,2-Dichloroethane	140	U	140	30	ug/L			08/22/18 00:00	142.86
1,1-Dichloroethene	140	U	140	27	ug/L			08/22/18 00:00	142.86
1,2-Dichloropropane	140	U	140	21	ug/L			08/22/18 00:00	142.86
Ethylbenzene	140	U	140	16	ug/L			08/22/18 00:00	142.86
2-Hexanone	1400	U	1400	77	ug/L			08/22/18 00:00	142.86
Isopropylbenzene	140	U	140	13	ug/L			08/22/18 00:00	142.86
Methyl acetate	1400	U	1400	250	ug/L			08/22/18 00:00	142.86
Methylcyclohexane	140	U	140	47	ug/L			08/22/18 00:00	142.86
Methylene Chloride	710	U	710	370	ug/L			08/22/18 00:00	142.86
4-Methyl-2-pentanone (MIBK)	1400	U	1400	60	ug/L			08/22/18 00:00	142.86
Methyl tert-butyl ether	140	U	140	10	ug/L			08/22/18 00:00	142.86
Styrene	140	U	140	14	ug/L			08/22/18 00:00	142.86
1,1,2,2-Tetrachloroethane	140	U	140	19	ug/L			08/22/18 00:00	142.86
Tetrachloroethene	140	U	140	21	ug/L			08/22/18 00:00	142.86
Toluene	140	U	140	20	ug/L			08/22/18 00:00	142.86
trans-1,2-Dichloroethene	140	U	140	27	ug/L			08/22/18 00:00	142.86
trans-1,3-Dichloropropene	140	U	140	96	ug/L			08/22/18 00:00	142.86
1,2,4-Trichlorobenzene	140	U	140	37	ug/L			08/22/18 00:00	142.86
1,1,1-Trichloroethane	140	U	140	34	ug/L			08/22/18 00:00	142.86
1,1,2-Trichloroethane	140	U	140	13	ug/L			08/22/18 00:00	142.86

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-10_080918

Lab Sample ID: 240-99857-3

Date Collected: 08/09/18 17:40

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	140	U	140	14	ug/L			08/22/18 00:00	142.86
Trichlorofluoromethane	140	U	140	64	ug/L			08/22/18 00:00	142.86
1,1,2-Trichloro-1,2,2-trifluoroethane	140	U	140	59	ug/L			08/22/18 00:00	142.86
1,2,3-Trimethylbenzene	710	U	710	20	ug/L			08/22/18 00:00	142.86
1,2,4-Trimethylbenzene	140	U	140	10	ug/L			08/22/18 00:00	142.86
1,3,5-Trimethylbenzene	140	U	140	17	ug/L			08/22/18 00:00	142.86
Vinyl chloride	2300		140	29	ug/L			08/22/18 00:00	142.86
Xylenes, Total	290	U	290	21	ug/L			08/22/18 00:00	142.86
1,4-Dioxane	7100	U	7100	1800	ug/L			08/22/18 00:00	142.86
Diethyl ether	290	U	290	27	ug/L			08/22/18 00:00	142.86

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		69 - 120		08/22/18 00:00	142.86
Dibromofluoromethane (Surr)	105		69 - 124		08/22/18 00:00	142.86
1,2-Dichloroethane-d4 (Surr)	101		61 - 138		08/22/18 00:00	142.86
Toluene-d8 (Surr)	96		73 - 120		08/22/18 00:00	142.86

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-19_081018

Lab Sample ID: 240-99857-4

Date Collected: 08/10/18 09:30

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	130		2.0	0.86	ug/L			08/20/18 21:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 125					08/20/18 21:47	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	5.6	J	10	5.4	ug/L			08/23/18 17:47	1
Benzene	1.0	U	1.0	0.13	ug/L			08/23/18 17:47	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/23/18 17:47	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/23/18 17:47	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/23/18 17:47	1
2-Butanone (MEK)	1.3	J	10	1.2	ug/L			08/23/18 17:47	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/23/18 17:47	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/23/18 17:47	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/23/18 17:47	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/23/18 17:47	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/23/18 17:47	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/23/18 17:47	1
cis-1,2-Dichloroethene	1.0		1.0	0.16	ug/L			08/23/18 17:47	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/23/18 17:47	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/23/18 17:47	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/23/18 17:47	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/23/18 17:47	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/23/18 17:47	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/23/18 17:47	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/23/18 17:47	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/23/18 17:47	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/23/18 17:47	1
1,1-Dichloroethane	4.7		1.0	0.17	ug/L			08/23/18 17:47	1
1,2-Dichloroethane	0.48	J	1.0	0.21	ug/L			08/23/18 17:47	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/23/18 17:47	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/23/18 17:47	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/23/18 17:47	1
2-Hexanone	1.1	J	10	0.54	ug/L			08/23/18 17:47	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/23/18 17:47	1
Methyl acetate	10	U	10	1.7	ug/L			08/23/18 17:47	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/23/18 17:47	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/23/18 17:47	1
4-Methyl-2-pentanone (MIBK)	0.87	J	10	0.42	ug/L			08/23/18 17:47	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/23/18 17:47	1
Styrene	1.0	U	1.0	0.10	ug/L			08/23/18 17:47	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/23/18 17:47	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/23/18 17:47	1
Toluene	1.0	U	1.0	0.14	ug/L			08/23/18 17:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/23/18 17:47	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/23/18 17:47	1
1,2,4-Trichlorobenzene	0.26	J	1.0	0.26	ug/L			08/23/18 17:47	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/23/18 17:47	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/23/18 17:47	1

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-19_081018

Lab Sample ID: 240-99857-4

Date Collected: 08/10/18 09:30

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	1.0		1.0	0.10	ug/L			08/23/18 17:47	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/23/18 17:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/23/18 17:47	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/23/18 17:47	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/23/18 17:47	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/23/18 17:47	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/23/18 17:47	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/23/18 17:47	1
1,4-Dioxane	130		50	13	ug/L			08/23/18 17:47	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/23/18 17:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		69 - 120					08/23/18 17:47	1
Dibromofluoromethane (Surr)	111		69 - 124					08/23/18 17:47	1
1,2-Dichloroethane-d4 (Surr)	105		61 - 138					08/23/18 17:47	1
Toluene-d8 (Surr)	99		73 - 120					08/23/18 17:47	1

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-34_081018

Lab Sample ID: 240-99857-5

Date Collected: 08/10/18 11:16

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.6		2.0	0.86	ug/L			08/20/18 22:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 125					08/20/18 22:12	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			08/23/18 18:10	1
Benzene	1.0	U	1.0	0.13	ug/L			08/23/18 18:10	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/23/18 18:10	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/23/18 18:10	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/23/18 18:10	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/23/18 18:10	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/23/18 18:10	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/23/18 18:10	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/23/18 18:10	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/23/18 18:10	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/23/18 18:10	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/23/18 18:10	1
cis-1,2-Dichloroethene	0.33	J	1.0	0.16	ug/L			08/23/18 18:10	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/23/18 18:10	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/23/18 18:10	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/23/18 18:10	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/23/18 18:10	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/23/18 18:10	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/23/18 18:10	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/23/18 18:10	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/23/18 18:10	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/23/18 18:10	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/23/18 18:10	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/23/18 18:10	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/23/18 18:10	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/23/18 18:10	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/23/18 18:10	1
2-Hexanone	10	U	10	0.54	ug/L			08/23/18 18:10	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/23/18 18:10	1
Methyl acetate	10	U	10	1.7	ug/L			08/23/18 18:10	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/23/18 18:10	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/23/18 18:10	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/23/18 18:10	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/23/18 18:10	1
Styrene	1.0	U	1.0	0.10	ug/L			08/23/18 18:10	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/23/18 18:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/23/18 18:10	1
Toluene	1.0	U	1.0	0.14	ug/L			08/23/18 18:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/23/18 18:10	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/23/18 18:10	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/23/18 18:10	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/23/18 18:10	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/23/18 18:10	1

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-34_081018

Lab Sample ID: 240-99857-5

Date Collected: 08/10/18 11:16

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/23/18 18:10	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/23/18 18:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/23/18 18:10	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/23/18 18:10	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/23/18 18:10	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/23/18 18:10	1
Vinyl chloride	1.1		1.0	0.20	ug/L			08/23/18 18:10	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/23/18 18:10	1
1,4-Dioxane	50	U	50	13	ug/L			08/23/18 18:10	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/23/18 18:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		69 - 120		08/23/18 18:10	1
Dibromofluoromethane (Surr)	109		69 - 124		08/23/18 18:10	1
1,2-Dichloroethane-d4 (Surr)	100		61 - 138		08/23/18 18:10	1
Toluene-d8 (Surr)	100		73 - 120		08/23/18 18:10	1

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-2_081018

Lab Sample ID: 240-99857-6

Date Collected: 08/10/18 13:15

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.1		2.0	0.86	ug/L			08/20/18 22:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125					08/20/18 22:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	1400	U	1400	770	ug/L			08/23/18 18:32	142.86
Benzene	140	U	140	19	ug/L			08/23/18 18:32	142.86
Bromodichloromethane	140	U	140	24	ug/L			08/23/18 18:32	142.86
Bromoform	140	U	140	110	ug/L			08/23/18 18:32	142.86
Bromomethane	140	U	140	60	ug/L			08/23/18 18:32	142.86
2-Butanone (MEK)	1400	U	1400	170	ug/L			08/23/18 18:32	142.86
Carbon disulfide	710	U	710	40	ug/L			08/23/18 18:32	142.86
Carbon tetrachloride	140	U	140	37	ug/L			08/23/18 18:32	142.86
Chlorobenzene	140	U	140	20	ug/L			08/23/18 18:32	142.86
Chloroethane	140	U	140	120	ug/L			08/23/18 18:32	142.86
Chloroform	140	U	140	19	ug/L			08/23/18 18:32	142.86
Chloromethane	140	U	140	29	ug/L			08/23/18 18:32	142.86
cis-1,2-Dichloroethene	2300		140	23	ug/L			08/23/18 18:32	142.86
cis-1,3-Dichloropropene	140	U	140	87	ug/L			08/23/18 18:32	142.86
Cyclohexane	140	U	140	34	ug/L			08/23/18 18:32	142.86
Dibromochloromethane	140	U	140	56	ug/L			08/23/18 18:32	142.86
1,2-Dibromo-3-Chloropropane	140	U	140	130	ug/L			08/23/18 18:32	142.86
1,2-Dibromoethane	140	U	140	17	ug/L			08/23/18 18:32	142.86
1,2-Dichlorobenzene	140	U	140	21	ug/L			08/23/18 18:32	142.86
1,3-Dichlorobenzene	140	U	140	21	ug/L			08/23/18 18:32	142.86
1,4-Dichlorobenzene	140	U	140	23	ug/L			08/23/18 18:32	142.86
Dichlorodifluoromethane	140	U	140	50	ug/L			08/23/18 18:32	142.86
1,1-Dichloroethane	140	U	140	24	ug/L			08/23/18 18:32	142.86
1,2-Dichloroethane	140	U	140	30	ug/L			08/23/18 18:32	142.86
1,1-Dichloroethene	140	U	140	27	ug/L			08/23/18 18:32	142.86
1,2-Dichloropropane	140	U	140	21	ug/L			08/23/18 18:32	142.86
Ethylbenzene	140	U	140	16	ug/L			08/23/18 18:32	142.86
2-Hexanone	1400	U	1400	77	ug/L			08/23/18 18:32	142.86
Isopropylbenzene	140	U	140	13	ug/L			08/23/18 18:32	142.86
Methyl acetate	1400	U	1400	250	ug/L			08/23/18 18:32	142.86
Methylcyclohexane	140	U	140	47	ug/L			08/23/18 18:32	142.86
Methylene Chloride	710	U	710	370	ug/L			08/23/18 18:32	142.86
4-Methyl-2-pentanone (MIBK)	1400	U	1400	60	ug/L			08/23/18 18:32	142.86
Methyl tert-butyl ether	140	U	140	10	ug/L			08/23/18 18:32	142.86
Styrene	140	U	140	14	ug/L			08/23/18 18:32	142.86
1,1,2,2-Tetrachloroethane	140	U	140	19	ug/L			08/23/18 18:32	142.86
Tetrachloroethene	140	U	140	21	ug/L			08/23/18 18:32	142.86
Toluene	140	U	140	20	ug/L			08/23/18 18:32	142.86
trans-1,2-Dichloroethene	510		140	27	ug/L			08/23/18 18:32	142.86
trans-1,3-Dichloropropene	140	U	140	96	ug/L			08/23/18 18:32	142.86
1,2,4-Trichlorobenzene	140	U	140	37	ug/L			08/23/18 18:32	142.86
1,1,1-Trichloroethane	140	U	140	34	ug/L			08/23/18 18:32	142.86
1,1,2-Trichloroethane	140	U	140	13	ug/L			08/23/18 18:32	142.86

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-2_081018

Lab Sample ID: 240-99857-6

Date Collected: 08/10/18 13:15

Matrix: Water

Date Received: 08/14/18 09:10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	140	U	140	14	ug/L			08/23/18 18:32	142.86
Trichlorofluoromethane	140	U	140	64	ug/L			08/23/18 18:32	142.86
1,1,2-Trichloro-1,2,2-trifluoroethane	140	U	140	59	ug/L			08/23/18 18:32	142.86
1,2,3-Trimethylbenzene	710	U	710	20	ug/L			08/23/18 18:32	142.86
1,2,4-Trimethylbenzene	140	U	140	10	ug/L			08/23/18 18:32	142.86
1,3,5-Trimethylbenzene	140	U	140	17	ug/L			08/23/18 18:32	142.86
Vinyl chloride	170		140	29	ug/L			08/23/18 18:32	142.86
Xylenes, Total	290	U	290	21	ug/L			08/23/18 18:32	142.86
1,4-Dioxane	7100	U	7100	1800	ug/L			08/23/18 18:32	142.86
Diethyl ether	290	U	290	27	ug/L			08/23/18 18:32	142.86

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		69 - 120		08/23/18 18:32	142.86
Dibromofluoromethane (Surr)	108		69 - 124		08/23/18 18:32	142.86
1,2-Dichloroethane-d4 (Surr)	102		61 - 138		08/23/18 18:32	142.86
Toluene-d8 (Surr)	96		73 - 120		08/23/18 18:32	142.86

Surrogate Summary

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

TestAmerica Job ID: 240-99857-1

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 (69-120)	DBFM (69-124)	DCA (61-138)	TOL (73-120)
240-99857-1	MW-33_080918	94	109	110	101
240-99857-2	MW-20_080918	90	113	104	100
240-99857-3	MW-10_080918	89	105	101	96
240-99857-3 MS	MW-10_080918	100	105	101	104
240-99857-3 MSD	MW-10_080918	103	102	100	107
240-99857-4	MW-19_081018	91	111	105	99
240-99857-5	MW-34_081018	93	109	100	100
240-99857-6	MW-2_081018	92	108	102	96
240-99865-J-5 MS	Matrix Spike	101	99	92	99
240-99865-K-5 MSD	Matrix Spike Duplicate	97	98	93	101
LCS 240-341894/4	Lab Control Sample	99	104	98	104
LCS 240-342225/4	Lab Control Sample	101	99	97	102
MB 240-341894/6	Method Blank	92	106	102	99
MB 240-342225/6	Method Blank	92	110	105	100

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)
240-99857-1	MW-33_080918	104
240-99857-2	MW-20_080918	106
240-99857-3	MW-10_080918	102
240-99857-3 MS	MW-10_080918	101
240-99857-3 MSD	MW-10_080918	103
240-99857-4	MW-19_081018	104
240-99857-5	MW-34_081018	104
240-99857-6	MW-2_081018	106
LCS 240-341631/4	Lab Control Sample	95
MB 240-341631/5	Method Blank	98

Surrogate Legend

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

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: MB 240-341894/6

Matrix: Water

Analysis Batch: 341894

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			08/21/18 21:25	1
Benzene	1.0	U	1.0	0.13	ug/L			08/21/18 21:25	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/21/18 21:25	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/21/18 21:25	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/21/18 21:25	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/21/18 21:25	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/21/18 21:25	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/21/18 21:25	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/21/18 21:25	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/21/18 21:25	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/21/18 21:25	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/21/18 21:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			08/21/18 21:25	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/21/18 21:25	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/21/18 21:25	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/21/18 21:25	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/21/18 21:25	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/21/18 21:25	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/21/18 21:25	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/21/18 21:25	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/21/18 21:25	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/21/18 21:25	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/21/18 21:25	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/21/18 21:25	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/21/18 21:25	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/21/18 21:25	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/21/18 21:25	1
2-Hexanone	10	U	10	0.54	ug/L			08/21/18 21:25	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/21/18 21:25	1
Methyl acetate	10	U	10	1.7	ug/L			08/21/18 21:25	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/21/18 21:25	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/21/18 21:25	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/21/18 21:25	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/21/18 21:25	1
Styrene	1.0	U	1.0	0.10	ug/L			08/21/18 21:25	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/21/18 21:25	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/21/18 21:25	1
Toluene	1.0	U	1.0	0.14	ug/L			08/21/18 21:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/21/18 21:25	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/21/18 21:25	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/21/18 21:25	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/21/18 21:25	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/21/18 21:25	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/21/18 21:25	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/21/18 21:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/21/18 21:25	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/21/18 21:25	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/21/18 21:25	1

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: MB 240-341894/6
Matrix: Water
Analysis Batch: 341894

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/21/18 21:25	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/21/18 21:25	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/21/18 21:25	1
1,4-Dioxane	50	U	50	13	ug/L			08/21/18 21:25	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/21/18 21:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		69 - 120		08/21/18 21:25	1
Dibromofluoromethane (Surr)	106		69 - 124		08/21/18 21:25	1
1,2-Dichloroethane-d4 (Surr)	102		61 - 138		08/21/18 21:25	1
Toluene-d8 (Surr)	99		73 - 120		08/21/18 21:25	1

Lab Sample ID: LCS 240-341894/4
Matrix: Water
Analysis Batch: 341894

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	15.7		ug/L		78	35 - 131
Benzene	10.0	9.51		ug/L		95	79 - 120
Bromodichloromethane	10.0	9.45		ug/L		94	79 - 125
Bromoform	10.0	9.47		ug/L		95	55 - 145
Bromomethane	10.0	8.17		ug/L		82	17 - 158
2-Butanone (MEK)	20.0	15.7		ug/L		79	43 - 149
Carbon disulfide	10.0	8.79		ug/L		88	49 - 141
Carbon tetrachloride	10.0	9.00		ug/L		90	55 - 171
Chlorobenzene	10.0	9.31		ug/L		93	80 - 120
Chloroethane	10.0	8.33		ug/L		83	10 - 149
Chloroform	10.0	9.44		ug/L		94	80 - 120
Chloromethane	10.0	8.12		ug/L		81	59 - 124
cis-1,2-Dichloroethene	10.0	9.19		ug/L		92	77 - 120
cis-1,3-Dichloropropene	10.0	9.01		ug/L		90	75 - 120
Cyclohexane	10.0	8.59		ug/L		86	66 - 135
Dibromochloromethane	10.0	10.1		ug/L		101	64 - 129
1,2-Dibromo-3-Chloropropane	10.0	8.82		ug/L		88	50 - 130
1,2-Dibromoethane	10.0	9.30		ug/L		93	80 - 120
1,2-Dichlorobenzene	10.0	9.16		ug/L		92	80 - 120
1,3-Dichlorobenzene	10.0	8.96		ug/L		90	80 - 120
1,4-Dichlorobenzene	10.0	9.18		ug/L		92	80 - 120
Dichlorodifluoromethane	10.0	7.99		ug/L		80	42 - 141
1,1-Dichloroethane	10.0	9.84		ug/L		98	74 - 120
1,2-Dichloroethane	10.0	9.35		ug/L		94	68 - 133
1,1-Dichloroethene	10.0	8.89		ug/L		89	65 - 127
1,2-Dichloropropane	10.0	9.69		ug/L		97	78 - 127
Ethylbenzene	10.0	8.81		ug/L		88	80 - 120
2-Hexanone	20.0	16.4		ug/L		82	28 - 169
Isopropylbenzene	10.0	8.55		ug/L		86	80 - 128
Methyl acetate	20.0	18.1		ug/L		91	63 - 137
Methylcyclohexane	10.0	8.04		ug/L		80	63 - 141

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: LCS 240-341894/4
Matrix: Water
Analysis Batch: 341894

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	10.0	9.99		ug/L		100	64 - 140
4-Methyl-2-pentanone (MIBK)	20.0	15.7		ug/L		79	53 - 144
Methyl tert-butyl ether	10.0	9.36		ug/L		94	73 - 120
Styrene	10.0	8.89		ug/L		89	80 - 121
1,1,2,2-Tetrachloroethane	10.0	10.4		ug/L		104	58 - 122
Tetrachloroethene	10.0	9.30		ug/L		93	80 - 122
Toluene	10.0	9.66		ug/L		97	78 - 120
trans-1,2-Dichloroethene	10.0	9.50		ug/L		95	74 - 124
trans-1,3-Dichloropropene	10.0	8.83		ug/L		88	67 - 120
1,2,4-Trichlorobenzene	10.0	7.41		ug/L		74	34 - 141
1,1,1-Trichloroethane	10.0	9.22		ug/L		92	64 - 147
1,1,2-Trichloroethane	10.0	10.2		ug/L		102	76 - 121
Trichloroethene	10.0	9.11		ug/L		91	76 - 124
Trichlorofluoromethane	10.0	7.95		ug/L		80	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.42		ug/L		84	65 - 144
1,2,4-Trimethylbenzene	10.0	8.67		ug/L		87	80 - 120
1,3,5-Trimethylbenzene	10.0	8.92		ug/L		89	79 - 120
Vinyl chloride	10.0	8.70		ug/L		87	65 - 124
Xylenes, Total	20.0	17.5		ug/L		88	80 - 120
1,4-Dioxane	200	178		ug/L		89	35 - 134
Diethyl ether	10.0	9.76		ug/L		98	72 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		69 - 120
Dibromofluoromethane (Surr)	104		69 - 124
1,2-Dichloroethane-d4 (Surr)	98		61 - 138
Toluene-d8 (Surr)	104		73 - 120

Lab Sample ID: 240-99857-3 MS
Matrix: Water
Analysis Batch: 341894

Client Sample ID: MW-10_080918
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	1400	U	2860	2270		ug/L		79	19 - 133
Benzene	140	U	1430	1300		ug/L		91	69 - 127
Bromodichloromethane	140	U	1430	1360		ug/L		95	75 - 128
Bromoform	140	U	1430	1340		ug/L		94	61 - 135
Bromomethane	140	U	1430	1240		ug/L		87	10 - 148
2-Butanone (MEK)	1400	U	2860	2300		ug/L		81	34 - 153
Carbon disulfide	710	U	1430	1180		ug/L		82	46 - 143
Carbon tetrachloride	140	U	1430	1110		ug/L		78	53 - 175
Chlorobenzene	140	U	1430	1250		ug/L		88	76 - 120
Chloroethane	140	U	1430	1200		ug/L		84	10 - 141
Chloroform	140	U	1430	1320		ug/L		93	74 - 125
Chloromethane	140	U	1430	1230		ug/L		86	34 - 127
cis-1,2-Dichloroethene	140	U	1430	1280		ug/L		90	69 - 127
cis-1,3-Dichloropropene	140	U	1430	1310		ug/L		92	68 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: 240-99857-3 MS

Matrix: Water

Analysis Batch: 341894

Client Sample ID: MW-10_080918

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Cyclohexane	140	U	1430	906		ug/L		63	56 - 135
Dibromochloromethane	140	U	1430	1420		ug/L		99	62 - 131
1,2-Dibromo-3-Chloropropane	140	U	1430	1050		ug/L		74	48 - 130
1,2-Dibromoethane	140	U	1430	1360		ug/L		95	73 - 121
1,2-Dichlorobenzene	140	U	1430	1210		ug/L		85	70 - 120
1,3-Dichlorobenzene	140	U	1430	1210		ug/L		84	71 - 120
1,4-Dichlorobenzene	140	U	1430	1250		ug/L		87	72 - 120
Dichlorodifluoromethane	140	U	1430	1140		ug/L		80	45 - 130
1,1-Dichloroethane	140	U	1430	1370		ug/L		96	69 - 122
1,2-Dichloroethane	140	U	1430	1330		ug/L		93	64 - 138
1,1-Dichloroethene	140	U	1430	1160		ug/L		81	62 - 127
1,2-Dichloropropane	140	U	1430	1370		ug/L		96	72 - 131
Ethylbenzene	140	U	1430	1100		ug/L		77	72 - 121
2-Hexanone	1400	U	2860	2300		ug/L		81	21 - 184
Isopropylbenzene	140	U	1430	1020		ug/L		72	70 - 132
Methyl acetate	1400	U	2860	2600		ug/L		91	52 - 139
Methylcyclohexane	140	U	1430	788		ug/L		55	46 - 139
Methylene Chloride	710	U	1430	1380		ug/L		96	52 - 137
4-Methyl-2-pentanone (MIBK)	1400	U	2860	2320		ug/L		81	53 - 147
Methyl tert-butyl ether	140	U	1430	1310		ug/L		91	67 - 125
Styrene	140	U	1430	1190		ug/L		83	74 - 125
1,1,2,2-Tetrachloroethane	140	U	1430	1400		ug/L		98	51 - 123
Tetrachloroethene	140	U	1430	1150		ug/L		81	69 - 126
Toluene	140	U	1430	1280		ug/L		89	69 - 125
trans-1,2-Dichloroethene	140	U	1430	1280		ug/L		90	66 - 131
trans-1,3-Dichloropropene	140	U	1430	1210		ug/L		85	59 - 120
1,2,4-Trichlorobenzene	140	U	1430	1030		ug/L		72	26 - 138
1,1,1-Trichloroethane	140	U	1430	1190		ug/L		83	57 - 156
1,1,2-Trichloroethane	140	U	1430	1400		ug/L		98	68 - 127
Trichloroethene	140	U	1430	1210		ug/L		85	68 - 129
Trichlorofluoromethane	140	U	1430	1050		ug/L		73	28 - 172
1,1,2-Trichloro-1,2,2-trifluoroethane	140	U	1430	986		ug/L		69	58 - 137
1,2,4-Trimethylbenzene	140	U	1430	1100		ug/L		77	64 - 120
1,3,5-Trimethylbenzene	140	U	1430	1100		ug/L		77	67 - 120
Vinyl chloride	2300		1430	3340		ug/L		76	55 - 123
Xylenes, Total	290	U	2860	2270		ug/L		79	71 - 122
1,4-Dioxane	7100	U	28600	20000		ug/L		70	13 - 155
Diethyl ether	290	U	1430	1320		ug/L		92	65 - 124

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	100		69 - 120
Dibromofluoromethane (Surr)	105		69 - 124
1,2-Dichloroethane-d4 (Surr)	101		61 - 138
Toluene-d8 (Surr)	104		73 - 120

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: 240-99857-3 MSD

Matrix: Water

Analysis Batch: 341894

Client Sample ID: MW-10_080918

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	1400	U	2860	2150		ug/L		75	19 - 133	5	35
Benzene	140	U	1430	1370		ug/L		96	69 - 127	5	10
Bromodichloromethane	140	U	1430	1380		ug/L		97	75 - 128	1	13
Bromoform	140	U	1430	1380		ug/L		97	61 - 135	3	13
Bromomethane	140	U	1430	1120		ug/L		78	10 - 148	10	35
2-Butanone (MEK)	1400	U	2860	2340		ug/L		82	34 - 153	2	23
Carbon disulfide	710	U	1430	1310		ug/L		91	46 - 143	10	18
Carbon tetrachloride	140	U	1430	1250		ug/L		87	53 - 175	11	17
Chlorobenzene	140	U	1430	1360		ug/L		95	76 - 120	8	12
Chloroethane	140	U	1430	1200		ug/L		84	10 - 141	0	35
Chloroform	140	U	1430	1380		ug/L		97	74 - 125	4	11
Chloromethane	140	U	1430	1300		ug/L		91	34 - 127	6	25
cis-1,2-Dichloroethene	140	U	1430	1300		ug/L		91	69 - 127	2	11
cis-1,3-Dichloropropene	140	U	1430	1230		ug/L		86	68 - 120	7	13
Cyclohexane	140	U	1430	1200		ug/L		84	56 - 135	28	35
Dibromochloromethane	140	U	1430	1460		ug/L		102	62 - 131	3	15
1,2-Dibromo-3-Chloropropane	140	U	1430	1190		ug/L		84	48 - 130	12	31
1,2-Dibromoethane	140	U	1430	1300		ug/L		91	73 - 121	5	12
1,2-Dichlorobenzene	140	U	1430	1270		ug/L		89	70 - 120	4	19
1,3-Dichlorobenzene	140	U	1430	1260		ug/L		88	71 - 120	5	18
1,4-Dichlorobenzene	140	U	1430	1250		ug/L		87	72 - 120	0	17
Dichlorodifluoromethane	140	U	1430	1170		ug/L		82	45 - 130	3	34
1,1-Dichloroethane	140	U	1430	1400		ug/L		98	69 - 122	2	11
1,2-Dichloroethane	140	U	1430	1300		ug/L		91	64 - 138	2	11
1,1-Dichloroethene	140	U	1430	1310		ug/L		92	62 - 127	12	14
1,2-Dichloropropane	140	U	1430	1420		ug/L		99	72 - 131	3	12
Ethylbenzene	140	U	1430	1240		ug/L		87	72 - 121	12	15
2-Hexanone	1400	U	2860	2390		ug/L		84	21 - 184	4	12
Isopropylbenzene	140	U	1430	1130		ug/L		79	70 - 132	10	16
Methyl acetate	1400	U	2860	2640		ug/L		92	52 - 139	1	14
Methylcyclohexane	140	U	1430	1090		ug/L		76	46 - 139	32	35
Methylene Chloride	710	U	1430	1460		ug/L		102	52 - 137	6	12
4-Methyl-2-pentanone (MIBK)	1400	U	2860	2360		ug/L		82	53 - 147	1	16
Methyl tert-butyl ether	140	U	1430	1290		ug/L		90	67 - 125	2	12
Styrene	140	U	1430	1260		ug/L		88	74 - 125	5	14
1,1,2,2-Tetrachloroethane	140	U	1430	1390		ug/L		97	51 - 123	1	17
Tetrachloroethene	140	U	1430	1260		ug/L		88	69 - 126	8	18
Toluene	140	U	1430	1320		ug/L		92	69 - 125	3	14
trans-1,2-Dichloroethene	140	U	1430	1340		ug/L		94	66 - 131	5	11
trans-1,3-Dichloropropene	140	U	1430	1210		ug/L		85	59 - 120	0	14
1,2,4-Trichlorobenzene	140	U	1430	1030		ug/L		72	26 - 138	0	35
1,1,1-Trichloroethane	140	U	1430	1340		ug/L		94	57 - 156	12	13
1,1,2-Trichloroethane	140	U	1430	1430		ug/L		100	68 - 127	2	11
Trichloroethene	140	U	1430	1280		ug/L		90	68 - 129	6	12
Trichlorofluoromethane	140	U	1430	1090		ug/L		77	28 - 172	4	26
1,1,2-Trichloro-1,2,2-trifluoroethane	140	U	1430	1160		ug/L		81	58 - 137	16	35
1,2,4-Trimethylbenzene	140	U	1430	1150		ug/L		81	64 - 120	5	22

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: 240-99857-3 MSD
Matrix: Water
Analysis Batch: 341894

Client Sample ID: MW-10_080918
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3,5-Trimethylbenzene	140	U	1430	1200		ug/L		84	67 - 120	9	25
Vinyl chloride	2300		1430	3260		ug/L		70	55 - 123	2	12
Xylenes, Total	290	U	2860	2480		ug/L		87	71 - 122	9	14
1,4-Dioxane	7100	U	28600	25800		ug/L		90	13 - 155	25	35
Diethyl ether	290	U	1430	1370		ug/L		96	65 - 124	4	11

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	103		69 - 120
Dibromofluoromethane (Surr)	102		69 - 124
1,2-Dichloroethane-d4 (Surr)	100		61 - 138
Toluene-d8 (Surr)	107		73 - 120

Lab Sample ID: MB 240-342225/6
Matrix: Water
Analysis Batch: 342225

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			08/23/18 10:43	1
Benzene	1.0	U	1.0	0.13	ug/L			08/23/18 10:43	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/23/18 10:43	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/23/18 10:43	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/23/18 10:43	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/23/18 10:43	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/23/18 10:43	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/23/18 10:43	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/23/18 10:43	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/23/18 10:43	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/23/18 10:43	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/23/18 10:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			08/23/18 10:43	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/23/18 10:43	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/23/18 10:43	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/23/18 10:43	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/23/18 10:43	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/23/18 10:43	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/23/18 10:43	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/23/18 10:43	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/23/18 10:43	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/23/18 10:43	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/23/18 10:43	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/23/18 10:43	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/23/18 10:43	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/23/18 10:43	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/23/18 10:43	1
2-Hexanone	10	U	10	0.54	ug/L			08/23/18 10:43	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/23/18 10:43	1
Methyl acetate	10	U	10	1.7	ug/L			08/23/18 10:43	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/23/18 10:43	1

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: MB 240-342225/6
Matrix: Water
Analysis Batch: 342225

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/23/18 10:43	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/23/18 10:43	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/23/18 10:43	1
Styrene	1.0	U	1.0	0.10	ug/L			08/23/18 10:43	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/23/18 10:43	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/23/18 10:43	1
Toluene	1.0	U	1.0	0.14	ug/L			08/23/18 10:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/23/18 10:43	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/23/18 10:43	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/23/18 10:43	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/23/18 10:43	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/23/18 10:43	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/23/18 10:43	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/23/18 10:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/23/18 10:43	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/23/18 10:43	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/23/18 10:43	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/23/18 10:43	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/23/18 10:43	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/23/18 10:43	1
1,4-Dioxane	50	U	50	13	ug/L			08/23/18 10:43	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/23/18 10:43	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	92		69 - 120		08/23/18 10:43	1
Dibromofluoromethane (Surr)	110		69 - 124		08/23/18 10:43	1
1,2-Dichloroethane-d4 (Surr)	105		61 - 138		08/23/18 10:43	1
Toluene-d8 (Surr)	100		73 - 120		08/23/18 10:43	1

Lab Sample ID: LCS 240-342225/4
Matrix: Water
Analysis Batch: 342225

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.65		ug/L		96	79 - 120
Bromodichloromethane	10.0	9.83		ug/L		98	79 - 125
Bromoform	10.0	10.1		ug/L		101	55 - 145
Bromomethane	10.0	8.53		ug/L		85	17 - 158
2-Butanone (MEK)	20.0	18.2		ug/L		91	43 - 149
Carbon disulfide	10.0	9.09		ug/L		91	49 - 141
Carbon tetrachloride	10.0	9.21		ug/L		92	55 - 171
Chlorobenzene	10.0	9.76		ug/L		98	80 - 120
Chloroethane	10.0	8.72		ug/L		87	10 - 149
Chloroform	10.0	9.28		ug/L		93	80 - 120
Chloromethane	10.0	9.25		ug/L		92	59 - 124
cis-1,2-Dichloroethene	10.0	8.85		ug/L		89	77 - 120
cis-1,3-Dichloropropene	10.0	9.94		ug/L		99	75 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: LCS 240-342225/4

Matrix: Water

Analysis Batch: 342225

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyclohexane	10.0	8.99		ug/L		90	66 - 135
Dibromochloromethane	10.0	10.0		ug/L		100	64 - 129
1,2-Dibromo-3-Chloropropane	10.0	8.68		ug/L		87	50 - 130
1,2-Dibromoethane	10.0	9.60		ug/L		96	80 - 120
1,2-Dichlorobenzene	10.0	9.15		ug/L		92	80 - 120
1,3-Dichlorobenzene	10.0	9.50		ug/L		95	80 - 120
1,4-Dichlorobenzene	10.0	9.50		ug/L		95	80 - 120
Dichlorodifluoromethane	10.0	9.41		ug/L		94	42 - 141
1,1-Dichloroethane	10.0	9.48		ug/L		95	74 - 120
1,2-Dichloroethane	10.0	9.06		ug/L		91	68 - 133
1,1-Dichloroethene	10.0	8.69		ug/L		87	65 - 127
1,2-Dichloropropane	10.0	10.3		ug/L		103	78 - 127
Ethylbenzene	10.0	9.43		ug/L		94	80 - 120
2-Hexanone	20.0	17.4		ug/L		87	28 - 169
Isopropylbenzene	10.0	8.59		ug/L		86	80 - 128
Methyl acetate	20.0	19.7		ug/L		99	63 - 137
Methylcyclohexane	10.0	8.73		ug/L		87	63 - 141
Methylene Chloride	10.0	9.28		ug/L		93	64 - 140
4-Methyl-2-pentanone (MIBK)	20.0	18.1		ug/L		91	53 - 144
Methyl tert-butyl ether	10.0	8.49		ug/L		85	73 - 120
Styrene	10.0	9.39		ug/L		94	80 - 121
1,1,2,2-Tetrachloroethane	10.0	9.60		ug/L		96	58 - 122
Tetrachloroethene	10.0	9.68		ug/L		97	80 - 122
Toluene	10.0	9.69		ug/L		97	78 - 120
trans-1,2-Dichloroethene	10.0	8.97		ug/L		90	74 - 124
trans-1,3-Dichloropropene	10.0	9.54		ug/L		95	67 - 120
1,2,4-Trichlorobenzene	10.0	8.46		ug/L		85	34 - 141
1,1,1-Trichloroethane	10.0	9.42		ug/L		94	64 - 147
1,1,2-Trichloroethane	10.0	10.2		ug/L		102	76 - 121
Trichloroethene	10.0	9.72		ug/L		97	76 - 124
Trichlorofluoromethane	10.0	8.43		ug/L		84	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	9.45		ug/L		95	65 - 144
1,2,4-Trimethylbenzene	10.0	8.57		ug/L		86	80 - 120
1,3,5-Trimethylbenzene	10.0	8.77		ug/L		88	79 - 120
Vinyl chloride	10.0	8.92		ug/L		89	65 - 124
Xylenes, Total	20.0	18.4		ug/L		92	80 - 120
1,4-Dioxane	200	192		ug/L		96	35 - 134
Diethyl ether	10.0	8.68		ug/L		87	72 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		69 - 120
Dibromofluoromethane (Surr)	99		69 - 124
1,2-Dichloroethane-d4 (Surr)	97		61 - 138
Toluene-d8 (Surr)	102		73 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: 240-99865-J-5 MS

Matrix: Water

Analysis Batch: 342225

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier			Limits	
Acetone	10	U	20.0	12.9		ug/L		65	19 - 133
Benzene	1.0	U	10.0	9.12		ug/L		91	69 - 127
Bromodichloromethane	1.0	U	10.0	9.07		ug/L		91	75 - 128
Bromoform	1.0	U	10.0	9.48		ug/L		95	61 - 135
Bromomethane	1.0	U	10.0	7.60		ug/L		76	10 - 148
2-Butanone (MEK)	10	U	20.0	13.9		ug/L		70	34 - 153
Carbon disulfide	5.0	U	10.0	8.40		ug/L		84	46 - 143
Carbon tetrachloride	1.0	U	10.0	7.85		ug/L		79	53 - 175
Chlorobenzene	1.0	U	10.0	9.23		ug/L		92	76 - 120
Chloroethane	1.0	U	10.0	7.59		ug/L		76	10 - 141
Chloroform	1.0	U	10.0	8.90		ug/L		89	74 - 125
Chloromethane	1.0	U	10.0	9.00		ug/L		90	34 - 127
cis-1,2-Dichloroethene	2.4		10.0	10.5		ug/L		81	69 - 127
cis-1,3-Dichloropropene	1.0	U	10.0	8.81		ug/L		88	68 - 120
Cyclohexane	1.0	U	10.0	6.13		ug/L		61	56 - 135
Dibromochloromethane	1.0	U	10.0	9.47		ug/L		95	62 - 131
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	8.55		ug/L		86	48 - 130
1,2-Dibromoethane	1.0	U	10.0	9.57		ug/L		96	73 - 121
1,2-Dichlorobenzene	1.0	U	10.0	8.81		ug/L		88	70 - 120
1,3-Dichlorobenzene	1.0	U	10.0	8.82		ug/L		88	71 - 120
1,4-Dichlorobenzene	1.0	U	10.0	9.08		ug/L		91	72 - 120
Dichlorodifluoromethane	1.0	U	10.0	6.89		ug/L		69	45 - 130
1,1-Dichloroethane	1.0	U	10.0	8.86		ug/L		89	69 - 122
1,2-Dichloroethane	1.0	U	10.0	8.50		ug/L		85	64 - 138
1,1-Dichloroethene	1.0	U	10.0	7.68		ug/L		77	62 - 127
1,2-Dichloropropane	1.0	U	10.0	9.51		ug/L		95	72 - 131
Ethylbenzene	1.0	U	10.0	8.37		ug/L		84	72 - 121
2-Hexanone	10	U	20.0	17.0		ug/L		85	21 - 184
Isopropylbenzene	1.0	U	10.0	7.76		ug/L		78	70 - 132
Methyl acetate	10	U	20.0	14.8		ug/L		74	52 - 139
Methylcyclohexane	1.0	U	10.0	5.56		ug/L		56	46 - 139
Methylene Chloride	5.0	U	10.0	9.22		ug/L		92	52 - 137
4-Methyl-2-pentanone (MIBK)	10	U	20.0	16.7		ug/L		83	53 - 147
Methyl tert-butyl ether	1.0	U	10.0	8.10		ug/L		81	67 - 125
Styrene	1.0	U	10.0	8.52		ug/L		85	74 - 125
1,1,2,2-Tetrachloroethane	1.0	U	10.0	9.21		ug/L		92	51 - 123
Tetrachloroethene	1.0	U	10.0	8.72		ug/L		87	69 - 126
Toluene	1.0	U	10.0	9.05		ug/L		90	69 - 125
trans-1,2-Dichloroethene	0.37	J	10.0	9.28		ug/L		89	66 - 131
trans-1,3-Dichloropropene	1.0	U	10.0	8.37		ug/L		84	59 - 120
1,2,4-Trichlorobenzene	1.0	U	10.0	7.66		ug/L		77	26 - 138
1,1,1-Trichloroethane	1.0	U	10.0	8.74		ug/L		87	57 - 156
1,1,2-Trichloroethane	1.0	U	10.0	9.91		ug/L		99	68 - 127
Trichloroethene	1.0	U	10.0	8.88		ug/L		89	68 - 129
Trichlorofluoromethane	1.0	U	10.0	6.69		ug/L		67	28 - 172
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	7.28		ug/L		73	58 - 137
1,2,4-Trimethylbenzene	1.0	U	10.0	7.98		ug/L		80	64 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: 240-99865-J-5 MS
Matrix: Water
Analysis Batch: 342225

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
1,3,5-Trimethylbenzene	1.0	U	10.0	7.98		ug/L		80	67 - 120
Vinyl chloride	0.54	J	10.0	8.61		ug/L		81	55 - 123
Xylenes, Total	2.0	U	20.0	16.9		ug/L		85	71 - 122
1,4-Dioxane	50	U	200	130		ug/L		65	13 - 155
Diethyl ether	2.0	U	10.0	8.27		ug/L		83	65 - 124

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		69 - 120
Dibromofluoromethane (Surr)	99		69 - 124
1,2-Dichloroethane-d4 (Surr)	92		61 - 138
Toluene-d8 (Surr)	99		73 - 120

Lab Sample ID: 240-99865-K-5 MSD
Matrix: Water
Analysis Batch: 342225

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	14.0		ug/L		70	19 - 133	8	35
Benzene	1.0	U	10.0	9.39		ug/L		94	69 - 127	3	10
Bromodichloromethane	1.0	U	10.0	9.13		ug/L		91	75 - 128	1	13
Bromoform	1.0	U	10.0	9.44		ug/L		94	61 - 135	0	13
Bromomethane	1.0	U	10.0	7.95		ug/L		79	10 - 148	4	35
2-Butanone (MEK)	10	U	20.0	15.2		ug/L		76	34 - 153	9	23
Carbon disulfide	5.0	U	10.0	9.12		ug/L		91	46 - 143	8	18
Carbon tetrachloride	1.0	U	10.0	8.97		ug/L		90	53 - 175	13	17
Chlorobenzene	1.0	U	10.0	9.32		ug/L		93	76 - 120	1	12
Chloroethane	1.0	U	10.0	8.32		ug/L		83	10 - 141	9	35
Chloroform	1.0	U	10.0	9.21		ug/L		92	74 - 125	3	11
Chloromethane	1.0	U	10.0	8.47		ug/L		85	34 - 127	6	25
cis-1,2-Dichloroethene	2.4		10.0	11.1		ug/L		87	69 - 127	6	11
cis-1,3-Dichloropropene	1.0	U	10.0	9.14		ug/L		91	68 - 120	4	13
Cyclohexane	1.0	U	10.0	8.41		ug/L		84	56 - 135	31	35
Dibromochloromethane	1.0	U	10.0	9.48		ug/L		95	62 - 131	0	15
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	8.53		ug/L		85	48 - 130	0	31
1,2-Dibromoethane	1.0	U	10.0	9.62		ug/L		96	73 - 121	1	12
1,2-Dichlorobenzene	1.0	U	10.0	8.95		ug/L		90	70 - 120	2	19
1,3-Dichlorobenzene	1.0	U	10.0	8.97		ug/L		90	71 - 120	2	18
1,4-Dichlorobenzene	1.0	U	10.0	9.16		ug/L		92	72 - 120	1	17
Dichlorodifluoromethane	1.0	U	10.0	8.10		ug/L		81	45 - 130	16	34
1,1-Dichloroethane	1.0	U	10.0	9.13		ug/L		91	69 - 122	3	11
1,2-Dichloroethane	1.0	U	10.0	8.43		ug/L		84	64 - 138	1	11
1,1-Dichloroethene	1.0	U	10.0	8.55		ug/L		86	62 - 127	11	14
1,2-Dichloropropane	1.0	U	10.0	10.0		ug/L		100	72 - 131	5	12
Ethylbenzene	1.0	U	10.0	8.77		ug/L		88	72 - 121	5	15
2-Hexanone	10	U	20.0	18.5		ug/L		92	21 - 184	8	12
Isopropylbenzene	1.0	U	10.0	8.06		ug/L		81	70 - 132	4	16
Methyl acetate	10	U	20.0	16.6		ug/L		83	52 - 139	11	14
Methylcyclohexane	1.0	U	10.0	7.62		ug/L		76	46 - 139	31	35

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: 240-99865-K-5 MSD

Matrix: Water

Analysis Batch: 342225

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
Methylene Chloride	5.0	U	10.0	9.24		ug/L		92	52 - 137	0	12
4-Methyl-2-pentanone (MIBK)	10	U	20.0	17.7		ug/L		88	53 - 147	6	16
Methyl tert-butyl ether	1.0	U	10.0	8.31		ug/L		83	67 - 125	3	12
Styrene	1.0	U	10.0	8.88		ug/L		89	74 - 125	4	14
1,1,2,2-Tetrachloroethane	1.0	U	10.0	9.18		ug/L		92	51 - 123	0	17
Tetrachloroethene	1.0	U	10.0	9.42		ug/L		94	69 - 126	8	18
Toluene	1.0	U	10.0	9.54		ug/L		95	69 - 125	5	14
trans-1,2-Dichloroethene	0.37	J	10.0	9.30		ug/L		89	66 - 131	0	11
trans-1,3-Dichloropropene	1.0	U	10.0	8.63		ug/L		86	59 - 120	3	14
1,2,4-Trichlorobenzene	1.0	U	10.0	7.97		ug/L		80	26 - 138	4	35
1,1,1-Trichloroethane	1.0	U	10.0	9.01		ug/L		90	57 - 156	3	13
1,1,2-Trichloroethane	1.0	U	10.0	9.79		ug/L		98	68 - 127	1	11
Trichloroethene	1.0	U	10.0	9.39		ug/L		94	68 - 129	6	12
Trichlorofluoromethane	1.0	U	10.0	7.52		ug/L		75	28 - 172	12	26
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	8.14		ug/L		81	58 - 137	11	35
1,2,4-Trimethylbenzene	1.0	U	10.0	8.35		ug/L		84	64 - 120	5	22
1,3,5-Trimethylbenzene	1.0	U	10.0	8.45		ug/L		85	67 - 120	6	25
Vinyl chloride	0.54	J	10.0	9.12		ug/L		86	55 - 123	6	12
Xylenes, Total	2.0	U	20.0	17.5		ug/L		87	71 - 122	3	14
1,4-Dioxane	50	U	200	131		ug/L		65	13 - 155	0	35
Diethyl ether	2.0	U	10.0	8.30		ug/L		83	65 - 124	0	11

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		69 - 120
Dibromofluoromethane (Surr)	98		69 - 124
1,2-Dichloroethane-d4 (Surr)	93		61 - 138
Toluene-d8 (Surr)	101		73 - 120

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

Lab Sample ID: MB 240-341631/5

Matrix: Water

Analysis Batch: 341631

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			08/20/18 12:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		63 - 125		08/20/18 12:43	1

Lab Sample ID: LCS 240-341631/4

Matrix: Water

Analysis Batch: 341631

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	9.06		ug/L		91	59 - 131

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99857-1

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

Lab Sample ID: LCS 240-341631/4
Matrix: Water
Analysis Batch: 341631

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

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

Lab Sample ID: 240-99857-3 MS
Matrix: Water
Analysis Batch: 341631

Client Sample ID: MW-10_080918
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	
	Result	Qualifier	Added	Result	Qualifier				Limits	
1,4-Dioxane	4.8	F2	10.0	12.8		ug/L		80	52 - 129	
Surrogate	MS	MS								
1,2-Dichloroethane-d4 (Surr)	%Recovery	Qualifier	Limits							
	101		63 - 125							

Lab Sample ID: 240-99857-3 MSD
Matrix: Water
Analysis Batch: 341631

Client Sample ID: MW-10_080918
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
1,4-Dioxane	4.8	F2	10.0	15.3	F2	ug/L		105	52 - 129	17	13
Surrogate	MSD	MSD									
1,2-Dichloroethane-d4 (Surr)	%Recovery	Qualifier	Limits								
	103		63 - 125								

QC Association Summary

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

TestAmerica Job ID: 240-99857-1

GC/MS VOA

Analysis Batch: 341631

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-99857-1	MW-33_080918	Total/NA	Water	8260B SIM	
240-99857-2	MW-20_080918	Total/NA	Water	8260B SIM	
240-99857-3	MW-10_080918	Total/NA	Water	8260B SIM	
240-99857-4	MW-19_081018	Total/NA	Water	8260B SIM	
240-99857-5	MW-34_081018	Total/NA	Water	8260B SIM	
240-99857-6	MW-2_081018	Total/NA	Water	8260B SIM	
MB 240-341631/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-341631/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-99857-3 MS	MW-10_080918	Total/NA	Water	8260B SIM	
240-99857-3 MSD	MW-10_080918	Total/NA	Water	8260B SIM	

Analysis Batch: 341894

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-99857-1	MW-33_080918	Total/NA	Water	8260B	
240-99857-2	MW-20_080918	Total/NA	Water	8260B	
240-99857-3	MW-10_080918	Total/NA	Water	8260B	
MB 240-341894/6	Method Blank	Total/NA	Water	8260B	
LCS 240-341894/4	Lab Control Sample	Total/NA	Water	8260B	
240-99857-3 MS	MW-10_080918	Total/NA	Water	8260B	
240-99857-3 MSD	MW-10_080918	Total/NA	Water	8260B	

Analysis Batch: 342225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-99857-4	MW-19_081018	Total/NA	Water	8260B	
240-99857-5	MW-34_081018	Total/NA	Water	8260B	
240-99857-6	MW-2_081018	Total/NA	Water	8260B	
MB 240-342225/6	Method Blank	Total/NA	Water	8260B	
LCS 240-342225/4	Lab Control Sample	Total/NA	Water	8260B	
240-99865-J-5 MS	Matrix Spike	Total/NA	Water	8260B	
240-99865-K-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-33_080918

Lab Sample ID: 240-99857-1

Date Collected: 08/09/18 14:30

Matrix: Water

Date Received: 08/14/18 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	341894	08/21/18 23:15	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	341631	08/20/18 19:44	SAM	TAL CAN

Client Sample ID: MW-20_080918

Lab Sample ID: 240-99857-2

Date Collected: 08/09/18 16:25

Matrix: Water

Date Received: 08/14/18 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	341894	08/21/18 23:38	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	341631	08/20/18 20:09	SAM	TAL CAN

Client Sample ID: MW-10_080918

Lab Sample ID: 240-99857-3

Date Collected: 08/09/18 17:40

Matrix: Water

Date Received: 08/14/18 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		142.86	341894	08/22/18 00:00	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	341631	08/20/18 20:33	SAM	TAL CAN

Client Sample ID: MW-19_081018

Lab Sample ID: 240-99857-4

Date Collected: 08/10/18 09:30

Matrix: Water

Date Received: 08/14/18 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	342225	08/23/18 17:47	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	341631	08/20/18 21:47	SAM	TAL CAN

Client Sample ID: MW-34_081018

Lab Sample ID: 240-99857-5

Date Collected: 08/10/18 11:16

Matrix: Water

Date Received: 08/14/18 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	342225	08/23/18 18:10	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	341631	08/20/18 22:12	SAM	TAL CAN

Client Sample ID: MW-2_081018

Lab Sample ID: 240-99857-6

Date Collected: 08/10/18 13:15

Matrix: Water

Date Received: 08/14/18 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		142.86	342225	08/23/18 18:32	LEE	TAL CAN

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-99857-1

Client Sample ID: MW-2_081018

Lab Sample ID: 240-99857-6

Date Collected: 08/10/18 13:15

Matrix: Water

Date Received: 08/14/18 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	341631	08/20/18 22:37	SAM	TAL CAN

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 - E203728

TestAmerica Job ID: 240-99857-1

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	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-18 *
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
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 Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact 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: M1001454.0004.00001 PO # M1001454.0004.00001		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other									
Client Project Manager: Kris Hmskey Telephone: 248-994-2240 Email: kristoffer.hmskey@arcadis.com		Site Contact: Angela DeGrandis Telephone: 734-320-0065									
Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT if different from below: <input type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day									
Sample Identification MW-33-080918 MW-20-080918 MW-10-080918 MW-19-081018 MW-34-081018 MW-2-081018	Sample Date 8/9/18 ↓ 8/10/18 ↓	Sample Time 1430 1625 1740 0930 1116 1315	Matrix Air Aqueous Sediment Solid Other:	Containers & Preservatives HCl HNO3 H2SO4 ZnAc NaOH Unpres Other:	Filtered Sample (Y/N) NG NG NG NG NG NG	Composite/C Grab X X X X X X	VOCs 8260B X X X X X X	1,4-Dioxane 8260B SIM X X X X X X	Analyses	For lab use only: Walk-in client Lab sampling Job/SDG No:	Sample Specific Notes / Special Instructions: MS/MSD
Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jim.tomalia@cadena.com, Cadena #E203728 Level IV Reporting.											
Relinquished by: DIVYA CAMATH <i>Divya Camath</i>		Company: ARCADIS		Date/Time: 8/10/18 / 14:30		Received by: NOVI FRIDGE		Company: ARCADIS		Date/Time: 8/11/18 / 14:30	
Relinquished by: Kasey Matteson <i>Kasey Matteson</i>		Company: Arcadis		Date/Time: 8-13-18 1057		Received by: <i>Jeff Deit</i>		Company: TAL		Date/Time: 8/13/18 / 1057	
Relinquished by: <i>Jeff Deit</i>		Company: TAL		Date/Time: 8/13/18 / 12:31		Received in Laboratory by: <i>MS/MSD</i>		Company: TASC		Date/Time: 8/16/18 / 1057	

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TestAmerica Canton Sample Receipt Form/Narrative

Login # : 99857

Canton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 8/14/18 Opened on 8/14/18

Gil Brown

FedEx: 1st (G) Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time

Storage Location

TestAmerica Cooler # Canton Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Elastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

- 1. Cooler temperature upon receipt
IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
IR GUN #36 (CF -0.3°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
-Were the seals on the outside of the cooler(s) signed & dated?
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?
-Were tamper/custody seals intact and uncompromised?
3. Shippers' packing slip attached to the cooler(s)?
4. Did custody papers accompany the sample(s)?
5. Were the custody papers relinquished & signed in the appropriate place?
6. Was/were the person(s) who collected the samples clearly identified on the COC?
7. Did all bottles arrive in good condition (Unbroken)?
8. Could all bottle labels be reconciled with the COC?
9. Were correct bottle(s) used for the test(s) indicated?
10. Sufficient quantity received to perform indicated analyses?
11. Are these work share samples?
If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt?
13. Were VOAs on the COC?
14. Were air bubbles >6 mm in any VOA vials?
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #
16. Was a LL Hg or Me Hg trip blank present?

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:

GB

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):

