

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: 240-99577-1

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:

8/21/2018 3:21:37 PM

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

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Definitions/Glossary

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

TestAmerica Job ID: 240-99577-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
U	Indicates the analyte was analyzed for but not detected.
*	LCS or LCSD is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

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: 240-99577-1

Job ID: 240-99577-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-99577-1

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 8/8/2018 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 1.8° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TW-16-01_080618 (240-99577-1), TW-16-02_080618 (240-99577-2), MW-23_080618 (240-99577-3), MW-22_080618 (240-99577-4), MW-51_080618 (240-99577-5) and TRIP BLANK (240-99577-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 08/18/2018 and 08/19/2018.

1,4-Dioxane failed the recovery criteria high for LCS 240-341482/6 and LCS 240-341513/6. Refer to the QC report for details.

1,4-Dioxane failed the recovery criteria high for the MS/MSD of sample 240-99576-1 in batch 240-341482.

1,4-Dioxane failed the recovery criteria high for the MS/MSD of sample 240-99616-5 in batch 240-341513. Refer to the QC report for details.

Samples TW-16-01_080618 (240-99577-1)[25X], TW-16-02_080618 (240-99577-2)[250X], MW-23_080618 (240-99577-3)[2500X] and MW-22_080618 (240-99577-4)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The laboratory control sample (LCS) for analytical batch 240-341482 recovered outside control limits for the following analyte: 1,4-Dioxane.

Case Narrative

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

TestAmerica Job ID: 240-99577-1

Job ID: 240-99577-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported: TW-16-01_080618 (240-99577-1), TW-16-02_080618 (240-99577-2) and (LCS 240-341482/6).

The laboratory control sample (LCS) for analytical batch 240-341513 recovered outside control limits for the following analyte: 1,4-Dioxane. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported: MW-23_080618 (240-99577-3), MW-22_080618 (240-99577-4), MW-51_080618 (240-99577-5), TRIP BLANK (240-99577-6) and (LCS 240-341513/6).

The vial used for reanalysis contained headspace due to instrument malfunction. Only one vial was received for the following sample: TRIP BLANK (240-99577-6).

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 TW-16-01_080618 (240-99577-1), TW-16-02_080618 (240-99577-2), MW-23_080618 (240-99577-3), MW-22_080618 (240-99577-4) and MW-51_080618 (240-99577-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 08/10/2018 and 08/14/2018.

Sample MW-23_080618 (240-99577-3)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for the following sample associated with analytical batch 240-340331 were outside control limits: TW-16-01_080618 (240-99577-1), TW-16-02_080618 (240-99577-2), MW-22_080618 (240-99577-4) and MW-51_080618 (240-99577-5). The associated laboratory control sample (LCS) recovery met acceptance criteria.

The following sample was diluted due to the nature of the sample matrix: MW-23_080618 (240-99577-3). Elevated reporting limits (RLs) are provided.

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 - E203728

TestAmerica Job ID: 240-99577-1

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: 240-99577-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-99577-1	TW-16-01_080618	Water	08/06/18 09:10	08/08/18 09:50
240-99577-2	TW-16-02_080618	Water	08/06/18 11:10	08/08/18 09:50
240-99577-3	MW-23_080618	Water	08/06/18 12:28	08/08/18 09:50
240-99577-4	MW-22_080618	Water	08/06/18 13:30	08/08/18 09:50
240-99577-5	MW-51_080618	Water	08/06/18 15:05	08/08/18 09:50
240-99577-6	TRIP BLANK	Water	08/06/18 00:00	08/08/18 09:50

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Detection Summary

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: TW-16-01_080618

Lab Sample ID: 240-99577-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	140		25	4.0	ug/L	25		8260B	Total/NA
trans-1,2-Dichloroethene	7.5	J	25	4.8	ug/L	25		8260B	Total/NA
Vinyl chloride	680		25	5.0	ug/L	25		8260B	Total/NA

Client Sample ID: TW-16-02_080618

Lab Sample ID: 240-99577-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.7		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	4100		250	40	ug/L	250		8260B	Total/NA
trans-1,2-Dichloroethene	56	J	250	48	ug/L	250		8260B	Total/NA
Vinyl chloride	7300		250	50	ug/L	250		8260B	Total/NA

Client Sample ID: MW-23_080618

Lab Sample ID: 240-99577-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	43000		2500	400	ug/L	2500		8260B	Total/NA
trans-1,2-Dichloroethene	2300	J	2500	480	ug/L	2500		8260B	Total/NA
Trichloroethene	12000		2500	250	ug/L	2500		8260B	Total/NA

Client Sample ID: MW-22_080618

Lab Sample ID: 240-99577-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	19		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	310		50	8.0	ug/L	50		8260B	Total/NA
Vinyl chloride	1300		50	10	ug/L	50		8260B	Total/NA

Client Sample ID: MW-51_080618

Lab Sample ID: 240-99577-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	0.37	J	1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.77	J	1.0	0.17	ug/L	1		8260B	Total/NA
1,2-Dichloroethane	0.28	J	1.0	0.21	ug/L	1		8260B	Total/NA
Vinyl chloride	0.40	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-99577-6

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 - E203728

TestAmerica Job ID: 240-99577-1

Client Sample ID: TW-16-01_080618

Lab Sample ID: 240-99577-1

Date Collected: 08/06/18 09:10

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/18 14:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125					08/10/18 14:51	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	250	U	250	140	ug/L			08/18/18 17:30	25
Benzene	25	U	25	3.3	ug/L			08/18/18 17:30	25
Bromodichloromethane	25	U	25	4.3	ug/L			08/18/18 17:30	25
Bromoform	25	U	25	19	ug/L			08/18/18 17:30	25
Bromomethane	25	U	25	11	ug/L			08/18/18 17:30	25
2-Butanone (MEK)	250	U	250	29	ug/L			08/18/18 17:30	25
Carbon disulfide	130	U	130	7.0	ug/L			08/18/18 17:30	25
Carbon tetrachloride	25	U	25	6.5	ug/L			08/18/18 17:30	25
Chlorobenzene	25	U	25	3.5	ug/L			08/18/18 17:30	25
Chloroethane	25	U	25	21	ug/L			08/18/18 17:30	25
Chloroform	25	U	25	3.3	ug/L			08/18/18 17:30	25
Chloromethane	25	U	25	5.0	ug/L			08/18/18 17:30	25
cis-1,2-Dichloroethene	140		25	4.0	ug/L			08/18/18 17:30	25
cis-1,3-Dichloropropene	25	U	25	15	ug/L			08/18/18 17:30	25
Cyclohexane	25	U	25	6.0	ug/L			08/18/18 17:30	25
Dibromochloromethane	25	U	25	9.8	ug/L			08/18/18 17:30	25
1,2-Dibromo-3-Chloropropane	25	U	25	23	ug/L			08/18/18 17:30	25
1,2-Dibromoethane	25	U	25	3.0	ug/L			08/18/18 17:30	25
1,2-Dichlorobenzene	25	U	25	3.8	ug/L			08/18/18 17:30	25
1,3-Dichlorobenzene	25	U	25	3.8	ug/L			08/18/18 17:30	25
1,4-Dichlorobenzene	25	U	25	4.0	ug/L			08/18/18 17:30	25
Dichlorodifluoromethane	25	U	25	8.8	ug/L			08/18/18 17:30	25
1,1-Dichloroethane	25	U	25	4.3	ug/L			08/18/18 17:30	25
1,2-Dichloroethane	25	U	25	5.3	ug/L			08/18/18 17:30	25
1,1-Dichloroethene	25	U	25	4.8	ug/L			08/18/18 17:30	25
1,2-Dichloropropane	25	U	25	3.8	ug/L			08/18/18 17:30	25
Ethylbenzene	25	U	25	2.8	ug/L			08/18/18 17:30	25
2-Hexanone	250	U	250	14	ug/L			08/18/18 17:30	25
Isopropylbenzene	25	U	25	2.3	ug/L			08/18/18 17:30	25
Methyl acetate	250	U	250	43	ug/L			08/18/18 17:30	25
Methylcyclohexane	25	U	25	8.3	ug/L			08/18/18 17:30	25
Methylene Chloride	130	U	130	66	ug/L			08/18/18 17:30	25
4-Methyl-2-pentanone (MIBK)	250	U	250	11	ug/L			08/18/18 17:30	25
Methyl tert-butyl ether	25	U	25	1.8	ug/L			08/18/18 17:30	25
Styrene	25	U	25	2.5	ug/L			08/18/18 17:30	25
1,1,2,2-Tetrachloroethane	25	U	25	3.3	ug/L			08/18/18 17:30	25
Tetrachloroethene	25	U	25	3.8	ug/L			08/18/18 17:30	25
Toluene	25	U	25	3.5	ug/L			08/18/18 17:30	25
trans-1,2-Dichloroethene	7.5	J	25	4.8	ug/L			08/18/18 17:30	25
trans-1,3-Dichloropropene	25	U	25	17	ug/L			08/18/18 17:30	25
1,2,4-Trichlorobenzene	25	U	25	6.5	ug/L			08/18/18 17:30	25
1,1,1-Trichloroethane	25	U	25	6.0	ug/L			08/18/18 17:30	25
1,1,2-Trichloroethane	25	U	25	2.3	ug/L			08/18/18 17:30	25

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: TW-16-01_080618

Lab Sample ID: 240-99577-1

Date Collected: 08/06/18 09:10

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	25	U	25	2.5	ug/L			08/18/18 17:30	25
Trichlorofluoromethane	25	U	25	11	ug/L			08/18/18 17:30	25
1,1,2-Trichloro-1,2,2-trifluoroethane	25	U	25	10	ug/L			08/18/18 17:30	25
1,2,3-Trimethylbenzene	130	U	130	3.5	ug/L			08/18/18 17:30	25
1,2,4-Trimethylbenzene	25	U	25	1.8	ug/L			08/18/18 17:30	25
1,3,5-Trimethylbenzene	25	U	25	3.0	ug/L			08/18/18 17:30	25
Vinyl chloride	680		25	5.0	ug/L			08/18/18 17:30	25
Xylenes, Total	50	U	50	3.8	ug/L			08/18/18 17:30	25
1,4-Dioxane	1300	U *	1300	320	ug/L			08/18/18 17:30	25
Diethyl ether	50	U	50	4.8	ug/L			08/18/18 17:30	25
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		69 - 120					08/18/18 17:30	25
Dibromofluoromethane (Surr)	107		69 - 124					08/18/18 17:30	25
1,2-Dichloroethane-d4 (Surr)	121		61 - 138					08/18/18 17:30	25
Toluene-d8 (Surr)	111		73 - 120					08/18/18 17:30	25

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: TW-16-02_080618

Lab Sample ID: 240-99577-2

Date Collected: 08/06/18 11:10

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.7		2.0	0.86	ug/L			08/10/18 15:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		63 - 125					08/10/18 15:16	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	2500	U	2500	1400	ug/L			08/18/18 17:52	250
Benzene	250	U	250	33	ug/L			08/18/18 17:52	250
Bromodichloromethane	250	U	250	43	ug/L			08/18/18 17:52	250
Bromoform	250	U	250	190	ug/L			08/18/18 17:52	250
Bromomethane	250	U	250	110	ug/L			08/18/18 17:52	250
2-Butanone (MEK)	2500	U	2500	290	ug/L			08/18/18 17:52	250
Carbon disulfide	1300	U	1300	70	ug/L			08/18/18 17:52	250
Carbon tetrachloride	250	U	250	65	ug/L			08/18/18 17:52	250
Chlorobenzene	250	U	250	35	ug/L			08/18/18 17:52	250
Chloroethane	250	U	250	210	ug/L			08/18/18 17:52	250
Chloroform	250	U	250	33	ug/L			08/18/18 17:52	250
Chloromethane	250	U	250	50	ug/L			08/18/18 17:52	250
cis-1,2-Dichloroethene	4100		250	40	ug/L			08/18/18 17:52	250
cis-1,3-Dichloropropene	250	U	250	150	ug/L			08/18/18 17:52	250
Cyclohexane	250	U	250	60	ug/L			08/18/18 17:52	250
Dibromochloromethane	250	U	250	98	ug/L			08/18/18 17:52	250
1,2-Dibromo-3-Chloropropane	250	U	250	230	ug/L			08/18/18 17:52	250
1,2-Dibromoethane	250	U	250	30	ug/L			08/18/18 17:52	250
1,2-Dichlorobenzene	250	U	250	38	ug/L			08/18/18 17:52	250
1,3-Dichlorobenzene	250	U	250	38	ug/L			08/18/18 17:52	250
1,4-Dichlorobenzene	250	U	250	40	ug/L			08/18/18 17:52	250
Dichlorodifluoromethane	250	U	250	88	ug/L			08/18/18 17:52	250
1,1-Dichloroethane	250	U	250	43	ug/L			08/18/18 17:52	250
1,2-Dichloroethane	250	U	250	53	ug/L			08/18/18 17:52	250
1,1-Dichloroethene	250	U	250	48	ug/L			08/18/18 17:52	250
1,2-Dichloropropane	250	U	250	38	ug/L			08/18/18 17:52	250
Ethylbenzene	250	U	250	28	ug/L			08/18/18 17:52	250
2-Hexanone	2500	U	2500	140	ug/L			08/18/18 17:52	250
Isopropylbenzene	250	U	250	23	ug/L			08/18/18 17:52	250
Methyl acetate	2500	U	2500	430	ug/L			08/18/18 17:52	250
Methylcyclohexane	250	U	250	83	ug/L			08/18/18 17:52	250
Methylene Chloride	1300	U	1300	660	ug/L			08/18/18 17:52	250
4-Methyl-2-pentanone (MIBK)	2500	U	2500	110	ug/L			08/18/18 17:52	250
Methyl tert-butyl ether	250	U	250	18	ug/L			08/18/18 17:52	250
Styrene	250	U	250	25	ug/L			08/18/18 17:52	250
1,1,2,2-Tetrachloroethane	250	U	250	33	ug/L			08/18/18 17:52	250
Tetrachloroethene	250	U	250	38	ug/L			08/18/18 17:52	250
Toluene	250	U	250	35	ug/L			08/18/18 17:52	250
trans-1,2-Dichloroethene	56	J	250	48	ug/L			08/18/18 17:52	250
trans-1,3-Dichloropropene	250	U	250	170	ug/L			08/18/18 17:52	250
1,2,4-Trichlorobenzene	250	U	250	65	ug/L			08/18/18 17:52	250
1,1,1-Trichloroethane	250	U	250	60	ug/L			08/18/18 17:52	250
1,1,2-Trichloroethane	250	U	250	23	ug/L			08/18/18 17:52	250

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: TW-16-02_080618

Lab Sample ID: 240-99577-2

Date Collected: 08/06/18 11:10

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	250	U	250	25	ug/L			08/18/18 17:52	250
Trichlorofluoromethane	250	U	250	110	ug/L			08/18/18 17:52	250
1,1,2-Trichloro-1,2,2-trifluoroethane	250	U	250	100	ug/L			08/18/18 17:52	250
1,2,3-Trimethylbenzene	1300	U	1300	35	ug/L			08/18/18 17:52	250
1,2,4-Trimethylbenzene	250	U	250	18	ug/L			08/18/18 17:52	250
1,3,5-Trimethylbenzene	250	U	250	30	ug/L			08/18/18 17:52	250
Vinyl chloride	7300		250	50	ug/L			08/18/18 17:52	250
Xylenes, Total	500	U	500	38	ug/L			08/18/18 17:52	250
1,4-Dioxane	13000	U *	13000	3200	ug/L			08/18/18 17:52	250
Diethyl ether	500	U	500	48	ug/L			08/18/18 17:52	250

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	109		69 - 120		08/18/18 17:52	250
Dibromofluoromethane (Surr)	112		69 - 124		08/18/18 17:52	250
1,2-Dichloroethane-d4 (Surr)	122		61 - 138		08/18/18 17:52	250
Toluene-d8 (Surr)	109		73 - 120		08/18/18 17:52	250

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: MW-23_080618

Lab Sample ID: 240-99577-3

Date Collected: 08/06/18 12:28

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	200	U	200	86	ug/L			08/14/18 14:32	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 125					08/14/18 14:32	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25000	U	25000	14000	ug/L			08/19/18 12:47	2500
Benzene	2500	U	2500	330	ug/L			08/19/18 12:47	2500
Bromodichloromethane	2500	U	2500	430	ug/L			08/19/18 12:47	2500
Bromoform	2500	U	2500	1900	ug/L			08/19/18 12:47	2500
Bromomethane	2500	U	2500	1100	ug/L			08/19/18 12:47	2500
2-Butanone (MEK)	25000	U	25000	2900	ug/L			08/19/18 12:47	2500
Carbon disulfide	13000	U	13000	700	ug/L			08/19/18 12:47	2500
Carbon tetrachloride	2500	U	2500	650	ug/L			08/19/18 12:47	2500
Chlorobenzene	2500	U	2500	350	ug/L			08/19/18 12:47	2500
Chloroethane	2500	U	2500	2100	ug/L			08/19/18 12:47	2500
Chloroform	2500	U	2500	330	ug/L			08/19/18 12:47	2500
Chloromethane	2500	U	2500	500	ug/L			08/19/18 12:47	2500
cis-1,2-Dichloroethene	43000		2500	400	ug/L			08/19/18 12:47	2500
cis-1,3-Dichloropropene	2500	U	2500	1500	ug/L			08/19/18 12:47	2500
Cyclohexane	2500	U	2500	600	ug/L			08/19/18 12:47	2500
Dibromochloromethane	2500	U	2500	980	ug/L			08/19/18 12:47	2500
1,2-Dibromo-3-Chloropropane	2500	U	2500	2300	ug/L			08/19/18 12:47	2500
1,2-Dibromoethane	2500	U	2500	300	ug/L			08/19/18 12:47	2500
1,2-Dichlorobenzene	2500	U	2500	380	ug/L			08/19/18 12:47	2500
1,3-Dichlorobenzene	2500	U	2500	380	ug/L			08/19/18 12:47	2500
1,4-Dichlorobenzene	2500	U	2500	400	ug/L			08/19/18 12:47	2500
Dichlorodifluoromethane	2500	U	2500	880	ug/L			08/19/18 12:47	2500
1,1-Dichloroethane	2500	U	2500	430	ug/L			08/19/18 12:47	2500
1,2-Dichloroethane	2500	U	2500	530	ug/L			08/19/18 12:47	2500
1,1-Dichloroethene	2500	U	2500	480	ug/L			08/19/18 12:47	2500
1,2-Dichloropropane	2500	U	2500	380	ug/L			08/19/18 12:47	2500
Ethylbenzene	2500	U	2500	280	ug/L			08/19/18 12:47	2500
2-Hexanone	25000	U	25000	1400	ug/L			08/19/18 12:47	2500
Isopropylbenzene	2500	U	2500	230	ug/L			08/19/18 12:47	2500
Methyl acetate	25000	U	25000	4300	ug/L			08/19/18 12:47	2500
Methylcyclohexane	2500	U	2500	830	ug/L			08/19/18 12:47	2500
Methylene Chloride	13000	U	13000	6600	ug/L			08/19/18 12:47	2500
4-Methyl-2-pentanone (MIBK)	25000	U	25000	1100	ug/L			08/19/18 12:47	2500
Methyl tert-butyl ether	2500	U	2500	180	ug/L			08/19/18 12:47	2500
Styrene	2500	U	2500	250	ug/L			08/19/18 12:47	2500
1,1,2,2-Tetrachloroethane	2500	U	2500	330	ug/L			08/19/18 12:47	2500
Tetrachloroethene	2500	U	2500	380	ug/L			08/19/18 12:47	2500
Toluene	2500	U	2500	350	ug/L			08/19/18 12:47	2500
trans-1,2-Dichloroethene	2300	J	2500	480	ug/L			08/19/18 12:47	2500
trans-1,3-Dichloropropene	2500	U	2500	1700	ug/L			08/19/18 12:47	2500
1,2,4-Trichlorobenzene	2500	U	2500	650	ug/L			08/19/18 12:47	2500
1,1,1-Trichloroethane	2500	U	2500	600	ug/L			08/19/18 12:47	2500
1,1,2-Trichloroethane	2500	U	2500	230	ug/L			08/19/18 12:47	2500

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: MW-23_080618

Lab Sample ID: 240-99577-3

Date Collected: 08/06/18 12:28

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	12000		2500	250	ug/L			08/19/18 12:47	2500
Trichlorofluoromethane	2500	U	2500	1100	ug/L			08/19/18 12:47	2500
1,1,2-Trichloro-1,2,2-trifluoroethane	2500	U	2500	1000	ug/L			08/19/18 12:47	2500
1,2,3-Trimethylbenzene	13000	U	13000	350	ug/L			08/19/18 12:47	2500
1,2,4-Trimethylbenzene	2500	U	2500	180	ug/L			08/19/18 12:47	2500
1,3,5-Trimethylbenzene	2500	U	2500	300	ug/L			08/19/18 12:47	2500
Vinyl chloride	2500	U	2500	500	ug/L			08/19/18 12:47	2500
Xylenes, Total	5000	U	5000	380	ug/L			08/19/18 12:47	2500
1,4-Dioxane	130000	U *	130000	32000	ug/L			08/19/18 12:47	2500
Diethyl ether	5000	U	5000	480	ug/L			08/19/18 12:47	2500
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		69 - 120					08/19/18 12:47	2500
Dibromofluoromethane (Surr)	103		69 - 124					08/19/18 12:47	2500
1,2-Dichloroethane-d4 (Surr)	120		61 - 138					08/19/18 12:47	2500
Toluene-d8 (Surr)	109		73 - 120					08/19/18 12:47	2500

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: MW-22_080618

Lab Sample ID: 240-99577-4

Date Collected: 08/06/18 13:30

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	19		2.0	0.86	ug/L			08/10/18 16:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		63 - 125					08/10/18 16:56	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	500	U	500	270	ug/L			08/19/18 13:09	50
Benzene	50	U	50	6.5	ug/L			08/19/18 13:09	50
Bromodichloromethane	50	U	50	8.5	ug/L			08/19/18 13:09	50
Bromoform	50	U	50	38	ug/L			08/19/18 13:09	50
Bromomethane	50	U	50	21	ug/L			08/19/18 13:09	50
2-Butanone (MEK)	500	U	500	58	ug/L			08/19/18 13:09	50
Carbon disulfide	250	U	250	14	ug/L			08/19/18 13:09	50
Carbon tetrachloride	50	U	50	13	ug/L			08/19/18 13:09	50
Chlorobenzene	50	U	50	7.0	ug/L			08/19/18 13:09	50
Chloroethane	50	U	50	42	ug/L			08/19/18 13:09	50
Chloroform	50	U	50	6.5	ug/L			08/19/18 13:09	50
Chloromethane	50	U	50	10	ug/L			08/19/18 13:09	50
cis-1,2-Dichloroethene	310		50	8.0	ug/L			08/19/18 13:09	50
cis-1,3-Dichloropropene	50	U	50	31	ug/L			08/19/18 13:09	50
Cyclohexane	50	U	50	12	ug/L			08/19/18 13:09	50
Dibromochloromethane	50	U	50	20	ug/L			08/19/18 13:09	50
1,2-Dibromo-3-Chloropropane	50	U	50	46	ug/L			08/19/18 13:09	50
1,2-Dibromoethane	50	U	50	6.0	ug/L			08/19/18 13:09	50
1,2-Dichlorobenzene	50	U	50	7.5	ug/L			08/19/18 13:09	50
1,3-Dichlorobenzene	50	U	50	7.5	ug/L			08/19/18 13:09	50
1,4-Dichlorobenzene	50	U	50	8.0	ug/L			08/19/18 13:09	50
Dichlorodifluoromethane	50	U	50	18	ug/L			08/19/18 13:09	50
1,1-Dichloroethane	50	U	50	8.5	ug/L			08/19/18 13:09	50
1,2-Dichloroethane	50	U	50	11	ug/L			08/19/18 13:09	50
1,1-Dichloroethene	50	U	50	9.5	ug/L			08/19/18 13:09	50
1,2-Dichloropropane	50	U	50	7.5	ug/L			08/19/18 13:09	50
Ethylbenzene	50	U	50	5.5	ug/L			08/19/18 13:09	50
2-Hexanone	500	U	500	27	ug/L			08/19/18 13:09	50
Isopropylbenzene	50	U	50	4.5	ug/L			08/19/18 13:09	50
Methyl acetate	500	U	500	86	ug/L			08/19/18 13:09	50
Methylcyclohexane	50	U	50	17	ug/L			08/19/18 13:09	50
Methylene Chloride	250	U	250	130	ug/L			08/19/18 13:09	50
4-Methyl-2-pentanone (MIBK)	500	U	500	21	ug/L			08/19/18 13:09	50
Methyl tert-butyl ether	50	U	50	3.5	ug/L			08/19/18 13:09	50
Styrene	50	U	50	5.0	ug/L			08/19/18 13:09	50
1,1,2,2-Tetrachloroethane	50	U	50	6.5	ug/L			08/19/18 13:09	50
Tetrachloroethene	50	U	50	7.5	ug/L			08/19/18 13:09	50
Toluene	50	U	50	7.0	ug/L			08/19/18 13:09	50
trans-1,2-Dichloroethene	50	U	50	9.5	ug/L			08/19/18 13:09	50
trans-1,3-Dichloropropene	50	U	50	34	ug/L			08/19/18 13:09	50
1,2,4-Trichlorobenzene	50	U	50	13	ug/L			08/19/18 13:09	50
1,1,1-Trichloroethane	50	U	50	12	ug/L			08/19/18 13:09	50
1,1,2-Trichloroethane	50	U	50	4.5	ug/L			08/19/18 13:09	50

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: MW-22_080618

Lab Sample ID: 240-99577-4

Date Collected: 08/06/18 13:30

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	50	U	50	5.0	ug/L			08/19/18 13:09	50
Trichlorofluoromethane	50	U	50	23	ug/L			08/19/18 13:09	50
1,1,2-Trichloro-1,2,2-trifluoroethane	50	U	50	21	ug/L			08/19/18 13:09	50
1,2,3-Trimethylbenzene	250	U	250	7.0	ug/L			08/19/18 13:09	50
1,2,4-Trimethylbenzene	50	U	50	3.5	ug/L			08/19/18 13:09	50
1,3,5-Trimethylbenzene	50	U	50	6.0	ug/L			08/19/18 13:09	50
Vinyl chloride	1300		50	10	ug/L			08/19/18 13:09	50
Xylenes, Total	100	U	100	7.5	ug/L			08/19/18 13:09	50
1,4-Dioxane	2500	U *	2500	640	ug/L			08/19/18 13:09	50
Diethyl ether	100	U	100	9.5	ug/L			08/19/18 13:09	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	109		69 - 120		08/19/18 13:09	50
Dibromofluoromethane (Surr)	107		69 - 124		08/19/18 13:09	50
1,2-Dichloroethane-d4 (Surr)	121		61 - 138		08/19/18 13:09	50
Toluene-d8 (Surr)	110		73 - 120		08/19/18 13:09	50

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: MW-51_080618

Lab Sample ID: 240-99577-5

Date Collected: 08/06/18 15:05

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			08/10/18 17:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125					08/10/18 17:21	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			08/19/18 13:31	1
Benzene	1.0	U	1.0	0.13	ug/L			08/19/18 13:31	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/19/18 13:31	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/19/18 13:31	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/19/18 13:31	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/19/18 13:31	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/19/18 13:31	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/19/18 13:31	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/19/18 13:31	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/19/18 13:31	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/19/18 13:31	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/19/18 13:31	1
cis-1,2-Dichloroethene	0.37	J	1.0	0.16	ug/L			08/19/18 13:31	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/19/18 13:31	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/19/18 13:31	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/19/18 13:31	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/19/18 13:31	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/19/18 13:31	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/19/18 13:31	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/19/18 13:31	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/19/18 13:31	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/19/18 13:31	1
1,1-Dichloroethane	0.77	J	1.0	0.17	ug/L			08/19/18 13:31	1
1,2-Dichloroethane	0.28	J	1.0	0.21	ug/L			08/19/18 13:31	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/19/18 13:31	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/19/18 13:31	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/19/18 13:31	1
2-Hexanone	10	U	10	0.54	ug/L			08/19/18 13:31	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/19/18 13:31	1
Methyl acetate	10	U	10	1.7	ug/L			08/19/18 13:31	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/19/18 13:31	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/19/18 13:31	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/19/18 13:31	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/19/18 13:31	1
Styrene	1.0	U	1.0	0.10	ug/L			08/19/18 13:31	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/19/18 13:31	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/19/18 13:31	1
Toluene	1.0	U	1.0	0.14	ug/L			08/19/18 13:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/19/18 13:31	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/19/18 13:31	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/19/18 13:31	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/19/18 13:31	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/19/18 13:31	1

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: MW-51_080618

Lab Sample ID: 240-99577-5

Date Collected: 08/06/18 15:05

Matrix: Water

Date Received: 08/08/18 09:50

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			08/19/18 13:31	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/19/18 13:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/19/18 13:31	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/19/18 13:31	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/19/18 13:31	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/19/18 13:31	1
Vinyl chloride	0.40	J	1.0	0.20	ug/L			08/19/18 13:31	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/19/18 13:31	1
1,4-Dioxane	50	U *	50	13	ug/L			08/19/18 13:31	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/19/18 13:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		69 - 120		08/19/18 13:31	1
Dibromofluoromethane (Surr)	106		69 - 124		08/19/18 13:31	1
1,2-Dichloroethane-d4 (Surr)	123		61 - 138		08/19/18 13:31	1
Toluene-d8 (Surr)	111		73 - 120		08/19/18 13:31	1

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-99577-6

Date Collected: 08/06/18 00:00

Matrix: Water

Date Received: 08/08/18 09:50

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			08/19/18 13:53	1
Benzene	1.0	U	1.0	0.13	ug/L			08/19/18 13:53	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/19/18 13:53	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/19/18 13:53	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/19/18 13:53	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/19/18 13:53	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/19/18 13:53	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/19/18 13:53	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/19/18 13:53	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/19/18 13:53	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/19/18 13:53	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/19/18 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			08/19/18 13:53	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/19/18 13:53	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/19/18 13:53	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/19/18 13:53	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/19/18 13:53	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/19/18 13:53	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/19/18 13:53	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/19/18 13:53	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/19/18 13:53	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/19/18 13:53	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/19/18 13:53	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/19/18 13:53	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/19/18 13:53	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/19/18 13:53	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/19/18 13:53	1
2-Hexanone	10	U	10	0.54	ug/L			08/19/18 13:53	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/19/18 13:53	1
Methyl acetate	10	U	10	1.7	ug/L			08/19/18 13:53	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/19/18 13:53	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/19/18 13:53	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/19/18 13:53	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/19/18 13:53	1
Styrene	1.0	U	1.0	0.10	ug/L			08/19/18 13:53	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/19/18 13:53	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/19/18 13:53	1
Toluene	1.0	U	1.0	0.14	ug/L			08/19/18 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/19/18 13:53	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/19/18 13:53	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/19/18 13:53	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/19/18 13:53	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/19/18 13:53	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/19/18 13:53	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/19/18 13:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/19/18 13:53	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/19/18 13:53	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/19/18 13:53	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/19/18 13:53	1

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-99577-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-99577-6

Date Collected: 08/06/18 00:00

Matrix: Water

Date Received: 08/08/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/19/18 13:53	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/19/18 13:53	1
1,4-Dioxane	50	U *	50	13	ug/L			08/19/18 13:53	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/19/18 13:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	108		69 - 120		08/19/18 13:53	1
Dibromofluoromethane (Surr)	106		69 - 124		08/19/18 13:53	1
1,2-Dichloroethane-d4 (Surr)	121		61 - 138		08/19/18 13:53	1
Toluene-d8 (Surr)	111		73 - 120		08/19/18 13:53	1

Surrogate Summary

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

TestAmerica Job ID: 240-99577-1

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)
240-99576-E-1 MS	Matrix Spike	110	104	118	110
240-99576-E-1 MSD	Matrix Spike Duplicate	112	104	118	110
240-99577-1	TW-16-01_080618	107	107	121	111
240-99577-2	TW-16-02_080618	109	112	122	109
240-99577-3	MW-23_080618	107	103	120	109
240-99577-4	MW-22_080618	109	107	121	110
240-99577-5	MW-51_080618	107	106	123	111
240-99577-6	TRIP BLANK	108	106	121	111
240-99616-B-5 MS	Matrix Spike	111	108	121	111
240-99616-B-5 MSD	Matrix Spike Duplicate	113	106	121	111
LCS 240-341482/6	Lab Control Sample	112	112	123	110
LCS 240-341513/6	Lab Control Sample	109	108	122	111
MB 240-341482/9	Method Blank	107	107	122	108
MB 240-341513/9	Method Blank	109	102	119	110

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)
240-99577-1	TW-16-01_080618	106
240-99577-2	TW-16-02_080618	98
240-99577-3	MW-23_080618	102
240-99577-4	MW-22_080618	108
240-99577-5	MW-51_080618	106
240-99616-B-2 MS	Matrix Spike	108
240-99616-B-2 MSD	Matrix Spike Duplicate	112
LCS 240-340331/4	Lab Control Sample	99
LCS 240-340838/4	Lab Control Sample	104
MB 240-340331/5	Method Blank	104
MB 240-340838/5	Method Blank	105

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: 240-99577-1

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

Lab Sample ID: MB 240-341482/9

Matrix: Water

Analysis Batch: 341482

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			08/18/18 11:15	1
Benzene	1.0	U	1.0	0.13	ug/L			08/18/18 11:15	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/18/18 11:15	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/18/18 11:15	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/18/18 11:15	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/18/18 11:15	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/18/18 11:15	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/18/18 11:15	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/18/18 11:15	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/18/18 11:15	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/18/18 11:15	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/18/18 11:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			08/18/18 11:15	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/18/18 11:15	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/18/18 11:15	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/18/18 11:15	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/18/18 11:15	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/18/18 11:15	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/18/18 11:15	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/18/18 11:15	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/18/18 11:15	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/18/18 11:15	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/18/18 11:15	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/18/18 11:15	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/18/18 11:15	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/18/18 11:15	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/18/18 11:15	1
2-Hexanone	10	U	10	0.54	ug/L			08/18/18 11:15	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/18/18 11:15	1
Methyl acetate	10	U	10	1.7	ug/L			08/18/18 11:15	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/18/18 11:15	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/18/18 11:15	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/18/18 11:15	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/18/18 11:15	1
Styrene	1.0	U	1.0	0.10	ug/L			08/18/18 11:15	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/18/18 11:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/18/18 11:15	1
Toluene	1.0	U	1.0	0.14	ug/L			08/18/18 11:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/18/18 11:15	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/18/18 11:15	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/18/18 11:15	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/18/18 11:15	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/18/18 11:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/18/18 11:15	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/18/18 11:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/18/18 11:15	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/18/18 11:15	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/18/18 11:15	1

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: MB 240-341482/9

Matrix: Water

Analysis Batch: 341482

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			08/18/18 11:15	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/18/18 11:15	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/18/18 11:15	1
1,4-Dioxane	50	U	50	13	ug/L			08/18/18 11:15	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/18/18 11:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		69 - 120		08/18/18 11:15	1
Dibromofluoromethane (Surr)	107		69 - 124		08/18/18 11:15	1
1,2-Dichloroethane-d4 (Surr)	122		61 - 138		08/18/18 11:15	1
Toluene-d8 (Surr)	108		73 - 120		08/18/18 11:15	1

Lab Sample ID: LCS 240-341482/6

Matrix: Water

Analysis Batch: 341482

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	40.0	48.0		ug/L		120	35 - 131
Benzene	20.0	20.0		ug/L		100	79 - 120
Bromodichloromethane	20.0	18.8		ug/L		94	79 - 125
Bromoform	20.0	18.1		ug/L		90	55 - 145
Bromomethane	20.0	16.7		ug/L		84	17 - 158
2-Butanone (MEK)	40.0	42.2		ug/L		105	43 - 149
Carbon disulfide	20.0	19.0		ug/L		95	49 - 141
Carbon tetrachloride	20.0	18.5		ug/L		92	55 - 171
Chlorobenzene	20.0	19.0		ug/L		95	80 - 120
Chloroethane	20.0	18.5		ug/L		93	10 - 149
Chloroform	20.0	20.3		ug/L		101	80 - 120
Chloromethane	20.0	18.5		ug/L		93	59 - 124
cis-1,2-Dichloroethene	20.0	19.8		ug/L		99	77 - 120
cis-1,3-Dichloropropene	20.0	18.7		ug/L		94	75 - 120
Cyclohexane	20.0	20.1		ug/L		101	66 - 135
Dibromochloromethane	20.0	18.7		ug/L		94	64 - 129
1,2-Dibromo-3-Chloropropane	20.0	19.8		ug/L		99	50 - 130
1,2-Dibromoethane	20.0	19.4		ug/L		97	80 - 120
1,2-Dichlorobenzene	20.0	19.3		ug/L		97	80 - 120
1,3-Dichlorobenzene	20.0	19.1		ug/L		96	80 - 120
1,4-Dichlorobenzene	20.0	18.7		ug/L		94	80 - 120
Dichlorodifluoromethane	20.0	14.8		ug/L		74	42 - 141
1,1-Dichloroethane	20.0	21.5		ug/L		107	74 - 120
1,2-Dichloroethane	20.0	20.8		ug/L		104	68 - 133
1,1-Dichloroethene	20.0	21.8		ug/L		109	65 - 127
1,2-Dichloropropane	20.0	19.8		ug/L		99	78 - 127
Ethylbenzene	20.0	19.6		ug/L		98	80 - 120
2-Hexanone	40.0	44.6		ug/L		111	28 - 169
Isopropylbenzene	20.0	21.0		ug/L		105	80 - 128
Methyl acetate	40.0	41.7		ug/L		104	63 - 137
Methylcyclohexane	20.0	20.4		ug/L		102	63 - 141

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: LCS 240-341482/6
Matrix: Water
Analysis Batch: 341482

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	20.0	20.0		ug/L		100	64 - 140
4-Methyl-2-pentanone (MIBK)	40.0	41.2		ug/L		103	53 - 144
Methyl tert-butyl ether	20.0	21.2		ug/L		106	73 - 120
Styrene	20.0	20.1		ug/L		100	80 - 121
1,1,2,2-Tetrachloroethane	20.0	21.3		ug/L		107	58 - 122
Tetrachloroethene	20.0	18.3		ug/L		92	80 - 122
Toluene	20.0	20.2		ug/L		101	78 - 120
trans-1,2-Dichloroethene	20.0	21.2		ug/L		106	74 - 124
trans-1,3-Dichloropropene	20.0	18.7		ug/L		94	67 - 120
1,2,4-Trichlorobenzene	20.0	19.4		ug/L		97	34 - 141
1,1,1-Trichloroethane	20.0	19.6		ug/L		98	64 - 147
1,1,2-Trichloroethane	20.0	21.0		ug/L		105	76 - 121
Trichloroethene	20.0	17.8		ug/L		89	76 - 124
Trichlorofluoromethane	20.0	16.5		ug/L		83	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.3		ug/L		91	65 - 144
1,2,4-Trimethylbenzene	20.0	20.1		ug/L		100	80 - 120
1,3,5-Trimethylbenzene	20.0	20.6		ug/L		103	79 - 120
Vinyl chloride	20.0	19.9		ug/L		100	65 - 124
Xylenes, Total	40.0	39.8		ug/L		100	80 - 120
1,4-Dioxane	400	813	*	ug/L		203	35 - 134
Diethyl ether	20.0	21.4		ug/L		107	72 - 125

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
4-Bromofluorobenzene (Surr)	112		69 - 120
Dibromofluoromethane (Surr)	112		69 - 124
1,2-Dichloroethane-d4 (Surr)	123		61 - 138
Toluene-d8 (Surr)	110		73 - 120

Lab Sample ID: 240-99576-E-1 MS
Matrix: Water
Analysis Batch: 341482

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
Acetone	400	U	1600	1920		ug/L		120	19 - 133
Benzene	40	U	800	787		ug/L		98	69 - 127
Bromodichloromethane	40	U	800	757		ug/L		95	75 - 128
Bromoform	40	U	800	673		ug/L		84	61 - 135
Bromomethane	40	U	800	629		ug/L		79	10 - 148
2-Butanone (MEK)	400	U	1600	1790		ug/L		112	34 - 153
Carbon disulfide	200	U	800	690		ug/L		86	46 - 143
Carbon tetrachloride	40	U	800	679		ug/L		85	53 - 175
Chlorobenzene	40	U	800	748		ug/L		93	76 - 120
Chloroethane	40	U	800	682		ug/L		85	10 - 141
Chloroform	40	U	800	768		ug/L		96	74 - 125
Chloromethane	40	U	800	678		ug/L		85	34 - 127
cis-1,2-Dichloroethene	180		800	905		ug/L		90	69 - 127
cis-1,3-Dichloropropene	40	U	800	779		ug/L		97	68 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: 240-99576-E-1 MS
Matrix: Water
Analysis Batch: 341482

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

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Cyclohexane	40	U	800	678		ug/L		85	56 - 135
Dibromochloromethane	40	U	800	737		ug/L		92	62 - 131
1,2-Dibromo-3-Chloropropane	40	U	800	756		ug/L		94	48 - 130
1,2-Dibromoethane	40	U	800	771		ug/L		96	73 - 121
1,2-Dichlorobenzene	40	U	800	729		ug/L		91	70 - 120
1,3-Dichlorobenzene	40	U	800	720		ug/L		90	71 - 120
1,4-Dichlorobenzene	40	U	800	714		ug/L		89	72 - 120
Dichlorodifluoromethane	40	U	800	516		ug/L		65	45 - 130
1,1-Dichloroethane	40	U	800	803		ug/L		100	69 - 122
1,2-Dichloroethane	40	U	800	819		ug/L		102	64 - 138
1,1-Dichloroethene	40	U	800	802		ug/L		100	62 - 127
1,2-Dichloropropane	40	U	800	800		ug/L		100	72 - 131
Ethylbenzene	40	U	800	749		ug/L		94	72 - 121
2-Hexanone	400	U	1600	1850		ug/L		116	21 - 184
Isopropylbenzene	40	U	800	773		ug/L		97	70 - 132
Methyl acetate	400	U	1600	1670		ug/L		104	52 - 139
Methylcyclohexane	40	U	800	640		ug/L		80	46 - 139
Methylene Chloride	200	U	800	764		ug/L		96	52 - 137
4-Methyl-2-pentanone (MIBK)	400	U	1600	1730		ug/L		108	53 - 147
Methyl tert-butyl ether	40	U	800	799		ug/L		100	67 - 125
Styrene	40	U	800	784		ug/L		98	74 - 125
1,1,2,2-Tetrachloroethane	40	U	800	854		ug/L		107	51 - 123
Tetrachloroethene	40	U	800	703		ug/L		88	69 - 126
Toluene	40	U	800	801		ug/L		100	69 - 125
trans-1,2-Dichloroethene	40	U	800	800		ug/L		100	66 - 131
trans-1,3-Dichloropropene	40	U	800	759		ug/L		95	59 - 120
1,2,4-Trichlorobenzene	40	U	800	684		ug/L		85	26 - 138
1,1,1-Trichloroethane	40	U	800	726		ug/L		91	57 - 156
1,1,2-Trichloroethane	40	U	800	841		ug/L		105	68 - 127
Trichloroethene	40	U	800	691		ug/L		86	68 - 129
Trichlorofluoromethane	40	U	800	598		ug/L		75	28 - 172
1,1,2-Trichloro-1,2,2-trifluoroethane	40	U	800	606		ug/L		76	58 - 137
1,2,4-Trimethylbenzene	40	U	800	750		ug/L		94	64 - 120
1,3,5-Trimethylbenzene	40	U	800	767		ug/L		96	67 - 120
Vinyl chloride	870		800	1490		ug/L		78	55 - 123
Xylenes, Total	80	U	1600	1500		ug/L		93	71 - 122
1,4-Dioxane	2000	U F1 *	16000	33100	F1	ug/L		207	13 - 155
Diethyl ether	80	U	800	795		ug/L		99	65 - 124

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	110		69 - 120
Dibromofluoromethane (Surr)	104		69 - 124
1,2-Dichloroethane-d4 (Surr)	118		61 - 138
Toluene-d8 (Surr)	110		73 - 120

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: 240-99576-E-1 MSD

Matrix: Water

Analysis Batch: 341482

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
Acetone	400	U	1600	1860		ug/L		116	19 - 133	3	35
Benzene	40	U	800	780		ug/L		98	69 - 127	1	10
Bromodichloromethane	40	U	800	743		ug/L		93	75 - 128	2	13
Bromoform	40	U	800	675		ug/L		84	61 - 135	0	13
Bromomethane	40	U	800	629		ug/L		79	10 - 148	0	35
2-Butanone (MEK)	400	U	1600	1720		ug/L		108	34 - 153	4	23
Carbon disulfide	200	U	800	703		ug/L		88	46 - 143	2	18
Carbon tetrachloride	40	U	800	675		ug/L		84	53 - 175	1	17
Chlorobenzene	40	U	800	743		ug/L		93	76 - 120	1	12
Chloroethane	40	U	800	707		ug/L		88	10 - 141	4	35
Chloroform	40	U	800	776		ug/L		97	74 - 125	1	11
Chloromethane	40	U	800	712		ug/L		89	34 - 127	5	25
cis-1,2-Dichloroethene	180		800	905		ug/L		90	69 - 127	0	11
cis-1,3-Dichloropropene	40	U	800	759		ug/L		95	68 - 120	3	13
Cyclohexane	40	U	800	687		ug/L		86	56 - 135	1	35
Dibromochloromethane	40	U	800	734		ug/L		92	62 - 131	0	15
1,2-Dibromo-3-Chloropropane	40	U	800	765		ug/L		96	48 - 130	1	31
1,2-Dibromoethane	40	U	800	776		ug/L		97	73 - 121	1	12
1,2-Dichlorobenzene	40	U	800	750		ug/L		94	70 - 120	3	19
1,3-Dichlorobenzene	40	U	800	749		ug/L		94	71 - 120	4	18
1,4-Dichlorobenzene	40	U	800	731		ug/L		91	72 - 120	2	17
Dichlorodifluoromethane	40	U	800	559		ug/L		70	45 - 130	8	34
1,1-Dichloroethane	40	U	800	811		ug/L		101	69 - 122	1	11
1,2-Dichloroethane	40	U	800	801		ug/L		100	64 - 138	2	11
1,1-Dichloroethene	40	U	800	804		ug/L		100	62 - 127	0	14
1,2-Dichloropropane	40	U	800	799		ug/L		100	72 - 131	0	12
Ethylbenzene	40	U	800	761		ug/L		95	72 - 121	2	15
2-Hexanone	400	U	1600	1860		ug/L		116	21 - 184	0	12
Isopropylbenzene	40	U	800	763		ug/L		95	70 - 132	1	16
Methyl acetate	400	U	1600	1650		ug/L		103	52 - 139	1	14
Methylcyclohexane	40	U	800	658		ug/L		82	46 - 139	3	35
Methylene Chloride	200	U	800	756		ug/L		94	52 - 137	1	12
4-Methyl-2-pentanone (MIBK)	400	U	1600	1720		ug/L		107	53 - 147	1	16
Methyl tert-butyl ether	40	U	800	805		ug/L		101	67 - 125	1	12
Styrene	40	U	800	775		ug/L		97	74 - 125	1	14
1,1,2,2-Tetrachloroethane	40	U	800	890		ug/L		111	51 - 123	4	17
Tetrachloroethene	40	U	800	686		ug/L		86	69 - 126	2	18
Toluene	40	U	800	790		ug/L		99	69 - 125	1	14
trans-1,2-Dichloroethene	40	U	800	811		ug/L		101	66 - 131	1	11
trans-1,3-Dichloropropene	40	U	800	753		ug/L		94	59 - 120	1	14
1,2,4-Trichlorobenzene	40	U	800	715		ug/L		89	26 - 138	5	35
1,1,1-Trichloroethane	40	U	800	735		ug/L		92	57 - 156	1	13
1,1,2-Trichloroethane	40	U	800	835		ug/L		104	68 - 127	1	11
Trichloroethene	40	U	800	682		ug/L		85	68 - 129	1	12
Trichlorofluoromethane	40	U	800	629		ug/L		79	28 - 172	5	26
1,1,2-Trichloro-1,2,2-trifluoroethane	40	U	800	610		ug/L		76	58 - 137	1	35
1,2,4-Trimethylbenzene	40	U	800	778		ug/L		97	64 - 120	4	22

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: 240-99576-E-1 MSD

Matrix: Water

Analysis Batch: 341482

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
1,3,5-Trimethylbenzene	40	U	800	798		ug/L		100	67 - 120	4	25
Vinyl chloride	870		800	1560		ug/L		86	55 - 123	4	12
Xylenes, Total	80	U	1600	1480		ug/L		93	71 - 122	1	14
1,4-Dioxane	2000	U F1 *	16000	29800	F1	ug/L		186	13 - 155	10	35
Diethyl ether	80	U	800	822		ug/L		103	65 - 124	3	11

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	112		69 - 120
Dibromofluoromethane (Surr)	104		69 - 124
1,2-Dichloroethane-d4 (Surr)	118		61 - 138
Toluene-d8 (Surr)	110		73 - 120

Lab Sample ID: MB 240-341513/9

Matrix: Water

Analysis Batch: 341513

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			08/19/18 11:41	1
Benzene	1.0	U	1.0	0.13	ug/L			08/19/18 11:41	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			08/19/18 11:41	1
Bromoform	1.0	U	1.0	0.76	ug/L			08/19/18 11:41	1
Bromomethane	1.0	U	1.0	0.42	ug/L			08/19/18 11:41	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			08/19/18 11:41	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			08/19/18 11:41	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			08/19/18 11:41	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			08/19/18 11:41	1
Chloroethane	1.0	U	1.0	0.83	ug/L			08/19/18 11:41	1
Chloroform	1.0	U	1.0	0.13	ug/L			08/19/18 11:41	1
Chloromethane	1.0	U	1.0	0.20	ug/L			08/19/18 11:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			08/19/18 11:41	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			08/19/18 11:41	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			08/19/18 11:41	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			08/19/18 11:41	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			08/19/18 11:41	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			08/19/18 11:41	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/19/18 11:41	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			08/19/18 11:41	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			08/19/18 11:41	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			08/19/18 11:41	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			08/19/18 11:41	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			08/19/18 11:41	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/19/18 11:41	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			08/19/18 11:41	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			08/19/18 11:41	1
2-Hexanone	10	U	10	0.54	ug/L			08/19/18 11:41	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			08/19/18 11:41	1
Methyl acetate	10	U	10	1.7	ug/L			08/19/18 11:41	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			08/19/18 11:41	1

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: MB 240-341513/9
Matrix: Water
Analysis Batch: 341513

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	5.0	U	5.0	2.6	ug/L			08/19/18 11:41	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			08/19/18 11:41	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			08/19/18 11:41	1
Styrene	1.0	U	1.0	0.10	ug/L			08/19/18 11:41	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			08/19/18 11:41	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			08/19/18 11:41	1
Toluene	1.0	U	1.0	0.14	ug/L			08/19/18 11:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			08/19/18 11:41	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			08/19/18 11:41	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			08/19/18 11:41	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			08/19/18 11:41	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			08/19/18 11:41	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			08/19/18 11:41	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			08/19/18 11:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			08/19/18 11:41	1
1,2,3-Trimethylbenzene	5.0	U	5.0	0.14	ug/L			08/19/18 11:41	1
1,2,4-Trimethylbenzene	1.0	U	1.0	0.070	ug/L			08/19/18 11:41	1
1,3,5-Trimethylbenzene	1.0	U	1.0	0.12	ug/L			08/19/18 11:41	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			08/19/18 11:41	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			08/19/18 11:41	1
1,4-Dioxane	50	U	50	13	ug/L			08/19/18 11:41	1
Diethyl ether	2.0	U	2.0	0.19	ug/L			08/19/18 11:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	109		69 - 120		08/19/18 11:41	1
Dibromofluoromethane (Surr)	102		69 - 124		08/19/18 11:41	1
1,2-Dichloroethane-d4 (Surr)	119		61 - 138		08/19/18 11:41	1
Toluene-d8 (Surr)	110		73 - 120		08/19/18 11:41	1

Lab Sample ID: LCS 240-341513/6
Matrix: Water
Analysis Batch: 341513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	40.0	49.2		ug/L		123	35 - 131
Benzene	20.0	20.7		ug/L		104	79 - 120
Bromodichloromethane	20.0	19.9		ug/L		99	79 - 125
Bromoform	20.0	18.4		ug/L		92	55 - 145
Bromomethane	20.0	15.9		ug/L		80	17 - 158
2-Butanone (MEK)	40.0	42.7		ug/L		107	43 - 149
Carbon disulfide	20.0	19.8		ug/L		99	49 - 141
Carbon tetrachloride	20.0	19.4		ug/L		97	55 - 171
Chlorobenzene	20.0	19.7		ug/L		98	80 - 120
Chloroethane	20.0	18.3		ug/L		91	10 - 149
Chloroform	20.0	20.7		ug/L		103	80 - 120
Chloromethane	20.0	17.9		ug/L		89	59 - 124
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 120
cis-1,3-Dichloropropene	20.0	19.9		ug/L		100	75 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: LCS 240-341513/6
Matrix: Water
Analysis Batch: 341513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyclohexane	20.0	22.3		ug/L		111	66 - 135
Dibromochloromethane	20.0	19.7		ug/L		98	64 - 129
1,2-Dibromo-3-Chloropropane	20.0	21.0		ug/L		105	50 - 130
1,2-Dibromoethane	20.0	19.6		ug/L		98	80 - 120
1,2-Dichlorobenzene	20.0	20.4		ug/L		102	80 - 120
1,3-Dichlorobenzene	20.0	19.7		ug/L		99	80 - 120
1,4-Dichlorobenzene	20.0	19.6		ug/L		98	80 - 120
Dichlorodifluoromethane	20.0	15.1		ug/L		76	42 - 141
1,1-Dichloroethane	20.0	21.7		ug/L		109	74 - 120
1,2-Dichloroethane	20.0	21.4		ug/L		107	68 - 133
1,1-Dichloroethene	20.0	22.5		ug/L		113	65 - 127
1,2-Dichloropropane	20.0	20.4		ug/L		102	78 - 127
Ethylbenzene	20.0	20.3		ug/L		101	80 - 120
2-Hexanone	40.0	45.7		ug/L		114	28 - 169
Isopropylbenzene	20.0	21.9		ug/L		109	80 - 128
Methyl acetate	40.0	41.2		ug/L		103	63 - 137
Methylcyclohexane	20.0	22.1		ug/L		111	63 - 141
Methylene Chloride	20.0	20.1		ug/L		101	64 - 140
4-Methyl-2-pentanone (MIBK)	40.0	42.7		ug/L		107	53 - 144
Methyl tert-butyl ether	20.0	21.7		ug/L		109	73 - 120
Styrene	20.0	20.5		ug/L		103	80 - 121
1,1,2,2-Tetrachloroethane	20.0	22.6		ug/L		113	58 - 122
Tetrachloroethene	20.0	19.1		ug/L		96	80 - 122
Toluene	20.0	21.0		ug/L		105	78 - 120
trans-1,2-Dichloroethene	20.0	21.7		ug/L		109	74 - 124
trans-1,3-Dichloropropene	20.0	20.3		ug/L		102	67 - 120
1,2,4-Trichlorobenzene	20.0	20.3		ug/L		102	34 - 141
1,1,1-Trichloroethane	20.0	19.8		ug/L		99	64 - 147
1,1,2-Trichloroethane	20.0	21.5		ug/L		108	76 - 121
Trichloroethene	20.0	18.1		ug/L		91	76 - 124
Trichlorofluoromethane	20.0	16.4		ug/L		82	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	20.1		ug/L		100	65 - 144
1,2,4-Trimethylbenzene	20.0	21.2		ug/L		106	80 - 120
1,3,5-Trimethylbenzene	20.0	21.8		ug/L		109	79 - 120
Vinyl chloride	20.0	18.9		ug/L		95	65 - 124
Xylenes, Total	40.0	41.2		ug/L		103	80 - 120
1,4-Dioxane	400	756 *		ug/L		189	35 - 134
Diethyl ether	20.0	22.2		ug/L		111	72 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	109		69 - 120
Dibromofluoromethane (Surr)	108		69 - 124
1,2-Dichloroethane-d4 (Surr)	122		61 - 138
Toluene-d8 (Surr)	111		73 - 120

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: 240-99616-B-5 MS

Matrix: Water

Analysis Batch: 341513

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	100	U	400	468		ug/L		117	19 - 133
Benzene	30		200	224		ug/L		97	69 - 127
Bromodichloromethane	10	U	200	187		ug/L		93	75 - 128
Bromoform	10	U	200	163		ug/L		81	61 - 135
Bromomethane	10	U	200	149		ug/L		75	10 - 148
2-Butanone (MEK)	100	U	400	428		ug/L		107	34 - 153
Carbon disulfide	50	U	200	174		ug/L		87	46 - 143
Carbon tetrachloride	10	U	200	170		ug/L		85	53 - 175
Chlorobenzene	290		200	458		ug/L		84	76 - 120
Chloroethane	29		200	195		ug/L		83	10 - 141
Chloroform	10	U	200	196		ug/L		98	74 - 125
Chloromethane	10	U	200	168		ug/L		84	34 - 127
cis-1,2-Dichloroethene	7.5	J	200	193		ug/L		93	69 - 127
cis-1,3-Dichloropropene	10	U	200	185		ug/L		93	68 - 120
Dibromochloromethane	10	U	200	177		ug/L		89	62 - 131
1,2-Dichlorobenzene	10	U	200	185		ug/L		93	70 - 120
1,3-Dichlorobenzene	10	U	200	183		ug/L		91	71 - 120
1,4-Dichlorobenzene	10	U	200	180		ug/L		90	72 - 120
1,1-Dichloroethane	110		200	311		ug/L		99	69 - 122
1,2-Dichloroethane	5.4	J	200	207		ug/L		101	64 - 138
1,1-Dichloroethene	47		200	248		ug/L		101	62 - 127
1,2-Dichloropropane	10	U	200	201		ug/L		100	72 - 131
Ethylbenzene	10	U	200	187		ug/L		94	72 - 121
2-Hexanone	100	U	400	455		ug/L		114	21 - 184
Methylene Chloride	50	U	200	210		ug/L		105	52 - 137
4-Methyl-2-pentanone (MIBK)	100	U	400	421		ug/L		105	53 - 147
Styrene	10	U	200	195		ug/L		98	74 - 125
1,1,2,2-Tetrachloroethane	10	U	200	219		ug/L		109	51 - 123
Tetrachloroethene	1.9	J	200	175		ug/L		87	69 - 126
Toluene	10	U	200	197		ug/L		99	69 - 125
trans-1,2-Dichloroethene	10	U	200	204		ug/L		102	66 - 131
trans-1,3-Dichloropropene	10	U	200	184		ug/L		92	59 - 120
1,1,1-Trichloroethane	25		200	210		ug/L		92	57 - 156
1,1,2-Trichloroethane	4.2	J	200	212		ug/L		104	68 - 127
Trichloroethene	7.9	J	200	179		ug/L		86	68 - 129
Vinyl chloride	10	U	200	180		ug/L		90	55 - 123
Xylenes, Total	20	U	400	380		ug/L		95	71 - 122
1,4-Dioxane	960	F1 *	4000	7670	F1	ug/L		168	13 - 155

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	111		69 - 120
Dibromofluoromethane (Surr)	108		69 - 124
1,2-Dichloroethane-d4 (Surr)	121		61 - 138
Toluene-d8 (Surr)	111		73 - 120

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: 240-99616-B-5 MSD

Matrix: Water

Analysis Batch: 341513

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
Acetone	100	U	400	505		ug/L		126	19 - 133	7	35
Benzene	30		200	236		ug/L		103	69 - 127	5	10
Bromodichloromethane	10	U	200	198		ug/L		99	75 - 128	6	13
Bromoform	10	U	200	177		ug/L		89	61 - 135	9	13
Bromomethane	10	U	200	157		ug/L		78	10 - 148	5	35
2-Butanone (MEK)	100	U	400	470		ug/L		118	34 - 153	9	23
Carbon disulfide	50	U	200	190		ug/L		95	46 - 143	9	18
Carbon tetrachloride	10	U	200	178		ug/L		89	53 - 175	5	17
Chlorobenzene	290		200	458		ug/L		83	76 - 120	0	12
Chloroethane	29		200	206		ug/L		89	10 - 141	5	35
Chloroform	10	U	200	207		ug/L		103	74 - 125	5	11
Chloromethane	10	U	200	179		ug/L		89	34 - 127	6	25
cis-1,2-Dichloroethene	7.5	J	200	205		ug/L		99	69 - 127	6	11
cis-1,3-Dichloropropene	10	U	200	198		ug/L		99	68 - 120	6	13
Dibromochloromethane	10	U	200	195		ug/L		98	62 - 131	9	15
1,2-Dichlorobenzene	10	U	200	190		ug/L		95	70 - 120	3	19
1,3-Dichlorobenzene	10	U	200	187		ug/L		93	71 - 120	2	18
1,4-Dichlorobenzene	10	U	200	185		ug/L		93	72 - 120	3	17
1,1-Dichloroethane	110		200	328		ug/L		108	69 - 122	5	11
1,2-Dichloroethane	5.4	J	200	221		ug/L		108	64 - 138	6	11
1,1-Dichloroethene	47		200	259		ug/L		106	62 - 127	4	14
1,2-Dichloropropane	10	U	200	211		ug/L		105	72 - 131	5	12
Ethylbenzene	10	U	200	194		ug/L		97	72 - 121	3	15
2-Hexanone	100	U	400	493		ug/L		123	21 - 184	8	12
Methylene Chloride	50	U	200	225		ug/L		113	52 - 137	7	12
4-Methyl-2-pentanone (MIBK)	100	U	400	454		ug/L		114	53 - 147	8	16
Styrene	10	U	200	208		ug/L		104	74 - 125	6	14
1,1,2,2-Tetrachloroethane	10	U	200	232		ug/L		116	51 - 123	6	17
Tetrachloroethene	1.9	J	200	182		ug/L		90	69 - 126	4	18
Toluene	10	U	200	209		ug/L		104	69 - 125	6	14
trans-1,2-Dichloroethene	10	U	200	213		ug/L		106	66 - 131	4	11
trans-1,3-Dichloropropene	10	U	200	200		ug/L		100	59 - 120	8	14
1,1,1-Trichloroethane	25		200	220		ug/L		98	57 - 156	5	13
1,1,2-Trichloroethane	4.2	J	200	226		ug/L		111	68 - 127	7	11
Trichloroethene	7.9	J	200	182		ug/L		87	68 - 129	1	12
Vinyl chloride	10	U	200	194		ug/L		97	55 - 123	8	12
Xylenes, Total	20	U	400	399		ug/L		100	71 - 122	5	14
1,4-Dioxane	960	F1 *	4000	9150	F1	ug/L		205	13 - 155	18	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	113		69 - 120
Dibromofluoromethane (Surr)	106		69 - 124
1,2-Dichloroethane-d4 (Surr)	121		61 - 138
Toluene-d8 (Surr)	111		73 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: MB 240-340331/5
Matrix: Water
Analysis Batch: 340331

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			08/10/18 13:11	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 125					08/10/18 13:11	1

Lab Sample ID: LCS 240-340331/4
Matrix: Water
Analysis Batch: 340331

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	9.52		ug/L		95	59 - 131
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	99		63 - 125				

Lab Sample ID: MB 240-340838/5
Matrix: Water
Analysis Batch: 340838

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			08/14/18 13:17	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		63 - 125					08/14/18 13:17	1

Lab Sample ID: LCS 240-340838/4
Matrix: Water
Analysis Batch: 340838

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	9.11		ug/L		91	59 - 131
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	104		63 - 125				

Lab Sample ID: 240-99616-B-2 MS
Matrix: Water
Analysis Batch: 340838

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	350		30.0	384	4	ug/L		110	52 - 129
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	108		63 - 125						

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-99577-1

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

Lab Sample ID: 240-99616-B-2 MSD
 Matrix: Water
 Analysis Batch: 340838

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	350		30.0	374	4	ug/L		75	52 - 129	3	13
Surrogate	%Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	112		63 - 125								

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QC Association Summary

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

TestAmerica Job ID: 240-99577-1

GC/MS VOA

Analysis Batch: 340331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-99577-1	TW-16-01_080618	Total/NA	Water	8260B SIM	
240-99577-2	TW-16-02_080618	Total/NA	Water	8260B SIM	
240-99577-4	MW-22_080618	Total/NA	Water	8260B SIM	
240-99577-5	MW-51_080618	Total/NA	Water	8260B SIM	
MB 240-340331/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-340331/4	Lab Control Sample	Total/NA	Water	8260B SIM	

Analysis Batch: 340838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-99577-3	MW-23_080618	Total/NA	Water	8260B SIM	
MB 240-340838/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-340838/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-99616-B-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-99616-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 341482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-99577-1	TW-16-01_080618	Total/NA	Water	8260B	
240-99577-2	TW-16-02_080618	Total/NA	Water	8260B	
MB 240-341482/9	Method Blank	Total/NA	Water	8260B	
LCS 240-341482/6	Lab Control Sample	Total/NA	Water	8260B	
240-99576-E-1 MS	Matrix Spike	Total/NA	Water	8260B	
240-99576-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 341513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-99577-3	MW-23_080618	Total/NA	Water	8260B	
240-99577-4	MW-22_080618	Total/NA	Water	8260B	
240-99577-5	MW-51_080618	Total/NA	Water	8260B	
240-99577-6	TRIP BLANK	Total/NA	Water	8260B	
MB 240-341513/9	Method Blank	Total/NA	Water	8260B	
LCS 240-341513/6	Lab Control Sample	Total/NA	Water	8260B	
240-99616-B-5 MS	Matrix Spike	Total/NA	Water	8260B	
240-99616-B-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: 240-99577-1

Client Sample ID: TW-16-01_080618

Date Collected: 08/06/18 09:10

Date Received: 08/08/18 09:50

Lab Sample ID: 240-99577-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		25	341482	08/18/18 17:30	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	340331	08/10/18 14:51	SAM	TAL CAN

Client Sample ID: TW-16-02_080618

Date Collected: 08/06/18 11:10

Date Received: 08/08/18 09:50

Lab Sample ID: 240-99577-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		250	341482	08/18/18 17:52	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	340331	08/10/18 15:16	SAM	TAL CAN

Client Sample ID: MW-23_080618

Date Collected: 08/06/18 12:28

Date Received: 08/08/18 09:50

Lab Sample ID: 240-99577-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2500	341513	08/19/18 12:47	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		100	340838	08/14/18 14:32	SAM	TAL CAN

Client Sample ID: MW-22_080618

Date Collected: 08/06/18 13:30

Date Received: 08/08/18 09:50

Lab Sample ID: 240-99577-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		50	341513	08/19/18 13:09	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	340331	08/10/18 16:56	SAM	TAL CAN

Client Sample ID: MW-51_080618

Date Collected: 08/06/18 15:05

Date Received: 08/08/18 09:50

Lab Sample ID: 240-99577-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	341513	08/19/18 13:31	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	340331	08/10/18 17:21	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Date Collected: 08/06/18 00:00

Date Received: 08/08/18 09:50

Lab Sample ID: 240-99577-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	341513	08/19/18 13:53	HMB	TAL CAN

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-99577-1

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 - E203728

TestAmerica Job ID: 240-99577-1

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		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kristoffer.hinskey@arcadis.com		Site Contact: Angela DeGrandis Telephone: 330-497-9396	
Project Name: Ford LTP Project Number: M1001454.0004.00001 PO # M1001454.0004.00001		TestAmerica Laboratories, Inc. COC No: 2 of 1	
Method of Shipment/Carrier: Shipping/Tracking No:		For lab use only Walk-in client Lab sampling Job/SDG No:	
Analyte 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		Analyses	
Matrix: Air <input type="checkbox"/> Aqueous <input type="checkbox"/> Sediment <input type="checkbox"/> Solid <input type="checkbox"/> Other:		Containers & Preservatives: HCl <input type="checkbox"/> NaOH <input type="checkbox"/> ZnAc/NaOH <input type="checkbox"/> Lipres <input type="checkbox"/> Other:	
Sample Date Sample Time		Filtered Sample (Y/N) Composite C/Grab C VOCs 8260B 1,4-Dioxane 8260B SIM	
Sample Identification TW-16-01-080618 TW-16-02-080618 MW-23-080618 MW-22-080618 MW-51-080618 TRIP BLANK		Sample Specific Notes / Special Instructions: Level 4 report Level 4 report Level 4 report Level 4 report Level 4 report	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Irritant <input type="checkbox"/> 4th Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown			
Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203728 Level IV Reporting.			
Relinquished by: <i>Erin Zuber</i> Relinquished by: <i>KALAN BRIGGS</i> Relinquished by: <i>John</i>		Received by: <i>KALAN BRIGGS</i> Received by: <i>John</i> Received in Laboratory by: <i>John</i>	
Company: Arcadis Company: Arcadis Company: TRC		Company: Arcadis Company: TRC Company: TRC	
Date/Time: 8-7-18 8:50 Date/Time: 8-7-18 12:15 Date/Time: 8/7/18 13:57		Date/Time: 8-7-18 8:50 Date/Time: 8/7/18 12:15 Date/Time: 8-8-18 9:50	

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TestAmerica Canton Sample Receipt Form/Narrative

Login #: 99577

Canton Facility

Client ACADIS Site Name -

Cooler unpacked by:

Cooler Received on 8-8-18 Opened on 8-8-18

BOF

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

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

TestAmerica Cooler # TA 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 °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 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# HC849161
- 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 # BG12501VB Yes No
- 16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

BOF

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): _____

