

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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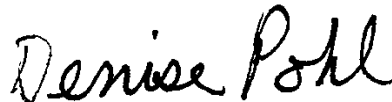
TestAmerica Job ID: 240-91361-1

Client Project/Site: Ford LTP Livonia MI - E203631

For:

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

Attn: Kristoffer Hinskey



Authorized for release by:
2/22/2018 8:14:19 AM

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Method Summary	6
Sample Summary	7
Detection Summary	8
Client Sample Results	10
Surrogate Summary	22
QC Sample Results	24
QC Association Summary	33
Lab Chronicle	34
Certification Summary	37
Chain of Custody	38

Definitions/Glossary

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

TestAmerica Job ID: 240-91361-1

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.
X	Surrogate is outside control limits
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

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

TestAmerica Job ID: 240-91361-1

Job ID: 240-91361-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-91361-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 2/9/2018 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.3° C, 1.7° C and 3.1° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-73S-020618 (240-91361-1), MW-73D-020618 (240-91361-2), MW-74-020618 (240-91361-3), MW-72-020618 (240-91361-4), MW-75D-020618 (240-91361-5), MW-76-020618 (240-91361-6), MW-75S-020618 (240-91361-7), MW-82S-020618 (240-91361-8), MW-82D-020618 (240-91361-9), MW-81-020618 (240-91361-10), DUP-01-020618 (240-91361-11) and TRIP BLANK (240-91361-12) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 02/13/2018.

Methylene Chloride was detected in method blank MB 240-314603/7 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Methylene Chloride was detected in method blank MB 240-314604/6 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

1,1,2-Trichloro-1,2,2-trifluoroethane, 2-Butanone (MEK), Cyclohexane, Dibromochloromethane, Diethyl ether and Methyl acetate failed the

Case Narrative

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

TestAmerica Job ID: 240-91361-1

Job ID: 240-91361-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

recovery criteria high for LCS 240-314603/5. Refer to the QC report for details.

Bromomethane failed the recovery criteria high for the MS of sample 240-91369-1 in batch 240-314603. Bromomethane failed the recovery criteria high for the MSD of sample 240-91369-1 in batch 240-314603. Vinyl chloride exceeded the RPD limit. Refer to the QC report for details.

Method(s) 8260B: The laboratory control sample (LCS) for analytical batch 240-314603 recovered outside control limits for multiple analytes: These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

MW-82S-020618 (240-91361-8), MW-82D-020618 (240-91361-9), MW-81-020618 (240-91361-10), DUP-01-020618 (240-91361-11), TRIP BLANK (240-91361-12) and (LCS 240-314603/5)

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-73S-020618 (240-91361-1), MW-73D-020618 (240-91361-2), MW-74-020618 (240-91361-3), MW-72-020618 (240-91361-4), MW-75D-020618 (240-91361-5), MW-76-020618 (240-91361-6), MW-75S-020618 (240-91361-7), MW-82S-020618 (240-91361-8), MW-82D-020618 (240-91361-9), MW-81-020618 (240-91361-10) and DUP-01-020618 (240-91361-11) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 02/15/2018 and 02/16/2018.

1,2-Dichloroethane-d4 (Surr) failed the surrogate recovery criteria high for MW-72-020618 (240-91361-4). 1,2-Dichloroethane-d4 (Surr) failed the surrogate recovery criteria high for MW-82S-020618 (240-91361-8). Refer to the QC report for details.

Method(s) 8260B SIM: Surrogate recovery for the following samples were outside the upper control limit: MW-72-020618 (240-91361-4) and MW-82S-020618 (240-91361-8). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

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

Method Summary

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

TestAmerica Job ID: 240-91361-1

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

Protocol References:

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

Laboratory References:

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



Sample Summary

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

TestAmerica Job ID: 240-91361-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-91361-1	MW-73S-020618	Water	02/06/18 09:45	02/09/18 09:20
240-91361-2	MW-73D-020618	Water	02/06/18 10:07	02/09/18 09:20
240-91361-3	MW-74-020618	Water	02/06/18 11:44	02/09/18 09:20
240-91361-4	MW-72-020618	Water	02/06/18 11:45	02/09/18 09:20
240-91361-5	MW-75D-020618	Water	02/06/18 13:17	02/09/18 09:20
240-91361-6	MW-76-020618	Water	02/06/18 13:30	02/09/18 09:20
240-91361-7	MW-75S-020618	Water	02/06/18 14:13	02/09/18 09:20
240-91361-8	MW-82S-020618	Water	02/06/18 14:55	02/09/18 09:20
240-91361-9	MW-82D-020618	Water	02/06/18 15:55	02/09/18 09:20
240-91361-10	MW-81-020618	Water	02/06/18 15:41	02/09/18 09:20
240-91361-11	DUP-01-020618	Water	02/06/18 00:00	02/09/18 09:20
240-91361-12	TRIP BLANK	Water	02/06/18 00:00	02/09/18 09:20



Detection Summary

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-73S-020618

Lab Sample ID: 240-91361-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.3		1.0	0.30	ug/L	1		8260B	Total/NA
Trichloroethene	0.33	J	1.0	0.33	ug/L	1		8260B	Total/NA
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-73D-020618

Lab Sample ID: 240-91361-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.5	J	2.0	0.24	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	0.43	J	1.0	0.30	ug/L	1		8260B	Total/NA
Vinyl chloride	0.79	J	1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-74-020618

Lab Sample ID: 240-91361-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.66	J	2.0	0.24	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	0.42	J	1.0	0.30	ug/L	1		8260B	Total/NA
Vinyl chloride	2.0		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-72-020618

Lab Sample ID: 240-91361-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.78	J	2.0	0.24	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	1.3		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-75D-020618

Lab Sample ID: 240-91361-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.91	J	2.0	0.24	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	1.9		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-76-020618

Lab Sample ID: 240-91361-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.2		1.0	0.30	ug/L	1		8260B	Total/NA

Client Sample ID: MW-75S-020618

Lab Sample ID: 240-91361-7

No Detections.

Client Sample ID: MW-82S-020618

Lab Sample ID: 240-91361-8

No Detections.

Client Sample ID: MW-82D-020618

Lab Sample ID: 240-91361-9

No Detections.

Client Sample ID: MW-81-020618

Lab Sample ID: 240-91361-10

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Detection Summary

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: DUP-01-020618

Lab Sample ID: 240-91361-11

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-91361-12

No Detections.

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- 2
- 3
- 4
- 5
- 6
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- 9
- 10
- 11
- 12
- 13
- 14

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-73S-020618

Lab Sample ID: 240-91361-1

Date Collected: 02/06/18 09:45

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 12:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		63 - 125					02/15/18 12:51	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.3		1.0	0.30	ug/L			02/13/18 17:01	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 17:01	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 17:01	1
Trichloroethene	0.33	J	1.0	0.33	ug/L			02/13/18 17:01	1
Vinyl chloride	1.1		1.0	0.45	ug/L			02/13/18 17:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		69 - 120					02/13/18 17:01	1
Dibromofluoromethane (Surr)	97		69 - 124					02/13/18 17:01	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/13/18 17:01	1
Toluene-d8 (Surr)	97		73 - 120					02/13/18 17:01	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-73D-020618

Lab Sample ID: 240-91361-2

Date Collected: 02/06/18 10:07

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.5	J	2.0	0.24	ug/L			02/16/18 15:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		63 - 125					02/16/18 15:17	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.43	J	1.0	0.30	ug/L			02/13/18 17:23	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 17:23	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 17:23	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 17:23	1
Vinyl chloride	0.79	J	1.0	0.45	ug/L			02/13/18 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		69 - 120					02/13/18 17:23	1
Dibromofluoromethane (Surr)	93		69 - 124					02/13/18 17:23	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/13/18 17:23	1
Toluene-d8 (Surr)	97		73 - 120					02/13/18 17:23	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-74-020618

Lab Sample ID: 240-91361-3

Date Collected: 02/06/18 11:44

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.66	J	2.0	0.24	ug/L			02/15/18 13:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		63 - 125					02/15/18 13:43	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.42	J	1.0	0.30	ug/L			02/13/18 17:45	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 17:45	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 17:45	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 17:45	1
Vinyl chloride	2.0		1.0	0.45	ug/L			02/13/18 17:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		69 - 120					02/13/18 17:45	1
Dibromofluoromethane (Surr)	95		69 - 124					02/13/18 17:45	1
1,2-Dichloroethane-d4 (Surr)	94		61 - 138					02/13/18 17:45	1
Toluene-d8 (Surr)	96		73 - 120					02/13/18 17:45	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-72-020618

Lab Sample ID: 240-91361-4

Date Collected: 02/06/18 11:45

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.78	J	2.0	0.24	ug/L			02/15/18 14:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	126	X	63 - 125					02/15/18 14:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 18:08	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 18:08	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 18:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 18:08	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 18:08	1
Vinyl chloride	1.3		1.0	0.45	ug/L			02/13/18 18:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		69 - 120					02/13/18 18:08	1
Dibromofluoromethane (Surr)	99		69 - 124					02/13/18 18:08	1
1,2-Dichloroethane-d4 (Surr)	91		61 - 138					02/13/18 18:08	1
Toluene-d8 (Surr)	98		73 - 120					02/13/18 18:08	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-75D-020618

Lab Sample ID: 240-91361-5

Date Collected: 02/06/18 13:17

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.91	J	2.0	0.24	ug/L			02/15/18 14:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		63 - 125					02/15/18 14:35	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 18:30	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 18:30	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 18:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 18:30	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 18:30	1
Vinyl chloride	1.9		1.0	0.45	ug/L			02/13/18 18:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		69 - 120					02/13/18 18:30	1
Dibromofluoromethane (Surr)	100		69 - 124					02/13/18 18:30	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/13/18 18:30	1
Toluene-d8 (Surr)	97		73 - 120					02/13/18 18:30	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-76-020618

Lab Sample ID: 240-91361-6

Date Collected: 02/06/18 13:30

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 15:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		63 - 125					02/15/18 15:00	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	2.2		1.0	0.30	ug/L			02/13/18 18:51	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 18:51	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 18:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 18:51	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 18:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 18:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		69 - 120					02/13/18 18:51	1
Dibromofluoromethane (Surr)	97		69 - 124					02/13/18 18:51	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/13/18 18:51	1
Toluene-d8 (Surr)	97		73 - 120					02/13/18 18:51	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-75S-020618

Lab Sample ID: 240-91361-7

Date Collected: 02/06/18 14:13

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 15:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	121		63 - 125					02/15/18 15:26	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 19:14	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 19:14	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 19:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 19:14	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 19:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 19:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		69 - 120					02/13/18 19:14	1
Dibromofluoromethane (Surr)	95		69 - 124					02/13/18 19:14	1
1,2-Dichloroethane-d4 (Surr)	92		61 - 138					02/13/18 19:14	1
Toluene-d8 (Surr)	98		73 - 120					02/13/18 19:14	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-82S-020618

Lab Sample ID: 240-91361-8

Date Collected: 02/06/18 14:55

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 15:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	127	X	63 - 125					02/15/18 15:52	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 16:15	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 16:15	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 16:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 16:15	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 16:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 16:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		69 - 120					02/13/18 16:15	1
Dibromofluoromethane (Surr)	98		69 - 124					02/13/18 16:15	1
1,2-Dichloroethane-d4 (Surr)	90		61 - 138					02/13/18 16:15	1
Toluene-d8 (Surr)	78		73 - 120					02/13/18 16:15	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-82D-020618

Lab Sample ID: 240-91361-9

Date Collected: 02/06/18 15:55

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 16:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		63 - 125					02/15/18 16:17	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 16:38	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 16:38	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 16:38	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 16:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 16:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	77		69 - 120					02/13/18 16:38	1
Dibromofluoromethane (Surr)	102		69 - 124					02/13/18 16:38	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/13/18 16:38	1
Toluene-d8 (Surr)	78		73 - 120					02/13/18 16:38	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-81-020618

Lab Sample ID: 240-91361-10

Date Collected: 02/06/18 15:41

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 16:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		63 - 125					02/15/18 16:43	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:01	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 17:01	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 17:01	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 17:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 17:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		69 - 120					02/13/18 17:01	1
Dibromofluoromethane (Surr)	105		69 - 124					02/13/18 17:01	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/13/18 17:01	1
Toluene-d8 (Surr)	76		73 - 120					02/13/18 17:01	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: DUP-01-020618

Lab Sample ID: 240-91361-11

Date Collected: 02/06/18 00:00

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 17:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		63 - 125					02/15/18 17:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:25	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 17:25	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 17:25	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 17:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 17:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	76		69 - 120					02/13/18 17:25	1
Dibromofluoromethane (Surr)	102		69 - 124					02/13/18 17:25	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138					02/13/18 17:25	1
Toluene-d8 (Surr)	79		73 - 120					02/13/18 17:25	1

Client Sample Results

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-91361-12

Date Collected: 02/06/18 00:00

Matrix: Water

Date Received: 02/09/18 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:48	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 17:48	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 17:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 17:48	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 17:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 17:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		69 - 120		02/13/18 17:48	1
Dibromofluoromethane (Surr)	105		69 - 124		02/13/18 17:48	1
1,2-Dichloroethane-d4 (Surr)	99		61 - 138		02/13/18 17:48	1
Toluene-d8 (Surr)	76		73 - 120		02/13/18 17:48	1

Surrogate Summary

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

TestAmerica Job ID: 240-91361-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		BFB (69-120)	DBFM (69-124)	DCA (61-138)	TOL (73-120)
240-91361-1	MW-73S-020618	88	97	93	97
240-91361-2	MW-73D-020618	87	93	93	97
240-91361-3	MW-74-020618	88	95	94	96
240-91361-4	MW-72-020618	91	99	91	98
240-91361-5	MW-75D-020618	92	100	93	97
240-91361-6	MW-76-020618	90	97	93	97
240-91361-7	MW-75S-020618	88	95	92	98
240-91361-8	MW-82S-020618	79	98	90	78
240-91361-9	MW-82D-020618	77	102	93	78
240-91361-10	MW-81-020618	74	105	93	76
240-91361-11	DUP-01-020618	76	102	93	79
240-91361-12	TRIP BLANK	79	105	99	76
240-91369-D-1 MS	Matrix Spike	90	92	83	85
240-91369-E-1 MSD	Matrix Spike Duplicate	90	91	80	84
240-91376-H-13 MS	Matrix Spike	90	100	95	97
240-91376-I-13 MSD	Matrix Spike Duplicate	95	100	94	102
LCS 240-314603/5	Lab Control Sample	92	93	85	83
LCS 240-314604/4	Lab Control Sample	90	103	98	99
MB 240-314603/7	Method Blank	79	105	93	79
MB 240-314604/6	Method Blank	89	91	90	95

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

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

TOL = Toluene-d8 (Surr)

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (63-125)
240-91334-F-7 MS	Matrix Spike	110
240-91334-F-7 MSD	Matrix Spike Duplicate	116
240-91361-1	MW-73S-020618	120
240-91361-2	MW-73D-020618	112
240-91361-3	MW-74-020618	122
240-91361-4	MW-72-020618	126 X
240-91361-5	MW-75D-020618	122
240-91361-6	MW-76-020618	122
240-91361-7	MW-75S-020618	121
240-91361-8	MW-82S-020618	127 X
240-91361-9	MW-82D-020618	123
240-91361-10	MW-81-020618	123
240-91361-11	DUP-01-020618	118
240-91361-11 MS	DUP-01-020618	121
240-91361-11 MSD	DUP-01-020618	119
LCS 240-314896/4	Lab Control Sample	113

TestAmerica Canton

Surrogate Summary

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

TestAmerica Job ID: 240-91361-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (63-125)
LCS 240-315121/4	Lab Control Sample	104
MB 240-314896/5	Method Blank	120
MB 240-315121/5	Method Blank	109

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (10-150)
MRL 240-315121/6	Lab Control Sample	108

Surrogate Legend

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

QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

Lab Sample ID: MB 240-314603/7

Matrix: Water

Analysis Batch: 314603

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 15:53	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 15:53	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 15:53	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 15:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		69 - 120		02/13/18 15:53	1
Dibromofluoromethane (Surr)	105		69 - 124		02/13/18 15:53	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138		02/13/18 15:53	1
Toluene-d8 (Surr)	79		73 - 120		02/13/18 15:53	1

Lab Sample ID: LCS 240-314603/5

Matrix: Water

Analysis Batch: 314603

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	25.0		ug/L		125	35 - 131
Benzene	10.0	11.0		ug/L		110	79 - 120
Bromodichloromethane	10.0	12.0		ug/L		120	79 - 125
Bromoform	10.0	13.2		ug/L		132	55 - 145
Bromomethane	10.0	12.5		ug/L		125	17 - 158
2-Butanone (MEK)	20.0	32.8	*	ug/L		164	43 - 149
Carbon disulfide	10.0	11.5		ug/L		115	49 - 141
Carbon tetrachloride	10.0	14.2		ug/L		142	55 - 171
Chlorobenzene	10.0	11.2		ug/L		112	80 - 120
Chloroethane	10.0	9.66		ug/L		97	10 - 149
Chloroform	10.0	11.5		ug/L		115	80 - 120
Chloromethane	10.0	9.33		ug/L		93	59 - 124
cis-1,2-Dichloroethene	10.0	11.4		ug/L		114	77 - 120
cis-1,3-Dichloropropene	10.0	9.93		ug/L		99	75 - 120
Cyclohexane	10.0	14.3	*	ug/L		143	66 - 135
Dibromochloromethane	10.0	13.1	*	ug/L		131	64 - 129
1,2-Dibromo-3-Chloropropane	10.0	11.2		ug/L		112	50 - 130
1,2-Dibromoethane	10.0	12.0		ug/L		120	80 - 120
1,2-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
1,3-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
1,4-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
Dichlorodifluoromethane	10.0	13.9		ug/L		139	42 - 141
1,1-Dichloroethane	10.0	11.6		ug/L		116	74 - 120
1,2-Dichloroethane	10.0	11.9		ug/L		119	68 - 133
1,1-Dichloroethene	10.0	11.7		ug/L		117	65 - 127
1,2-Dichloropropane	10.0	11.7		ug/L		117	78 - 127
Diethyl ether	10.0	14.8	*	ug/L		148	72 - 125
Ethylbenzene	10.0	10.9		ug/L		109	80 - 120
2-Hexanone	20.0	29.3		ug/L		146	28 - 169
Isopropylbenzene	10.0	10.7		ug/L		107	80 - 128

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

Lab Sample ID: LCS 240-314603/5

Matrix: Water

Analysis Batch: 314603

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	27.8	*	ug/L		139	63 - 137
Methylcyclohexane	10.0	11.9		ug/L		119	63 - 141
Methylene Chloride	10.0	12.8		ug/L		128	64 - 140
4-Methyl-2-pentanone (MIBK)	20.0	24.8		ug/L		124	53 - 144
Methyl tert-butyl ether	10.0	8.25		ug/L		83	73 - 120
Styrene	10.0	11.6		ug/L		116	80 - 121
1,1,2,2-Tetrachloroethane	10.0	11.5		ug/L		115	58 - 122
Tetrachloroethene	10.0	12.1		ug/L		121	80 - 122
Toluene	10.0	11.1		ug/L		111	78 - 120
trans-1,2-Dichloroethene	10.0	12.4		ug/L		124	74 - 124
trans-1,3-Dichloropropene	10.0	9.91		ug/L		99	67 - 120
1,2,4-Trichlorobenzene	10.0	7.20		ug/L		72	34 - 141
1,1,1-Trichloroethane	10.0	12.3		ug/L		123	64 - 147
1,1,2-Trichloroethane	10.0	12.0		ug/L		120	76 - 121
Trichloroethene	10.0	11.5		ug/L		115	76 - 124
Trichlorofluoromethane	10.0	17.4		ug/L		174	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	15.4	*	ug/L		154	65 - 144
1,2,4-Trimethylbenzene	10.0	10.2		ug/L		102	80 - 120
1,3,5-Trimethylbenzene	10.0	10.6		ug/L		106	79 - 120
Vinyl chloride	10.0	9.59		ug/L		96	65 - 124
Xylenes, Total	20.0	21.7		ug/L		109	80 - 120
1,4-Dioxane	200	170		ug/L		85	35 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	92		69 - 120
Dibromofluoromethane (Surr)	93		69 - 124
1,2-Dichloroethane-d4 (Surr)	85		61 - 138
Toluene-d8 (Surr)	83		73 - 120

Lab Sample ID: 240-91369-D-1 MS

Matrix: Water

Analysis Batch: 314603

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	10	U	20.0	20.1		ug/L		100	19 - 133
Benzene	1.0	U	10.0	10.0		ug/L		100	69 - 127
Bromodichloromethane	1.0	U	10.0	10.5		ug/L		105	75 - 128
Bromoform	1.0	U	10.0	11.5		ug/L		115	61 - 135
Bromomethane	1.0	U F1	10.0	16.2	F1	ug/L		162	10 - 148
2-Butanone (MEK)	10	U *	20.0	24.1		ug/L		120	34 - 153
Carbon disulfide	5.0	U	10.0	11.3		ug/L		113	46 - 143
Carbon tetrachloride	1.0	U	10.0	13.0		ug/L		130	53 - 175
Chlorobenzene	1.0	U	10.0	10.3		ug/L		103	76 - 120
Chloroethane	1.0	U	10.0	12.8		ug/L		128	10 - 141
Chloroform	1.0	U	10.0	10.7		ug/L		107	74 - 125
Chloromethane	1.0	U	10.0	9.19		ug/L		92	34 - 127
cis-1,2-Dichloroethene	1.0	U	10.0	10.9		ug/L		109	69 - 127

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QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

Lab Sample ID: 240-91369-D-1 MS
Matrix: Water
Analysis Batch: 314603

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
cis-1,3-Dichloropropene	1.0	U	10.0	8.28		ug/L		83	68 - 120
Dibromochloromethane	1.0	U *	10.0	11.6		ug/L		116	62 - 131
1,2-Dibromoethane	1.0	U	10.0	10.7		ug/L		107	73 - 121
1,2-Dichlorobenzene	1.0	U	10.0	9.08		ug/L		91	70 - 120
1,3-Dichlorobenzene	1.0	U	10.0	8.87		ug/L		89	71 - 120
1,4-Dichlorobenzene	1.0	U	10.0	9.02		ug/L		90	72 - 120
Dichlorodifluoromethane	1.0	U	10.0	11.6		ug/L		116	45 - 130
1,1-Dichloroethane	1.0	U	10.0	10.7		ug/L		107	69 - 122
1,2-Dichloroethane	1.0	U	10.0	10.8		ug/L		108	64 - 138
1,1-Dichloroethene	1.0	U	10.0	10.8		ug/L		108	62 - 127
1,2-Dichloropropane	1.0	U	10.0	10.4		ug/L		104	72 - 131
Ethylbenzene	1.0	U	10.0	9.72		ug/L		97	72 - 121
2-Hexanone	10	U	20.0	21.5		ug/L		108	21 - 184
Isopropylbenzene	1.0	U	10.0	9.36		ug/L		94	70 - 132
Methylene Chloride	5.0	U	10.0	10.7		ug/L		107	52 - 137
4-Methyl-2-pentanone (MIBK)	10	U	20.0	18.8		ug/L		94	53 - 147
Methyl tert-butyl ether	1.0	U	10.0	6.83		ug/L		68	67 - 125
Styrene	1.0	U	10.0	10.2		ug/L		102	74 - 125
1,1,2,2-Tetrachloroethane	1.0	U	10.0	8.85		ug/L		88	51 - 123
Tetrachloroethene	1.0	U	10.0	10.7		ug/L		107	69 - 126
Toluene	1.0	U	10.0	10.1		ug/L		101	69 - 125
trans-1,2-Dichloroethene	1.0	U	10.0	11.4		ug/L		114	66 - 131
trans-1,3-Dichloropropene	1.0	U	10.0	8.39		ug/L		84	59 - 120
1,2,4-Trichlorobenzene	1.0	U	10.0	7.32		ug/L		73	26 - 138
1,1,1-Trichloroethane	1.0	U	10.0	10.9		ug/L		109	57 - 156
1,1,2-Trichloroethane	1.0	U	10.0	10.8		ug/L		108	68 - 127
Trichloroethene	1.0	U	10.0	10.2		ug/L		102	68 - 129
Trichlorofluoromethane	1.0	U	10.0	16.9		ug/L		169	28 - 172
1,2,4-Trimethylbenzene	1.0	U	10.0	8.65		ug/L		86	64 - 120
1,3,5-Trimethylbenzene	1.0	U	10.0	8.67		ug/L		87	67 - 120
Vinyl chloride	1.0	U F2	10.0	7.86		ug/L		79	55 - 123
Xylenes, Total	2.0	U	20.0	19.4		ug/L		97	71 - 122

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	90		69 - 120
Dibromofluoromethane (Surr)	92		69 - 124
1,2-Dichloroethane-d4 (Surr)	83		61 - 138
Toluene-d8 (Surr)	85		73 - 120

Lab Sample ID: 240-91369-E-1 MSD
Matrix: Water
Analysis Batch: 314603

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	19.2		ug/L		96	19 - 133	4	35
Benzene	1.0	U	10.0	9.94		ug/L		99	69 - 127	1	10
Bromodichloromethane	1.0	U	10.0	10.8		ug/L		108	75 - 128	3	13
Bromoform	1.0	U	10.0	11.0		ug/L		110	61 - 135	4	13

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QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

Lab Sample ID: 240-91369-E-1 MSD

Matrix: Water

Analysis Batch: 314603

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
Bromomethane	1.0	U F1	10.0	18.1	F1	ug/L		181	10 - 148	11	35
2-Butanone (MEK)	10	U *	20.0	23.4		ug/L		117	34 - 153	3	23
Carbon disulfide	5.0	U	10.0	11.0		ug/L		110	46 - 143	3	18
Carbon tetrachloride	1.0	U	10.0	12.4		ug/L		124	53 - 175	4	17
Chlorobenzene	1.0	U	10.0	10.3		ug/L		103	76 - 120	0	12
Chloroethane	1.0	U	10.0	14.1		ug/L		141	10 - 141	9	35
Chloroform	1.0	U	10.0	10.7		ug/L		107	74 - 125	0	11
Chloromethane	1.0	U	10.0	9.48		ug/L		95	34 - 127	3	25
cis-1,2-Dichloroethene	1.0	U	10.0	10.5		ug/L		105	69 - 127	4	11
cis-1,3-Dichloropropene	1.0	U	10.0	8.49		ug/L		85	68 - 120	2	13
Dibromochloromethane	1.0	U *	10.0	11.7		ug/L		117	62 - 131	0	15
1,2-Dibromoethane	1.0	U	10.0	10.2		ug/L		102	73 - 121	4	12
1,2-Dichlorobenzene	1.0	U	10.0	9.57		ug/L		96	70 - 120	5	19
1,3-Dichlorobenzene	1.0	U	10.0	8.95		ug/L		89	71 - 120	1	18
1,4-Dichlorobenzene	1.0	U	10.0	9.31		ug/L		93	72 - 120	3	17
Dichlorodifluoromethane	1.0	U	10.0	12.1		ug/L		121	45 - 130	4	34
1,1-Dichloroethane	1.0	U	10.0	10.5		ug/L		105	69 - 122	2	11
1,2-Dichloroethane	1.0	U	10.0	10.4		ug/L		104	64 - 138	4	11
1,1-Dichloroethene	1.0	U	10.0	10.8		ug/L		108	62 - 127	1	14
1,2-Dichloropropane	1.0	U	10.0	10.7		ug/L		107	72 - 131	3	12
Ethylbenzene	1.0	U	10.0	9.57		ug/L		96	72 - 121	1	15
2-Hexanone	10	U	20.0	20.8		ug/L		104	21 - 184	3	12
Isopropylbenzene	1.0	U	10.0	8.90		ug/L		89	70 - 132	5	16
Methylene Chloride	5.0	U	10.0	10.1		ug/L		101	52 - 137	6	12
4-Methyl-2-pentanone (MIBK)	10	U	20.0	17.6		ug/L		88	53 - 147	7	16
Methyl tert-butyl ether	1.0	U	10.0	6.76		ug/L		68	67 - 125	1	12
Styrene	1.0	U	10.0	9.93		ug/L		99	74 - 125	3	14
1,1,2,2-Tetrachloroethane	1.0	U	10.0	8.46		ug/L		85	51 - 123	5	17
Tetrachloroethene	1.0	U	10.0	10.4		ug/L		104	69 - 126	3	18
Toluene	1.0	U	10.0	9.86		ug/L		99	69 - 125	3	14
trans-1,2-Dichloroethene	1.0	U	10.0	11.1		ug/L		111	66 - 131	3	11
trans-1,3-Dichloropropene	1.0	U	10.0	8.13		ug/L		81	59 - 120	3	14
1,2,4-Trichlorobenzene	1.0	U	10.0	7.90		ug/L		79	26 - 138	8	35
1,1,1-Trichloroethane	1.0	U	10.0	10.8		ug/L		108	57 - 156	1	13
1,1,2-Trichloroethane	1.0	U	10.0	10.4		ug/L		104	68 - 127	4	11
Trichloroethene	1.0	U	10.0	9.94		ug/L		99	68 - 129	3	12
Trichlorofluoromethane	1.0	U	10.0	17.0		ug/L		170	28 - 172	1	26
1,2,4-Trimethylbenzene	1.0	U	10.0	8.79		ug/L		88	64 - 120	2	22
1,3,5-Trimethylbenzene	1.0	U	10.0	8.97		ug/L		90	67 - 120	3	25
Vinyl chloride	1.0	U F2	10.0	8.95	F2	ug/L		90	55 - 123	13	12
Xylenes, Total	2.0	U	20.0	18.9		ug/L		94	71 - 122	3	14

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		69 - 120
Dibromofluoromethane (Surr)	91		69 - 124
1,2-Dichloroethane-d4 (Surr)	80		61 - 138
Toluene-d8 (Surr)	84		73 - 120

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QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

Lab Sample ID: MB 240-314604/6

Matrix: Water

Analysis Batch: 314604

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 14:49	1
1,1-Dichloroethene	1.0	U	1.0	0.27	ug/L			02/13/18 14:49	1
Tetrachloroethene	1.0	U	1.0	0.30	ug/L			02/13/18 14:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.29	ug/L			02/13/18 14:49	1
Trichloroethene	1.0	U	1.0	0.33	ug/L			02/13/18 14:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/13/18 14:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		69 - 120		02/13/18 14:49	1
Dibromofluoromethane (Surr)	91		69 - 124		02/13/18 14:49	1
1,2-Dichloroethane-d4 (Surr)	90		61 - 138		02/13/18 14:49	1
Toluene-d8 (Surr)	95		73 - 120		02/13/18 14:49	1

Lab Sample ID: LCS 240-314604/4

Matrix: Water

Analysis Batch: 314604

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	17.5		ug/L		88	35 - 131
Benzene	10.0	9.42		ug/L		94	79 - 120
Bromodichloromethane	10.0	9.72		ug/L		97	79 - 125
Bromoform	10.0	8.40		ug/L		84	55 - 145
Bromomethane	10.0	10.2		ug/L		102	17 - 158
2-Butanone (MEK)	20.0	18.1		ug/L		91	43 - 149
Carbon disulfide	10.0	10.9		ug/L		109	49 - 141
Carbon tetrachloride	10.0	11.7		ug/L		117	55 - 171
Chlorobenzene	10.0	10.3		ug/L		103	80 - 120
Chloroethane	10.0	5.51		ug/L		55	10 - 149
Chloroform	10.0	10.9		ug/L		109	80 - 120
Chloromethane	10.0	7.71		ug/L		77	59 - 124
cis-1,2-Dichloroethene	10.0	10.7		ug/L		107	77 - 120
cis-1,3-Dichloropropene	10.0	8.81		ug/L		88	75 - 120
Cyclohexane	10.0	9.07		ug/L		91	66 - 135
Dibromochloromethane	10.0	9.76		ug/L		98	64 - 129
1,2-Dibromo-3-Chloropropane	10.0	6.61		ug/L		66	50 - 130
1,2-Dibromoethane	10.0	9.34		ug/L		93	80 - 120
1,2-Dichlorobenzene	10.0	9.55		ug/L		95	80 - 120
1,3-Dichlorobenzene	10.0	9.27		ug/L		93	80 - 120
1,4-Dichlorobenzene	10.0	9.17		ug/L		92	80 - 120
Dichlorodifluoromethane	10.0	9.04		ug/L		90	42 - 141
1,1-Dichloroethane	10.0	10.3		ug/L		103	74 - 120
1,2-Dichloroethane	10.0	10.9		ug/L		109	68 - 133
1,1-Dichloroethene	10.0	10.9		ug/L		109	65 - 127
1,2-Dichloropropane	10.0	9.35		ug/L		93	78 - 127
Diethyl ether	10.0	10.8		ug/L		108	72 - 125
Ethylbenzene	10.0	10.3		ug/L		103	80 - 120
2-Hexanone	20.0	15.5		ug/L		77	28 - 169
Isopropylbenzene	10.0	10.4		ug/L		104	80 - 128

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

Lab Sample ID: LCS 240-314604/4
Matrix: Water
Analysis Batch: 314604

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	15.2		ug/L		76	63 - 137
Methylcyclohexane	10.0	9.09		ug/L		91	63 - 141
Methylene Chloride	10.0	11.1		ug/L		111	64 - 140
4-Methyl-2-pentanone (MIBK)	20.0	15.7		ug/L		78	53 - 144
Methyl tert-butyl ether	10.0	9.71		ug/L		97	73 - 120
Styrene	10.0	9.54		ug/L		95	80 - 121
1,1,2,2-Tetrachloroethane	10.0	8.74		ug/L		87	58 - 122
Tetrachloroethene	10.0	10.1		ug/L		101	80 - 122
Toluene	10.0	9.87		ug/L		99	78 - 120
trans-1,2-Dichloroethene	10.0	10.6		ug/L		106	74 - 124
trans-1,3-Dichloropropene	10.0	8.06		ug/L		81	67 - 120
1,2,4-Trichlorobenzene	10.0	8.12		ug/L		81	34 - 141
1,1,1-Trichloroethane	10.0	11.5		ug/L		115	64 - 147
1,1,2-Trichloroethane	10.0	9.55		ug/L		96	76 - 121
Trichloroethene	10.0	10.3		ug/L		103	76 - 124
Trichlorofluoromethane	10.0	15.3		ug/L		153	27 - 176
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	12.6		ug/L		126	65 - 144
1,2,4-Trimethylbenzene	10.0	9.51		ug/L		95	80 - 120
1,3,5-Trimethylbenzene	10.0	9.64		ug/L		96	79 - 120
Vinyl chloride	10.0	9.13		ug/L		91	65 - 124
Xylenes, Total	20.0	20.1		ug/L		101	80 - 120
1,4-Dioxane	200	128		ug/L		64	35 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		69 - 120
Dibromofluoromethane (Surr)	103		69 - 124
1,2-Dichloroethane-d4 (Surr)	98		61 - 138
Toluene-d8 (Surr)	99		73 - 120

Lab Sample ID: 240-91376-H-13 MS
Matrix: Water
Analysis Batch: 314604

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
Benzene	1.0	U	10.0	9.00		ug/L		90	69 - 127
1,2-Dichloroethane	1.0	U	10.0	10.3		ug/L		103	64 - 138
Ethylbenzene	1.0	U	10.0	10.2		ug/L		102	72 - 121
Toluene	1.0	U	10.0	9.50		ug/L		95	69 - 125
1,2,4-Trimethylbenzene	1.0	U	10.0	9.10		ug/L		91	64 - 120
1,3,5-Trimethylbenzene	1.0	U	10.0	9.06		ug/L		91	67 - 120
Xylenes, Total	2.0	U	20.0	19.6		ug/L		98	71 - 122

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		69 - 120
Dibromofluoromethane (Surr)	100		69 - 124
1,2-Dichloroethane-d4 (Surr)	95		61 - 138
Toluene-d8 (Surr)	97		73 - 120

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91361-1

Lab Sample ID: 240-91376-I-13 MSD
Matrix: Water
Analysis Batch: 314604

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
Benzene	1.0	U	10.0	9.16		ug/L		92	69 - 127	2	10
1,2-Dichloroethane	1.0	U	10.0	10.5		ug/L		105	64 - 138	1	11
Ethylbenzene	1.0	U	10.0	10.3		ug/L		103	72 - 121	1	15
Toluene	1.0	U	10.0	9.93		ug/L		99	69 - 125	4	14
1,2,4-Trimethylbenzene	1.0	U	10.0	9.31		ug/L		93	64 - 120	2	22
1,3,5-Trimethylbenzene	1.0	U	10.0	9.21		ug/L		92	67 - 120	2	25
Xylenes, Total	2.0	U	20.0	20.8		ug/L		104	71 - 122	6	14

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		69 - 120
Dibromofluoromethane (Surr)	100		69 - 124
1,2-Dichloroethane-d4 (Surr)	94		61 - 138
Toluene-d8 (Surr)	102		73 - 120

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

Lab Sample ID: MB 240-314896/5
Matrix: Water
Analysis Batch: 314896

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/15/18 11:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		63 - 125		02/15/18 11:07	1

Lab Sample ID: LCS 240-314896/4
Matrix: Water
Analysis Batch: 314896

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	9.28		ug/L		93	59 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	113		63 - 125

Lab Sample ID: 240-91361-11 MS
Matrix: Water
Analysis Batch: 314896

Client Sample ID: DUP-01-020618
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	8.15		ug/L		82	52 - 129

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	121		63 - 125

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

Lab Sample ID: 240-91361-11 MSD

Matrix: Water
Analysis Batch: 314896

Client Sample ID: DUP-01-020618

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	8.96		ug/L		90	52 - 129	10	13
Surrogate	%Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	119		63 - 125								

Lab Sample ID: MB 240-315121/5

Matrix: Water
Analysis Batch: 315121

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dioxane	2.0	U	2.0	0.24	ug/L			02/16/18 14:27	1	
Surrogate	%Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
1,2-Dichloroethane-d4 (Surr)	109		63 - 125		02/16/18 14:27	1				

Lab Sample ID: LCS 240-315121/4

Matrix: Water
Analysis Batch: 315121

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	8.85		ug/L		88	59 - 131
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	104		63 - 125				

Lab Sample ID: MRL 240-315121/6

Matrix: Water
Analysis Batch: 315121

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	0.00100	0.000714	J	ng/uL		71	10 - 150
Surrogate	%Recovery	MRL Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	108		10 - 150				

Lab Sample ID: 240-91334-F-7 MS

Matrix: Water
Analysis Batch: 315121

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	13		10.0	19.3		ug/L		67	52 - 129
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	110		63 - 125						

TestAmerica Canton

QC Sample Results

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

TestAmerica Job ID: 240-91361-1

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

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

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	13		10.0	19.9		ug/L		73	52 - 129	3	13
Surrogate	%Recovery	MSD Qualifier	MSD Limits								
1,2-Dichloroethane-d4 (Surr)	116		63 - 125								

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QC Association Summary

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

TestAmerica Job ID: 240-91361-1

GC/MS VOA

Analysis Batch: 314603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91361-8	MW-82S-020618	Total/NA	Water	8260B	
240-91361-9	MW-82D-020618	Total/NA	Water	8260B	
240-91361-10	MW-81-020618	Total/NA	Water	8260B	
240-91361-11	DUP-01-020618	Total/NA	Water	8260B	
240-91361-12	TRIP BLANK	Total/NA	Water	8260B	
MB 240-314603/7	Method Blank	Total/NA	Water	8260B	
LCS 240-314603/5	Lab Control Sample	Total/NA	Water	8260B	
240-91369-D-1 MS	Matrix Spike	Total/NA	Water	8260B	
240-91369-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 314604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91361-1	MW-73S-020618	Total/NA	Water	8260B	
240-91361-2	MW-73D-020618	Total/NA	Water	8260B	
240-91361-3	MW-74-020618	Total/NA	Water	8260B	
240-91361-4	MW-72-020618	Total/NA	Water	8260B	
240-91361-5	MW-75D-020618	Total/NA	Water	8260B	
240-91361-6	MW-76-020618	Total/NA	Water	8260B	
240-91361-7	MW-75S-020618	Total/NA	Water	8260B	
MB 240-314604/6	Method Blank	Total/NA	Water	8260B	
LCS 240-314604/4	Lab Control Sample	Total/NA	Water	8260B	
240-91376-H-13 MS	Matrix Spike	Total/NA	Water	8260B	
240-91376-I-13 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 314896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91361-1	MW-73S-020618	Total/NA	Water	8260B SIM	
240-91361-3	MW-74-020618	Total/NA	Water	8260B SIM	
240-91361-4	MW-72-020618	Total/NA	Water	8260B SIM	
240-91361-5	MW-75D-020618	Total/NA	Water	8260B SIM	
240-91361-6	MW-76-020618	Total/NA	Water	8260B SIM	
240-91361-7	MW-75S-020618	Total/NA	Water	8260B SIM	
240-91361-8	MW-82S-020618	Total/NA	Water	8260B SIM	
240-91361-9	MW-82D-020618	Total/NA	Water	8260B SIM	
240-91361-10	MW-81-020618	Total/NA	Water	8260B SIM	
240-91361-11	DUP-01-020618	Total/NA	Water	8260B SIM	
MB 240-314896/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-314896/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-91361-11 MS	DUP-01-020618	Total/NA	Water	8260B SIM	
240-91361-11 MSD	DUP-01-020618	Total/NA	Water	8260B SIM	

Analysis Batch: 315121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91361-2	MW-73D-020618	Total/NA	Water	8260B SIM	
MB 240-315121/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-315121/4	Lab Control Sample	Total/NA	Water	8260B SIM	
MRL 240-315121/6	Lab Control Sample	Total/NA	Water	8260B SIM	
240-91334-F-7 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-91334-F-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-73S-020618

Date Collected: 02/06/18 09:45

Date Received: 02/09/18 09:20

Lab Sample ID: 240-91361-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314604	02/13/18 17:01	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 12:51	SAM	TAL CAN

Client Sample ID: MW-73D-020618

Date Collected: 02/06/18 10:07

Date Received: 02/09/18 09:20

Lab Sample ID: 240-91361-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314604	02/13/18 17:23	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	315121	02/16/18 15:17	TJL2	TAL CAN

Client Sample ID: MW-74-020618

Date Collected: 02/06/18 11:44

Date Received: 02/09/18 09:20

Lab Sample ID: 240-91361-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314604	02/13/18 17:45	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 13:43	SAM	TAL CAN

Client Sample ID: MW-72-020618

Date Collected: 02/06/18 11:45

Date Received: 02/09/18 09:20

Lab Sample ID: 240-91361-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314604	02/13/18 18:08	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 14:09	SAM	TAL CAN

Client Sample ID: MW-75D-020618

Date Collected: 02/06/18 13:17

Date Received: 02/09/18 09:20

Lab Sample ID: 240-91361-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314604	02/13/18 18:30	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 14:35	SAM	TAL CAN

Client Sample ID: MW-76-020618

Date Collected: 02/06/18 13:30

Date Received: 02/09/18 09:20

Lab Sample ID: 240-91361-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314604	02/13/18 18:51	LRW	TAL CAN

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: MW-76-020618

Lab Sample ID: 240-91361-6

Date Collected: 02/06/18 13:30

Matrix: Water

Date Received: 02/09/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 15:00	SAM	TAL CAN

Client Sample ID: MW-75S-020618

Lab Sample ID: 240-91361-7

Date Collected: 02/06/18 14:13

Matrix: Water

Date Received: 02/09/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314604	02/13/18 19:14	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 15:26	SAM	TAL CAN

Client Sample ID: MW-82S-020618

Lab Sample ID: 240-91361-8

Date Collected: 02/06/18 14:55

Matrix: Water

Date Received: 02/09/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314603	02/13/18 16:15	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 15:52	SAM	TAL CAN

Client Sample ID: MW-82D-020618

Lab Sample ID: 240-91361-9

Date Collected: 02/06/18 15:55

Matrix: Water

Date Received: 02/09/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314603	02/13/18 16:38	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 16:17	SAM	TAL CAN

Client Sample ID: MW-81-020618

Lab Sample ID: 240-91361-10

Date Collected: 02/06/18 15:41

Matrix: Water

Date Received: 02/09/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314603	02/13/18 17:01	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 16:43	SAM	TAL CAN

Client Sample ID: DUP-01-020618

Lab Sample ID: 240-91361-11

Date Collected: 02/06/18 00:00

Matrix: Water

Date Received: 02/09/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314603	02/13/18 17:25	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	314896	02/15/18 17:09	SAM	TAL CAN

TestAmerica Canton

Lab Chronicle

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

TestAmerica Job ID: 240-91361-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-91361-12

Date Collected: 02/06/18 00:00

Matrix: Water

Date Received: 02/09/18 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	314603	02/13/18 17:48	LRW	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 - E203631

TestAmerica Job ID: 240-91361-1

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18 *
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18 *
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

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

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com

Site Contact: Angela DeGrandis
Telephone: 734-320-0065

Lab Contact: Denise Pohl
Telephone: 330-966-9789

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: M1001373.0001.00002
PO # M1001373.0001.00002

Method of Shipment/Carrier:
Shipping/Tracking No:

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

Containers & Preservatives
HCl NaOH ZnOH Other:

Matrix
Air Aqueous Sediment Solid Other:

Filtered Sample (Yes/No) Composite (C/Grab)

Analyses
1,1-DCE 8260B 1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM

Sample Specific Notes / Special Instructions:

240-91361 Chain of Custody

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnOH	Other:	Filtered Sample (Yes/No)	Composite (C/Grab)	1,1-DCE 8260B	1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM
MW-735-020618	2-6-18	945		6						6				N	G	X	X	X	X	X	X	X
MW-73D-020618	2-6-18	1007		6						6				N	G	X	X	X	X	X	X	X
MW-74-020618	2-6-18	1144		6						6				N	G	X	X	X	X	X	X	X
MW-72-020618	2-6-18	1145		6						6				N	G	X	X	X	X	X	X	X
MW-75D-020618	2-6-18	1317		6						6				N	G	X	X	X	X	X	X	X
MW-76-020618	2-6-18	1330		6						6				N	G	X	X	X	X	X	X	X
MW-755-020618	2-6-18	1413		6						6				N	G	X	X	X	X	X	X	X
MW-825-020618	2-6-18	1455		6						6				N	G	X	X	X	X	X	X	X
MW-82D-020618	2-6-18	1555		6						6				N	G	X	X	X	X	X	X	X
MW-81-020618	2-6-18	1541		6						6				N	G	X	X	X	X	X	X	X

Possible Hazard Identification
 Non-Hazard Irritant Injurious Poison B Unknown

Special Instructions/OC Requirements & Comments:
Level IV Reporting Lab

Submit all results through Cadena at jim.tornalio@cadena.com. Cadena #E203631

Relinquished by: *Archie A. Dyer*
Relinquished by: *Zachary Nelson*
Relinquished by:

Company: ARCADIS
Company: TAC
Company:

Date/Time: 2/5/18 1010
Date/Time: 2/5/18 13:04
Date/Time:

Received by: *Archie A. Dyer*
Received by: *Zachary Nelson*
Received in Laboratory by:

Company: TAC
Company: TAC
Company:

Date/Time: 2/5/18 10:10
Date/Time: 2/9/18 0920
Date/Time:

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TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinsky
 Telephone: 248-994-2240
 Email: krystoffer.hinsky@arcadis.com

Site Contact: Angela DeGrandis
 Telephone: 734-320-0065

Lab Contact: Denise Pohl
 Telephone: 330-966-9789

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: MI001373.0001.00002

PO # MI001373.0001.00002

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

Method of Shipment/Carrier:

Shipping/Tracking No:

Containers & Preservatives
 HCl
 HNO3
 H2SO4
 Other:

Matrix
 Aqueous
 Solid
 Other:

Filtered Sample (Y/N)
 Composite C/Grab=C

Analyses
 1-1-DCE 8260B
 cis-1,2-DCE 8260B
 Trans-1,2-DCE 8260B
 PCE 8260B
 TCE 8260B
 Vinyl Chloride 8260B
 1,4-Dioxane 8260B SIM

Walk-in client
 Lab sampling
 Job/SDG No:

Sample Specific Notes /
 Special Instructions:

Sample Identification	Sample Date	Sample Time	Matrix	Containers & Preservatives	Filtered Sample (Y/N)	Composite C/Grab=C	Analyses	Sample Specific Notes / Special Instructions:
DUP-01_020618	2-6-18	-	Aqueous	HCl	NG	X	1-1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM	
TRIPBLANK	2	-	Aqueous	HCl	NG	X	1-1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM	

Possible Hazard Identification
 Non-Hazard Irritant Poison B Unknown

Special Instructions/OC Requirements & Comments:
 Level IV Reporting

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

Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203631

Relinquished by: *Julian N. Byers*
 Relinquished by: *Johny mbr*
 Relinquished by: *Johny mbr*

Company: ARCADIS
 Date/Time: 2/8/18 10:10

Company: TAC
 Date/Time: 2/9/18 9:20

Company: TAC
 Date/Time: 2/9/18 9:20



TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login #: 91361


Client Arcadis Site Name _____ Cooler unpacked by: DSD

Cooler Received on 2/19/18 Opened on 2/19/18

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

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

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
IR GUN# IR-8 (CF -0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 See Multiple Cooler Form
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Leach 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 N/A pH Strip Lot# HC730269
13. Were VOAs on the COC? Yes No NA
14. Were air bubbles >6 mm in any VOA vials? Yes No NA  Larger than this.
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B729401vB Yes No 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 _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
Samples processed by: _____

17. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

18. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative
Canton Facility

Login #: 91361

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
Chest	8	1.6	1.3	ICE
b	b	2.0	1.7	b
		3.4	3.1	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

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