

ANALYTICAL REPORT

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Laboratory Job ID: 460-196921-1
Client Project/Site: Ford LTP Off-Site

For:
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Authorized for release by:
12/2/2019 7:00:45 PM

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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 Off-Site

Job ID: 460-196921-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Job ID: 460-196921-1

Laboratory: Eurofins TestAmerica, Edison

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Off-Site

Report Number: 460-196921-1

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

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

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

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

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

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

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

RECEIPT

The samples were received on 11/15/2019 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.6° C and 2.0° C.

Receipt Exceptions

The following sample was listed on the Chain of Custody (COC); however, no sample was received: TRIP BLANK (460-196921-1).

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-101S_111319 (460-196921-2), MW-79SR_111319 (460-196921-3), MW-141S_111319 (460-196921-4), MW-136S_111319 (460-196921-5), MW-139S_111319 (460-196921-6), MW-98S_111319 (460-196921-7) and DUP-07 (460-196921-8) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 11/26/2019.

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

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples MW-101S_111319 (460-196921-2), MW-79SR_111319 (460-196921-3), MW-141S_111319 (460-196921-4), MW-136S_111319 (460-196921-5), MW-139S_111319 (460-196921-6), MW-98S_111319 (460-196921-7) and DUP-07 (460-196921-8) were analyzed for Volatile organic compounds (GC/MS) in accordance with SW-846 Method 8260C SIM. The samples were analyzed on 11/23/2019.

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

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Client Sample ID: MW-101S_111319

Lab Sample ID: 460-196921-2

No Detections.

Client Sample ID: MW-79SR_111319

Lab Sample ID: 460-196921-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.30	J	1.0	0.17	ug/L	1		8260C	Total/NA

Client Sample ID: MW-141S_111319

Lab Sample ID: 460-196921-4

No Detections.

Client Sample ID: MW-136S_111319

Lab Sample ID: 460-196921-5

No Detections.

Client Sample ID: MW-139S_111319

Lab Sample ID: 460-196921-6

No Detections.

Client Sample ID: MW-98S_111319

Lab Sample ID: 460-196921-7

No Detections.

Client Sample ID: DUP-07

Lab Sample ID: 460-196921-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Edison

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Client Sample ID: MW-101S_111319

Lab Sample ID: 460-196921-2

Date Collected: 11/13/19 09:47

Matrix: Water

Date Received: 11/15/19 10:00

Method: 8260C 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	0.33	ug/L			11/23/19 15:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	102		72 - 133					11/23/19 15:21	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/26/19 03:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/26/19 03:13	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/26/19 03:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/26/19 03:13	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/26/19 03:13	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/26/19 03:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		74 - 132					11/26/19 03:13	1
Toluene-d8 (Surr)	106		80 - 120					11/26/19 03:13	1
Dibromofluoromethane (Surr)	116		72 - 131					11/26/19 03:13	1
4-Bromofluorobenzene	118		77 - 124					11/26/19 03:13	1

Client Sample ID: MW-79SR_111319

Lab Sample ID: 460-196921-3

Date Collected: 11/13/19 11:02

Matrix: Water

Date Received: 11/15/19 10:00

Method: 8260C 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	0.33	ug/L			11/23/19 15:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 133					11/23/19 15:44	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/26/19 03:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/26/19 03:36	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/26/19 03:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/26/19 03:36	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/26/19 03:36	1
Vinyl chloride	0.30	J	1.0	0.17	ug/L			11/26/19 03:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		74 - 132					11/26/19 03:36	1
Toluene-d8 (Surr)	94		80 - 120					11/26/19 03:36	1
Dibromofluoromethane (Surr)	104		72 - 131					11/26/19 03:36	1
4-Bromofluorobenzene	105		77 - 124					11/26/19 03:36	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Client Sample ID: MW-141S_111319

Lab Sample ID: 460-196921-4

Date Collected: 11/13/19 12:32

Matrix: Water

Date Received: 11/15/19 10:00

Method: 8260C 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	0.33	ug/L			11/23/19 16:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		72 - 133					11/23/19 16:08	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/26/19 04:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/26/19 04:00	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/26/19 04:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/26/19 04:00	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/26/19 04:00	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/26/19 04:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		74 - 132					11/26/19 04:00	1
Toluene-d8 (Surr)	90		80 - 120					11/26/19 04:00	1
Dibromofluoromethane (Surr)	100		72 - 131					11/26/19 04:00	1
4-Bromofluorobenzene	100		77 - 124					11/26/19 04:00	1

Client Sample ID: MW-136S_111319

Lab Sample ID: 460-196921-5

Date Collected: 11/13/19 13:42

Matrix: Water

Date Received: 11/15/19 10:00

Method: 8260C 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	0.33	ug/L			11/23/19 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	99		72 - 133					11/23/19 16:31	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/26/19 04:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/26/19 04:23	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/26/19 04:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/26/19 04:23	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/26/19 04:23	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/26/19 04:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		74 - 132					11/26/19 04:23	1
Toluene-d8 (Surr)	90		80 - 120					11/26/19 04:23	1
Dibromofluoromethane (Surr)	99		72 - 131					11/26/19 04:23	1
4-Bromofluorobenzene	101		77 - 124					11/26/19 04:23	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Client Sample ID: MW-139S_111319

Lab Sample ID: 460-196921-6

Date Collected: 11/13/19 14:47

Matrix: Water

Date Received: 11/15/19 10:00

Method: 8260C 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	0.33	ug/L			11/23/19 16:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		72 - 133					11/23/19 16:54	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/26/19 04:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/26/19 04:46	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/26/19 04:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/26/19 04:46	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/26/19 04:46	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/26/19 04:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		74 - 132					11/26/19 04:46	1
Toluene-d8 (Surr)	90		80 - 120					11/26/19 04:46	1
Dibromofluoromethane (Surr)	99		72 - 131					11/26/19 04:46	1
4-Bromofluorobenzene	102		77 - 124					11/26/19 04:46	1

Client Sample ID: MW-98S_111319

Lab Sample ID: 460-196921-7

Date Collected: 11/13/19 15:52

Matrix: Water

Date Received: 11/15/19 10:00

Method: 8260C 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	0.33	ug/L			11/23/19 17:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	103		72 - 133					11/23/19 17:18	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/26/19 05:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/26/19 05:10	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/26/19 05:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/26/19 05:10	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/26/19 05:10	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/26/19 05:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		74 - 132					11/26/19 05:10	1
Toluene-d8 (Surr)	94		80 - 120					11/26/19 05:10	1
Dibromofluoromethane (Surr)	73		72 - 131					11/26/19 05:10	1
4-Bromofluorobenzene	104		77 - 124					11/26/19 05:10	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Client Sample ID: DUP-07

Lab Sample ID: 460-196921-8

Date Collected: 11/13/19 00:00

Matrix: Water

Date Received: 11/15/19 10:00

Method: 8260C 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	0.33	ug/L	-		11/23/19 17:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	103		72 - 133					11/23/19 17:41	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L	-		11/26/19 05:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L	-		11/26/19 05:40	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L	-		11/26/19 05:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L	-		11/26/19 05:40	1
Trichloroethene	1.0	U	1.0	0.31	ug/L	-		11/26/19 05:40	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L	-		11/26/19 05:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		74 - 132					11/26/19 05:40	1
Toluene-d8 (Surr)	105		80 - 120					11/26/19 05:40	1
Dibromofluoromethane (Surr)	116		72 - 131					11/26/19 05:40	1
4-Bromofluorobenzene	118		77 - 124					11/26/19 05:40	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (74-132)	TOL (80-120)	DBFM (72-131)	BFB (77-124)
460-196921-2	MW-101S_111319	108	106	116	118
460-196921-3	MW-79SR_111319	96	94	104	105
460-196921-4	MW-141S_111319	94	90	100	100
460-196921-5	MW-136S_111319	91	90	99	101
460-196921-6	MW-139S_111319	93	90	99	102
460-196921-7	MW-98S_111319	93	94	73	104
460-196921-8	DUP-07	109	105	116	118
460-197264-B-6 MS	Matrix Spike	90	91	99	105
460-197264-B-6 MSD	Matrix Spike Duplicate	93	94	97	107
LCS 460-658233/5	Lab Control Sample	93	92	100	106
MB 460-658233/9	Method Blank	97	94	105	105

Surrogate Legend

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

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

BFB = 4-Bromofluorobenzene

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB
		(72-133)
460-196921-2	MW-101S_111319	102
460-196921-3	MW-79SR_111319	98
460-196921-4	MW-141S_111319	98
460-196921-5	MW-136S_111319	99
460-196921-6	MW-139S_111319	100
460-196921-7	MW-98S_111319	103
460-196921-8	DUP-07	103
LCS 460-657680/4	Lab Control Sample	99
LCSD 460-657680/5	Lab Control Sample Dup	95
MB 460-657680/9	Method Blank	93

Surrogate Legend

BFB = 4-Bromofluorobenzene

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 460-658233/9
Matrix: Water
Analysis Batch: 658233

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/25/19 22:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/25/19 22:21	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/25/19 22:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/25/19 22:21	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/25/19 22:21	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/25/19 22:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		74 - 132		11/25/19 22:21	1
Toluene-d8 (Surr)	94		80 - 120		11/25/19 22:21	1
Dibromofluoromethane (Surr)	105		72 - 131		11/25/19 22:21	1
4-Bromofluorobenzene	105		77 - 124		11/25/19 22:21	1

Lab Sample ID: LCS 460-658233/5
Matrix: Water
Analysis Batch: 658233

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	16.7		ug/L		83	74 - 123
cis-1,2-Dichloroethene	20.0	19.2		ug/L		96	80 - 120
Tetrachloroethene	20.0	20.2		ug/L		101	78 - 122
trans-1,2-Dichloroethene	20.0	19.2		ug/L		96	79 - 120
Trichloroethene	20.0	18.3		ug/L		92	77 - 120
Vinyl chloride	20.0	20.7		ug/L		104	62 - 138

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		74 - 132
Toluene-d8 (Surr)	92		80 - 120
Dibromofluoromethane (Surr)	100		72 - 131
4-Bromofluorobenzene	106		77 - 124

Lab Sample ID: 460-197264-B-6 MS
Matrix: Water
Analysis Batch: 658233

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
1,1-Dichloroethene	1.0	U	200	161		ug/L		81	74 - 123
cis-1,2-Dichloroethene	1.0	U	200	191		ug/L		95	80 - 120
Tetrachloroethene	0.29	J	200	205		ug/L		102	78 - 122
trans-1,2-Dichloroethene	1.0	U	200	195		ug/L		97	79 - 120
Trichloroethene	0.71	J	200	185		ug/L		92	77 - 120
Vinyl chloride	1.0	U F2	200	182		ug/L		91	62 - 138

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	90		74 - 132
Toluene-d8 (Surr)	91		80 - 120
Dibromofluoromethane (Surr)	99		72 - 131

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

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

Lab Sample ID: 460-197264-B-6 MS
Matrix: Water
Analysis Batch: 658233

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

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene	105		77 - 124

Lab Sample ID: 460-197264-B-6 MSD
Matrix: Water
Analysis Batch: 658233

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
1,1-Dichloroethene	1.0	U	200	217		ug/L		109	74 - 123	30	30
cis-1,2-Dichloroethene	1.0	U	200	179		ug/L		89	80 - 120	7	30
Tetrachloroethene	0.29	J	200	202		ug/L		101	78 - 122	2	30
trans-1,2-Dichloroethene	1.0	U	200	182		ug/L		91	79 - 120	7	30
Trichloroethene	0.71	J	200	227		ug/L		113	77 - 120	20	30
Vinyl chloride	1.0	U F2	200	249	F2	ug/L		124	62 - 138	31	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		74 - 132
Toluene-d8 (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	97		72 - 131
4-Bromofluorobenzene	107		77 - 124

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

Lab Sample ID: MB 460-657680/9
Matrix: Water
Analysis Batch: 657680

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	0.33	ug/L			11/23/19 11:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	93		72 - 133		11/23/19 11:05	1

Lab Sample ID: LCS 460-657680/4
Matrix: Water
Analysis Batch: 657680

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	5.00	5.69		ug/L		114	66 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	99		72 - 133

Lab Sample ID: LCSD 460-657680/5
Matrix: Water
Analysis Batch: 657680

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	5.00	5.10		ug/L		102	66 - 135	11	30

Eurofins TestAmerica, Edison

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

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

<i>Surrogate</i>	<i>LCS D</i>	<i>LCS D</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
4-Bromofluorobenzene	95		72 - 133

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QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

GC/MS VOA

Analysis Batch: 657680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-196921-2	MW-101S_111319	Total/NA	Water	8260C SIM	
460-196921-3	MW-79SR_111319	Total/NA	Water	8260C SIM	
460-196921-4	MW-141S_111319	Total/NA	Water	8260C SIM	
460-196921-5	MW-136S_111319	Total/NA	Water	8260C SIM	
460-196921-6	MW-139S_111319	Total/NA	Water	8260C SIM	
460-196921-7	MW-98S_111319	Total/NA	Water	8260C SIM	
460-196921-8	DUP-07	Total/NA	Water	8260C SIM	
MB 460-657680/9	Method Blank	Total/NA	Water	8260C SIM	
LCS 460-657680/4	Lab Control Sample	Total/NA	Water	8260C SIM	
LCSD 460-657680/5	Lab Control Sample Dup	Total/NA	Water	8260C SIM	

Analysis Batch: 658233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-196921-2	MW-101S_111319	Total/NA	Water	8260C	
460-196921-3	MW-79SR_111319	Total/NA	Water	8260C	
460-196921-4	MW-141S_111319	Total/NA	Water	8260C	
460-196921-5	MW-136S_111319	Total/NA	Water	8260C	
460-196921-6	MW-139S_111319	Total/NA	Water	8260C	
460-196921-7	MW-98S_111319	Total/NA	Water	8260C	
460-196921-8	DUP-07	Total/NA	Water	8260C	
MB 460-658233/9	Method Blank	Total/NA	Water	8260C	
LCS 460-658233/5	Lab Control Sample	Total/NA	Water	8260C	
460-197264-B-6 MS	Matrix Spike	Total/NA	Water	8260C	
460-197264-B-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Client Sample ID: MW-101S_111319

Lab Sample ID: 460-196921-2

Date Collected: 11/13/19 09:47

Matrix: Water

Date Received: 11/15/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658233	11/26/19 03:13	AVM	TAL EDI
Total/NA	Analysis	8260C SIM		1	657680	11/23/19 15:21	DAS	TAL EDI

Client Sample ID: MW-79SR_111319

Lab Sample ID: 460-196921-3

Date Collected: 11/13/19 11:02

Matrix: Water

Date Received: 11/15/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658233	11/26/19 03:36	AVM	TAL EDI
Total/NA	Analysis	8260C SIM		1	657680	11/23/19 15:44	DAS	TAL EDI

Client Sample ID: MW-141S_111319

Lab Sample ID: 460-196921-4

Date Collected: 11/13/19 12:32

Matrix: Water

Date Received: 11/15/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658233	11/26/19 04:00	AVM	TAL EDI
Total/NA	Analysis	8260C SIM		1	657680	11/23/19 16:08	DAS	TAL EDI

Client Sample ID: MW-136S_111319

Lab Sample ID: 460-196921-5

Date Collected: 11/13/19 13:42

Matrix: Water

Date Received: 11/15/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658233	11/26/19 04:23	AVM	TAL EDI
Total/NA	Analysis	8260C SIM		1	657680	11/23/19 16:31	DAS	TAL EDI

Client Sample ID: MW-139S_111319

Lab Sample ID: 460-196921-6

Date Collected: 11/13/19 14:47

Matrix: Water

Date Received: 11/15/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658233	11/26/19 04:46	AVM	TAL EDI
Total/NA	Analysis	8260C SIM		1	657680	11/23/19 16:54	DAS	TAL EDI

Client Sample ID: MW-98S_111319

Lab Sample ID: 460-196921-7

Date Collected: 11/13/19 15:52

Matrix: Water

Date Received: 11/15/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658233	11/26/19 05:10	AVM	TAL EDI
Total/NA	Analysis	8260C SIM		1	657680	11/23/19 17:18	DAS	TAL EDI

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Client Sample ID: DUP-07

Date Collected: 11/13/19 00:00

Date Received: 11/15/19 10:00

Lab Sample ID: 460-196921-8

Matrix: Water

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	8260C		1	658233	11/26/19 05:40	AVM	TAL EDI
Total/NA	Analysis	8260C SIM		1	657680	11/23/19 17:41	DAS	TAL EDI

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Laboratory: Eurofins TestAmerica, Edison

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

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-20
DE Haz. Subst. Cleanup Act (HSCA)	State	<cert No.>	12-31-21
Georgia	State	12028 (NJ)	06-30-20
Massachusetts	State Program	M-NJ312	06-30-20
New Jersey	NELAP	12028	06-30-20
New York	NELAP	11452	04-01-20
Pennsylvania	NELAP	68-00522	02-28-20
Rhode Island	State	LAO00132	12-30-19
USDA	US Federal Programs	P330-18-00135	05-03-21

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL EDI
8260C SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI
5030C	Purge and Trap	SW846	TAL EDI

Protocol References:

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

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off-Site

Job ID: 460-196921-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
460-196921-2	MW-101S_111319	Water	11/13/19 09:47	11/15/19 10:00	
460-196921-3	MW-79SR_111319	Water	11/13/19 11:02	11/15/19 10:00	
460-196921-4	MW-141S_111319	Water	11/13/19 12:32	11/15/19 10:00	
460-196921-5	MW-136S_111319	Water	11/13/19 13:42	11/15/19 10:00	
460-196921-6	MW-139S_111319	Water	11/13/19 14:47	11/15/19 10:00	
460-196921-7	MW-98S_111319	Water	11/13/19 15:52	11/15/19 10:00	
460-196921-8	DUP-07	Water	11/13/19 00:00	11/15/19 10:00	

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MICHIGAN 190

Chain of Custody Record



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

Client Contact: Company Name: Arcadis
 Address: 28550 Cabot Drive, Suite 500
 City/State/Zip: Novi, MI, 48377
 Phone: 248-994-2240
 Project Name: Ford LTP Off-Site
 Project Number: 30016346.0002B
 PO # 30016346.0002B

Regulatory program: DW NPDES RCRA Other
 Client Project Manager: Kris Hinskey
 Telephone: 248-994-2240
 Email: kristoffer.hinskey@arcadis.com
 Site Contract: Rachel Bielak
 Telephone: 248-946-6331
 Lab Contact: Mike DeMontico
 Telephone: 330-497-9396
 TestAmerica Laboratories, Inc.
 COC No: / of / COCs

Sampler Name: Heather Woodrum
 Method of Shipment/Carrier:
 Shipping/Tracking No:
 TAT if different from below:
 3 weeks
 2 weeks
 1 week
 2 days
 1 day
 10 day
 Analytes:
 1,4-Dioxane 8260B SIM
 Vinyl Chloride 8260B
 TCE 8260B
 PCE 8260B
 Trans-1,2-DCE 8260B
 Cis-1,2-DCE 8260B
 1,1-DCE 8260B
 Sample Specific Notes / Special Instructions:
 Trip Blank
 3 VOA for 8260B
 3 VOA for 8260B/4

Sample Identification	Sample Date	Sample Time	Air		Sediment		Solid		Other:		Blinded Sample (Y/N)	Analyses						Sample Specific Notes / Special Instructions	
			Other:	H2SO4	HNO3	HCl	NaOH	ZnOH	Uppers	Other:		1,4-DCE 8260B	Cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B		1,4-Dioxane 8260B SIM
TRIP BLANK	---	---	X								NG	X	X	X	X	X	X	X	1 Trip Blank
MW-1015-11319	11/13/19	9:47	X								NG	X	X	X	X	X	X	X	3 VOA for 8260B
MW-795R-11319	11/13/19	11:02	X								NG	X	X	X	X	X	X	X	3 VOA for 8260B/4
MW-141S-11319	11/13/19	12:32	X								NG	X	X	X	X	X	X	X	
MW-136S-11319	11/13/19	13:42	X								NG	X	X	X	X	X	X	X	
MW-139S-11319	11/13/19	14:47	X								NG	X	X	X	X	X	X	X	
MW-98S-11319	11/13/19	15:52	X								NG	X	X	X	X	X	X	X	
DUP-07	11/13/19	---	X								NG	X	X	X	X	X	X	X	



460-196921 Chain of Custody

Possible Hazard Identification
 Non-Hazard Irritant Poison B Unknown
 Return to Client Disposal By Lab Archive For

Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo)

Special Instructions/QC Requirements & Comments:
 Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203631
 Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Heather Woodrum	Arcadis	11/13/19 1620	Novitsky	Arcadis	11/13/19 1800
Rachel Bielak	Arcadis	11/14/19 1335	ETA	ETA	11/14/19 1340

Kyava Knordle ETA 11/15/19 1600
 Viafedex seal-1055803 01/31 @ 1.71
 IR #11
 1-6 2-0



Eurofins TestAmerica Edison Receipt Temperature and pH Log

Job Number: 196924

IR Gun # 11

Number of Coolers: 2

Cooler #	Temperature (°C)	
	RAW	CORRECTED
Cooler #1:	<u>13</u>	<u>16</u>
Cooler #2:	<u>17</u>	<u>20</u>
Cooler #3:	<u> </u>	<u> </u>
Cooler #4:	<u> </u>	<u> </u>
Cooler #5:	<u> </u>	<u> </u>
Cooler #6:	<u> </u>	<u> </u>
Cooler #7:	<u> </u>	<u> </u>
Cooler #8:	<u> </u>	<u> </u>
Cooler #9:	<u> </u>	<u> </u>

Cooler Temperatures

TALS Sample Number	Ammonia	COD	Nitrate Nitrite	Metals*	Hardness	Pest	EPH or QAM	Phenols	Sulfide	TKN	TOC	Total Cyanide	Total Phos	Other	Other
	(pH<2)	(pH<2)	(pH<2)	(pH<2)	(pH<2)	(pH 5-9)	(pH<2)	(pH<2)	(pH>9)	(pH<2)	(pH<2)	(pH>12)	(pH<2)		

If pH adjustments are required record the information below:

Sample No(s). adjusted:

Preservative Name/Conc.: Volume of Preservative used (ml):

Lot # of Preservative(s): Expiration Date:

*The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.
* Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: KK Date: 11/15/19



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 460-196921-1

Login Number: 196921

List Number: 1

Creator: Infante, Warleny M

List Source: Eurofins TestAmerica, Edison

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	CS#1055303
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	