

## ANALYTICAL REPORT

Eurofins TestAmerica, Edison  
777 New Durham Road  
Edison, NJ 08817  
Tel: (732)549-3900

Laboratory Job ID: 460-196331-1  
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:  
11/21/2019 3:16:19 PM

Michael DelMonico, Project Manager I  
(330)497-9396  
[michael.delmonico@testamericainc.com](mailto:michael.delmonico@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*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.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Definitions/Glossary . . . . .	3
Case Narrative . . . . .	4
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Surrogate Summary . . . . .	11
QC Sample Results . . . . .	12
QC Association Summary . . . . .	15
Lab Chronicle . . . . .	16
Certification Summary . . . . .	18
Method Summary . . . . .	19
Sample Summary . . . . .	20
Chain of Custody . . . . .	21
Receipt Checklists . . . . .	23

# Definitions/Glossary

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

Job ID: 460-196331-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
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 Livonia MI - E203631

Job ID: 460-196331-1

**Job ID: 460-196331-1**

**Laboratory: Eurofins TestAmerica, Edison**

**Narrative**

## CASE NARRATIVE

**Client: ARCADIS U.S., Inc.**

**Project: Ford LTP Livonia MI - E203631**

**Report Number: 460-196331-1**

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 11/7/2019 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.0° C, 1.1° C and 1.9° C.

### **VOLATILE ORGANIC COMPOUNDS (GCMS)**

Samples Trip Blank (460-196331-1), MW-83S\_110519 (460-196331-2), MW-83\_110519 (460-196331-3), MW-134S\_110519 (460-196331-4), MW-135S\_110519 (460-196331-5), MW-80SR\_110519 (460-196331-6) and DUP-04 (460-196331-7) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 11/17/2019.

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-83S\_110519 (460-196331-2), MW-83\_110519 (460-196331-3), MW-134S\_110519 (460-196331-4), MW-135S\_110519 (460-196331-5), MW-80SR\_110519 (460-196331-6) and DUP-04 (460-196331-7) were analyzed for Volatile organic compounds (GC/MS) in accordance with SW-846 Method 8260C SIM. The samples were analyzed on 11/16/2019.

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

# Case Narrative

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

Job ID: 460-196331-1

---

**Job ID: 460-196331-1 (Continued)**

---

**Laboratory: Eurofins TestAmerica, Edison (Continued)**

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Detection Summary

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

Job ID: 460-196331-1

## Client Sample ID: Trip Blank

Lab Sample ID: 460-196331-1

No Detections.

## Client Sample ID: MW-83S\_110519

Lab Sample ID: 460-196331-2

No Detections.

## Client Sample ID: MW-83\_110519

Lab Sample ID: 460-196331-3

No Detections.

## Client Sample ID: MW-134S\_110519

Lab Sample ID: 460-196331-4

No Detections.

## Client Sample ID: MW-135S\_110519

Lab Sample ID: 460-196331-5

No Detections.

## Client Sample ID: MW-80SR\_110519

Lab Sample ID: 460-196331-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.84	J	2.0	0.33	ug/L	1		8260C SIM	Total/NA
Vinyl chloride	3.6		1.0	0.17	ug/L	1		8260C	Total/NA

## Client Sample ID: DUP-04

Lab Sample ID: 460-196331-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.73	J	2.0	0.33	ug/L	1		8260C SIM	Total/NA
Vinyl chloride	3.8		1.0	0.17	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Edison

# Client Sample Results

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

Job ID: 460-196331-1

## Client Sample ID: Trip Blank

Date Collected: 11/05/19 16:02

Date Received: 11/07/19 10:00

## Lab Sample ID: 460-196331-1

Matrix: Water

### 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	-		11/17/19 11:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L	-		11/17/19 11:14	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L	-		11/17/19 11:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L	-		11/17/19 11:14	1
Trichloroethene	1.0	U	1.0	0.31	ug/L	-		11/17/19 11:14	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L	-		11/17/19 11:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		74 - 132		11/17/19 11:14	1
Toluene-d8 (Surr)	102		80 - 120		11/17/19 11:14	1
Dibromofluoromethane (Surr)	104		72 - 131		11/17/19 11:14	1
4-Bromofluorobenzene	100		77 - 124		11/17/19 11:14	1

## Client Sample ID: MW-83S\_110519

Date Collected: 11/05/19 10:22

Date Received: 11/07/19 10:00

## Lab Sample ID: 460-196331-2

Matrix: Water

### 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	-		11/16/19 13:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	94		72 - 133		11/16/19 13:02	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	-		11/17/19 13:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L	-		11/17/19 13:04	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L	-		11/17/19 13:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L	-		11/17/19 13:04	1
Trichloroethene	1.0	U	1.0	0.31	ug/L	-		11/17/19 13:04	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L	-		11/17/19 13:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		74 - 132		11/17/19 13:04	1
Toluene-d8 (Surr)	100		80 - 120		11/17/19 13:04	1
Dibromofluoromethane (Surr)	100		72 - 131		11/17/19 13:04	1
4-Bromofluorobenzene	99		77 - 124		11/17/19 13:04	1

## Client Sample ID: MW-83\_110519

Date Collected: 11/05/19 11:12

Date Received: 11/07/19 10:00

## Lab Sample ID: 460-196331-3

Matrix: Water

### 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	-		11/16/19 13:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	92		72 - 133		11/16/19 13:26	1

# Client Sample Results

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

Job ID: 460-196331-1

**Client Sample ID: MW-83\_110519**

**Lab Sample ID: 460-196331-3**

Date Collected: 11/05/19 11:12

Matrix: Water

Date Received: 11/07/19 10:00

**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	-		11/17/19 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L	-		11/17/19 13:27	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L	-		11/17/19 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L	-		11/17/19 13:27	1
Trichloroethene	1.0	U	1.0	0.31	ug/L	-		11/17/19 13:27	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L	-		11/17/19 13:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		74 - 132		11/17/19 13:27	1
Toluene-d8 (Surr)	101		80 - 120		11/17/19 13:27	1
Dibromofluoromethane (Surr)	101		72 - 131		11/17/19 13:27	1
4-Bromofluorobenzene	98		77 - 124		11/17/19 13:27	1

**Client Sample ID: MW-134S\_110519**

**Lab Sample ID: 460-196331-4**

Date Collected: 11/05/19 13:32

Matrix: Water

Date Received: 11/07/19 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	-		11/16/19 10:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	94		72 - 133		11/16/19 10:19	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	-		11/17/19 12:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L	-		11/17/19 12:42	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L	-		11/17/19 12:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L	-		11/17/19 12:42	1
Trichloroethene	1.0	U	1.0	0.31	ug/L	-		11/17/19 12:42	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L	-		11/17/19 12:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		74 - 132		11/17/19 12:42	1
Toluene-d8 (Surr)	101		80 - 120		11/17/19 12:42	1
Dibromofluoromethane (Surr)	100		72 - 131		11/17/19 12:42	1
4-Bromofluorobenzene	98		77 - 124		11/17/19 12:42	1

**Client Sample ID: MW-135S\_110519**

**Lab Sample ID: 460-196331-5**

Date Collected: 11/05/19 14:52

Matrix: Water

Date Received: 11/07/19 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	-		11/16/19 13:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	91		72 - 133		11/16/19 13:49	1



# Client Sample Results

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

Job ID: 460-196331-1

**Client Sample ID: MW-135S\_110519**

**Lab Sample ID: 460-196331-5**

Date Collected: 11/05/19 14:52

Matrix: Water

Date Received: 11/07/19 10:00

**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	-		11/17/19 13:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L	-		11/17/19 13:49	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L	-		11/17/19 13:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L	-		11/17/19 13:49	1
Trichloroethene	1.0	U	1.0	0.31	ug/L	-		11/17/19 13:49	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L	-		11/17/19 13:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		74 - 132		11/17/19 13:49	1
Toluene-d8 (Surr)	102		80 - 120		11/17/19 13:49	1
Dibromofluoromethane (Surr)	99		72 - 131		11/17/19 13:49	1
4-Bromofluorobenzene	100		77 - 124		11/17/19 13:49	1

**Client Sample ID: MW-80SR\_110519**

**Lab Sample ID: 460-196331-6**

Date Collected: 11/05/19 16:02

Matrix: Water

Date Received: 11/07/19 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.84	J	2.0	0.33	ug/L	-		11/16/19 14:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	91		72 - 133		11/16/19 14:12	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	-		11/17/19 14:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L	-		11/17/19 14:11	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L	-		11/17/19 14:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L	-		11/17/19 14:11	1
Trichloroethene	1.0	U	1.0	0.31	ug/L	-		11/17/19 14:11	1
Vinyl chloride	3.6		1.0	0.17	ug/L	-		11/17/19 14:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		74 - 132		11/17/19 14:11	1
Toluene-d8 (Surr)	101		80 - 120		11/17/19 14:11	1
Dibromofluoromethane (Surr)	100		72 - 131		11/17/19 14:11	1
4-Bromofluorobenzene	97		77 - 124		11/17/19 14:11	1

**Client Sample ID: DUP-04**

**Lab Sample ID: 460-196331-7**

Date Collected: 11/05/19 00:00

Matrix: Water

Date Received: 11/07/19 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.73	J	2.0	0.33	ug/L	-		11/16/19 14:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	93		72 - 133		11/16/19 14:36	1

# Client Sample Results

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

Job ID: 460-196331-1

**Client Sample ID: DUP-04**

**Lab Sample ID: 460-196331-7**

**Date Collected: 11/05/19 00:00**

**Matrix: Water**

**Date Received: 11/07/19 10:00**

**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			11/17/19 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/17/19 14:33	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/17/19 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/17/19 14:33	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/17/19 14:33	1
<b>Vinyl chloride</b>	<b>3.8</b>		1.0	0.17	ug/L			11/17/19 14:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		74 - 132		11/17/19 14:33	1
Toluene-d8 (Surr)	101		80 - 120		11/17/19 14:33	1
Dibromofluoromethane (Surr)	99		72 - 131		11/17/19 14:33	1
4-Bromofluorobenzene	97		77 - 124		11/17/19 14:33	1

# Surrogate Summary

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

Job ID: 460-196331-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (74-132)	TOL (80-120)	DBFM (72-131)	BFB (77-124)
460-196331-1	Trip Blank	100	102	104	100
460-196331-2	MW-83S_110519	98	100	100	99
460-196331-3	MW-83_110519	97	101	101	98
460-196331-4	MW-134S_110519	97	101	100	98
460-196331-4 MS	MW-134S-MS_110519	95	100	101	100
460-196331-4 MSD	MW-134S-MSD_110519	97	102	101	99
460-196331-5	MW-135S_110519	95	102	99	100
460-196331-6	MW-80SR_110519	97	101	100	97
460-196331-7	DUP-04	96	101	99	97
LCS 460-656053/4	Lab Control Sample	94	102	97	99
MB 460-656053/9	Method Blank	97	100	100	98

**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

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		BFB (72-133)
460-196331-2	MW-83S_110519	94
460-196331-3	MW-83_110519	92
460-196331-4	MW-134S_110519	94
460-196331-4 MS	MW-134S-MS_110519	89
460-196331-4 MSD	MW-134S-MSD_110519	89
460-196331-5	MW-135S_110519	91
460-196331-6	MW-80SR_110519	91
460-196331-7	DUP-04	93
LCS 460-655852/4	Lab Control Sample	93
MB 460-655852/8	Method Blank	91

**Surrogate Legend**

BFB = 4-Bromofluorobenzene

# QC Sample Results

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

Job ID: 460-196331-1

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

**Lab Sample ID: MB 460-656053/9**  
**Matrix: Water**  
**Analysis Batch: 656053**

**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			11/17/19 10:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/17/19 10:51	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/17/19 10:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/17/19 10:51	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/17/19 10:51	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/17/19 10:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		74 - 132		11/17/19 10:51	1
Toluene-d8 (Surr)	100		80 - 120		11/17/19 10:51	1
Dibromofluoromethane (Surr)	100		72 - 131		11/17/19 10:51	1
4-Bromofluorobenzene	98		77 - 124		11/17/19 10:51	1

**Lab Sample ID: LCS 460-656053/4**  
**Matrix: Water**  
**Analysis Batch: 656053**

**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	20.7		ug/L		103	74 - 123
cis-1,2-Dichloroethene	20.0	19.2		ug/L		96	80 - 120
Tetrachloroethene	20.0	20.5		ug/L		103	78 - 122
trans-1,2-Dichloroethene	20.0	19.9		ug/L		100	79 - 120
Trichloroethene	20.0	20.0		ug/L		100	77 - 120
Vinyl chloride	20.0	22.9		ug/L		114	62 - 138

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		74 - 132
Toluene-d8 (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	97		72 - 131
4-Bromofluorobenzene	99		77 - 124

**Lab Sample ID: 460-196331-4 MS**  
**Matrix: Water**  
**Analysis Batch: 656053**

**Client Sample ID: MW-134S-MS\_110519**  
**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	20.0	21.1		ug/L		106	74 - 123
cis-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	80 - 120
Tetrachloroethene	1.0	U	20.0	19.9		ug/L		100	78 - 122
trans-1,2-Dichloroethene	1.0	U	20.0	20.9		ug/L		104	79 - 120
Trichloroethene	1.0	U	20.0	20.3		ug/L		102	77 - 120
Vinyl chloride	1.0	U	20.0	24.8		ug/L		124	62 - 138

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		74 - 132
Toluene-d8 (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	101		72 - 131

# QC Sample Results

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

Job ID: 460-196331-1

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

**Lab Sample ID: 460-196331-4 MS**  
**Matrix: Water**  
**Analysis Batch: 656053**

**Client Sample ID: MW-134S-MS\_110519**  
**Prep Type: Total/NA**

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	100		77 - 124

**Lab Sample ID: 460-196331-4 MSD**  
**Matrix: Water**  
**Analysis Batch: 656053**

**Client Sample ID: MW-134S-MSD\_110519**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
1,1-Dichloroethene	1.0	U	20.0	20.8		ug/L		104	74 - 123	2	30	
cis-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	80 - 120	5	30	
Tetrachloroethene	1.0	U	20.0	19.3		ug/L		96	78 - 122	3	30	
trans-1,2-Dichloroethene	1.0	U	20.0	20.5		ug/L		102	79 - 120	2	30	
Trichloroethene	1.0	U	20.0	20.5		ug/L		102	77 - 120	1	30	
Vinyl chloride	1.0	U	20.0	24.1		ug/L		121	62 - 138	3	30	

  

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	97		74 - 132
Toluene-d8 (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	101		72 - 131
4-Bromofluorobenzene	99		77 - 124

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

**Lab Sample ID: MB 460-655852/8**  
**Matrix: Water**  
**Analysis Batch: 655852**

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.33	ug/L			11/16/19 09:10	1

  

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene	91		72 - 133		11/16/19 09:10	1

**Lab Sample ID: LCS 460-655852/4**  
**Matrix: Water**  
**Analysis Batch: 655852**

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

Analyte	Spike	LCS LCS		Unit	D	%Rec	%Rec.	
		Result	Qualifier				Limits	RPD
Benzene	0.0500	0.10	U	ug/L		102	10 - 150	
Chloroform	0.0500	0.10	U	ug/L		113	59 - 150	
1,2,3-Trichloropropane	0.0500	0.0472		ug/L		94	63 - 133	

  

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	93		72 - 133

# QC Sample Results

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

Job ID: 460-196331-1

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

**Lab Sample ID: 460-196331-4 MS**

**Matrix: Water**

**Analysis Batch: 655852**

**Client Sample ID: MW-134S-MS\_110519**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Benzene	0.10	U	0.0500	0.10	U	ug/L		NC	10 - 150	
Chloroform	0.075	J	0.0500	0.123		ug/L		96	59 - 150	
1,2,3-Trichloropropane	0.030	U	0.0500	0.0594		ug/L		119	63 - 133	
				<b>MS MS</b>						
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>							
4-Bromofluorobenzene	89		72 - 133							

**Lab Sample ID: 460-196331-4 MSD**

**Matrix: Water**

**Analysis Batch: 655852**

**Client Sample ID: MW-134S-MSD\_110519**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Benzene	0.10	U	0.0500	0.10	U	ug/L		NC	10 - 150	NC	30	
Chloroform	0.075	J	0.0500	0.115		ug/L		79	59 - 150	7	30	
1,2,3-Trichloropropane	0.030	U	0.0500	0.0606		ug/L		121	63 - 133	2	30	
				<b>MSD MSD</b>								
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>									
4-Bromofluorobenzene	89		72 - 133									

# QC Association Summary

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

Job ID: 460-196331-1

## GC/MS VOA

### Analysis Batch: 655852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-196331-2	MW-83S_110519	Total/NA	Water	8260C SIM	
460-196331-3	MW-83_110519	Total/NA	Water	8260C SIM	
460-196331-4	MW-134S_110519	Total/NA	Water	8260C SIM	
460-196331-5	MW-135S_110519	Total/NA	Water	8260C SIM	
460-196331-6	MW-80SR_110519	Total/NA	Water	8260C SIM	
460-196331-7	DUP-04	Total/NA	Water	8260C SIM	
MB 460-655852/8	Method Blank	Total/NA	Water	8260C SIM	
LCS 460-655852/4	Lab Control Sample	Total/NA	Water	8260C SIM	
460-196331-4 MS	MW-134S-MS_110519	Total/NA	Water	8260C SIM	
460-196331-4 MSD	MW-134S-MSD_110519	Total/NA	Water	8260C SIM	

### Analysis Batch: 656053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-196331-1	Trip Blank	Total/NA	Water	8260C	
460-196331-2	MW-83S_110519	Total/NA	Water	8260C	
460-196331-3	MW-83_110519	Total/NA	Water	8260C	
460-196331-4	MW-134S_110519	Total/NA	Water	8260C	
460-196331-5	MW-135S_110519	Total/NA	Water	8260C	
460-196331-6	MW-80SR_110519	Total/NA	Water	8260C	
460-196331-7	DUP-04	Total/NA	Water	8260C	
MB 460-656053/9	Method Blank	Total/NA	Water	8260C	
LCS 460-656053/4	Lab Control Sample	Total/NA	Water	8260C	
460-196331-4 MS	MW-134S-MS_110519	Total/NA	Water	8260C	
460-196331-4 MSD	MW-134S-MSD_110519	Total/NA	Water	8260C	

# Lab Chronicle

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

Job ID: 460-196331-1

## Client Sample ID: Trip Blank

Date Collected: 11/05/19 16:02

Date Received: 11/07/19 10:00

Lab Sample ID: 460-196331-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	656053	11/17/19 11:14	CJM	TAL EDI

## Client Sample ID: MW-83S\_110519

Date Collected: 11/05/19 10:22

Date Received: 11/07/19 10:00

Lab Sample ID: 460-196331-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	656053	11/17/19 13:04	CJM	TAL EDI
Total/NA	Analysis	8260C SIM		1	655852	11/16/19 13:02	KLB	TAL EDI

## Client Sample ID: MW-83\_110519

Date Collected: 11/05/19 11:12

Date Received: 11/07/19 10:00

Lab Sample ID: 460-196331-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	656053	11/17/19 13:27	CJM	TAL EDI
Total/NA	Analysis	8260C SIM		1	655852	11/16/19 13:26	KLB	TAL EDI

## Client Sample ID: MW-134S\_110519

Date Collected: 11/05/19 13:32

Date Received: 11/07/19 10:00

Lab Sample ID: 460-196331-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	656053	11/17/19 12:42	CJM	TAL EDI
Total/NA	Analysis	8260C SIM		1	655852	11/16/19 10:19	KLB	TAL EDI

## Client Sample ID: MW-135S\_110519

Date Collected: 11/05/19 14:52

Date Received: 11/07/19 10:00

Lab Sample ID: 460-196331-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	656053	11/17/19 13:49	CJM	TAL EDI
Total/NA	Analysis	8260C SIM		1	655852	11/16/19 13:49	KLB	TAL EDI

## Client Sample ID: MW-80SR\_110519

Date Collected: 11/05/19 16:02

Date Received: 11/07/19 10:00

Lab Sample ID: 460-196331-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	656053	11/17/19 14:11	CJM	TAL EDI
Total/NA	Analysis	8260C SIM		1	655852	11/16/19 14:12	KLB	TAL EDI



# Lab Chronicle

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

Job ID: 460-196331-1

**Client Sample ID: DUP-04**

**Lab Sample ID: 460-196331-7**

**Date Collected: 11/05/19 00:00**

**Matrix: Water**

**Date Received: 11/07/19 10:00**

<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	656053	11/17/19 14:33	CJM	TAL EDI
Total/NA	Analysis	8260C SIM		1	655852	11/16/19 14:36	KLB	TAL EDI

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Accreditation/Certification Summary

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

Job ID: 460-196331-1

## 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
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 Livonia MI - E203631

Job ID: 460-196331-1

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 Livonia MI - E203631

Job ID: 460-196331-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
460-196331-1	Trip Blank	Water	11/05/19 16:02	11/07/19 10:00	
460-196331-2	MW-83S_110519	Water	11/05/19 10:22	11/07/19 10:00	
460-196331-3	MW-83_110519	Water	11/05/19 11:12	11/07/19 10:00	
460-196331-4	MW-134S_110519	Water	11/05/19 13:32	11/07/19 10:00	
460-196331-5	MW-135S_110519	Water	11/05/19 14:52	11/07/19 10:00	
460-196331-6	MW-80SR_110519	Water	11/05/19 16:02	11/07/19 10:00	
460-196331-7	DUP-04	Water	11/05/19 00:00	11/07/19 10:00	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Chain of Custody Record

MICHIGAN TestAmerica  
190 THE LEADER IN ENVIRONMENTAL TESTING

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

Regulatory program:  DW  NPDES  RCRA  Other

Client Contact: **Company Name:** Arcadis  
**Address:** 28550 Cabot Drive, Suite 500  
**City/State/Zip:** Novi, MI, 48377  
**Telephone:** 248-994-2240  
**Client Project Manager:** Kris Hinskey  
**Site Contact:** Rachel Biak  
**Lab Contact:** Mike DeMarco  
**Telephone:** 248-946-6331  
**Telephone:** 330-497-9396

**Project Name:** Ford LTP Off-Site  
**Sampler Name:** Heather Wiskorn  
**Method of Shipment/Carrier:**  
**Shipping/Tracking No.:**

**Project Number:** 30016346-0002B  
**PO #** 30016346-0002B  
**Sample Identification:**  
**Sample Date:**  
**Sample Time:**  
**Matrix:** Air, Aqueous, Sediment, Solid, Other:  
**Retention Time:** 10 day, 3 weeks, 2 weeks, 1 week, 2 days, 1 day  
**Analysis:** 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

Sample Identification	Sample Date	Sample Time	Matrix					Component Retention Times					Filtered Sample (Y/N)	Composite (C/Grab/G)	Special Specific Notes / Special Instructions	
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH				Unpres
TRIP BLANK																
MW-835-110519	11/5/19	1022														1 Trip Blank
MW-83-110519	11/5/19	1112														3 Vials for 8260B 3 Vials for 8260B SIM
MW-1345-110519	11/5/19	1332														
MW-1345-MS-110519	11/5/19	1332														Run MS/MSD
MW-1345-MSD-110519	11/5/19	1452														
MW-805R-110519	11/5/19	1602														
DUP-04	11/5/19															



**Possible Hazard Identification:**  Non-Hazard  Inflammable  Corrosive  Toxic  Volatile  Other

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

Requisitioned by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
<i>[Signature]</i>	Arcadis	11/5/19 / 1640	<i>[Signature]</i>	Arcadis	11/5/19 / 1640
<i>[Signature]</i>	Arcadis	11/5/19 / 1715	<i>[Signature]</i>	Arcadis	11/5/19 / 1715
<i>[Signature]</i>	Arcadis	11/6/19 / 110	<i>[Signature]</i>	Arcadis	11/6/19 / 110

*[Handwritten notes and signatures]*  
 Jim Tomalia ETA 11-6-19 1030  
 10/11/19  
 11/19/19  
 11/19/19



# Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 460-196331-1

**Login Number: 196331**

**List Number: 1**

**Creator: DiGuardia, Joseph L**

**List Source: Eurofins TestAmerica, Edison**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
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.	True	
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	