

ANALYTICAL REPORT

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Laboratory Job ID: 240-110478-1

Client Project/Site: Ford LTP Livonia MI - E203631

For:

ARCADIS U.S., Inc.
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Attn: Kristoffer Hinskey



Authorized for release by:
4/18/2019 3:11:31 PM

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

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Definitions/Glossary

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

Job ID: 240-110478-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	ISTD response or retention time outside acceptable limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
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.
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

Job ID: 240-110478-1

Job ID: 240-110478-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-110478-1

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, Canton 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 4/4/2019 9:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6° C, 0.8° C, 2.2° C and 3.2° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples HPT-211_13-17_080219 (240-110478-1), HPT-211_2-6_080219 (240-110478-2), HPT-211_7-11_080219 (240-110478-3), HPT-212_18-22_080219 (240-110478-4), HPT-212_10-14_080219 (240-110478-5), HPT-212_5-9_080219 (240-110478-6) and TRIP BLANK (240-110478-15) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/15/2019.

Samples HPT-211_2-6_080219 (240-110478-2)[1.67X], HPT-211_7-11_080219 (240-110478-3)[14.29X], HPT-212_18-22_080219 (240-110478-4)[5X] and HPT-212_10-14_080219 (240-110478-5)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

VOLATILE ORGANIC COMPOUNDS

Samples HPT-211_18-19_080219 (240-110478-7), HPT-210_0-1_080219 (240-110478-8), HPT-210_1-2_080219 (240-110478-9), HPT-210_2-3_080219 (240-110478-10), HPT-212_1-2_080219 (240-110478-11), HPT-212_2-3_080219 (240-110478-12), HPT-212_3-4_080219 (240-110478-13) and HPT-212_4-5_080219 (240-110478-14) were analyzed for volatile organic compounds in

Case Narrative

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

Job ID: 240-110478-1

Job ID: 240-110478-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/09/2019.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-375537 and analytical batch 240-375622.

The continuing calibration verification (CCV) associated with batch 240-375622 recovered above the upper control limit for vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: HPT-211_18-19_080219 (240-110478-7), HPT-210_0-1_080219 (240-110478-8), HPT-210_1-2_080219 (240-110478-9), HPT-210_2-3_080219 (240-110478-10), HPT-212_1-2_080219 (240-110478-11), HPT-212_2-3_080219 (240-110478-12), HPT-212_3-4_080219 (240-110478-13), HPT-212_4-5_080219 (240-110478-14) and (CCVIS 240-375622/4).

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 HPT-211_13-17_080219 (240-110478-1), HPT-211_2-6_080219 (240-110478-2), HPT-211_7-11_080219 (240-110478-3), HPT-212_18-22_080219 (240-110478-4), HPT-212_10-14_080219 (240-110478-5) and HPT-212_5-9_080219 (240-110478-6) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 04/10/2019.

Internal standard responses were outside of acceptance limits for the following samples: HPT-211_7-11_080219 (240-110478-3). The samples shows evidence of matrix interference.

The pH is greater than 2 for the following samples HPT-212_18-22_080219 (240-110478-4).

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

PERCENT SOLIDS

Samples HPT-211_18-19_080219 (240-110478-7), HPT-210_0-1_080219 (240-110478-8), HPT-210_1-2_080219 (240-110478-9), HPT-210_2-3_080219 (240-110478-10), HPT-212_1-2_080219 (240-110478-11), HPT-212_2-3_080219 (240-110478-12), HPT-212_3-4_080219 (240-110478-13) and HPT-212_4-5_080219 (240-110478-14) were analyzed for percent solids in accordance with ASTM Method D2216-80. The samples were analyzed on 04/05/2019.

No 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

Job ID: 240-110478-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B MI	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

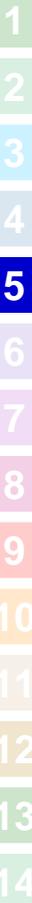
Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

TAL CAN = Eurofins 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

Job ID: 240-110478-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-110478-1	HPT-211_13-17_080219	Water	04/02/19 10:18	04/04/19 09:55
240-110478-2	HPT-211_2-6_080219	Water	04/02/19 10:50	04/04/19 09:55
240-110478-3	HPT-211_7-11_080219	Water	04/02/19 10:35	04/04/19 09:55
240-110478-4	HPT-212_18-22_080219	Water	04/02/19 14:05	04/04/19 09:55
240-110478-5	HPT-212_10-14_080219	Water	04/02/19 14:18	04/04/19 09:55
240-110478-6	HPT-212_5-9_080219	Water	04/02/19 14:33	04/04/19 09:55
240-110478-7	HPT-211_18-19_080219	Solid	04/02/19 09:45	04/04/19 09:55
240-110478-8	HPT-210_0-1_080219	Solid	04/02/19 09:00	04/04/19 09:55
240-110478-9	HPT-210_1-2_080219	Solid	04/02/19 09:00	04/04/19 09:55
240-110478-10	HPT-210_2-3_080219	Solid	04/02/19 09:00	04/04/19 09:55
240-110478-11	HPT-212_1-2_080219	Solid	04/02/19 15:40	04/04/19 09:55
240-110478-12	HPT-212_2-3_080219	Solid	04/02/19 15:40	04/04/19 09:55
240-110478-13	HPT-212_3-4_080219	Solid	04/02/19 15:40	04/04/19 09:55
240-110478-14	HPT-212_4-5_080219	Solid	04/02/19 15:40	04/04/19 09:55
240-110478-15	TRIP BLANK	Water	04/02/19 00:00	04/04/19 09:55

Detection Summary

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

Job ID: 240-110478-1

Client Sample ID: HPT-211_13-17_080219

Lab Sample ID: 240-110478-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	14		1.0	0.16	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	1.8		1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	1.4		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: HPT-211_2-6_080219

Lab Sample ID: 240-110478-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9.4		1.7	0.27	ug/L	1.67		8260B	Total/NA
trans-1,2-Dichloroethene	0.77	J	1.7	0.32	ug/L	1.67		8260B	Total/NA
Trichloroethene	45		1.7	0.17	ug/L	1.67		8260B	Total/NA

Client Sample ID: HPT-211_7-11_080219

Lab Sample ID: 240-110478-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	63		14	2.3	ug/L	14.29		8260B	Total/NA
trans-1,2-Dichloroethene	4.6	J	14	2.7	ug/L	14.29		8260B	Total/NA
Trichloroethene	320		14	1.4	ug/L	14.29		8260B	Total/NA

Client Sample ID: HPT-212_18-22_080219

Lab Sample ID: 240-110478-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	110		5.0	0.80	ug/L	5		8260B	Total/NA
trans-1,2-Dichloroethene	0.96	J	5.0	0.95	ug/L	5		8260B	Total/NA
Vinyl chloride	46		5.0	1.0	ug/L	5		8260B	Total/NA

Client Sample ID: HPT-212_10-14_080219

Lab Sample ID: 240-110478-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	35		10	1.6	ug/L	10		8260B	Total/NA
trans-1,2-Dichloroethene	3.2	J	10	1.9	ug/L	10		8260B	Total/NA
Trichloroethene	220		10	1.0	ug/L	10		8260B	Total/NA
Vinyl chloride	9.1	J	10	2.0	ug/L	10		8260B	Total/NA

Client Sample ID: HPT-212_5-9_080219

Lab Sample ID: 240-110478-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9.9		1.0	0.16	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.98	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	7.5		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	3.6		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: HPT-211_18-19_080219

Lab Sample ID: 240-110478-7

No Detections.

Client Sample ID: HPT-210_0-1_080219

Lab Sample ID: 240-110478-8

No Detections.

Client Sample ID: HPT-210_1-2_080219

Lab Sample ID: 240-110478-9

No Detections.

Client Sample ID: HPT-210_2-3_080219

Lab Sample ID: 240-110478-10

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_1-2_080219

Lab Sample ID: 240-110478-11

No Detections.

Client Sample ID: HPT-212_2-3_080219

Lab Sample ID: 240-110478-12

No Detections.

Client Sample ID: HPT-212_3-4_080219

Lab Sample ID: 240-110478-13

No Detections.

Client Sample ID: HPT-212_4-5_080219

Lab Sample ID: 240-110478-14

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110478-15

No Detections.

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

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-211_13-17_080219

Lab Sample ID: 240-110478-1

Date Collected: 04/02/19 10:18

Matrix: Water

Date Received: 04/04/19 09:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/10/19 16:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		63 - 125		04/10/19 16:39	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/15/19 16:12	1
cis-1,2-Dichloroethene	14		1.0	0.16	ug/L			04/15/19 16:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/15/19 16:12	1
trans-1,2-Dichloroethene	1.8		1.0	0.19	ug/L			04/15/19 16:12	1
Trichloroethene	1.4		1.0	0.10	ug/L			04/15/19 16:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/15/19 16:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 121		04/15/19 16:12	1
4-Bromofluorobenzene (Surr)	72		59 - 120		04/15/19 16:12	1
Toluene-d8 (Surr)	94		70 - 123		04/15/19 16:12	1
Dibromofluoromethane (Surr)	88		75 - 128		04/15/19 16:12	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-211_2-6_080219

Lab Sample ID: 240-110478-2

Date Collected: 04/02/19 10:50

Matrix: Water

Date Received: 04/04/19 09:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		04/10/19 17:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	124		63 - 125		04/10/19 17:05	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.7	U	1.7	0.32	ug/L	-		04/15/19 16:35	1.67
cis-1,2-Dichloroethene	9.4		1.7	0.27	ug/L			04/15/19 16:35	1.67
Tetrachloroethene	1.7	U	1.7	0.25	ug/L			04/15/19 16:35	1.67
trans-1,2-Dichloroethene	0.77	J	1.7	0.32	ug/L			04/15/19 16:35	1.67
Trichloroethene	45		1.7	0.17	ug/L			04/15/19 16:35	1.67
Vinyl chloride	1.7	U	1.7	0.33	ug/L			04/15/19 16:35	1.67

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	76		70 - 121		04/15/19 16:35	1.67
4-Bromofluorobenzene (Surr)	72		59 - 120		04/15/19 16:35	1.67
Toluene-d8 (Surr)	90		70 - 123		04/15/19 16:35	1.67
Dibromofluoromethane (Surr)	82		75 - 128		04/15/19 16:35	1.67

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-211_7-11_080219

Lab Sample ID: 240-110478-3

Date Collected: 04/02/19 10:35

Matrix: Water

Date Received: 04/04/19 09:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U *	2.0	0.86	ug/L	-		04/10/19 17:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	125		63 - 125		04/10/19 17:30	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	14	U	14	2.7	ug/L	-		04/15/19 16:57	14.29
cis-1,2-Dichloroethene	63		14	2.3	ug/L			04/15/19 16:57	14.29
Tetrachloroethene	14	U	14	2.1	ug/L			04/15/19 16:57	14.29
trans-1,2-Dichloroethene	4.6	J	14	2.7	ug/L			04/15/19 16:57	14.29
Trichloroethene	320		14	1.4	ug/L			04/15/19 16:57	14.29
Vinyl chloride	14	U	14	2.9	ug/L			04/15/19 16:57	14.29

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 121		04/15/19 16:57	14.29
4-Bromofluorobenzene (Surr)	81		59 - 120		04/15/19 16:57	14.29
Toluene-d8 (Surr)	100		70 - 123		04/15/19 16:57	14.29
Dibromofluoromethane (Surr)	97		75 - 128		04/15/19 16:57	14.29

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_18-22_080219

Lab Sample ID: 240-110478-4

Date Collected: 04/02/19 14:05

Matrix: Water

Date Received: 04/04/19 09:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		04/10/19 17:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		63 - 125		04/10/19 17:56	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L	-		04/15/19 17:19	5
cis-1,2-Dichloroethene	110		5.0	0.80	ug/L			04/15/19 17:19	5
Tetrachloroethene	5.0	U	5.0	0.75	ug/L			04/15/19 17:19	5
trans-1,2-Dichloroethene	0.96	J	5.0	0.95	ug/L			04/15/19 17:19	5
Trichloroethene	5.0	U	5.0	0.50	ug/L			04/15/19 17:19	5
Vinyl chloride	46		5.0	1.0	ug/L			04/15/19 17:19	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		70 - 121		04/15/19 17:19	5
4-Bromofluorobenzene (Surr)	85		59 - 120		04/15/19 17:19	5
Toluene-d8 (Surr)	105		70 - 123		04/15/19 17:19	5
Dibromofluoromethane (Surr)	100		75 - 128		04/15/19 17:19	5

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_10-14_080219

Lab Sample ID: 240-110478-5

Date Collected: 04/02/19 14:18

Matrix: Water

Date Received: 04/04/19 09:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L	-		04/10/19 18:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	124		63 - 125		04/10/19 18:22	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	10	U	10	1.9	ug/L	-		04/15/19 17:41	10
cis-1,2-Dichloroethene	35		10	1.6	ug/L			04/15/19 17:41	10
Tetrachloroethene	10	U	10	1.5	ug/L			04/15/19 17:41	10
trans-1,2-Dichloroethene	3.2	J	10	1.9	ug/L			04/15/19 17:41	10
Trichloroethene	220		10	1.0	ug/L			04/15/19 17:41	10
Vinyl chloride	9.1	J	10	2.0	ug/L			04/15/19 17:41	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		70 - 121		04/15/19 17:41	10
4-Bromofluorobenzene (Surr)	74		59 - 120		04/15/19 17:41	10
Toluene-d8 (Surr)	93		70 - 123		04/15/19 17:41	10
Dibromofluoromethane (Surr)	91		75 - 128		04/15/19 17:41	10

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_5-9_080219

Lab Sample ID: 240-110478-6

Date Collected: 04/02/19 14:33

Matrix: Water

Date Received: 04/04/19 09:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/10/19 18:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	121		63 - 125					04/10/19 18:47	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/15/19 18:03	1
cis-1,2-Dichloroethene	9.9		1.0	0.16	ug/L			04/15/19 18:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/15/19 18:03	1
trans-1,2-Dichloroethene	0.98	J	1.0	0.19	ug/L			04/15/19 18:03	1
Trichloroethene	7.5		1.0	0.10	ug/L			04/15/19 18:03	1
Vinyl chloride	3.6		1.0	0.20	ug/L			04/15/19 18:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 121					04/15/19 18:03	1
4-Bromofluorobenzene (Surr)	78		59 - 120					04/15/19 18:03	1
Toluene-d8 (Surr)	98		70 - 123					04/15/19 18:03	1
Dibromofluoromethane (Surr)	95		75 - 128					04/15/19 18:03	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-211_18-19_080219

Lab Sample ID: 240-110478-7

Date Collected: 04/02/19 09:45

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 80.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	67	U	67	27	ug/Kg	☼	04/09/19 11:56	04/09/19 19:36	1
1,4-Dioxane	21000	U	21000	1800	ug/Kg	☼	04/09/19 11:56	04/09/19 19:36	1
cis-1,2-Dichloroethene	67	U	67	15	ug/Kg	☼	04/09/19 11:56	04/09/19 19:36	1
Tetrachloroethene	67	U	67	30	ug/Kg	☼	04/09/19 11:56	04/09/19 19:36	1
trans-1,2-Dichloroethene	67	U	67	17	ug/Kg	☼	04/09/19 11:56	04/09/19 19:36	1
Trichloroethene	67	U	67	18	ug/Kg	☼	04/09/19 11:56	04/09/19 19:36	1
Vinyl chloride	53	U	53	20	ug/Kg	☼	04/09/19 11:56	04/09/19 19:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		53 - 155	04/09/19 11:56	04/09/19 19:36	1
4-Bromofluorobenzene (Surr)	111		48 - 151	04/09/19 11:56	04/09/19 19:36	1
Dibromofluoromethane (Surr)	95		49 - 138	04/09/19 11:56	04/09/19 19:36	1
Toluene-d8 (Surr)	112		49 - 147	04/09/19 11:56	04/09/19 19:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	80.4		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	19.6		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-210_0-1_080219

Lab Sample ID: 240-110478-8

Date Collected: 04/02/19 09:00

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 83.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	66	U	66	27	ug/Kg	☼	04/09/19 11:56	04/09/19 19:57	1
1,4-Dioxane	21000	U	21000	1800	ug/Kg	☼	04/09/19 11:56	04/09/19 19:57	1
cis-1,2-Dichloroethene	66	U	66	15	ug/Kg	☼	04/09/19 11:56	04/09/19 19:57	1
Tetrachloroethene	66	U	66	30	ug/Kg	☼	04/09/19 11:56	04/09/19 19:57	1
trans-1,2-Dichloroethene	66	U	66	17	ug/Kg	☼	04/09/19 11:56	04/09/19 19:57	1
Trichloroethene	66	U	66	18	ug/Kg	☼	04/09/19 11:56	04/09/19 19:57	1
Vinyl chloride	53	U	53	20	ug/Kg	☼	04/09/19 11:56	04/09/19 19:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		53 - 155	04/09/19 11:56	04/09/19 19:57	1
4-Bromofluorobenzene (Surr)	122		48 - 151	04/09/19 11:56	04/09/19 19:57	1
Dibromofluoromethane (Surr)	104		49 - 138	04/09/19 11:56	04/09/19 19:57	1
Toluene-d8 (Surr)	127		49 - 147	04/09/19 11:56	04/09/19 19:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	83.3		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	16.7		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-210_1-2_080219

Lab Sample ID: 240-110478-9

Date Collected: 04/02/19 09:00

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 84.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	59	U	59	24	ug/Kg	☼	04/09/19 11:56	04/09/19 20:19	1
1,4-Dioxane	18000	U	18000	1600	ug/Kg	☼	04/09/19 11:56	04/09/19 20:19	1
cis-1,2-Dichloroethene	59	U	59	13	ug/Kg	☼	04/09/19 11:56	04/09/19 20:19	1
Tetrachloroethene	59	U	59	26	ug/Kg	☼	04/09/19 11:56	04/09/19 20:19	1
trans-1,2-Dichloroethene	59	U	59	15	ug/Kg	☼	04/09/19 11:56	04/09/19 20:19	1
Trichloroethene	59	U	59	16	ug/Kg	☼	04/09/19 11:56	04/09/19 20:19	1
Vinyl chloride	47	U	47	18	ug/Kg	☼	04/09/19 11:56	04/09/19 20:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		53 - 155	04/09/19 11:56	04/09/19 20:19	1
4-Bromofluorobenzene (Surr)	106		48 - 151	04/09/19 11:56	04/09/19 20:19	1
Dibromofluoromethane (Surr)	94		49 - 138	04/09/19 11:56	04/09/19 20:19	1
Toluene-d8 (Surr)	110		49 - 147	04/09/19 11:56	04/09/19 20:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	84.8		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	15.2		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-210_2-3_080219

Lab Sample ID: 240-110478-10

Date Collected: 04/02/19 09:00

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 84.6

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	56	U	56	22	ug/Kg	☼	04/09/19 11:56	04/09/19 20:40	1
1,4-Dioxane	17000	U	17000	1500	ug/Kg	☼	04/09/19 11:56	04/09/19 20:40	1
cis-1,2-Dichloroethene	56	U	56	13	ug/Kg	☼	04/09/19 11:56	04/09/19 20:40	1
Tetrachloroethene	56	U	56	25	ug/Kg	☼	04/09/19 11:56	04/09/19 20:40	1
trans-1,2-Dichloroethene	56	U	56	14	ug/Kg	☼	04/09/19 11:56	04/09/19 20:40	1
Trichloroethene	56	U	56	15	ug/Kg	☼	04/09/19 11:56	04/09/19 20:40	1
Vinyl chloride	45	U	45	17	ug/Kg	☼	04/09/19 11:56	04/09/19 20:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		53 - 155	04/09/19 11:56	04/09/19 20:40	1
4-Bromofluorobenzene (Surr)	99		48 - 151	04/09/19 11:56	04/09/19 20:40	1
Dibromofluoromethane (Surr)	85		49 - 138	04/09/19 11:56	04/09/19 20:40	1
Toluene-d8 (Surr)	107		49 - 147	04/09/19 11:56	04/09/19 20:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	84.6		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	15.4		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_1-2_080219

Lab Sample ID: 240-110478-11

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 89.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	53	U	53	21	ug/Kg	☼	04/09/19 11:56	04/09/19 21:02	1
1,4-Dioxane	17000	U	17000	1400	ug/Kg	☼	04/09/19 11:56	04/09/19 21:02	1
cis-1,2-Dichloroethene	53	U	53	12	ug/Kg	☼	04/09/19 11:56	04/09/19 21:02	1
Tetrachloroethene	53	U	53	24	ug/Kg	☼	04/09/19 11:56	04/09/19 21:02	1
trans-1,2-Dichloroethene	53	U	53	13	ug/Kg	☼	04/09/19 11:56	04/09/19 21:02	1
Trichloroethene	53	U	53	15	ug/Kg	☼	04/09/19 11:56	04/09/19 21:02	1
Vinyl chloride	42	U	42	16	ug/Kg	☼	04/09/19 11:56	04/09/19 21:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		53 - 155	04/09/19 11:56	04/09/19 21:02	1
4-Bromofluorobenzene (Surr)	96		48 - 151	04/09/19 11:56	04/09/19 21:02	1
Dibromofluoromethane (Surr)	79		49 - 138	04/09/19 11:56	04/09/19 21:02	1
Toluene-d8 (Surr)	98		49 - 147	04/09/19 11:56	04/09/19 21:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	89.4		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	10.6		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_2-3_080219

Lab Sample ID: 240-110478-12

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 86.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	54	U	54	22	ug/Kg	☼	04/09/19 11:56	04/09/19 21:24	1
1,4-Dioxane	17000	U	17000	1500	ug/Kg	☼	04/09/19 11:56	04/09/19 21:24	1
cis-1,2-Dichloroethene	54	U	54	12	ug/Kg	☼	04/09/19 11:56	04/09/19 21:24	1
Tetrachloroethene	54	U	54	24	ug/Kg	☼	04/09/19 11:56	04/09/19 21:24	1
trans-1,2-Dichloroethene	54	U	54	13	ug/Kg	☼	04/09/19 11:56	04/09/19 21:24	1
Trichloroethene	54	U	54	15	ug/Kg	☼	04/09/19 11:56	04/09/19 21:24	1
Vinyl chloride	43	U	43	16	ug/Kg	☼	04/09/19 11:56	04/09/19 21:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		53 - 155	04/09/19 11:56	04/09/19 21:24	1
4-Bromofluorobenzene (Surr)	109		48 - 151	04/09/19 11:56	04/09/19 21:24	1
Dibromofluoromethane (Surr)	90		49 - 138	04/09/19 11:56	04/09/19 21:24	1
Toluene-d8 (Surr)	111		49 - 147	04/09/19 11:56	04/09/19 21:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	86.4		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	13.6		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_3-4_080219

Lab Sample ID: 240-110478-13

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 88.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	50	U	50	20	ug/Kg	☼	04/09/19 11:56	04/09/19 21:45	1
1,4-Dioxane	16000	U	16000	1400	ug/Kg	☼	04/09/19 11:56	04/09/19 21:45	1
cis-1,2-Dichloroethene	50	U	50	11	ug/Kg	☼	04/09/19 11:56	04/09/19 21:45	1
Tetrachloroethene	50	U	50	23	ug/Kg	☼	04/09/19 11:56	04/09/19 21:45	1
trans-1,2-Dichloroethene	50	U	50	13	ug/Kg	☼	04/09/19 11:56	04/09/19 21:45	1
Trichloroethene	50	U	50	14	ug/Kg	☼	04/09/19 11:56	04/09/19 21:45	1
Vinyl chloride	40	U	40	15	ug/Kg	☼	04/09/19 11:56	04/09/19 21:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		53 - 155	04/09/19 11:56	04/09/19 21:45	1
4-Bromofluorobenzene (Surr)	102		48 - 151	04/09/19 11:56	04/09/19 21:45	1
Dibromofluoromethane (Surr)	87		49 - 138	04/09/19 11:56	04/09/19 21:45	1
Toluene-d8 (Surr)	109		49 - 147	04/09/19 11:56	04/09/19 21:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88.4		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	11.6		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_4-5_080219

Lab Sample ID: 240-110478-14

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 89.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	54	U	54	22	ug/Kg	☼	04/09/19 11:56	04/09/19 22:07	1
1,4-Dioxane	17000	U	17000	1500	ug/Kg	☼	04/09/19 11:56	04/09/19 22:07	1
cis-1,2-Dichloroethene	54	U	54	12	ug/Kg	☼	04/09/19 11:56	04/09/19 22:07	1
Tetrachloroethene	54	U	54	24	ug/Kg	☼	04/09/19 11:56	04/09/19 22:07	1
trans-1,2-Dichloroethene	54	U	54	14	ug/Kg	☼	04/09/19 11:56	04/09/19 22:07	1
Trichloroethene	54	U	54	15	ug/Kg	☼	04/09/19 11:56	04/09/19 22:07	1
Vinyl chloride	43	U	43	16	ug/Kg	☼	04/09/19 11:56	04/09/19 22:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		53 - 155	04/09/19 11:56	04/09/19 22:07	1
4-Bromofluorobenzene (Surr)	104		48 - 151	04/09/19 11:56	04/09/19 22:07	1
Dibromofluoromethane (Surr)	91		49 - 138	04/09/19 11:56	04/09/19 22:07	1
Toluene-d8 (Surr)	110		49 - 147	04/09/19 11:56	04/09/19 22:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	89.2		0.1	0.1	%			04/05/19 13:21	1
Percent Moisture	10.8		0.1	0.1	%			04/05/19 13:21	1

Client Sample Results

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

Job ID: 240-110478-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110478-15

Date Collected: 04/02/19 00:00

Matrix: Water

Date Received: 04/04/19 09:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/15/19 18:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/15/19 18:26	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/15/19 18:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/15/19 18:26	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/15/19 18:26	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/15/19 18:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 121		04/15/19 18:26	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/15/19 18:26	1
Toluene-d8 (Surr)	100		70 - 123		04/15/19 18:26	1
Dibromofluoromethane (Surr)	96		75 - 128		04/15/19 18:26	1

Surrogate Summary

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

Job ID: 240-110478-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (70-121)	BFB (59-120)	TOL (70-123)	DBFM (75-128)
240-110459-E-1 MSD	Matrix Spike Duplicate	81	91	102	91
240-110459-H-1 MS	Matrix Spike	82	91	106	91
240-110478-1	HPT-211_13-17_080219	80	72	94	88
240-110478-2	HPT-211_2-6_080219	76	72	90	82
240-110478-3	HPT-211_7-11_080219	89	81	100	97
240-110478-4	HPT-212_18-22_080219	90	85	105	100
240-110478-5	HPT-212_10-14_080219	80	74	93	91
240-110478-6	HPT-212_5-9_080219	84	78	98	95
240-110478-15	TRIP BLANK	85	78	100	96
LCS 240-376459/4	Lab Control Sample	84	98	107	91
MB 240-376459/6	Method Blank	84	84	94	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (53-155)	BFB (48-151)	DBFM (49-138)	TOL (49-147)
240-110478-7	HPT-211_18-19_080219	97	111	95	112
240-110478-8	HPT-210_0-1_080219	106	122	104	127
240-110478-9	HPT-210_1-2_080219	97	106	94	110
240-110478-10	HPT-210_2-3_080219	86	99	85	107
240-110478-11	HPT-212_1-2_080219	82	96	79	98
240-110478-12	HPT-212_2-3_080219	94	109	90	111
240-110478-13	HPT-212_3-4_080219	92	102	87	109
240-110478-14	HPT-212_4-5_080219	92	104	91	110
LCS 240-375537/2-A	Lab Control Sample	76	89	76	91
MB 240-375537/1-A	Method Blank	76	90	74	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (63-125)
240-110458-C-3 MS	Matrix Spike	122
240-110458-C-3 MSD	Matrix Spike Duplicate	117
240-110478-1	HPT-211_13-17_080219	120
240-110478-2	HPT-211_2-6_080219	124

Eurofins TestAmerica, Canton

Surrogate Summary

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

Job ID: 240-110478-1

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)
240-110478-3	HPT-211_7-11_080219	125
240-110478-4	HPT-212_18-22_080219	120
240-110478-5	HPT-212_10-14_080219	124
240-110478-6	HPT-212_5-9_080219	121
LCS 240-375762/4	Lab Control Sample	116
MB 240-375762/5	Method Blank	116

Surrogate Legend

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

QC Sample Results

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

Job ID: 240-110478-1

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

Lab Sample ID: MB 240-376459/6
Matrix: Water
Analysis Batch: 376459

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	0.19	ug/L			04/15/19 11:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/15/19 11:47	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/15/19 11:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/15/19 11:47	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/15/19 11:47	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/15/19 11:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 121		04/15/19 11:47	1
4-Bromofluorobenzene (Surr)	84		59 - 120		04/15/19 11:47	1
Toluene-d8 (Surr)	94		70 - 123		04/15/19 11:47	1
Dibromofluoromethane (Surr)	93		75 - 128		04/15/19 11:47	1

Lab Sample ID: LCS 240-376459/4
Matrix: Water
Analysis Batch: 376459

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	10.0	10.1		ug/L		101	65 - 139
cis-1,2-Dichloroethene	10.0	9.47		ug/L		95	76 - 128
Tetrachloroethene	10.0	9.10		ug/L		91	74 - 130
trans-1,2-Dichloroethene	10.0	9.76		ug/L		98	78 - 133
Trichloroethene	10.0	9.01		ug/L		90	76 - 125
Vinyl chloride	10.0	9.11		ug/L		91	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		70 - 121
4-Bromofluorobenzene (Surr)	98		59 - 120
Toluene-d8 (Surr)	107		70 - 123
Dibromofluoromethane (Surr)	91		75 - 128

Lab Sample ID: 240-110459-E-1 MSD
Matrix: Water
Analysis Batch: 376459

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	10.0	10.3		ug/L		103	53 - 140	17	35
cis-1,2-Dichloroethene	2.1		10.0	12.0		ug/L		99	64 - 130	3	21
Tetrachloroethene	12		10.0	21.0		ug/L		86	51 - 136	0	23
Trichloroethene	1.6		10.0	10.6		ug/L		90	55 - 131	7	23
Vinyl chloride	1.0	U	10.0	9.10		ug/L		91	43 - 154	5	29

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		70 - 121
4-Bromofluorobenzene (Surr)	91		59 - 120
Toluene-d8 (Surr)	102		70 - 123
Dibromofluoromethane (Surr)	91		75 - 128

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110478-1

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

Lab Sample ID: 240-110459-H-1 MS
Matrix: Water
Analysis Batch: 376459

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	10.0	8.72		ug/L		87	53 - 140
cis-1,2-Dichloroethene	2.1		10.0	11.6		ug/L		95	64 - 130
Tetrachloroethene	12		10.0	21.0		ug/L		86	51 - 136
Trichloroethene	1.6		10.0	9.86		ug/L		83	55 - 131
Vinyl chloride	1.0	U	10.0	8.65		ug/L		86	43 - 154

Surrogate	MS %Recovery	MS Qualifier	MS Limits
1,2-Dichloroethane-d4 (Surr)	82		70 - 121
4-Bromofluorobenzene (Surr)	91		59 - 120
Toluene-d8 (Surr)	106		70 - 123
Dibromofluoromethane (Surr)	91		75 - 128

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

Lab Sample ID: MB 240-375537/1-A
Matrix: Solid
Analysis Batch: 375622

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 375537

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	40	U	40	16	ug/Kg		04/09/19 11:56	04/09/19 18:52	1
1,4-Dioxane	13000	U	13000	1100	ug/Kg		04/09/19 11:56	04/09/19 18:52	1
cis-1,2-Dichloroethene	40	U	40	9.0	ug/Kg		04/09/19 11:56	04/09/19 18:52	1
Tetrachloroethene	40	U	40	18	ug/Kg		04/09/19 11:56	04/09/19 18:52	1
trans-1,2-Dichloroethene	40	U	40	10	ug/Kg		04/09/19 11:56	04/09/19 18:52	1
Trichloroethene	40	U	40	11	ug/Kg		04/09/19 11:56	04/09/19 18:52	1
Vinyl chloride	32	U	32	12	ug/Kg		04/09/19 11:56	04/09/19 18:52	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	76		53 - 155	04/09/19 11:56	04/09/19 18:52	1
4-Bromofluorobenzene (Surr)	90		48 - 151	04/09/19 11:56	04/09/19 18:52	1
Dibromofluoromethane (Surr)	74		49 - 138	04/09/19 11:56	04/09/19 18:52	1
Toluene-d8 (Surr)	90		49 - 147	04/09/19 11:56	04/09/19 18:52	1

Lab Sample ID: LCS 240-375537/2-A
Matrix: Solid
Analysis Batch: 375622

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 375537

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1000	1030		ug/Kg		103	57 - 139
1,4-Dioxane	20000	19200		ug/Kg		96	51 - 140
cis-1,2-Dichloroethene	1000	911		ug/Kg		91	74 - 123
Tetrachloroethene	1000	939		ug/Kg		94	76 - 120
trans-1,2-Dichloroethene	1000	1050		ug/Kg		105	71 - 133
Trichloroethene	1000	862		ug/Kg		86	73 - 126
Vinyl chloride	1000	1130		ug/Kg		113	52 - 130

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
1,2-Dichloroethane-d4 (Surr)	76		53 - 155

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110478-1

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

Lab Sample ID: LCS 240-375537/2-A
Matrix: Solid
Analysis Batch: 375622

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 375537

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	89		48 - 151
Dibromofluoromethane (Surr)	76		49 - 138
Toluene-d8 (Surr)	91		49 - 147

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

Lab Sample ID: MB 240-375762/5
Matrix: Water
Analysis Batch: 375762

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	0.86	ug/L			04/10/19 12:22	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	116		63 - 125		04/10/19 12:22	1

Lab Sample ID: LCS 240-375762/4
Matrix: Water
Analysis Batch: 375762

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
1,4-Dioxane	10.0	11.9		ug/L		119	59 - 131

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	116		63 - 125

Lab Sample ID: 240-110458-C-3 MS
Matrix: Water
Analysis Batch: 375762

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
1,4-Dioxane	68		10.0	82.4	4	ug/L		142	52 - 129

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	122		63 - 125

Lab Sample ID: 240-110458-C-3 MSD
Matrix: Water
Analysis Batch: 375762

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
				Result	Qualifier						
1,4-Dioxane	68		10.0	79.6	4	ug/L		113	52 - 129	4	13

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	117		63 - 125

QC Sample Results

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

Job ID: 240-110478-1

Method: Moisture - Percent Moisture

Lab Sample ID: 240-110478-14 DU

Matrix: Solid

Analysis Batch: 374979

Client Sample ID: HPT-212_4-5_080219

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	89.2		88.0		%		1	20
Percent Moisture	10.8		12.0		%		11	20

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

QC Association Summary

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

Job ID: 240-110478-1

GC/MS VOA

Prep Batch: 375537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110478-7	HPT-211_18-19_080219	Total/NA	Solid	5030B	
240-110478-8	HPT-210_0-1_080219	Total/NA	Solid	5030B	
240-110478-9	HPT-210_1-2_080219	Total/NA	Solid	5030B	
240-110478-10	HPT-210_2-3_080219	Total/NA	Solid	5030B	
240-110478-11	HPT-212_1-2_080219	Total/NA	Solid	5030B	
240-110478-12	HPT-212_2-3_080219	Total/NA	Solid	5030B	
240-110478-13	HPT-212_3-4_080219	Total/NA	Solid	5030B	
240-110478-14	HPT-212_4-5_080219	Total/NA	Solid	5030B	
MB 240-375537/1-A	Method Blank	Total/NA	Solid	5030B	
LCS 240-375537/2-A	Lab Control Sample	Total/NA	Solid	5030B	

Analysis Batch: 375622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110478-7	HPT-211_18-19_080219	Total/NA	Solid	8260B MI	375537
240-110478-8	HPT-210_0-1_080219	Total/NA	Solid	8260B MI	375537
240-110478-9	HPT-210_1-2_080219	Total/NA	Solid	8260B MI	375537
240-110478-10	HPT-210_2-3_080219	Total/NA	Solid	8260B MI	375537
240-110478-11	HPT-212_1-2_080219	Total/NA	Solid	8260B MI	375537
240-110478-12	HPT-212_2-3_080219	Total/NA	Solid	8260B MI	375537
240-110478-13	HPT-212_3-4_080219	Total/NA	Solid	8260B MI	375537
240-110478-14	HPT-212_4-5_080219	Total/NA	Solid	8260B MI	375537
MB 240-375537/1-A	Method Blank	Total/NA	Solid	8260B MI	375537
LCS 240-375537/2-A	Lab Control Sample	Total/NA	Solid	8260B MI	375537

Analysis Batch: 375762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110478-1	HPT-211_13-17_080219	Total/NA	Water	8260B SIM	
240-110478-2	HPT-211_2-6_080219	Total/NA	Water	8260B SIM	
240-110478-3	HPT-211_7-11_080219	Total/NA	Water	8260B SIM	
240-110478-4	HPT-212_18-22_080219	Total/NA	Water	8260B SIM	
240-110478-5	HPT-212_10-14_080219	Total/NA	Water	8260B SIM	
240-110478-6	HPT-212_5-9_080219	Total/NA	Water	8260B SIM	
MB 240-375762/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-375762/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-110458-C-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-110458-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 376459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110478-1	HPT-211_13-17_080219	Total/NA	Water	8260B	
240-110478-2	HPT-211_2-6_080219	Total/NA	Water	8260B	
240-110478-3	HPT-211_7-11_080219	Total/NA	Water	8260B	
240-110478-4	HPT-212_18-22_080219	Total/NA	Water	8260B	
240-110478-5	HPT-212_10-14_080219	Total/NA	Water	8260B	
240-110478-6	HPT-212_5-9_080219	Total/NA	Water	8260B	
240-110478-15	TRIP BLANK	Total/NA	Water	8260B	
MB 240-376459/6	Method Blank	Total/NA	Water	8260B	
LCS 240-376459/4	Lab Control Sample	Total/NA	Water	8260B	
240-110459-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-110459-H-1 MS	Matrix Spike	Total/NA	Water	8260B	

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QC Association Summary

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

Job ID: 240-110478-1

General Chemistry

Analysis Batch: 374979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110478-7	HPT-211_18-19_080219	Total/NA	Solid	Moisture	
240-110478-8	HPT-210_0-1_080219	Total/NA	Solid	Moisture	
240-110478-9	HPT-210_1-2_080219	Total/NA	Solid	Moisture	
240-110478-10	HPT-210_2-3_080219	Total/NA	Solid	Moisture	
240-110478-11	HPT-212_1-2_080219	Total/NA	Solid	Moisture	
240-110478-12	HPT-212_2-3_080219	Total/NA	Solid	Moisture	
240-110478-13	HPT-212_3-4_080219	Total/NA	Solid	Moisture	
240-110478-14	HPT-212_4-5_080219	Total/NA	Solid	Moisture	
240-110478-14 DU	HPT-212_4-5_080219	Total/NA	Solid	Moisture	

Lab Chronicle

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

Job ID: 240-110478-1

Client Sample ID: HPT-211_13-17_080219

Lab Sample ID: 240-110478-1

Date Collected: 04/02/19 10:18

Matrix: Water

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376459	04/15/19 16:12	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 16:39	SAM	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 16:39	SAM	TAL CAN

Client Sample ID: HPT-211_2-6_080219

Lab Sample ID: 240-110478-2

Date Collected: 04/02/19 10:50

Matrix: Water

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1.67	376459	04/15/19 16:35	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 17:05	SAM	TAL CAN

Client Sample ID: HPT-211_7-11_080219

Lab Sample ID: 240-110478-3

Date Collected: 04/02/19 10:35

Matrix: Water

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		14.29	376459	04/15/19 16:57	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 17:30	SAM	TAL CAN

Client Sample ID: HPT-212_18-22_080219

Lab Sample ID: 240-110478-4

Date Collected: 04/02/19 14:05

Matrix: Water

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	376459	04/15/19 17:19	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 17:56	SAM	TAL CAN

Client Sample ID: HPT-212_10-14_080219

Lab Sample ID: 240-110478-5

Date Collected: 04/02/19 14:18

Matrix: Water

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	376459	04/15/19 17:41	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 18:22	SAM	TAL CAN

Client Sample ID: HPT-212_5-9_080219

Lab Sample ID: 240-110478-6

Date Collected: 04/02/19 14:33

Matrix: Water

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376459	04/15/19 18:03	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 18:47	SAM	TAL CAN

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Lab Chronicle

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

Job ID: 240-110478-1

Client Sample ID: HPT-211_18-19_080219

Date Collected: 04/02/19 09:45

Date Received: 04/04/19 09:55

Lab Sample ID: 240-110478-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Client Sample ID: HPT-211_18-19_080219

Date Collected: 04/02/19 09:45

Date Received: 04/04/19 09:55

Lab Sample ID: 240-110478-7

Matrix: Solid

Percent Solids: 80.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 19:36	TJL1	TAL CAN

Client Sample ID: HPT-210_0-1_080219

Date Collected: 04/02/19 09:00

Date Received: 04/04/19 09:55

Lab Sample ID: 240-110478-8

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Client Sample ID: HPT-210_0-1_080219

Date Collected: 04/02/19 09:00

Date Received: 04/04/19 09:55

Lab Sample ID: 240-110478-8

Matrix: Solid

Percent Solids: 83.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 19:57	TJL1	TAL CAN

Client Sample ID: HPT-210_1-2_080219

Date Collected: 04/02/19 09:00

Date Received: 04/04/19 09:55

Lab Sample ID: 240-110478-9

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Client Sample ID: HPT-210_1-2_080219

Date Collected: 04/02/19 09:00

Date Received: 04/04/19 09:55

Lab Sample ID: 240-110478-9

Matrix: Solid

Percent Solids: 84.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 20:19	TJL1	TAL CAN

Client Sample ID: HPT-210_2-3_080219

Date Collected: 04/02/19 09:00

Date Received: 04/04/19 09:55

Lab Sample ID: 240-110478-10

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Eurofins TestAmerica, Canton

Lab Chronicle

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

Job ID: 240-110478-1

Client Sample ID: HPT-210_2-3_080219

Lab Sample ID: 240-110478-10

Date Collected: 04/02/19 09:00

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 84.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 20:40	TJL1	TAL CAN

Client Sample ID: HPT-212_1-2_080219

Lab Sample ID: 240-110478-11

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Client Sample ID: HPT-212_1-2_080219

Lab Sample ID: 240-110478-11

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 89.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 21:02	TJL1	TAL CAN

Client Sample ID: HPT-212_2-3_080219

Lab Sample ID: 240-110478-12

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Client Sample ID: HPT-212_2-3_080219

Lab Sample ID: 240-110478-12

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 86.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 21:24	TJL1	TAL CAN

Client Sample ID: HPT-212_3-4_080219

Lab Sample ID: 240-110478-13

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Lab Chronicle

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

Job ID: 240-110478-1

Client Sample ID: HPT-212_3-4_080219

Lab Sample ID: 240-110478-13

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 88.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 21:45	TJL1	TAL CAN

Client Sample ID: HPT-212_4-5_080219

Lab Sample ID: 240-110478-14

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	374979	04/05/19 13:21	BLW	TAL CAN

Client Sample ID: HPT-212_4-5_080219

Lab Sample ID: 240-110478-14

Date Collected: 04/02/19 15:40

Matrix: Solid

Date Received: 04/04/19 09:55

Percent Solids: 89.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			375537	04/09/19 11:56	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	375622	04/09/19 22:07	TJL1	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110478-15

Date Collected: 04/02/19 00:00

Matrix: Water

Date Received: 04/04/19 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376459	04/15/19 18:26	LEE	TAL CAN

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 240-110478-1

Laboratory: Eurofins 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	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

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



TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

MICHIGAN 190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information		Lab P/M:		Carrier Tracking No(s):					
Company: ARCADIS U.S. Inc.		DelMonico, Michael		240-59411-25360.1					
Address: 28550 Cabot Drive Suite 500		E-Mail: michael.delmonico@testamericainc.com		COC No: 240-59411-25360.1					
City: Novi		Phone: Christina Weaver (989)-619-5009		Page: 1 of 2					
State, Zip: MI, 48377		TAT Requested (days): 10-DAY (STD.)		Job #:					
Phone: 248-722-2411		PO #: MI001318.0002.00002		Preservation Codes:					
Email: Caitlin.ONeill@arcadis.com		WO #: Cadena #: E203631		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:					
Project Name: Ford LTP Livonia MI - E203631		Project #: 24015353		M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)					
Site: LIVONIA		SSOW#:		Special Instructions/Note:					
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Weater, Solid, Dose, etc.)	Field Filtered Sample (Yes or No)	Perform MSMSD (Yes or No)	8260B_M - VOCs (Short List)	8260B - VOCs (Short List)	Total Number of Containers
HPT-211-13-17-040219	4/2/19	1018	6	Water	X	X	3	0	6
HPT-211-2-6-040219	4/2/19	1050	6	Water	X	X	3	0	6
HPT-211-7-11-040219	4/2/19	1035	6	Water	X	X	3	0	6
HPT-212-18-22-040219	4/2/19	1405	6	Water	X	X	3	0	6
HPT-212-10-14-040219	4/2/19	1418	6	Water	X	X	3	0	6
HPT-212-5-9-040219	4/2/19	1433	6	Water	X	X	3	0	6
HPT-211-18-19-040219	4/2/19	0945	6	Solid	X	X	0	1	2
HPT-210-0-1-040219	4/2/19	0900	6	Solid	X	X	0	1	2
HPT-210-1-2-040219	4/2/19	0900	6	Solid	X	X	0	1	2
HPT-210-2-3-040219	4/2/19	0900	6	Solid	X	X	0	1	2
HPT-212-1-2-040219	4/2/19	1540	6	Solid	X	X	0	1	2



240-110478 Chain of Custody

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

Special Instructions/QC Requirements: Submitt all results through cadena at SIM. FORMULE @ cadena.com

Method of Shipment: _____

Received by:	Date/Time:	Company:
Novi cold storage	4/2/19 1740	ARCADIS
Yosh mba	4/13/19 1410	ARCADIS
Yosh mba	4/2/19 955	ARCADIS

Empty Kit Relinquished by: _____
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological
 Deliverable Requested: I, II, III (X) Other (specify) _____

Custody Seal No.: _____
 Δ Yes Δ No

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TestAmerica Canton
 4101 Shuffel Street NW
 North Canton, OH 44720
 Phone (330) 497-9396 Fax (330) 497-0772

MICHIGAN
190

Chain of Custody Record

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

Client Information		Carrier Tracking No(s):										
Company: ARCADIS U.S. Inc	Lab PM: DeilMonico, Michael	COC No: 240-59411-25360.1										
Address: 28550 Cabot Drive Suite 500	Client Contact: Christina Weaver	Page: 2 of 2	Job #: 2									
City: Novi	Phone: (989) 619-5009	E-Mail: michael.delmonico@testamericainc.com										
State, Zip: MI, 48377	Analysis Requested											
Phone: 248-722-2411	Due Date Requested:	Preservation Codes:										
	TAT Requested (days):	A - HCL B - NaOH C - AsNaO2 D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:										
PO #: MI001318.0002.00002	10 DAY (STD.)	M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)										
WO #: Cadena #: E203631		Total Number of Containers										
Project #: 24015353												
SSOW#: Ford LTP Livonia MI - E203631												
Site: LIVONIA												
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=water, oil, B=trace, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B, 8260B, SIM	8260B MI - VOCs (Short List)	8260B - VOCs (Short List)	Analysis Requested	Special Instructions/Note:	
HPT-212-2-3-040219	4/12/19	1540	6	Water	X	X					2 Dry sample	
HPT-212-3-4-040219	4/12/19	1540	6	Water							2 Dry sample	
HPT-212-4-5-040219	4/12/19	1540	6	Water							2 Dry sample	
Trip blank.				Water							1 Ran out of lab	
				Water							Provided dry weight	
				Water							Sample cups. utilized	
				Solid							oil shake test cup.	
				Solid								
				Solid								
				Solid								
				Solid								
Possible Hazard Identification											Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological											<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months	
Deliverable Requested: I, II, III, IV, Other (specify)											Special Instructions/QC Requirements: Submit all results through cadena at jim.tomalia@cadena.com	
Empty Kit Relinquished by:											Method of Shipment:	
Relinquished by: Christina Weaver											Date/Time: 4/12/19 1740	Company: Arcadis
Relinquished by: Christina Weaver											Date/Time: 04/03/19 1410	Company: Arcadis
Relinquished by: Christina Weaver											Date/Time: 4/3/19 1307	Company: Arcadis
Custody Seal No.:											Cooler Temperature(s) °C and Other Remarks:	
Δ Yes Δ No												

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TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 110478

Client Arceadis Site Name _____ Cooler unpacked by: [Signature]
 Cooler Received on 4/4/19 Opened on 4/4/19
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 76A Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #36 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
 If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC861525
13. Were VOAs on the COC? Yes No
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 # n/a Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

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

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JR

Could not decipher between Samples HPT-210, All 3
Bottle labels washed off of vials. Ink is unreadable
Further looking could make out ID's from glare of light and indentations of pen mark

18. SAMPLE CONDITION

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

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

