

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
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Tel: (330)497-9396

Laboratory Job ID: 240-110662-1

Client Project/Site: Ford LTP Livonia MI - E203631
Revision: 1

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



Authorized for release by:
4/24/2019 9:45:27 AM

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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: 240-110662-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
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.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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

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Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-110662-1

Revision

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.

Report revised 4/24/2019 to update listed Cadena number.

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 4/9/2019 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.6° C and 2.2° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples HPT-217_4-8_040719 (240-110662-1), HPT-217_16-20_040719 (240-110662-2), HPT-217_9-13_040719 (240-110662-3), HPT-218_15-19_040719 (240-110662-9), HPT-218_10-14_040719 (240-110662-10), HPT-218_5-9_040719 (240-110662-11) and TRIP BLANK (240-110662-13) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/16/2019.

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

VOLATILE ORGANIC COMPOUNDS

Samples HPT-217_28-29_040719 (240-110662-4), HPT-218_4-5_040719 (240-110662-5), HPT-218_3-4_040719 (240-110662-6), HPT-218_2-3_040719 (240-110662-7), HPT-218_1-2_040719 (240-110662-8) and HPT-218_28-29_040719 (240-110662-12) were

Case Narrative

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

Job ID: 240-110662-1

Job ID: 240-110662-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

analyzed for volatile organic compounds in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/12/2019 and 04/14/2019.

Batch 240-376248 is reported without a matrix spike/matrix spike duplicate (MS/MSD), because the MS/MSD has not been analyzed at this point. The MS/MSD result does not have immediate bearing on any samples except for the actual sample spiked. The associated laboratory control sample (LCS) met acceptance criteria and provides long-term precision and accuracy for this batch: HPT-217_28-29_040719 (240-110662-4), HPT-218_4-5_040719 (240-110662-5), HPT-218_3-4_040719 (240-110662-6), HPT-218_2-3_040719 (240-110662-7) and HPT-218_1-2_040719 (240-110662-8).

Batch 240-376372 is reported without a matrix spike/matrix spike duplicate (MS/MSD), because the MS/MSD has not been analyzed at this point. The MS/MSD result does not have immediate bearing on any samples except for the actual sample spiked. The associated laboratory control sample (LCS) met acceptance criteria and provides long-term precision and accuracy for this batch: HPT-218_28-29_040719 (240-110662-12).

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-217_4-8_040719 (240-110662-1), HPT-217_16-20_040719 (240-110662-2), HPT-217_9-13_040719 (240-110662-3), HPT-218_15-19_040719 (240-110662-9), HPT-218_10-14_040719 (240-110662-10) and HPT-218_5-9_040719 (240-110662-11) 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 and 04/11/2019.

The pH is greater than 2 for the following samples HPT-217_4-8_040719 (240-110662-1), HPT-217_16-20_040719 (240-110662-2) and HPT-218_15-19_040719 (240-110662-9).

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

PERCENT SOLIDS

Samples HPT-217_28-29_040719 (240-110662-4), HPT-218_4-5_040719 (240-110662-5), HPT-218_3-4_040719 (240-110662-6), HPT-218_2-3_040719 (240-110662-7), HPT-218_1-2_040719 (240-110662-8) and HPT-218_28-29_040719 (240-110662-12) were analyzed for percent solids in accordance with ASTM Method D2216-80. The samples were analyzed on 04/09/2019.

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: 240-110662-1

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: 240-110662-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-110662-1	HPT-217_4-8_040719	Water	04/07/19 10:20	04/09/19 08:30
240-110662-2	HPT-217_16-20_040719	Water	04/07/19 09:35	04/09/19 08:30
240-110662-3	HPT-217_9-13_040719	Water	04/07/19 10:00	04/09/19 08:30
240-110662-4	HPT-217_28-29_040719	Solid	04/07/19 10:30	04/09/19 08:30
240-110662-5	HPT-218_4-5_040719	Solid	04/07/19 10:45	04/09/19 08:30
240-110662-6	HPT-218_3-4_040719	Solid	04/07/19 10:45	04/09/19 08:30
240-110662-7	HPT-218_2-3_040719	Solid	04/07/19 10:45	04/09/19 08:30
240-110662-8	HPT-218_1-2_040719	Solid	04/07/19 10:45	04/09/19 08:30
240-110662-9	HPT-218_15-19_040719	Water	04/07/19 13:25	04/09/19 08:30
240-110662-10	HPT-218_10-14_040719	Water	04/07/19 13:35	04/09/19 08:30
240-110662-11	HPT-218_5-9_040719	Water	04/07/19 13:55	04/09/19 08:30
240-110662-12	HPT-218_28-29_040719	Solid	04/07/19 13:05	04/09/19 08:30
240-110662-13	TRIP BLANK	Water	04/07/19 00:00	04/09/19 08:30

Detection Summary

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

Job ID: 240-110662-1

Client Sample ID: HPT-217_4-8_040719 **Lab Sample ID: 240-110662-1**

No Detections.

Client Sample ID: HPT-217_16-20_040719 **Lab Sample ID: 240-110662-2**

No Detections.

Client Sample ID: HPT-217_9-13_040719 **Lab Sample ID: 240-110662-3**

No Detections.

Client Sample ID: HPT-217_28-29_040719 **Lab Sample ID: 240-110662-4**

No Detections.

Client Sample ID: HPT-218_4-5_040719 **Lab Sample ID: 240-110662-5**

No Detections.

Client Sample ID: HPT-218_3-4_040719 **Lab Sample ID: 240-110662-6**

No Detections.

Client Sample ID: HPT-218_2-3_040719 **Lab Sample ID: 240-110662-7**

No Detections.

Client Sample ID: HPT-218_1-2_040719 **Lab Sample ID: 240-110662-8**

No Detections.

Client Sample ID: HPT-218_15-19_040719 **Lab Sample ID: 240-110662-9**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.93	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
trans-1,2-Dichloroethene	0.19	J	1.0	0.19	ug/L	1		8260B	Total/NA

Client Sample ID: HPT-218_10-14_040719 **Lab Sample ID: 240-110662-10**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.6		1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: HPT-218_5-9_040719 **Lab Sample ID: 240-110662-11**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	28		1.0	0.16	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	3.9		1.0	0.19	ug/L	1		8260B	Total/NA

Client Sample ID: HPT-218_28-29_040719 **Lab Sample ID: 240-110662-12**

No Detections.

Client Sample ID: TRIP BLANK **Lab Sample ID: 240-110662-13**

No Detections.

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: 240-110662-1

Client Sample ID: HPT-217_4-8_040719

Lab Sample ID: 240-110662-1

Date Collected: 04/07/19 10:20

Matrix: Water

Date Received: 04/09/19 08:30

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 21:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		63 - 125		04/10/19 21:47	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			04/16/19 18:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/16/19 18:24	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/16/19 18:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/16/19 18:24	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/16/19 18:24	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/16/19 18:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		70 - 121		04/16/19 18:24	1
4-Bromofluorobenzene (Surr)	68		59 - 120		04/16/19 18:24	1
Toluene-d8 (Surr)	84		70 - 123		04/16/19 18:24	1
Dibromofluoromethane (Surr)	123		75 - 128		04/16/19 18:24	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-217_16-20_040719

Lab Sample ID: 240-110662-2

Date Collected: 04/07/19 09:35

Matrix: Water

Date Received: 04/09/19 08:30

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 22:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		63 - 125		04/10/19 22:13	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	-		04/16/19 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		04/16/19 18:46	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		04/16/19 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		04/16/19 18:46	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		04/16/19 18:46	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		04/16/19 18:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 121		04/16/19 18:46	1
4-Bromofluorobenzene (Surr)	66		59 - 120		04/16/19 18:46	1
Toluene-d8 (Surr)	81		70 - 123		04/16/19 18:46	1
Dibromofluoromethane (Surr)	121		75 - 128		04/16/19 18:46	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-217_9-13_040719

Lab Sample ID: 240-110662-3

Date Collected: 04/07/19 10:00

Matrix: Water

Date Received: 04/09/19 08:30

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	-		04/11/19 16:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		63 - 125		04/11/19 16:04	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	-		04/16/19 19:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		04/16/19 19:08	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		04/16/19 19:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		04/16/19 19:08	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		04/16/19 19:08	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		04/16/19 19:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 121		04/16/19 19:08	1
4-Bromofluorobenzene (Surr)	64		59 - 120		04/16/19 19:08	1
Toluene-d8 (Surr)	80		70 - 123		04/16/19 19:08	1
Dibromofluoromethane (Surr)	120		75 - 128		04/16/19 19:08	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-217_28-29_040719

Lab Sample ID: 240-110662-4

Date Collected: 04/07/19 10:30

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 83.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	60	U	60	24	ug/Kg	☼	04/11/19 13:35	04/12/19 20:59	1
1,4-Dioxane	19000	U	19000	1600	ug/Kg	☼	04/11/19 13:35	04/12/19 20:59	1
cis-1,2-Dichloroethene	60	U	60	14	ug/Kg	☼	04/11/19 13:35	04/12/19 20:59	1
Tetrachloroethene	60	U	60	27	ug/Kg	☼	04/11/19 13:35	04/12/19 20:59	1
trans-1,2-Dichloroethene	60	U	60	15	ug/Kg	☼	04/11/19 13:35	04/12/19 20:59	1
Trichloroethene	60	U	60	17	ug/Kg	☼	04/11/19 13:35	04/12/19 20:59	1
Vinyl chloride	48	U	48	18	ug/Kg	☼	04/11/19 13:35	04/12/19 20:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		53 - 155	04/11/19 13:35	04/12/19 20:59	1
4-Bromofluorobenzene (Surr)	95		48 - 151	04/11/19 13:35	04/12/19 20:59	1
Dibromofluoromethane (Surr)	97		49 - 138	04/11/19 13:35	04/12/19 20:59	1
Toluene-d8 (Surr)	99		49 - 147	04/11/19 13:35	04/12/19 20:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	83.5		0.1	0.1	%			04/09/19 17:09	1
Percent Moisture	16.5		0.1	0.1	%			04/09/19 17:09	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_4-5_040719

Lab Sample ID: 240-110662-5

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 95.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	55	U	55	22	ug/Kg	☼	04/11/19 13:35	04/12/19 21:23	1
1,4-Dioxane	17000	U	17000	1500	ug/Kg	☼	04/11/19 13:35	04/12/19 21:23	1
cis-1,2-Dichloroethene	55	U	55	12	ug/Kg	☼	04/11/19 13:35	04/12/19 21:23	1
Tetrachloroethene	55	U	55	25	ug/Kg	☼	04/11/19 13:35	04/12/19 21:23	1
trans-1,2-Dichloroethene	55	U	55	14	ug/Kg	☼	04/11/19 13:35	04/12/19 21:23	1
Trichloroethene	55	U	55	15	ug/Kg	☼	04/11/19 13:35	04/12/19 21:23	1
Vinyl chloride	44	U	44	17	ug/Kg	☼	04/11/19 13:35	04/12/19 21:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		53 - 155	04/11/19 13:35	04/12/19 21:23	1
4-Bromofluorobenzene (Surr)	95		48 - 151	04/11/19 13:35	04/12/19 21:23	1
Dibromofluoromethane (Surr)	93		49 - 138	04/11/19 13:35	04/12/19 21:23	1
Toluene-d8 (Surr)	99		49 - 147	04/11/19 13:35	04/12/19 21:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	95.1		0.1	0.1	%			04/09/19 17:09	1
Percent Moisture	4.9		0.1	0.1	%			04/09/19 17:09	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_3-4_040719

Lab Sample ID: 240-110662-6

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 88.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	51	U	51	20	ug/Kg	☼	04/11/19 13:35	04/12/19 21:48	1
1,4-Dioxane	16000	U	16000	1400	ug/Kg	☼	04/11/19 13:35	04/12/19 21:48	1
cis-1,2-Dichloroethene	51	U	51	12	ug/Kg	☼	04/11/19 13:35	04/12/19 21:48	1
Tetrachloroethene	51	U	51	23	ug/Kg	☼	04/11/19 13:35	04/12/19 21:48	1
trans-1,2-Dichloroethene	51	U	51	13	ug/Kg	☼	04/11/19 13:35	04/12/19 21:48	1
Trichloroethene	51	U	51	14	ug/Kg	☼	04/11/19 13:35	04/12/19 21:48	1
Vinyl chloride	41	U	41	15	ug/Kg	☼	04/11/19 13:35	04/12/19 21:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		53 - 155	04/11/19 13:35	04/12/19 21:48	1
4-Bromofluorobenzene (Surr)	98		48 - 151	04/11/19 13:35	04/12/19 21:48	1
Dibromofluoromethane (Surr)	92		49 - 138	04/11/19 13:35	04/12/19 21:48	1
Toluene-d8 (Surr)	102		49 - 147	04/11/19 13:35	04/12/19 21:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88.2		0.1	0.1	%			04/09/19 17:09	1
Percent Moisture	11.8		0.1	0.1	%			04/09/19 17:09	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_2-3_040719

Lab Sample ID: 240-110662-7

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 85.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	58	U	58	23	ug/Kg	☼	04/11/19 13:35	04/12/19 22:13	1
1,4-Dioxane	18000	U	18000	1600	ug/Kg	☼	04/11/19 13:35	04/12/19 22:13	1
cis-1,2-Dichloroethene	58	U	58	13	ug/Kg	☼	04/11/19 13:35	04/12/19 22:13	1
Tetrachloroethene	58	U	58	26	ug/Kg	☼	04/11/19 13:35	04/12/19 22:13	1
trans-1,2-Dichloroethene	58	U	58	15	ug/Kg	☼	04/11/19 13:35	04/12/19 22:13	1
Trichloroethene	58	U	58	16	ug/Kg	☼	04/11/19 13:35	04/12/19 22:13	1
Vinyl chloride	47	U	47	17	ug/Kg	☼	04/11/19 13:35	04/12/19 22:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		53 - 155	04/11/19 13:35	04/12/19 22:13	1
4-Bromofluorobenzene (Surr)	97		48 - 151	04/11/19 13:35	04/12/19 22:13	1
Dibromofluoromethane (Surr)	89		49 - 138	04/11/19 13:35	04/12/19 22:13	1
Toluene-d8 (Surr)	99		49 - 147	04/11/19 13:35	04/12/19 22:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	85.0		0.1	0.1	%			04/09/19 17:09	1
Percent Moisture	15.0		0.1	0.1	%			04/09/19 17:09	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_1-2_040719

Lab Sample ID: 240-110662-8

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 90.5

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	☼	04/11/19 13:35	04/12/19 22:38	1
1,4-Dioxane	16000	U	16000	1400	ug/Kg	☼	04/11/19 13:35	04/12/19 22:38	1
cis-1,2-Dichloroethene	50	U	50	11	ug/Kg	☼	04/11/19 13:35	04/12/19 22:38	1
Tetrachloroethene	50	U	50	23	ug/Kg	☼	04/11/19 13:35	04/12/19 22:38	1
trans-1,2-Dichloroethene	50	U	50	13	ug/Kg	☼	04/11/19 13:35	04/12/19 22:38	1
Trichloroethene	50	U	50	14	ug/Kg	☼	04/11/19 13:35	04/12/19 22:38	1
Vinyl chloride	40	U	40	15	ug/Kg	☼	04/11/19 13:35	04/12/19 22:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		53 - 155	04/11/19 13:35	04/12/19 22:38	1
4-Bromofluorobenzene (Surr)	95		48 - 151	04/11/19 13:35	04/12/19 22:38	1
Dibromofluoromethane (Surr)	90		49 - 138	04/11/19 13:35	04/12/19 22:38	1
Toluene-d8 (Surr)	98		49 - 147	04/11/19 13:35	04/12/19 22:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	90.5		0.1	0.1	%			04/09/19 17:09	1
Percent Moisture	9.5		0.1	0.1	%			04/09/19 17:09	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_15-19_040719

Lab Sample ID: 240-110662-9

Date Collected: 04/07/19 13:25

Matrix: Water

Date Received: 04/09/19 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.93	J	2.0	0.86	ug/L			04/11/19 17:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 125					04/11/19 17:21	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			04/16/19 20:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/16/19 20:13	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/16/19 20:13	1
trans-1,2-Dichloroethene	0.19	J	1.0	0.19	ug/L			04/16/19 20:13	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/16/19 20:13	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/16/19 20:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 121					04/16/19 20:13	1
4-Bromofluorobenzene (Surr)	72		59 - 120					04/16/19 20:13	1
Toluene-d8 (Surr)	84		70 - 123					04/16/19 20:13	1
Dibromofluoromethane (Surr)	119		75 - 128					04/16/19 20:13	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_10-14_040719

Lab Sample ID: 240-110662-10

Date Collected: 04/07/19 13:35

Matrix: Water

Date Received: 04/09/19 08:30

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			04/11/19 17:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		63 - 125		04/11/19 17:46	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			04/16/19 15:39	1
cis-1,2-Dichloroethene	1.6		1.0	0.16	ug/L			04/16/19 15:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/16/19 15:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/16/19 15:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/16/19 15:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/16/19 15:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		70 - 121		04/16/19 15:39	1
4-Bromofluorobenzene (Surr)	75		59 - 120		04/16/19 15:39	1
Toluene-d8 (Surr)	96		70 - 123		04/16/19 15:39	1
Dibromofluoromethane (Surr)	95		75 - 128		04/16/19 15:39	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_5-9_040719

Lab Sample ID: 240-110662-11

Date Collected: 04/07/19 13:55

Matrix: Water

Date Received: 04/09/19 08:30

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			04/11/19 18:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		63 - 125		04/11/19 18:12	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			04/16/19 16:01	1
cis-1,2-Dichloroethene	28		1.0	0.16	ug/L			04/16/19 16:01	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/16/19 16:01	1
trans-1,2-Dichloroethene	3.9		1.0	0.19	ug/L			04/16/19 16:01	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/16/19 16:01	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/16/19 16:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		70 - 121		04/16/19 16:01	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/16/19 16:01	1
Toluene-d8 (Surr)	104		70 - 123		04/16/19 16:01	1
Dibromofluoromethane (Surr)	103		75 - 128		04/16/19 16:01	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_28-29_040719

Lab Sample ID: 240-110662-12

Date Collected: 04/07/19 13:05

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 79.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	63	U	63	25	ug/Kg	☼	04/11/19 13:35	04/14/19 18:35	1
1,4-Dioxane	20000	U	20000	1700	ug/Kg	☼	04/11/19 13:35	04/14/19 18:35	1
cis-1,2-Dichloroethene	63	U	63	14	ug/Kg	☼	04/11/19 13:35	04/14/19 18:35	1
Tetrachloroethene	63	U	63	28	ug/Kg	☼	04/11/19 13:35	04/14/19 18:35	1
trans-1,2-Dichloroethene	63	U	63	16	ug/Kg	☼	04/11/19 13:35	04/14/19 18:35	1
Trichloroethene	63	U	63	17	ug/Kg	☼	04/11/19 13:35	04/14/19 18:35	1
Vinyl chloride	50	U	50	19	ug/Kg	☼	04/11/19 13:35	04/14/19 18:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		53 - 155	04/11/19 13:35	04/14/19 18:35	1
4-Bromofluorobenzene (Surr)	75		48 - 151	04/11/19 13:35	04/14/19 18:35	1
Dibromofluoromethane (Surr)	82		49 - 138	04/11/19 13:35	04/14/19 18:35	1
Toluene-d8 (Surr)	82		49 - 147	04/11/19 13:35	04/14/19 18:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	79.0		0.1	0.1	%			04/09/19 17:09	1
Percent Moisture	21.0		0.1	0.1	%			04/09/19 17:09	1

Client Sample Results

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

Job ID: 240-110662-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110662-13

Date Collected: 04/07/19 00:00

Matrix: Water

Date Received: 04/09/19 08:30

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			04/16/19 16:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/16/19 16:23	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/16/19 16:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/16/19 16:23	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/16/19 16:23	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/16/19 16:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		70 - 121		04/16/19 16:23	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/16/19 16:23	1
Toluene-d8 (Surr)	97		70 - 123		04/16/19 16:23	1
Dibromofluoromethane (Surr)	93		75 - 128		04/16/19 16:23	1

Surrogate Summary

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

Job ID: 240-110662-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (70-121)	BFB (59-120)	TOL (70-123)	DBFM (75-128)
240-110529-F-12 MS	Matrix Spike	88	94	111	94
240-110529-F-12 MSD	Matrix Spike Duplicate	82	88	101	94
240-110662-1	HPT-217_4-8_040719	108	68	84	123
240-110662-2	HPT-217_16-20_040719	106	66	81	121
240-110662-3	HPT-217_9-13_040719	103	64	80	120
240-110662-3 MS	HPT-217_9-13_040719	88	89	89	108
240-110662-3 MSD	HPT-217_9-13_040719	85	86	88	103
240-110662-9	HPT-218_15-19_040719	105	72	84	119
240-110662-10	HPT-218_10-14_040719	86	75	96	95
240-110662-11	HPT-218_5-9_040719	92	80	104	103
240-110662-13	TRIP BLANK	82	78	97	93
LCS 240-376652/4	Lab Control Sample	83	95	105	94
LCS 240-376654/4	Lab Control Sample	84	88	90	102
MB 240-376652/6	Method Blank	89	84	107	102
MB 240-376654/6	Method Blank	96	69	81	110

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

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (53-155)	BFB (48-151)	DBFM (49-138)	TOL (49-147)
240-110662-4	HPT-217_28-29_040719	98	95	97	99
240-110662-5	HPT-218_4-5_040719	99	95	93	99
240-110662-6	HPT-218_3-4_040719	99	98	92	102
240-110662-7	HPT-218_2-3_040719	98	97	89	99
240-110662-8	HPT-218_1-2_040719	100	95	90	98
240-110662-12	HPT-218_28-29_040719	87	75	82	82
LCS 240-376103/2-A	Lab Control Sample	80	81	82	85
LCSD 240-376103/3-A	Lab Control Sample Dup	82	82	84	87
MB 240-376103/1-A	Method Blank	86	85	86	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

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (63-125)
240-110458-C-3 MS	Matrix Spike	122

Eurofins TestAmerica, Canton

Surrogate Summary

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

Job ID: 240-110662-1

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)
240-110458-C-3 MSD	Matrix Spike Duplicate	117
240-110662-1	HPT-217_4-8_040719	113
240-110662-2	HPT-217_16-20_040719	116
240-110662-3	HPT-217_9-13_040719	100
240-110662-3 MS	HPT-217_9-13_040719	102
240-110662-3 MSD	HPT-217_9-13_040719	101
240-110662-9	HPT-218_15-19_040719	103
240-110662-10	HPT-218_10-14_040719	101
240-110662-11	HPT-218_5-9_040719	99
LCS 240-375762/4	Lab Control Sample	116
LCS 240-376059/4	Lab Control Sample	99
MB 240-375762/5	Method Blank	116
MB 240-376059/5	Method Blank	101

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: 240-110662-1

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

Lab Sample ID: MB 240-376652/6
Matrix: Water
Analysis Batch: 376652

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			04/16/19 10:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/16/19 10:41	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/16/19 10:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/16/19 10:41	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/16/19 10:41	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/16/19 10:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 121		04/16/19 10:41	1
4-Bromofluorobenzene (Surr)	84		59 - 120		04/16/19 10:41	1
Toluene-d8 (Surr)	107		70 - 123		04/16/19 10:41	1
Dibromofluoromethane (Surr)	102		75 - 128		04/16/19 10:41	1

Lab Sample ID: LCS 240-376652/4
Matrix: Water
Analysis Batch: 376652

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	9.67		ug/L		97	65 - 139
cis-1,2-Dichloroethene	10.0	10.0		ug/L		100	76 - 128
Tetrachloroethene	10.0	8.87		ug/L		89	74 - 130
trans-1,2-Dichloroethene	10.0	9.88		ug/L		99	78 - 133
Trichloroethene	10.0	8.99		ug/L		90	76 - 125
Vinyl chloride	10.0	10.2		ug/L		102	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		70 - 121
4-Bromofluorobenzene (Surr)	95		59 - 120
Toluene-d8 (Surr)	105		70 - 123
Dibromofluoromethane (Surr)	94		75 - 128

Lab Sample ID: 240-110529-F-12 MS
Matrix: Water
Analysis Batch: 376652

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	5.0	U	50.0	34.9		ug/L		70	53 - 140
cis-1,2-Dichloroethene	32		50.0	67.3		ug/L		71	64 - 130
Tetrachloroethene	5.0	U F2	50.0	32.8		ug/L		66	51 - 136
trans-1,2-Dichloroethene	4.1	J	50.0	41.2		ug/L		74	68 - 133
Trichloroethene	120	F1	50.0	134	F1	ug/L		36	55 - 131
Vinyl chloride	5.0	U F2	50.0	34.7		ug/L		69	43 - 154

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		70 - 121
4-Bromofluorobenzene (Surr)	94		59 - 120
Toluene-d8 (Surr)	111		70 - 123

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110662-1

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

Lab Sample ID: 240-110529-F-12 MS
Matrix: Water
Analysis Batch: 376652

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	94		75 - 128

Lab Sample ID: 240-110529-F-12 MSD
Matrix: Water
Analysis Batch: 376652

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	5.0	U	50.0	49.1		ug/L		98	53 - 140	34	35
cis-1,2-Dichloroethene	32		50.0	77.8		ug/L		92	64 - 130	14	21
Tetrachloroethene	5.0	U F2	50.0	44.2	F2	ug/L		88	51 - 136	30	23
trans-1,2-Dichloroethene	4.1	J	50.0	52.6		ug/L		97	68 - 133	24	24
Trichloroethene	120	F1	50.0	144		ug/L		57	55 - 131	7	23
Vinyl chloride	5.0	U F2	50.0	47.9	F2	ug/L		96	43 - 154	32	29

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	82		70 - 121
<i>4-Bromofluorobenzene (Surr)</i>	88		59 - 120
<i>Toluene-d8 (Surr)</i>	101		70 - 123
<i>Dibromofluoromethane (Surr)</i>	94		75 - 128

Lab Sample ID: MB 240-376654/6
Matrix: Water
Analysis Batch: 376654

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			04/16/19 11:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/16/19 11:32	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/16/19 11:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/16/19 11:32	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/16/19 11:32	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/16/19 11:32	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>MB MB Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	96		70 - 121		04/16/19 11:32	1
<i>4-Bromofluorobenzene (Surr)</i>	69		59 - 120		04/16/19 11:32	1
<i>Toluene-d8 (Surr)</i>	81		70 - 123		04/16/19 11:32	1
<i>Dibromofluoromethane (Surr)</i>	110		75 - 128		04/16/19 11:32	1

Lab Sample ID: LCS 240-376654/4
Matrix: Water
Analysis Batch: 376654

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	11.8		ug/L		118	76 - 128
Tetrachloroethene	10.0	11.4		ug/L		114	74 - 130
trans-1,2-Dichloroethene	10.0	13.0		ug/L		130	78 - 133
Trichloroethene	10.0	10.3		ug/L		103	76 - 125

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110662-1

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

Lab Sample ID: LCS 240-376654/4
Matrix: Water
Analysis Batch: 376654

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	10.7		ug/L		107	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		70 - 121
4-Bromofluorobenzene (Surr)	88		59 - 120
Toluene-d8 (Surr)	90		70 - 123
Dibromofluoromethane (Surr)	102		75 - 128

Lab Sample ID: 240-110662-3 MS
Matrix: Water
Analysis Batch: 376654

Client Sample ID: HPT-217_9-13_040719
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	9.25		ug/L		93	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	10.5		ug/L		105	64 - 130
Tetrachloroethene	1.0	U	10.0	9.69		ug/L		97	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	11.5		ug/L		115	68 - 133
Trichloroethene	1.0	U	10.0	8.91		ug/L		89	55 - 131
Vinyl chloride	1.0	U	10.0	10.8		ug/L		108	43 - 154

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		70 - 121
4-Bromofluorobenzene (Surr)	89		59 - 120
Toluene-d8 (Surr)	89		70 - 123
Dibromofluoromethane (Surr)	108		75 - 128

Lab Sample ID: 240-110662-3 MSD
Matrix: Water
Analysis Batch: 376654

Client Sample ID: HPT-217_9-13_040719
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	8.55		ug/L		86	53 - 140	8	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.86		ug/L		99	64 - 130	6	21
Tetrachloroethene	1.0	U	10.0	8.86		ug/L		89	51 - 136	9	23
trans-1,2-Dichloroethene	1.0	U	10.0	11.1		ug/L		111	68 - 133	3	24
Trichloroethene	1.0	U	10.0	8.59		ug/L		86	55 - 131	4	23
Vinyl chloride	1.0	U	10.0	11.0		ug/L		110	43 - 154	2	29

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		70 - 121
4-Bromofluorobenzene (Surr)	86		59 - 120
Toluene-d8 (Surr)	88		70 - 123
Dibromofluoromethane (Surr)	103		75 - 128

QC Sample Results

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

Job ID: 240-110662-1

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

Lab Sample ID: MB 240-376103/1-A
Matrix: Solid
Analysis Batch: 376248

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 376103

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	40	U	40	16	ug/Kg		04/11/19 13:35	04/12/19 19:45	1
1,4-Dioxane	13000	U	13000	1100	ug/Kg		04/11/19 13:35	04/12/19 19:45	1
cis-1,2-Dichloroethene	40	U	40	9.0	ug/Kg		04/11/19 13:35	04/12/19 19:45	1
Tetrachloroethene	40	U	40	18	ug/Kg		04/11/19 13:35	04/12/19 19:45	1
trans-1,2-Dichloroethene	40	U	40	10	ug/Kg		04/11/19 13:35	04/12/19 19:45	1
Trichloroethene	40	U	40	11	ug/Kg		04/11/19 13:35	04/12/19 19:45	1
Vinyl chloride	32	U	32	12	ug/Kg		04/11/19 13:35	04/12/19 19:45	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	86		53 - 155	04/11/19 13:35	04/12/19 19:45	1
4-Bromofluorobenzene (Surr)	85		48 - 151	04/11/19 13:35	04/12/19 19:45	1
Dibromofluoromethane (Surr)	86		49 - 138	04/11/19 13:35	04/12/19 19:45	1
Toluene-d8 (Surr)	90		49 - 147	04/11/19 13:35	04/12/19 19:45	1

Lab Sample ID: LCS 240-376103/2-A
Matrix: Solid
Analysis Batch: 376248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 376103

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
1,1-Dichloroethene	1000	988		ug/Kg		99	57 - 139
1,4-Dioxane	20000	17100		ug/Kg		85	51 - 140
cis-1,2-Dichloroethene	1000	943		ug/Kg		94	74 - 123
Tetrachloroethene	1000	947		ug/Kg		95	76 - 120
trans-1,2-Dichloroethene	1000	1000		ug/Kg		100	71 - 133
Trichloroethene	1000	960		ug/Kg		96	73 - 126
Vinyl chloride	1000	914		ug/Kg		91	52 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	80		53 - 155
4-Bromofluorobenzene (Surr)	81		48 - 151
Dibromofluoromethane (Surr)	82		49 - 138
Toluene-d8 (Surr)	85		49 - 147

Lab Sample ID: LCSD 240-376103/3-A
Matrix: Solid
Analysis Batch: 376248

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 376103

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	Limits	RPD	
		Result	Qualifier					RPD	Limit
1,1-Dichloroethene	1000	1030		ug/Kg		103	57 - 139	4	40
1,4-Dioxane	20000	18200		ug/Kg		91	51 - 140	6	40
cis-1,2-Dichloroethene	1000	982		ug/Kg		98	74 - 123	4	40
Tetrachloroethene	1000	992		ug/Kg		99	76 - 120	5	40
trans-1,2-Dichloroethene	1000	1030		ug/Kg		103	71 - 133	3	40
Trichloroethene	1000	991		ug/Kg		99	73 - 126	3	40
Vinyl chloride	1000	905		ug/Kg		91	52 - 130	1	40

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110662-1

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

Lab Sample ID: LCSD 240-376103/3-A
Matrix: Solid
Analysis Batch: 376248

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 376103

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	82		53 - 155
4-Bromofluorobenzene (Surr)	82		48 - 151
Dibromofluoromethane (Surr)	84		49 - 138
Toluene-d8 (Surr)	87		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

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110662-1

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

Lab Sample ID: MB 240-376059/5
Matrix: Water
Analysis Batch: 376059

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			04/11/19 14:21	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		63 - 125					04/11/19 14:21	1

Lab Sample ID: LCS 240-376059/4
Matrix: Water
Analysis Batch: 376059

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	11.5		ug/L		115	59 - 131
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	99		63 - 125				

Lab Sample ID: 240-110662-3 MS
Matrix: Water
Analysis Batch: 376059

Client Sample ID: HPT-217_9-13_040719
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	11.9		ug/L		119	52 - 129
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	102		63 - 125						

Lab Sample ID: 240-110662-3 MSD
Matrix: Water
Analysis Batch: 376059

Client Sample ID: HPT-217_9-13_040719
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.8		ug/L		118	52 - 129	1	13
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	101		63 - 125								

Method: Moisture - Percent Moisture

Lab Sample ID: 240-110665-B-20 DU
Matrix: Solid
Analysis Batch: 375590

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	97.4		97.3		%		0	20
Percent Moisture	2.6		2.7		%		0.8	20

Eurofins TestAmerica, Canton

QC Association Summary

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

Job ID: 240-110662-1

GC/MS VOA

Analysis Batch: 375762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-1	HPT-217_4-8_040719	Total/NA	Water	8260B SIM	
240-110662-2	HPT-217_16-20_040719	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: 376059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-3	HPT-217_9-13_040719	Total/NA	Water	8260B SIM	
240-110662-9	HPT-218_15-19_040719	Total/NA	Water	8260B SIM	
240-110662-10	HPT-218_10-14_040719	Total/NA	Water	8260B SIM	
240-110662-11	HPT-218_5-9_040719	Total/NA	Water	8260B SIM	
MB 240-376059/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-376059/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-110662-3 MS	HPT-217_9-13_040719	Total/NA	Water	8260B SIM	
240-110662-3 MSD	HPT-217_9-13_040719	Total/NA	Water	8260B SIM	

Prep Batch: 376103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-4	HPT-217_28-29_040719	Total/NA	Solid	5030B	
240-110662-5	HPT-218_4-5_040719	Total/NA	Solid	5030B	
240-110662-6	HPT-218_3-4_040719	Total/NA	Solid	5030B	
240-110662-7	HPT-218_2-3_040719	Total/NA	Solid	5030B	
240-110662-8	HPT-218_1-2_040719	Total/NA	Solid	5030B	
240-110662-12	HPT-218_28-29_040719	Total/NA	Solid	5030B	
MB 240-376103/1-A	Method Blank	Total/NA	Solid	5030B	
LCS 240-376103/2-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 240-376103/3-A	Lab Control Sample Dup	Total/NA	Solid	5030B	

Analysis Batch: 376248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-4	HPT-217_28-29_040719	Total/NA	Solid	8260B MI	376103
240-110662-5	HPT-218_4-5_040719	Total/NA	Solid	8260B MI	376103
240-110662-6	HPT-218_3-4_040719	Total/NA	Solid	8260B MI	376103
240-110662-7	HPT-218_2-3_040719	Total/NA	Solid	8260B MI	376103
240-110662-8	HPT-218_1-2_040719	Total/NA	Solid	8260B MI	376103
MB 240-376103/1-A	Method Blank	Total/NA	Solid	8260B MI	376103
LCS 240-376103/2-A	Lab Control Sample	Total/NA	Solid	8260B MI	376103
LCSD 240-376103/3-A	Lab Control Sample Dup	Total/NA	Solid	8260B MI	376103

Analysis Batch: 376372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-12	HPT-218_28-29_040719	Total/NA	Solid	8260B MI	376103

Analysis Batch: 376652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-10	HPT-218_10-14_040719	Total/NA	Water	8260B	
240-110662-11	HPT-218_5-9_040719	Total/NA	Water	8260B	
240-110662-13	TRIP BLANK	Total/NA	Water	8260B	
MB 240-376652/6	Method Blank	Total/NA	Water	8260B	

Eurofins TestAmerica, Canton

QC Association Summary

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

Job ID: 240-110662-1

GC/MS VOA (Continued)

Analysis Batch: 376652 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-376652/4	Lab Control Sample	Total/NA	Water	8260B	
240-110529-F-12 MS	Matrix Spike	Total/NA	Water	8260B	
240-110529-F-12 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 376654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-1	HPT-217_4-8_040719	Total/NA	Water	8260B	
240-110662-2	HPT-217_16-20_040719	Total/NA	Water	8260B	
240-110662-3	HPT-217_9-13_040719	Total/NA	Water	8260B	
240-110662-9	HPT-218_15-19_040719	Total/NA	Water	8260B	
MB 240-376654/6	Method Blank	Total/NA	Water	8260B	
LCS 240-376654/4	Lab Control Sample	Total/NA	Water	8260B	
240-110662-3 MS	HPT-217_9-13_040719	Total/NA	Water	8260B	
240-110662-3 MSD	HPT-217_9-13_040719	Total/NA	Water	8260B	

General Chemistry

Analysis Batch: 375590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110662-4	HPT-217_28-29_040719	Total/NA	Solid	Moisture	
240-110662-5	HPT-218_4-5_040719	Total/NA	Solid	Moisture	
240-110662-6	HPT-218_3-4_040719	Total/NA	Solid	Moisture	
240-110662-7	HPT-218_2-3_040719	Total/NA	Solid	Moisture	
240-110662-8	HPT-218_1-2_040719	Total/NA	Solid	Moisture	
240-110662-12	HPT-218_28-29_040719	Total/NA	Solid	Moisture	
240-110665-B-20 DU	Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

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

Job ID: 240-110662-1

Client Sample ID: HPT-217_4-8_040719

Lab Sample ID: 240-110662-1

Date Collected: 04/07/19 10:20

Matrix: Water

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376654	04/16/19 18:24	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 21:47	SAM	TAL CAN

Client Sample ID: HPT-217_16-20_040719

Lab Sample ID: 240-110662-2

Date Collected: 04/07/19 09:35

Matrix: Water

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376654	04/16/19 18:46	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	375762	04/10/19 22:13	SAM	TAL CAN

Client Sample ID: HPT-217_9-13_040719

Lab Sample ID: 240-110662-3

Date Collected: 04/07/19 10:00

Matrix: Water

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376654	04/16/19 19:08	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376059	04/11/19 16:04	SAM	TAL CAN

Client Sample ID: HPT-217_28-29_040719

Lab Sample ID: 240-110662-4

Date Collected: 04/07/19 10:30

Matrix: Solid

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	375590	04/09/19 17:09	ACR	TAL CAN

Client Sample ID: HPT-217_28-29_040719

Lab Sample ID: 240-110662-4

Date Collected: 04/07/19 10:30

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 83.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			376103	04/11/19 13:35	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	376248	04/12/19 20:59	HMB	TAL CAN

Client Sample ID: HPT-218_4-5_040719

Lab Sample ID: 240-110662-5

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	375590	04/09/19 17:09	ACR	TAL CAN

Lab Chronicle

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_4-5_040719

Lab Sample ID: 240-110662-5

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 95.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			376103	04/11/19 13:35	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	376248	04/12/19 21:23	HMB	TAL CAN

Client Sample ID: HPT-218_3-4_040719

Lab Sample ID: 240-110662-6

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	375590	04/09/19 17:09	ACR	TAL CAN

Client Sample ID: HPT-218_3-4_040719

Lab Sample ID: 240-110662-6

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 88.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			376103	04/11/19 13:35	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	376248	04/12/19 21:48	HMB	TAL CAN

Client Sample ID: HPT-218_2-3_040719

Lab Sample ID: 240-110662-7

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	375590	04/09/19 17:09	ACR	TAL CAN

Client Sample ID: HPT-218_2-3_040719

Lab Sample ID: 240-110662-7

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 85.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			376103	04/11/19 13:35	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	376248	04/12/19 22:13	HMB	TAL CAN

Client Sample ID: HPT-218_1-2_040719

Lab Sample ID: 240-110662-8

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	375590	04/09/19 17:09	ACR	TAL CAN

Lab Chronicle

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

Job ID: 240-110662-1

Client Sample ID: HPT-218_1-2_040719

Lab Sample ID: 240-110662-8

Date Collected: 04/07/19 10:45

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 90.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			376103	04/11/19 13:35	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	376248	04/12/19 22:38	HMB	TAL CAN

Client Sample ID: HPT-218_15-19_040719

Lab Sample ID: 240-110662-9

Date Collected: 04/07/19 13:25

Matrix: Water

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376654	04/16/19 20:13	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376059	04/11/19 17:21	SAM	TAL CAN

Client Sample ID: HPT-218_10-14_040719

Lab Sample ID: 240-110662-10

Date Collected: 04/07/19 13:35

Matrix: Water

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376652	04/16/19 15:39	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376059	04/11/19 17:46	SAM	TAL CAN

Client Sample ID: HPT-218_5-9_040719

Lab Sample ID: 240-110662-11

Date Collected: 04/07/19 13:55

Matrix: Water

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376652	04/16/19 16:01	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376059	04/11/19 18:12	SAM	TAL CAN

Client Sample ID: HPT-218_28-29_040719

Lab Sample ID: 240-110662-12

Date Collected: 04/07/19 13:05

Matrix: Solid

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	375590	04/09/19 17:09	ACR	TAL CAN

Client Sample ID: HPT-218_28-29_040719

Lab Sample ID: 240-110662-12

Date Collected: 04/07/19 13:05

Matrix: Solid

Date Received: 04/09/19 08:30

Percent Solids: 79.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			376103	04/11/19 13:35	LAM	TAL CAN
Total/NA	Analysis	8260B MI		1	376372	04/14/19 18:35	HMB	TAL CAN

Eurofins TestAmerica, Canton

Lab Chronicle

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

Job ID: 240-110662-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110662-13

Date Collected: 04/07/19 00:00

Matrix: Water

Date Received: 04/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	376652	04/16/19 16:23	LEE	TAL CAN

Laboratory References:

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

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Accreditation/Certification Summary

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

Job ID: 240-110662-1

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.



Client Information Client Contact: Caitlin O'Neill Company: ARCADIS U.S. Inc. Address: 28550 Cabot Drive Suite 500 City: Novi State/Zip: MI, 48377 Phone: 248-722-2411 Email: Caitlin.O'Neill@arcadis.com Project Name: Ford LTP Livonia MI - E203631 Site:		Lab PM: DelMonico, Michael E-Mail: michael.delmonico@testamericamc.com Sample: Christina Weaver Phone: (989)-69-5009		Carner Tracking Note(s): COC No: 240-59392-25341.4 Page: 1 of 2 Job #:	
Due Date Requested: 4/11/19 at latest TAT Requested (days): PUSH 48-Hr PO #: MI001318.0002.00002 WO #: Cadena #: E203631 Project #: 24015353 SSON#:		Analysis Requested Barcode: 240-110662 Chain of Custody			
Sample Identification Sample ID: HPT-217-4-8-040719 HPT-217-16-20-040719 HPT-217-9-13-040719 HPT-217-28-29-040719 HPT-218-4-5-040719 HPT-218-3-4-040719 HPT-218-2-3-040719 HPT-218-1-2-040719 HPT-218-15-19-040719 HPT-218-10-14-040719 HPT-218-5-9-040719		Sample Date: 4/7/19 1020 4/7/19 0935 4/7/19 1000 4/7/19 1030 4/7/19 1045 4/7/19 1045 4/7/19 1045 4/7/19 1045 4/7/19 1325 4/7/19 1335 4/7/19 1355		Sample Type (C=Comp, G=Grab): 6 6 6 6 6 6 6 6 6 6 6	
Matrix (W=Water, S=solid, O=water, BT=Trace, A=Air): Water Water Water Water Water Water Water Water Water Water Water		Preservation Code: A F A A F A A F A A F A A F A A F A A F A A F A A F A A F A A F A A F A		Field Filtered Sample (Yes or No): Form MS/MSD (Yes or No): 826B_MI_VOCs (Short List): 826B_VOCs (Short List):	
Total Number of Containers: 6 6 18 MS/MSO completed 2 Dry weight included 2 Dry weight included 2 Dry weight included 2 Dry weight included 2 Dry weight included 6 6 6		Special Instructions/Note: MS/MSO completed Dry weight included Dry weight included Dry weight included Dry weight included Dry weight included			
Preservation Codes: 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:		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)			
Possible Hazard Identification <input checked="" 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		Deliverable Requested: I, II, III (IV) Other (specify)			
Empty Kit Relinquished by:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Relinquished by: Christina Weaver Date/Time: 4/7/19 20:00 Company: Arcadis		Special Instructions/OC Requirements: Submit all results through Cadena at jim.temalia@arcadis.com #5203728 Method of Shipment:			
Relinquished by: Caitlin O'Neill Date/Time: 4/10/19 11:00 Company: Arcadis		Received by: Heidi's Date/Time: 4/17/19 20:00 Company: Arcadis			
Relinquished by: Caitlin O'Neill Date/Time: 4/8/19 13:45 Company: T/A		Received by: Heidi's Date/Time: 4/8/19 11:00 Company: Arcadis			
Body Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature: °C and Other Remarks:			


TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 110662

Client Arcadis Site Name _____ Cooler unpacked by: [Signature]
 Cooler Received on 4-9-19 Opened on 4-9-19
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 1A 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 2 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 # B834001VB 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: MJ

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: _____

