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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-114327-1
Client Project/Site: Ford LTP Livonia MI - E203728

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

Attn: Kristoffer Hinskey

Authorized for release by:
6/27/2019 10:20:06 AM

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

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

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

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Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 240-114327-1
Project/Site: Ford LTP Livonia MI - E203728

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Job ID: 240-114327-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-114327-1

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 6/13/2019 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.5º C, 2.7º C and 4.1º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-64_06112019 (240-114327-1), MW-1_06112019 (240-114327-2), MW-49_06112019 (240-114327-3), MW-24_061112019 (240-114327-4), MW-36_06112019 (240-114327-5) and TRIP BLANK (240-114327-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/22/2019.

Sample MW-49_06112019 (240-114327-3)[714.29X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No MS/MSD in batch 387698 due to incorrect dilution: MW-64_06112019 (240-114327-1), MW-1_06112019 (240-114327-2), MW-49_06112019 (240-114327-3), MW-24_061112019 (240-114327-4), MW-36_06112019 (240-114327-5) and TRIP BLANK (240-114327-6).

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-64_06112019 (240-114327-1), MW-1_06112019 (240-114327-2), MW-49_06112019 (240-114327-3), MW-24_061112019

Job ID: 240-114327-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

(240-114327-4) and MW-36_06112019 (240-114327-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 06/17/2019.

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.
Job ID: 240-114327-1
Project/Site: Ford LTP Livonia MI - E203728

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

Protocol References:

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

Laboratory References:

TAL CAN = 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 - E203728

Job ID: 240-114327-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114327-1	MW-64_06112019	Water	06/11/19 09:14	06/13/19 08:30	
240-114327-2	MW-1_06112019	Water	06/11/19 13:48	06/13/19 08:30	
240-114327-3	MW-49_06112019	Water	06/11/19 11:11	06/13/19 08:30	
240-114327-4	MW-24_061112019	Water	06/11/19 16:27	06/13/19 08:30	
240-114327-5	MW-36_06112019	Water	06/11/19 18:29	06/13/19 08:30	
240-114327-6	TRIP BLANK	Water	06/11/19 00:00	06/13/19 08:30	

Detection Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-114327-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: MW-64_06112019 — Lab Sample ID: 240-114327-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.25	J	1.0	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	1.7		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-1_06112019 — Lab Sample ID: 240-114327-2

No Detections.

Client Sample ID: MW-49_06112019 — Lab Sample ID: 240-114327-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	6.1		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	19000		710	110	ug/L	714.29		8260B	Total/NA
Vinyl chloride	7100		710	140	ug/L	714.29		8260B	Total/NA

Client Sample ID: MW-24_061112019 — Lab Sample ID: 240-114327-4

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

Client Sample ID: MW-36_06112019 — Lab Sample ID: 240-114327-5

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-114327-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114327-1

Client Sample ID: MW-64_06112019
Date Collected: 06/11/19 09:14
Date Received: 06/13/19 08:30

Lab Sample ID: 240-114327-1
Matrix: Water

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			06/17/19 12:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 125*		*06/17/19 12:17*	*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			06/22/19 18:32	1
cis-1,2-Dichloroethene	**0.25**	**J**	1.0	0.16	ug/L			06/22/19 18:32	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/19 18:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/19 18:32	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/19 18:32	1
Vinyl chloride	**1.7**		1.0	0.20	ug/L			06/22/19 18:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 121*		*06/22/19 18:32*	*1*
4-Bromofluorobenzene (Surr)	*67*		*59 - 120*		*06/22/19 18:32*	*1*
Toluene-d8 (Surr)	*82*		*70 - 123*		*06/22/19 18:32*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 128*		*06/22/19 18:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114327-1

Client Sample ID: MW-1_06112019
Date Collected: 06/11/19 13:48
Date Received: 06/13/19 08:30

Lab Sample ID: 240-114327-2
Matrix: Water

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			06/17/19 12:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 125*		*06/17/19 12:42*	*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			06/22/19 18:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/19 18:54	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/19 18:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/19 18:54	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/19 18:54	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/22/19 18:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 121*		*06/22/19 18:54*	*1*
4-Bromofluorobenzene (Surr)	*67*		*59 - 120*		*06/22/19 18:54*	*1*
Toluene-d8 (Surr)	*83*		*70 - 123*		*06/22/19 18:54*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 128*		*06/22/19 18:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114327-1

Client Sample ID: MW-49_06112019
Date Collected: 06/11/19 11:11
Date Received: 06/13/19 08:30

Lab Sample ID: 240-114327-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**6.1**		2.0	0.86	ug/L			06/17/19 13:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 125*		*06/17/19 13:07*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	710	U	710	140	ug/L			06/22/19 19:16	714.29
cis-1,2-Dichloroethene	**19000**		710	110	ug/L			06/22/19 19:16	714.29
Tetrachloroethene	710	U	710	110	ug/L			06/22/19 19:16	714.29
trans-1,2-Dichloroethene	710	U	710	140	ug/L			06/22/19 19:16	714.29
Trichloroethene	710	U	710	71	ug/L			06/22/19 19:16	714.29
Vinyl chloride	**7100**		710	140	ug/L			06/22/19 19:16	714.29

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*06/22/19 19:16*	*714.29*
4-Bromofluorobenzene (Surr)	*68*		*59 - 120*		*06/22/19 19:16*	*714.29*
Toluene-d8 (Surr)	*84*		*70 - 123*		*06/22/19 19:16*	*714.29*
Dibromofluoromethane (Surr)	*95*		*75 - 128*		*06/22/19 19:16*	*714.29*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114327-1

Client Sample ID: MW-24_061112019
Date Collected: 06/11/19 16:27
Date Received: 06/13/19 08:30

Lab Sample ID: 240-114327-4
Matrix: Water

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			06/17/19 13:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 125*		*06/17/19 13:32*	*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			06/22/19 19:38	1
cis-1,2-Dichloroethene	**0.16**	**J**	1.0	0.16	ug/L			06/22/19 19:38	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/19 19:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/19 19:38	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/19 19:38	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/22/19 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 121*		*06/22/19 19:38*	*1*
4-Bromofluorobenzene (Surr)	*68*		*59 - 120*		*06/22/19 19:38*	*1*
Toluene-d8 (Surr)	*83*		*70 - 123*		*06/22/19 19:38*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 128*		*06/22/19 19:38*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114327-1

Client Sample ID: MW-36_06112019
Date Collected: 06/11/19 18:29
Date Received: 06/13/19 08:30

Lab Sample ID: 240-114327-5
Matrix: Water

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			06/17/19 13:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 125*		*06/17/19 13:57*	*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			06/22/19 20:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/19 20:00	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/19 20:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/19 20:00	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/19 20:00	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/22/19 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 121*		*06/22/19 20:00*	*1*
4-Bromofluorobenzene (Surr)	*67*		*59 - 120*		*06/22/19 20:00*	*1*
Toluene-d8 (Surr)	*83*		*70 - 123*		*06/22/19 20:00*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 128*		*06/22/19 20:00*	*1*

Client: ARCADIS U.S., Inc.
Job ID: 240-114327-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-114327-6
Date Collected: 06/11/19 00:00
Matrix: Water
Date Received: 06/13/19 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			06/22/19 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/19 20:22	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/19 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/19 20:22	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/19 20:22	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/22/19 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*06/22/19 20:22*	*1*
4-Bromofluorobenzene (Surr)	*63*		*59 - 120*		*06/22/19 20:22*	*1*
Toluene-d8 (Surr)	*79*		*70 - 123*		*06/22/19 20:22*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 128*		*06/22/19 20:22*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114327-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(70-121)	(59-120)	(70-123)	(75-128)
240-114327-1	MW-64_06112019	102	67	82	96
240-114327-2	MW-1_06112019	104	67	83	97
240-114327-3	MW-49_06112019	100	68	84	95
240-114327-4	MW-24_061112019	105	68	83	97
240-114327-5	MW-36_06112019	103	67	83	95
240-114327-6	TRIP BLANK	100	63	79	97
LCS 240-387698/4	Lab Control Sample	81	90	89	80
MB 240-387698/6	Method Blank	96	74	82	96

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(63-125)
240-114327-1	MW-64_06112019	103
240-114327-2	MW-1_06112019	113
240-114327-3	MW-49_06112019	96
240-114327-4	MW-24_061112019	103
240-114327-5	MW-36_06112019	110
LCS 240-386517/4	Lab Control Sample	99
MB 240-386517/5	Method Blank	105

Surrogate Legend

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

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

Lab Sample ID: MB 240-387698/6
Matrix: Water
Analysis Batch: 387698

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			06/22/19 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/19 15:59	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/19 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/19 15:59	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/19 15:59	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/22/19 15:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*06/22/19 15:59*	*1*
4-Bromofluorobenzene (Surr)	*74*		*59 - 120*		*06/22/19 15:59*	*1*
Toluene-d8 (Surr)	*82*		*70 - 123*		*06/22/19 15:59*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 128*		*06/22/19 15:59*	*1*

Lab Sample ID: LCS 240-387698/4
Matrix: Water
Analysis Batch: 387698

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	8.27		ug/L		83	65 - 139
cis-1,2-Dichloroethene	10.0	8.49		ug/L		85	76 - 128
Tetrachloroethene	10.0	8.76		ug/L		88	74 - 130
trans-1,2-Dichloroethene	10.0	8.88		ug/L		89	78 - 133
Trichloroethene	10.0	8.54		ug/L		85	76 - 125
Vinyl chloride	10.0	8.35		ug/L		83	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*70 - 121*
4-Bromofluorobenzene (Surr)	*90*		*59 - 120*
Toluene-d8 (Surr)	*89*		*70 - 123*
Dibromofluoromethane (Surr)	*80*		*75 - 128*

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

Lab Sample ID: MB 240-386517/5
Matrix: Water
Analysis Batch: 386517

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			06/17/19 11:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 125*		*06/17/19 11:27*	*1*

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

Lab Sample ID: LCS 240-386517/4
Matrix: Water
Analysis Batch: 386517

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	10.9		ug/L		109	59 - 131		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 125*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-114327-1
Project/Site: Ford LTP Livonia MI - E203728

GC/MS VOA

Analysis Batch: 386517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114327-1	MW-64_06112019	Total/NA	Water	8260B SIM	
240-114327-2	MW-1_06112019	Total/NA	Water	8260B SIM	
240-114327-3	MW-49_06112019	Total/NA	Water	8260B SIM	
240-114327-4	MW-24_061112019	Total/NA	Water	8260B SIM	
240-114327-5	MW-36_06112019	Total/NA	Water	8260B SIM	
MB 240-386517/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-386517/4	Lab Control Sample	Total/NA	Water	8260B SIM	

Analysis Batch: 387698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114327-1	MW-64_06112019	Total/NA	Water	8260B	
240-114327-2	MW-1_06112019	Total/NA	Water	8260B	
240-114327-3	MW-49_06112019	Total/NA	Water	8260B	
240-114327-4	MW-24_061112019	Total/NA	Water	8260B	
240-114327-5	MW-36_06112019	Total/NA	Water	8260B	
240-114327-6	TRIP BLANK	Total/NA	Water	8260B	
MB 240-387698/6	Method Blank	Total/NA	Water	8260B	
LCS 240-387698/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 240-114327-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: MW-64_06112019
Lab Sample ID: 240-114327-1
Date Collected: 06/11/19 09:14
Matrix: Water
Date Received: 06/13/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387698	06/22/19 18:32	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	386517	06/17/19 12:17	SAM	TAL CAN

Client Sample ID: MW-1_06112019
Lab Sample ID: 240-114327-2
Date Collected: 06/11/19 13:48
Matrix: Water
Date Received: 06/13/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387698	06/22/19 18:54	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	386517	06/17/19 12:42	SAM	TAL CAN

Client Sample ID: MW-49_06112019
Lab Sample ID: 240-114327-3
Date Collected: 06/11/19 11:11
Matrix: Water
Date Received: 06/13/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		714.29	387698	06/22/19 19:16	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	386517	06/17/19 13:07	SAM	TAL CAN

Client Sample ID: MW-24_061112019
Lab Sample ID: 240-114327-4
Date Collected: 06/11/19 16:27
Matrix: Water
Date Received: 06/13/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387698	06/22/19 19:38	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	386517	06/17/19 13:32	SAM	TAL CAN

Client Sample ID: MW-36_06112019
Lab Sample ID: 240-114327-5
Date Collected: 06/11/19 18:29
Matrix: Water
Date Received: 06/13/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387698	06/22/19 20:00	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	386517	06/17/19 13:57	SAM	TAL CAN

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-114327-6
Date Collected: 06/11/19 00:00
Matrix: Water
Date Received: 06/13/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387698	06/22/19 20:22	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.
Job ID: 240-114327-1
Project/Site: Ford LTP Livonia MI - E203728

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		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Florida	NELAP		E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
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 Jersey	NELAP		OH001	06-30-19
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
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.

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

MICHIGAN 100

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Madison Olender	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-61361-26116.1
Client Contact: Caitlin ONeill	Phone:	E-Mail: michael.delmonico@testamericainc.com		Page: Page 1 of 10
Company: ARCADIS U.S. Inc		**Analysis Requested**		Job #:
Address: 28550 Cabot Drive Suite 500	Due Date Requested:			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, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Novi	TAT Requested (days): 10 day / Standard			
State, Zip: MI, 48377				
Phone:	PO #: ~~0004.00018~~ MI001454.~~0006.00001~~			
Email: Caitlin.ONeill@arcadis.com	WO #: Cadena #: E203~~631~~728			Other:
Project Name: Ford LTP Livonia MI - E203~~631~~ 728	Project #: 24015353			
Site: LTP	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B, 8260B_SIM	8260B - VOCs (Short List)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	A		
MW-64_06112019	6/11/19	0914	G	Water	N	N	X	X	6	
MW-1_06112019	6/11/19	1348	G	Water	N	N	X	X	6	
MW-49_06112019	6/11/19	1111	G	Water	N	N	X	X	6	
~~MW-MW~~ MS				Water						
MW-24_06112019	6/11/19	1627	G	Water	N	N	X	X	6	
MW-36_06112019	6/11/19	1829	G	Water	N	N	X	X	6	
Trip Blank	6/11/19	—	~~G~~ NO	Water	-	-	X	X	1	
				Water						
				Water						
				Water						
				Water						

240-114327 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by:	6/11/19 / 1930	Arcadis	Received by: Navi Cold Storage	6/11/19 2015	Arcadis
Relinquished by: PACHIE BIELAK Pat Bielak	6/12/19 1020	ARCADIS	Received by:	6-12-19 1020	ETA
Relinquished by:	6-12-19 1340	ETA	Received by:	6/13/19 ~~0940~~ 0820	ETA

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 114327**

Canton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Arsenault

Cooler Received on 6/13/19 Opened on 6/14/19

FedEx: 1st (Grd) Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # CANTON 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 +0.1 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

IR GUN #36 (CF +0.6°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 ea	(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# HC984738
13. Were VOAs on the COC?	(Yes)	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B904401VB	(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: AMM

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: _____

WI-NC-099

Login # : ______________

TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA (circled) Client Box Other	IR-8 (circled) #36	4.0	4.1	Wet Ice (circled) Blue Ice Dry Ice Water None
TA (circled) Client Box Other	IR-8 (circled) #36	2.6	2.7	Wet Ice (circled) Blue Ice Dry Ice Water None
TA (circled) Client Box Other	IR-8 (circled) #36	2.4	2.5	Wet Ice (circled) Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
				☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers