eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 240-126397-1
Client Project/Site: Ford LTP On Site

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

Attn: Kristoffer Hinskey

Authorized for release by:
3/3/2020 9:28:42 AM

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

Table of Contents

Definitions/Glossary

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

Job ID: 240-126397-1

Qualifiers

GC/MS VOA

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

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: 240-126397-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP On Site

Report Number: 240-126397-1

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 2/15/2020 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-126397-1), MW-122_021320 (240-126397-2), MW-67_021320 (240-126397-3) and DUP-15 (240-126397-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 02/24/2020.

Samples MW-67_021320 (240-126397-3)[3.33X] and DUP-15 (240-126397-4)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-122_021320 (240-126397-2), MW-67_021320 (240-126397-3) and DUP-15 (240-126397-4) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 02/26/2020.

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 On Site

Job ID: 240-126397-1

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 On Site

Job ID: 240-126397-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-126397-1	TRIP BLANK	Water	02/13/20 00:00	02/15/20 09:30	
240-126397-2	MW-122_021320	Water	02/13/20 10:31	02/15/20 09:30	
240-126397-3	MW-67_021320	Water	02/13/20 12:38	02/15/20 09:30	
240-126397-4	DUP-15	Water	02/13/20 00:00	02/15/20 09:30	

Detection Summary

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

Job ID: 240-126397-1

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-126397-1

No Detections.

Client Sample ID: MW-122_021320 — Lab Sample ID: 240-126397-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.3	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	2.1		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-67_021320 — Lab Sample ID: 240-126397-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.8		3.3	0.53	ug/L	3.33		8260B	Total/NA
trans-1,2-Dichloroethene	0.79	J	3.3	0.63	ug/L	3.33		8260B	Total/NA
Trichloroethene	45		3.3	0.33	ug/L	3.33		8260B	Total/NA

Client Sample ID: DUP-15 — Lab Sample ID: 240-126397-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.5		2.0	0.32	ug/L	2		8260B	Total/NA
trans-1,2-Dichloroethene	0.86	J	2.0	0.38	ug/L	2		8260B	Total/NA
Trichloroethene	46		2.0	0.20	ug/L	2		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

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

Job ID: 240-126397-1

Client Sample ID: TRIP BLANK
Date Collected: 02/13/20 00:00
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-1
Matrix: Water

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			02/24/20 19:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/24/20 19:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/24/20 19:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/24/20 19:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/24/20 19:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/24/20 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*75 - 130*		*02/24/20 19:14*	*1*
4-Bromofluorobenzene (Surr)	*98*		*47 - 134*		*02/24/20 19:14*	*1*
Toluene-d8 (Surr)	*92*		*69 - 122*		*02/24/20 19:14*	*1*
Dibromofluoromethane (Surr)	*101*		*78 - 129*		*02/24/20 19:14*	*1*

Client Sample ID: MW-122_021320

Date Collected: 02/13/20 10:31
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.3**	**J**	2.0	0.86	ug/L			02/26/20 03:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*70 - 133*		*02/26/20 03:59*	*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			02/24/20 19:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/24/20 19:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/24/20 19:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/24/20 19:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/24/20 19:36	1
Vinyl chloride	**2.1**		1.0	0.20	ug/L			02/24/20 19:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*75 - 130*		*02/24/20 19:36*	*1*
4-Bromofluorobenzene (Surr)	*96*		*47 - 134*		*02/24/20 19:36*	*1*
Toluene-d8 (Surr)	*88*		*69 - 122*		*02/24/20 19:36*	*1*
Dibromofluoromethane (Surr)	*94*		*78 - 129*		*02/24/20 19:36*	*1*

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

Job ID: 240-126397-1

Client Sample ID: MW-67_021320
Date Collected: 02/13/20 12:38
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/26/20 12:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 133*		*02/26/20 12:55*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	0.63	ug/L			02/24/20 19:58	3.33
cis-1,2-Dichloroethene	**4.8**		3.3	0.53	ug/L			02/24/20 19:58	3.33
Tetrachloroethene	3.3	U	3.3	0.50	ug/L			02/24/20 19:58	3.33
trans-1,2-Dichloroethene	**0.79**	**J**	3.3	0.63	ug/L			02/24/20 19:58	3.33
Trichloroethene	**45**		3.3	0.33	ug/L			02/24/20 19:58	3.33
Vinyl chloride	3.3	U	3.3	0.67	ug/L			02/24/20 19:58	3.33

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*75 - 130*		*02/24/20 19:58*	*3.33*
4-Bromofluorobenzene (Surr)	*94*		*47 - 134*		*02/24/20 19:58*	*3.33*
Toluene-d8 (Surr)	*90*		*69 - 122*		*02/24/20 19:58*	*3.33*
Dibromofluoromethane (Surr)	*89*		*78 - 129*		*02/24/20 19:58*	*3.33*

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

Job ID: 240-126397-1

Client Sample ID: DUP-15

Date Collected: 02/13/20 00:00
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-4

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			02/26/20 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 133*		*02/26/20 13:20*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.38	ug/L			02/24/20 20:21	2
cis-1,2-Dichloroethene	**5.5**		2.0	0.32	ug/L			02/24/20 20:21	2
Tetrachloroethene	2.0	U	2.0	0.30	ug/L			02/24/20 20:21	2
trans-1,2-Dichloroethene	**0.86**	**J**	2.0	0.38	ug/L			02/24/20 20:21	2
Trichloroethene	**46**		2.0	0.20	ug/L			02/24/20 20:21	2
Vinyl chloride	2.0	U	2.0	0.40	ug/L			02/24/20 20:21	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 130*		*02/24/20 20:21*	*2*
4-Bromofluorobenzene (Surr)	*95*		*47 - 134*		*02/24/20 20:21*	*2*
Toluene-d8 (Surr)	*89*		*69 - 122*		*02/24/20 20:21*	*2*
Dibromofluoromethane (Surr)	*96*		*78 - 129*		*02/24/20 20:21*	*2*

Surrogate Summary

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

Job ID: 240-126397-1

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

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-126397-1	TRIP BLANK	109	98	92	101
240-126397-2	MW-122_021320	103	96	88	94
240-126397-3	MW-67_021320	103	94	90	89
240-126397-4	DUP-15	107	95	89	96
240-126398-E-9 MS	Matrix Spike	104	101	92	99
240-126398-F-9 MSD	Matrix Spike Duplicate	101	97	90	97
LCS 240-423963/4	Lab Control Sample	102	98	91	99
MB 240-423963/6	Method Blank	110	98	93	103

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)
Lab Sample ID	Client Sample ID	DCA (70-133)
240-126348-G-5 MS	Matrix Spike	122
240-126348-G-5 MSD	Matrix Spike Duplicate	116
240-126397-2	MW-122_021320	120
240-126397-3	MW-67_021320	106
240-126397-4	DUP-15	105
240-126438-G-3 MS	Matrix Spike	134 X
240-126438-G-3 MSD	Matrix Spike Duplicate	133
LCS 240-424238/12	Lab Control Sample	104
LCS 240-424320/4	Lab Control Sample	105
MB 240-424238/13	Method Blank	105
MB 240-424320/5	Method Blank	105

Surrogate Legend

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

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

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DCA (10-150)
MRL 240-424238/14	Lab Control Sample	105

Surrogate Legend

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

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

Lab Sample ID: MB 240-423963/6
Matrix: Water
Analysis Batch: 423963

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			02/24/20 12:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/24/20 12:11	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/24/20 12:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/24/20 12:11	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/24/20 12:11	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/24/20 12:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*75 - 130*		*02/24/20 12:11*	*1*
4-Bromofluorobenzene (Surr)	*98*		*47 - 134*		*02/24/20 12:11*	*1*
Toluene-d8 (Surr)	*93*		*69 - 122*		*02/24/20 12:11*	*1*
Dibromofluoromethane (Surr)	*103*		*78 - 129*		*02/24/20 12:11*	*1*

Lab Sample ID: LCS 240-423963/4
Matrix: Water
Analysis Batch: 423963

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	9.79		ug/L		98	73 - 129
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	75 - 124
Tetrachloroethene	10.0	9.86		ug/L		99	70 - 125
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	74 - 130
Trichloroethene	10.0	9.23		ug/L		92	71 - 121
Vinyl chloride	10.0	7.21		ug/L		72	61 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*75 - 130*
4-Bromofluorobenzene (Surr)	*98*		*47 - 134*
Toluene-d8 (Surr)	*91*		*69 - 122*
Dibromofluoromethane (Surr)	*99*		*78 - 129*

Lab Sample ID: 240-126398-E-9 MS
Matrix: Water
Analysis Batch: 423963

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	2.0	U	20.0	17.9		ug/L		90	64 - 132
cis-1,2-Dichloroethene	2.0	U	20.0	21.1		ug/L		105	68 - 121
Tetrachloroethene	52		20.0	67.7		ug/L		79	52 - 129
trans-1,2-Dichloroethene	2.0	U	20.0	19.7		ug/L		99	69 - 126
Trichloroethene	1.7	J	20.0	19.9		ug/L		91	56 - 124
Vinyl chloride	2.0	U	20.0	13.7		ug/L		68	49 - 136

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*75 - 130*
4-Bromofluorobenzene (Surr)	*101*		*47 - 134*
Toluene-d8 (Surr)	*92*		*69 - 122*

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

Lab Sample ID: 240-126398-E-9 MS
Matrix: Water
Analysis Batch: 423963

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

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*99*		*78 - 129*

Lab Sample ID: 240-126398-F-9 MSD
Matrix: Water
Analysis Batch: 423963

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	2.0	U	20.0	17.7		ug/L		89	64 - 132	1	35
cis-1,2-Dichloroethene	2.0	U	20.0	19.3		ug/L		97	68 - 121	9	35
Tetrachloroethene	52		20.0	68.5		ug/L		83	52 - 129	1	35
trans-1,2-Dichloroethene	2.0	U	20.0	17.9		ug/L		90	69 - 126	10	35
Trichloroethene	1.7	J	20.0	18.8		ug/L		86	56 - 124	6	35
Vinyl chloride	2.0	U	20.0	14.5		ug/L		72	49 - 136	6	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*75 - 130*
4-Bromofluorobenzene (Surr)	*97*		*47 - 134*
Toluene-d8 (Surr)	*90*		*69 - 122*
Dibromofluoromethane (Surr)	*97*		*78 - 129*

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

Lab Sample ID: MB 240-424238/13
Matrix: Water
Analysis Batch: 424238

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			02/25/20 21:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 133*		*02/25/20 21:07*	*1*

Lab Sample ID: LCS 240-424238/12
Matrix: Water
Analysis Batch: 424238

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	10.6		ug/L		106	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 133*

Lab Sample ID: MRL 240-424238/14
Matrix: Water
Analysis Batch: 424238

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	0.00100	0.00123	J	ng/uL		123	10 - 150

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

Surrogate	MRL %Recovery	MRL Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		10 - 150

Lab Sample ID: 240-126348-G-5 MS
Matrix: Water
Analysis Batch: 424238

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
1,4-Dioxane	1.1	J	10.0	11.5		ug/L		104	46 - 170

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	122		70 - 133

Lab Sample ID: 240-126348-G-5 MSD
Matrix: Water
Analysis Batch: 424238

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
1,4-Dioxane	1.1	J	10.0	9.99		ug/L		89	46 - 170	14	26

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	116		70 - 133

Lab Sample ID: MB 240-424320/5
Matrix: Water
Analysis Batch: 424320

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			02/26/20 12:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 133		02/26/20 12:03	1

Lab Sample ID: LCS 240-424320/4
Matrix: Water
Analysis Batch: 424320

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	10.5		ug/L		105	80 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		70 - 133

Lab Sample ID: 240-126438-G-3 MS
Matrix: Water
Analysis Batch: 424320

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
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	46 - 170

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

Lab Sample ID: 240-126438-G-3 MS
Matrix: Water
Analysis Batch: 424320

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

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*134*	*X*	*70 - 133*

Lab Sample ID: 240-126438-G-3 MSD
Matrix: Water
Analysis Batch: 424320

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
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	46 - 170	11	26

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*133*		*70 - 133*

QC Association Summary

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

Job ID: 240-126397-1

GC/MS VOA

Analysis Batch: 423963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-126397-1	TRIP BLANK	Total/NA	Water	8260B	
240-126397-2	MW-122_021320	Total/NA	Water	8260B	
240-126397-3	MW-67_021320	Total/NA	Water	8260B	
240-126397-4	DUP-15	Total/NA	Water	8260B	
MB 240-423963/6	Method Blank	Total/NA	Water	8260B	
LCS 240-423963/4	Lab Control Sample	Total/NA	Water	8260B	
240-126398-E-9 MS	Matrix Spike	Total/NA	Water	8260B	
240-126398-F-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 424238

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-126397-2	MW-122_021320	Total/NA	Water	8260B SIM	
MB 240-424238/13	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-424238/12	Lab Control Sample	Total/NA	Water	8260B SIM	
MRL 240-424238/14	Lab Control Sample	Total/NA	Water	8260B SIM	
240-126348-G-5 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-126348-G-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 424320

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-126397-3	MW-67_021320	Total/NA	Water	8260B SIM	
240-126397-4	DUP-15	Total/NA	Water	8260B SIM	
MB 240-424320/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-424320/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-126438-G-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-126438-G-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Lab Chronicle

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

Job ID: 240-126397-1

Client Sample ID: TRIP BLANK
Date Collected: 02/13/20 00:00
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	423963	02/24/20 19:14	LEE	TAL CAN

Client Sample ID: MW-122_021320
Date Collected: 02/13/20 10:31
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	423963	02/24/20 19:36	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	424238	02/26/20 03:59	SAM	TAL CAN

Client Sample ID: MW-67_021320
Date Collected: 02/13/20 12:38
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		3.33	423963	02/24/20 19:58	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	424320	02/26/20 12:55	SAM	TAL CAN

Client Sample ID: DUP-15
Date Collected: 02/13/20 00:00
Date Received: 02/15/20 09:30

Lab Sample ID: 240-126397-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	423963	02/24/20 20:21	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	424320	02/26/20 13:20	SAM	TAL CAN

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 240-126397-1

Laboratory: Eurofins TestAmerica, Canton

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

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

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

MICHIGAN 190 20127

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

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

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Melissa Weaver	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day	For lab use only: Walk-in client; Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:		Job/SDG No:
Project Number: 30042006.0401.02	Shipping/Tracking No:		
PO # 30042006.0401.02			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK	—	—		1						1					N	G	X	X	X	X	X	X	X	1 TRIP BLANK
MW-122_021320	2/13/20	1031		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM
MW-67_021320	2/13/20	1238		6						6					N	G	X	X	X	X	X	X	X	1
DUP-15	2/13/20	—		6						6					N	G	X	X	X	X	X	X	X	1

240-126397 Chain of Custody

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

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

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
M Weaver	Arcadis	2/13/20 1530	Arcadis Trailer	Arcadis 1530	2/13/20
ARCADIS TRAILER	Novi	2/13/20 1700		ARCADIS 1700	2/13/20
	ARCADIS	2/13/20 1730	Received in Laboratory by: Novi Cold Storage	ARCADIS 1730	2/13/20
RACHEL BIELAK Paul Patel	ARCADIS	2/14/20 1334	Molly Mascow	ETAL-MI	2/14/20 1334
Relinquished Molly Mascow	ETAL-MI	2/14/20 1445	TA	2/15-20 930	

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 126347**
Canton Facility

Client Arcadis Site Name

Cooler Received on 2-15-20 Opened on 2-15-20

Cooler unpacked by:

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

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

TestAmerica Cooler # 14 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-10 (CF +0.7 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.7 °C
   IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC995364
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 # ____	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: ____