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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
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Laboratory Job ID: 240-114522-1
Client Project/Site: Ford LTP Livonia MI - E203728

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

Attn: Kristoffer Hinskey

Authorized for release by:
6/27/2019 11:47:24 AM

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Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 240-114522-1
Project/Site: Ford LTP Livonia MI - E203728

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
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.
¤	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: 240-114522-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-114522-1

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 6/18/2019 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 3.1º C, 3.7º C and 3.9º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-43_061519 (240-114522-1), MW-52_061519 (240-114522-2), MW-41_061519 (240-114522-3) and TRIP BLANK (240-114522-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/25/2019.

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-43_061519 (240-114522-1), MW-52_061519 (240-114522-2) and MW-41_061519 (240-114522-3) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 06/20/2019.

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: 240-114522-1
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: 240-114522-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114522-1	MW-43_061519	Water	06/15/19 14:24	06/18/19 08:40	
240-114522-2	MW-52_061519	Water	06/15/19 15:32	06/18/19 08:40	
240-114522-3	MW-41_061519	Water	06/15/19 16:46	06/18/19 08:40	
240-114522-4	TRIP BLANK	Water	06/15/19 00:00	06/18/19 08:40	

Detection Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-114522-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: MW-43_061519 — Lab Sample ID: 240-114522-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.7		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	1.5		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-52_061519 — Lab Sample ID: 240-114522-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	3.4		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-41_061519 — Lab Sample ID: 240-114522-3

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
cis-1,2-Dichloroethene	2.0		1.0	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	1.9		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-114522-4

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: 240-114522-1

Client Sample ID: MW-43_061519
Date Collected: 06/15/19 14:24
Date Received: 06/18/19 08:40

Lab Sample ID: 240-114522-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.7**		2.0	0.86	ug/L			06/20/19 20:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*63 - 125*		*06/20/19 20:33*	*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			06/25/19 01:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/19 01:11	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/19 01:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/19 01:11	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/19 01:11	1
Vinyl chloride	**1.5**		1.0	0.20	ug/L			06/25/19 01:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 121*		*06/25/19 01:11*	*1*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*		*06/25/19 01:11*	*1*
Toluene-d8 (Surr)	*91*		*70 - 123*		*06/25/19 01:11*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*06/25/19 01:11*	*1*

Client Sample ID: MW-52_061519
Lab Sample ID: 240-114522-2
Date Collected: 06/15/19 15:32
Matrix: Water
Date Received: 06/18/19 08:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.2**	**J**	2.0	0.86	ug/L			06/20/19 20:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*63 - 125*		*06/20/19 20:58*	*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			06/25/19 01:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/19 01:37	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/19 01:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/19 01:37	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/19 01:37	1
Vinyl chloride	**3.4**		1.0	0.20	ug/L			06/25/19 01:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 121*		*06/25/19 01:37*	*1*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*06/25/19 01:37*	*1*
Toluene-d8 (Surr)	*94*		*70 - 123*		*06/25/19 01:37*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 128*		*06/25/19 01:37*	*1*

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

Job ID: 240-114522-1

Client Sample ID: MW-41_061519
Date Collected: 06/15/19 16:46
Date Received: 06/18/19 08:40

Lab Sample ID: 240-114522-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.3**	**J**	2.0	0.86	ug/L			06/20/19 21:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 125*		*06/20/19 21:22*	*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			06/25/19 16:44	1
cis-1,2-Dichloroethene	**2.0**		1.0	0.16	ug/L			06/25/19 16:44	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/19 16:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/19 16:44	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/19 16:44	1
Vinyl chloride	**1.9**		1.0	0.20	ug/L			06/25/19 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 121*		*06/25/19 16:44*	*1*
4-Bromofluorobenzene (Surr)	*95*		*59 - 120*		*06/25/19 16:44*	*1*
Toluene-d8 (Surr)	*78*		*70 - 123*		*06/25/19 16:44*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*06/25/19 16:44*	*1*

Client: ARCADIS U.S., Inc.
Job ID: 240-114522-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-114522-4
Date Collected: 06/15/19 00:00
Matrix: Water
Date Received: 06/18/19 08:40

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			06/25/19 02:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/19 02:30	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/19 02:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/19 02:30	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/19 02:30	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/19 02:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*70 - 121*		*06/25/19 02:30*	*1*
4-Bromofluorobenzene (Surr)	*88*		*59 - 120*		*06/25/19 02:30*	*1*
Toluene-d8 (Surr)	*85*		*70 - 123*		*06/25/19 02:30*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*06/25/19 02:30*	*1*

Surrogate Summary

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

Job ID: 240-114522-1

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)
240-114521-K-3 MS	Matrix Spike	111	92	97	109
240-114521-L-3 MSD	Matrix Spike Duplicate	113	104	90	113
240-114522-1	MW-43_061519	108	86	91	110
240-114522-2	MW-52_061519	103	83	94	97
240-114522-3	MW-41_061519	111	95	78	106
240-114522-4	TRIP BLANK	116	88	85	108
240-114523-E-1 MS	Matrix Spike	114	94	75	114
240-114523-H-1 MSD	Matrix Spike Duplicate	109	90	82	116
LCS 240-387956/4	Lab Control Sample	106	92	87	106
LCS 240-388086/4	Lab Control Sample	102	87	79	102
MB 240-387956/7	Method Blank	110	85	88	115
MB 240-388086/7	Method Blank	121	88	80	109

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)
240-114521-C-3 MS	Matrix Spike	113
240-114521-C-3 MSD	Matrix Spike Duplicate	109
240-114522-1	MW-43_061519	111
240-114522-2	MW-52_061519	111
240-114522-3	MW-41_061519	112
LCS 240-387287/4	Lab Control Sample	108
MB 240-387287/5	Method Blank	106

Surrogate Legend

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

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

Lab Sample ID: MB 240-387956/7
Matrix: Water
Analysis Batch: 387956

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			06/24/19 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/24/19 18:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/24/19 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/24/19 18:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/24/19 18:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/24/19 18:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 121*		*06/24/19 18:14*	*1*
4-Bromofluorobenzene (Surr)	*85*		*59 - 120*		*06/24/19 18:14*	*1*
Toluene-d8 (Surr)	*88*		*70 - 123*		*06/24/19 18:14*	*1*
Dibromofluoromethane (Surr)	*115*		*75 - 128*		*06/24/19 18:14*	*1*

Lab Sample ID: LCS 240-387956/4
Matrix: Water
Analysis Batch: 387956

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	11.0		ug/L		110	65 - 139
cis-1,2-Dichloroethene	10.0	9.86		ug/L		99	76 - 128
Tetrachloroethene	10.0	11.9		ug/L		119	74 - 130
trans-1,2-Dichloroethene	10.0	9.51		ug/L		95	78 - 133
Trichloroethene	10.0	12.2		ug/L		122	76 - 125
Vinyl chloride	10.0	9.63		ug/L		96	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 121*
4-Bromofluorobenzene (Surr)	*92*		*59 - 120*
Toluene-d8 (Surr)	*87*		*70 - 123*
Dibromofluoromethane (Surr)	*106*		*75 - 128*

Lab Sample ID: 240-114521-K-3 MS
Matrix: Water
Analysis Batch: 387956

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	10.0	8.58		ug/L		86	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	8.32		ug/L		83	64 - 130
Tetrachloroethene	1.0	U	10.0	10.5		ug/L		105	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	8.48		ug/L		85	68 - 133
Trichloroethene	1.0	U F2	10.0	8.82		ug/L		88	55 - 131
Vinyl chloride	0.67	J	10.0	9.69		ug/L		90	43 - 154

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 121*
4-Bromofluorobenzene (Surr)	*92*		*59 - 120*
Toluene-d8 (Surr)	*97*		*70 - 123*

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

Lab Sample ID: 240-114521-K-3 MS
Matrix: Water
Analysis Batch: 387956

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

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*109*		*75 - 128*

Lab Sample ID: 240-114521-L-3 MSD
Matrix: Water
Analysis Batch: 387956

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	10.0	9.34		ug/L		93	53 - 140	8	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.01		ug/L		90	64 - 130	8	21
Tetrachloroethene	1.0	U	10.0	9.55		ug/L		96	51 - 136	9	23
trans-1,2-Dichloroethene	1.0	U	10.0	8.87		ug/L		89	68 - 133	4	24
Trichloroethene	1.0	U F2	10.0	11.4	F2	ug/L		114	55 - 131	26	23
Vinyl chloride	0.67	J	10.0	9.27		ug/L		86	43 - 154	4	29

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 121*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Toluene-d8 (Surr)	*90*		*70 - 123*
Dibromofluoromethane (Surr)	*113*		*75 - 128*

Lab Sample ID: MB 240-388086/7
Matrix: Water
Analysis Batch: 388086

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			06/25/19 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/25/19 15:05	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/25/19 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/25/19 15:05	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/25/19 15:05	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/25/19 15:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*121*		*70 - 121*		*06/25/19 15:05*	*1*
4-Bromofluorobenzene (Surr)	*88*		*59 - 120*		*06/25/19 15:05*	*1*
Toluene-d8 (Surr)	*80*		*70 - 123*		*06/25/19 15:05*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*06/25/19 15:05*	*1*

Lab Sample ID: LCS 240-388086/4
Matrix: Water
Analysis Batch: 388086

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	8.13		ug/L		81	65 - 139
cis-1,2-Dichloroethene	10.0	8.29		ug/L		83	76 - 128
Tetrachloroethene	10.0	11.8		ug/L		118	74 - 130
trans-1,2-Dichloroethene	10.0	9.04		ug/L		90	78 - 133
Trichloroethene	10.0	10.6		ug/L		106	76 - 125

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

Lab Sample ID: LCS 240-388086/4
Matrix: Water
Analysis Batch: 388086

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	8.38		ug/L		84	58 - 143		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 121*
4-Bromofluorobenzene (Surr)	*87*		*59 - 120*
Toluene-d8 (Surr)	*79*		*70 - 123*
Dibromofluoromethane (Surr)	*102*		*75 - 128*

Lab Sample ID: 240-114523-E-1 MS
Matrix: Water
Analysis Batch: 388086

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene	1.0	U	10.0	11.0		ug/L		110	53 - 140		
cis-1,2-Dichloroethene	2.2		10.0	13.2		ug/L		110	64 - 130		
Tetrachloroethene	1.0	U	10.0	10.6		ug/L		106	51 - 136		
trans-1,2-Dichloroethene	0.37	J	10.0	10.2		ug/L		99	68 - 133		
Trichloroethene	1.0	U	10.0	11.6		ug/L		116	55 - 131		
Vinyl chloride	0.26	J	10.0	9.96		ug/L		97	43 - 154		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*114*		*70 - 121*
4-Bromofluorobenzene (Surr)	*94*		*59 - 120*
Toluene-d8 (Surr)	*75*		*70 - 123*
Dibromofluoromethane (Surr)	*114*		*75 - 128*

Lab Sample ID: 240-114523-H-1 MSD
Matrix: Water
Analysis Batch: 388086

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	10.0	8.01		ug/L		80	53 - 140	32	35
cis-1,2-Dichloroethene	2.2		10.0	11.2		ug/L		90	64 - 130	16	21
Tetrachloroethene	1.0	U	10.0	10.2		ug/L		102	51 - 136	4	23
trans-1,2-Dichloroethene	0.37	J	10.0	8.81		ug/L		84	68 - 133	15	24
Trichloroethene	1.0	U	10.0	10.7		ug/L		107	55 - 131	8	23
Vinyl chloride	0.26	J	10.0	8.97		ug/L		87	43 - 154	11	29

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 121*
4-Bromofluorobenzene (Surr)	*90*		*59 - 120*
Toluene-d8 (Surr)	*82*		*70 - 123*
Dibromofluoromethane (Surr)	*116*		*75 - 128*

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

Lab Sample ID: MB 240-387287/5
Matrix: Water
Analysis Batch: 387287

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			06/20/19 12:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 125*		*06/20/19 12:10*	*1*

Lab Sample ID: LCS 240-387287/4
Matrix: Water
Analysis Batch: 387287

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	9.56		ug/L		96	59 - 131		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 125*

Lab Sample ID: 240-114521-C-3 MS
Matrix: Water
Analysis Batch: 387287

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	2.5		10.0	13.9		ug/L		114	52 - 129		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 125*

Lab Sample ID: 240-114521-C-3 MSD
Matrix: Water
Analysis Batch: 387287

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	2.5		10.0	12.9		ug/L		104	52 - 129	8	13

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 125*

Client: ARCADIS U.S., Inc.
Job ID: 240-114522-1
Project/Site: Ford LTP Livonia MI - E203728

GC/MS VOA

Analysis Batch: 387287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114522-1	MW-43_061519	Total/NA	Water	8260B SIM	
240-114522-2	MW-52_061519	Total/NA	Water	8260B SIM	
240-114522-3	MW-41_061519	Total/NA	Water	8260B SIM	
MB 240-387287/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-387287/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-114521-C-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-114521-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 387956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114522-1	MW-43_061519	Total/NA	Water	8260B	
240-114522-2	MW-52_061519	Total/NA	Water	8260B	
240-114522-4	TRIP BLANK	Total/NA	Water	8260B	
MB 240-387956/7	Method Blank	Total/NA	Water	8260B	
LCS 240-387956/4	Lab Control Sample	Total/NA	Water	8260B	
240-114521-K-3 MS	Matrix Spike	Total/NA	Water	8260B	
240-114521-L-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 388086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114522-3	MW-41_061519	Total/NA	Water	8260B	
MB 240-388086/7	Method Blank	Total/NA	Water	8260B	
LCS 240-388086/4	Lab Control Sample	Total/NA	Water	8260B	
240-114523-E-1 MS	Matrix Spike	Total/NA	Water	8260B	
240-114523-H-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 240-114522-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: MW-43_061519
Lab Sample ID: 240-114522-1
Date Collected: 06/15/19 14:24
Matrix: Water
Date Received: 06/18/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387956	06/25/19 01:11	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	387287	06/20/19 20:33	SAM	TAL CAN

Client Sample ID: MW-52_061519
Lab Sample ID: 240-114522-2
Date Collected: 06/15/19 15:32
Matrix: Water
Date Received: 06/18/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387956	06/25/19 01:37	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	387287	06/20/19 20:58	SAM	TAL CAN

Client Sample ID: MW-41_061519
Lab Sample ID: 240-114522-3
Date Collected: 06/15/19 16:46
Matrix: Water
Date Received: 06/18/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	388086	06/25/19 16:44	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	387287	06/20/19 21:22	SAM	TAL CAN

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-114522-4
Date Collected: 06/15/19 00:00
Matrix: Water
Date Received: 06/18/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387956	06/25/19 02:30	LRW	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: 240-114522-1
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	06-30-20
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.

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: N.Canton — 4101 Shuffel Street NW/ North Canton, OH 44720 / 330-497-9396

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Angela DeGrandis	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-320-0065	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		TAT if different from below ☐ 3 weeks ☐ 2 weeks 5 Day ☑ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240				Lab sampling
Project Name: Ford LTP				Job/SDG No:
Project Number: MI001454.0003 0004.0001	Method of Shipment/Carrier: TA PICKUP			
PO # MI001454.0003 0001	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAcf/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	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:
MW-43 — 061519	6/15/19	1424		X						X					N	G	X	X	X	X	X	X	X	6 CONTAINERS
MW-52 — 061519	6/15/19	1532		X						X					N	G	X	X	X	X	X	X	X	6 CONTAINERS
MW-47 — 061519	6/15/19	1646		X						X					N	G	X	X	X	X	X	X	X	6 CONTAINERS
TRIP BLANK	—	—		X																				1 CONTAINER

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 jim.tomalia@cadena.com. Cadena ~~Project~~ E203728
Level IV Reporting.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	6/15/19	Null Cold STORAGE	ARCADIS	6/15/19
Relinquished by: NOVI COLD STORAGE	Company: ARCADIS	Date/Time: 06/17/19 11:43	Received by:	Company: ETA	Date/Time: 6-17-19 1143
Relinquished by:	Company: ETA	Date/Time: 6-17-19 1234	Received in Laboratory by:	Company: ETAC	Date/Time: 6-18-19 840

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 114522**
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by:

Cooler Received on 6-18-19 Opened on 6-18-19

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

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

TestAmerica Cooler # 7A 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

☑ See Multiple Cooler Form

1. Cooler temperature upon receipt
   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 3 (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 # 83170ZVB (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: M.S.

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: _____

Login # : ______________

TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	3.0	3.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.6	3.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.8	3.9	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
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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
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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