

ANALYTICAL REPORT

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

Laboratory Job ID: 240-119520-1

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:
10/10/2019 3:46:06 PM

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

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

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Definitions/Glossary

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

Job ID: 240-119520-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance 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)

Case Narrative

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

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Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-119520-1

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 9/26/2019 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.0° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-19_092419 (240-119520-1), MW-28_092419 (240-119520-2) and TRIP BLANK (1) (240-119520-3) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/04/2019.

1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane and 1,3,5-Trimethylbenzene failed the recovery criteria low for LCS 240-403996/4. Methyl acetate failed the recovery criteria high. Refer to the QC report for details.

The laboratory control sample (LCS) analyzed in batch 240-403996 was below the recovery control criteria for multiple analytes. This variance only affects results measured above the reporting limit. A MRL standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. This demonstrates the analyte reporting limit is valid, and it is acceptable to report ND results (non-detects). The samples associated with the LCS were non-detects for the affected analytes; therefore, the results were reported. The following samples are impacted: MW-19_092419 (240-119520-1), MW-28_092419 (240-119520-2), TRIP BLANK (1) (240-119520-3) and (LCS 240-403996/4).

The laboratory control sample (LCS) for analytical batch 240-403996 recovered outside control limits for the following analyte: Methyl acetate. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data has been reported:

Case Narrative

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

Job ID: 240-119520-1

Job ID: 240-119520-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

MW-19_092419 (240-119520-1), MW-28_092419 (240-119520-2), TRIP BLANK (1) (240-119520-3) and (LCS 240-403996/4).

There was an MS/MSD analyzed in batch 240-403996 but could not be reported because the associated sample needed reanalyzed in a different batch: MW-19_092419 (240-119520-1), MW-28_092419 (240-119520-2) and TRIP BLANK (1) (240-119520-3).

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-19_092419 (240-119520-1) and MW-28_092419 (240-119520-2) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 10/02/2019 and 10/03/2019.

Sample MW-19_092419 (240-119520-1)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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



Method Summary

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

Job ID: 240-119520-1

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 Livonia MI - E203728

Job ID: 240-119520-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-119520-1	MW-19_092419	Water	09/24/19 12:47	09/26/19 09:50	
240-119520-2	MW-28_092419	Water	09/24/19 14:27	09/26/19 09:50	
240-119520-3	TRIP BLANK (1)	Water	09/24/19 00:00	09/26/19 09:50	

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

Detection Summary

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

Job ID: 240-119520-1

Client Sample ID: MW-19_092419

Lab Sample ID: 240-119520-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	350		10	4.3	ug/L	5		8260B SIM	Total/NA
cis-1,2-Dichloroethene	0.99	J	1.0	0.16	ug/L	1		8260B	Total/NA
Trichloroethene	0.54	J	1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	1.2		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-28_092419

Lab Sample ID: 240-119520-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.93	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
1,1-Dichloroethene	1.2		1.0	0.19	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	0.98	J	1.0	0.16	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.27	J	1.0	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	0.64	J	1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119520-3

No Detections.

This Detection Summary does not include radiochemical test results.

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Client Sample Results

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

Job ID: 240-119520-1

Client Sample ID: MW-19_092419

Lab Sample ID: 240-119520-1

Date Collected: 09/24/19 12:47

Matrix: Water

Date Received: 09/26/19 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	350		10	4.3	ug/L			10/03/19 12:35	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	73		63 - 125		10/03/19 12:35	5

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			10/04/19 04:32	1
cis-1,2-Dichloroethene	0.99	J	1.0	0.16	ug/L			10/04/19 04:32	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/04/19 04:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/04/19 04:32	1
Trichloroethene	0.54	J	1.0	0.10	ug/L			10/04/19 04:32	1
Vinyl chloride	1.2		1.0	0.20	ug/L			10/04/19 04:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		59 - 120		10/04/19 04:32	1
Dibromofluoromethane (Surr)	104		75 - 128		10/04/19 04:32	1
1,2-Dichloroethane-d4 (Surr)	109		70 - 121		10/04/19 04:32	1
Toluene-d8 (Surr)	93		70 - 123		10/04/19 04:32	1

Client Sample Results

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

Job ID: 240-119520-1

Client Sample ID: MW-28_092419

Lab Sample ID: 240-119520-2

Date Collected: 09/24/19 14:27

Matrix: Water

Date Received: 09/26/19 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.93	J	2.0	0.86	ug/L			10/02/19 16:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	77		63 - 125		10/02/19 16:21	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.2		1.0	0.19	ug/L			10/04/19 04:57	1
cis-1,2-Dichloroethene	0.98	J	1.0	0.16	ug/L			10/04/19 04:57	1
Tetrachloroethene	0.27	J	1.0	0.15	ug/L			10/04/19 04:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/04/19 04:57	1
Trichloroethene	0.64	J	1.0	0.10	ug/L			10/04/19 04:57	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/04/19 04:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		59 - 120		10/04/19 04:57	1
Dibromofluoromethane (Surr)	102		75 - 128		10/04/19 04:57	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 121		10/04/19 04:57	1
Toluene-d8 (Surr)	95		70 - 123		10/04/19 04:57	1

Client Sample Results

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

Job ID: 240-119520-1

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119520-3

Date Collected: 09/24/19 00:00

Matrix: Water

Date Received: 09/26/19 09:50

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			10/04/19 05:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/04/19 05:23	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/04/19 05:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/04/19 05:23	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/04/19 05:23	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/04/19 05:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	78		59 - 120		10/04/19 05:23	1
Dibromofluoromethane (Surr)	99		75 - 128		10/04/19 05:23	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 121		10/04/19 05:23	1
Toluene-d8 (Surr)	95		70 - 123		10/04/19 05:23	1

Surrogate Summary

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

Job ID: 240-119520-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	DCA	TOL
		(59-120)	(75-128)	(70-121)	(70-123)
240-119520-1	MW-19_092419	79	104	109	93
240-119520-2	MW-28_092419	75	102	103	95
240-119520-3	TRIP BLANK (1)	78	99	99	95
LCS 240-403996/4	Lab Control Sample	81	106	102	96
MB 240-403996/7	Method Blank	77	103	101	96

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

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

TOL = Toluene-d8 (Surr)

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(63-125)
240-119520-1	MW-19_092419	73
240-119520-2	MW-28_092419	77
240-119520-2 MS	MW-28_092419	77
240-119520-2 MSD	MW-28_092419	76
240-119556-B-5 MS	Matrix Spike	72
240-119556-B-5 MSD	Matrix Spike Duplicate	75
LCS 240-403698/4	Lab Control Sample	75
LCS 240-403886/4	Lab Control Sample	74
MB 240-403698/5	Method Blank	75
MB 240-403886/5	Method Blank	75

Surrogate Legend

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

QC Sample Results

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

Job ID: 240-119520-1

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

Lab Sample ID: MB 240-403996/7
Matrix: Water
Analysis Batch: 403996

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			10/04/19 02:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/04/19 02:25	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/04/19 02:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/04/19 02:25	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/04/19 02:25	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/04/19 02:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	77		59 - 120		10/04/19 02:25	1
Dibromofluoromethane (Surr)	103		75 - 128		10/04/19 02:25	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 121		10/04/19 02:25	1
Toluene-d8 (Surr)	96		70 - 123		10/04/19 02:25	1

Lab Sample ID: LCS 240-403996/4
Matrix: Water
Analysis Batch: 403996

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.16		ug/L		92	69 - 134
1,1,1,2-Tetrachloroethane	10.0	6.43	*	ug/L		64	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.5		ug/L		105	50 - 156
1,1,2-Trichloroethane	10.0	7.70	*	ug/L		77	78 - 133
1,1-Dichloroethane	10.0	12.2		ug/L		122	75 - 133
1,1-Dichloroethene	10.0	8.51		ug/L		85	65 - 139
1,2,4-Trichlorobenzene	10.0	8.35		ug/L		84	42 - 133
1,2,4-Trimethylbenzene	10.0	7.66		ug/L		77	74 - 120
1,2-Dibromo-3-Chloropropane	10.0	8.86		ug/L		89	46 - 132
1,2-Dibromoethane	10.0	8.18		ug/L		82	77 - 123
1,2-Dichlorobenzene	10.0	8.89		ug/L		89	78 - 120
1,2-Dichloroethane	10.0	11.7		ug/L		117	71 - 135
1,2-Dichloropropane	10.0	11.6		ug/L		116	78 - 133
1,3,5-Trimethylbenzene	10.0	7.41	*	ug/L		74	75 - 121
1,3-Dichlorobenzene	10.0	9.01		ug/L		90	78 - 120
1,4-Dichlorobenzene	10.0	8.55		ug/L		85	78 - 120
2-Butanone (MEK)	20.0	22.9		ug/L		115	39 - 163
2-Hexanone	20.0	20.3		ug/L		102	43 - 148
4-Methyl-2-pentanone (MIBK)	20.0	22.9		ug/L		114	49 - 143
Acetone	20.0	27.0		ug/L		135	21 - 162
Benzene	10.0	9.32		ug/L		93	80 - 123
Bromodichloromethane	10.0	8.39		ug/L		84	77 - 125
Bromoform	10.0	8.96		ug/L		90	49 - 141
Bromomethane	10.0	8.56		ug/L		86	41 - 175
Carbon disulfide	10.0	8.28		ug/L		83	60 - 138
Carbon tetrachloride	10.0	10.0		ug/L		100	63 - 140
Chlorobenzene	10.0	8.35		ug/L		84	80 - 121
Chloroethane	10.0	10.4		ug/L		104	33 - 173
Chloroform	10.0	8.55		ug/L		85	79 - 127

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119520-1

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

Lab Sample ID: LCS 240-403996/4
Matrix: Water
Analysis Batch: 403996

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloromethane	10.0	10.3		ug/L		103	54 - 143
cis-1,2-Dichloroethene	10.0	9.62		ug/L		96	76 - 128
cis-1,3-Dichloropropene	10.0	7.75		ug/L		77	64 - 132
Cyclohexane	10.0	13.8		ug/L		138	58 - 145
Dibromochloromethane	10.0	8.39		ug/L		84	70 - 132
Dichlorodifluoromethane	10.0	5.76		ug/L		58	29 - 148
Diethyl ether	10.0	14.2		ug/L		142	70 - 146
Ethylbenzene	10.0	8.35		ug/L		84	80 - 120
Isopropylbenzene	10.0	8.20		ug/L		82	74 - 120
Methyl acetate	20.0	29.3 *		ug/L		147	52 - 145
Methyl tert-butyl ether	10.0	7.90		ug/L		79	51 - 133
Methylcyclohexane	10.0	9.06		ug/L		91	60 - 125
Methylene Chloride	10.0	7.71		ug/L		77	70 - 134
Styrene	10.0	7.92		ug/L		79	79 - 120
Tetrachloroethene	10.0	10.9		ug/L		109	74 - 130
Toluene	10.0	8.58		ug/L		86	78 - 129
trans-1,2-Dichloroethene	10.0	8.76		ug/L		88	78 - 133
trans-1,3-Dichloropropene	10.0	6.65		ug/L		66	55 - 128
Trichloroethene	10.0	10.6		ug/L		106	76 - 125
Trichlorofluoromethane	10.0	8.84		ug/L		88	51 - 164
Vinyl chloride	10.0	10.2		ug/L		102	58 - 143
Xylenes, Total	20.0	16.9		ug/L		84	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	81		59 - 120
Dibromofluoromethane (Surr)	106		75 - 128
1,2-Dichloroethane-d4 (Surr)	102		70 - 121
Toluene-d8 (Surr)	96		70 - 123

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

Lab Sample ID: MB 240-403698/5
Matrix: Water
Analysis Batch: 403698

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			10/02/19 13:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	75		63 - 125		10/02/19 13:50	1

Lab Sample ID: LCS 240-403698/4
Matrix: Water
Analysis Batch: 403698

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	11.8		ug/L		118	59 - 131

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-119520-1

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

Lab Sample ID: LCS 240-403698/4
Matrix: Water
Analysis Batch: 403698

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

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	75		63 - 125

Lab Sample ID: 240-119520-2 MS
Matrix: Water
Analysis Batch: 403698

Client Sample ID: MW-28_092419
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
1,4-Dioxane	0.93	J	10.0	11.7		ug/L		108		52 - 129
Surrogate	MS	MS								
1,2-Dichloroethane-d4 (Surr)	%Recovery	Qualifier	Limits							
	77		63 - 125							

Lab Sample ID: 240-119520-2 MSD
Matrix: Water
Analysis Batch: 403698

Client Sample ID: MW-28_092419
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
1,4-Dioxane	0.93	J	10.0	11.7		ug/L		108		52 - 129	0	13
Surrogate	MSD	MSD										
1,2-Dichloroethane-d4 (Surr)	%Recovery	Qualifier	Limits									
	76		63 - 125									

Lab Sample ID: MB 240-403886/5
Matrix: Water
Analysis Batch: 403886

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			10/03/19 11:20	1
Surrogate	MB	MB							
1,2-Dichloroethane-d4 (Surr)	%Recovery	Qualifier	Limits						
	75		63 - 125					10/03/19 11:20	1

Lab Sample ID: LCS 240-403886/4
Matrix: Water
Analysis Batch: 403886

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

Analyte			Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
			Added	Result	Qualifier					
1,4-Dioxane			10.0	11.6		ug/L		116		59 - 131
Surrogate	LCS	LCS								
1,2-Dichloroethane-d4 (Surr)	%Recovery	Qualifier	Limits							
	74		63 - 125							

QC Sample Results

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

Job ID: 240-119520-1

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

Lab Sample ID: 240-119556-B-5 MS

Matrix: Water

Analysis Batch: 403886

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	11.3		ug/L		113	52 - 129
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	72		63 - 125						

Lab Sample ID: 240-119556-B-5 MSD

Matrix: Water

Analysis Batch: 403886

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	11.9		ug/L		119	52 - 129	5	13
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	75		63 - 125								

QC Association Summary

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

Job ID: 240-119520-1

GC/MS VOA

Analysis Batch: 403698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119520-2	MW-28_092419	Total/NA	Water	8260B SIM	
MB 240-403698/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-403698/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119520-2 MS	MW-28_092419	Total/NA	Water	8260B SIM	
240-119520-2 MSD	MW-28_092419	Total/NA	Water	8260B SIM	

Analysis Batch: 403886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119520-1	MW-19_092419	Total/NA	Water	8260B SIM	
MB 240-403886/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-403886/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119556-B-5 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-119556-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 403996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119520-1	MW-19_092419	Total/NA	Water	8260B	
240-119520-2	MW-28_092419	Total/NA	Water	8260B	
240-119520-3	TRIP BLANK (1)	Total/NA	Water	8260B	
MB 240-403996/7	Method Blank	Total/NA	Water	8260B	
LCS 240-403996/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

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

Job ID: 240-119520-1

Client Sample ID: MW-19_092419

Lab Sample ID: 240-119520-1

Date Collected: 09/24/19 12:47

Matrix: Water

Date Received: 09/26/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403996	10/04/19 04:32	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		5	403886	10/03/19 12:35	SAM	TAL CAN

Client Sample ID: MW-28_092419

Lab Sample ID: 240-119520-2

Date Collected: 09/24/19 14:27

Matrix: Water

Date Received: 09/26/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403996	10/04/19 04:57	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	403698	10/02/19 16:21	SAM	TAL CAN

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119520-3

Date Collected: 09/24/19 00:00

Matrix: Water

Date Received: 09/26/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403996	10/04/19 05:23	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.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119520-1

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	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
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	01-12-20
West Virginia DEP	State	210	12-31-19

4315.0
3-2/3.9

Chain of Custody Record

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

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Project Number: M1001454.0004.0001B PO # M1001454.0004.0001B		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other		Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kris@hinskey@arcadis.com		Site Contact: Rachel Bielek Telephone: 244-946-6331		Lab Contact: Mike DelMonico Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No: _____ of _____ COCs			
Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT (if different from below) 10 day <input type="checkbox"/> 3 weeks <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day <input type="checkbox"/>		Containers & Preservatives H2SO4 <input type="checkbox"/> HNO3 <input type="checkbox"/> HCl <input type="checkbox"/> NaOH <input type="checkbox"/> ZnAc <input type="checkbox"/> Other: _____ Uppers <input type="checkbox"/> Other: _____		Matrix Air <input type="checkbox"/> Aqueous <input type="checkbox"/> Sediment <input type="checkbox"/> Solid <input type="checkbox"/> Other: _____		Filtered Sample (Y/N) Composite C/Grab C <input type="checkbox"/>		VOCs 8260B 1,4-Dioxane 8260B SIM <input type="checkbox"/>		Analyses	
Sample Identification MW-19-092419 MW-28-092419 Trip Blank (1)		Sample Date 9/24/19 ↓ 1427		Sample Time 1247 1427		<input checked="" type="checkbox"/> NG <input checked="" type="checkbox"/> NG		<input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> X		Sample Specific Notes / Special Instructions: 6 bottles 6 bottles			
<div style="text-align: center;">  240-119520 Chain of Custody </div>													
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown													
Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203728 Level IV Reporting.													
Relinquished by: Julie McElroy		Company: Arcadis		Date/Time: 9/24/19 1820		Received by: Nivi Goh		Company: Arcadis		Date/Time: 9/24/19 1820			
Relinquished by: Kaitlyn		Company: Arcadis		Date/Time: 09/25/19 11:35		Received by: Nelly Gassow		Company: ATAL-MI		Date/Time: 9/25/19 1135			
Relinquished by: Nelly Gassow		Company: ATAL-MI		Date/Time: 9/25/19 1200		Received in Laboratory by: [Signature]		Company: [Signature]		Date/Time: 9-26-19 850			

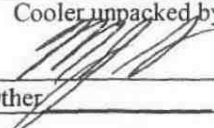
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Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility


Login # : 119520

Client Arcadi's Site Name _____
 Cooler Received on 7-26-19 Opened on 7-26-19
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Cooler unpacked by:


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

TestAmerica Cooler # 111 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. _____ °C Corrected Cooler Temp. _____ °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 2 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -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?
 If yes, Questions 12-16 have been checked at the originating laboratory.
 Yes No NA
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC991818
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this.
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ 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:
MS

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: _____

