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ANALYTICAL REPORT

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

Laboratory Job ID: 240-119512-1
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:
10/10/2019 2:32:19 PM

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

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

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Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 240-119512-1
Project/Site: Ford LTP Livonia MI - E203728

Qualifiers

GC/MS VOA

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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: 240-119512-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-119512-1

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 3.9º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-32_092419 (240-119512-1), MW-39_092419 (240-119512-2) and TRIP BLANK (240-119512-3) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/03/2019.

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-32_092419 (240-119512-1) and MW-39_092419 (240-119512-2) 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.

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: 240-119512-1
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: 240-119512-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-119512-1	MW-32_092419	Water	09/24/19 13:39	09/26/19 09:50	
240-119512-2	MW-39_092419	Water	09/24/19 15:02	09/26/19 09:50	
240-119512-3	TRIP BLANK	Water	09/24/19 00:00	09/26/19 09:50	

Detection Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-119512-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: MW-32_092419
Lab Sample ID: 240-119512-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.48	J	1.0	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	0.43	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-39_092419
Lab Sample ID: 240-119512-2

No Detections.

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-119512-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Job ID: 240-119512-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: MW-32_092419
Lab Sample ID: 240-119512-1
Date Collected: 09/24/19 13:39
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	2.0	U	2.0	0.86	ug/L			10/02/19 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 125*		*10/02/19 18:35*	*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			10/03/19 17:22	1
cis-1,2-Dichloroethene	**0.48**	**J**	1.0	0.16	ug/L			10/03/19 17:22	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/03/19 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/03/19 17:22	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/03/19 17:22	1
Vinyl chloride	**0.43**	**J**	1.0	0.20	ug/L			10/03/19 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*73*		*59 - 120*		*10/03/19 17:22*	*1*
Dibromofluoromethane (Surr)	*114*		*75 - 128*		*10/03/19 17:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*10/03/19 17:22*	*1*
Toluene-d8 (Surr)	*89*		*70 - 123*		*10/03/19 17:22*	*1*

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

Job ID: 240-119512-1

Client Sample ID: MW-39_092419
Date Collected: 09/24/19 15:02
Date Received: 09/26/19 09:50

Lab Sample ID: 240-119512-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			10/02/19 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 125*		*10/02/19 18:59*	*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			10/03/19 17:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/03/19 17:46	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/03/19 17:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/03/19 17:46	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/03/19 17:46	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/03/19 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*74*		*59 - 120*		*10/03/19 17:46*	*1*
Dibromofluoromethane (Surr)	*118*		*75 - 128*		*10/03/19 17:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*10/03/19 17:46*	*1*
Toluene-d8 (Surr)	*91*		*70 - 123*		*10/03/19 17:46*	*1*

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

Job ID: 240-119512-1

Client Sample ID: TRIP BLANK
Date Collected: 09/24/19 00:00
Date Received: 09/26/19 09:50

Lab Sample ID: 240-119512-3
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			10/03/19 18:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/03/19 18:10	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/03/19 18:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/03/19 18:10	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/03/19 18:10	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/03/19 18:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*74*		*59 - 120*		*10/03/19 18:10*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*10/03/19 18:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 121*		*10/03/19 18:10*	*1*
Toluene-d8 (Surr)	*92*		*70 - 123*		*10/03/19 18:10*	*1*

Surrogate Summary

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

Job ID: 240-119512-1

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 (59-120)	DBFM (75-128)	DCA (70-121)	TOL (70-123)
240-119512-1	MW-32_092419	73	114	98	89
240-119512-2	MW-39_092419	74	118	98	91
240-119512-3	TRIP BLANK	74	109	93	92
240-119518-E-3 MS	Matrix Spike	93	97	82	99
240-119518-F-3 MSD	Matrix Spike Duplicate	93	99	86	100
LCS 240-403913/4	Lab Control Sample	98	102	81	101
MB 240-403913/7	Method Blank	74	111	92	90

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)
240-119512-1	MW-32_092419	103
240-119512-2	MW-39_092419	101
240-119521-C-5 MS	Matrix Spike	84
240-119521-C-5 MSD	Matrix Spike Duplicate	92
LCS 240-403637/4	Lab Control Sample	99
MB 240-403637/5	Method Blank	99

Surrogate Legend

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

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

Lab Sample ID: MB 240-403913/7
Matrix: Water
Analysis Batch: 403913

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			10/03/19 14:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/03/19 14:35	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/03/19 14:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/03/19 14:35	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/03/19 14:35	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/03/19 14:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*74*		*59 - 120*		*10/03/19 14:35*	*1*
Dibromofluoromethane (Surr)	*111*		*75 - 128*		*10/03/19 14:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 121*		*10/03/19 14:35*	*1*
Toluene-d8 (Surr)	*90*		*70 - 123*		*10/03/19 14:35*	*1*

Lab Sample ID: LCS 240-403913/4
Matrix: Water
Analysis Batch: 403913

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	9.44		ug/L		94	69 - 134
1,1,2,2-Tetrachloroethane	10.0	9.29		ug/L		93	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	11.9		ug/L		119	50 - 156
1,1,2-Trichloroethane	10.0	10.0		ug/L		100	78 - 133
1,1-Dichloroethane	10.0	9.30		ug/L		93	75 - 133
1,1-Dichloroethene	10.0	9.72		ug/L		97	65 - 139
1,2,4-Trichlorobenzene	10.0	9.32		ug/L		93	42 - 133
1,2,4-Trimethylbenzene	10.0	8.54		ug/L		85	74 - 120
1,2-Dibromo-3-Chloropropane	10.0	9.92		ug/L		99	46 - 132
1,2-Dibromoethane	10.0	10.2		ug/L		102	77 - 123
1,2-Dichlorobenzene	10.0	9.42		ug/L		94	78 - 120
1,2-Dichloroethane	10.0	8.62		ug/L		86	71 - 135
1,2-Dichloropropane	10.0	9.06		ug/L		91	78 - 133
1,3,5-Trimethylbenzene	10.0	8.63		ug/L		86	75 - 121
1,3-Dichlorobenzene	10.0	9.74		ug/L		97	78 - 120
1,4-Dichlorobenzene	10.0	9.30		ug/L		93	78 - 120
2-Butanone (MEK)	20.0	19.6		ug/L		98	39 - 163
2-Hexanone	20.0	19.4		ug/L		97	43 - 148
4-Methyl-2-pentanone (MIBK)	20.0	20.1		ug/L		100	49 - 143
Acetone	20.0	19.2		ug/L		96	21 - 162
Benzene	10.0	9.52		ug/L		95	80 - 123
Bromodichloromethane	10.0	9.50		ug/L		95	77 - 125
Bromoform	10.0	11.3		ug/L		113	49 - 141
Bromomethane	10.0	6.25		ug/L		63	41 - 175
Carbon disulfide	10.0	9.96		ug/L		100	60 - 138
Carbon tetrachloride	10.0	10.6		ug/L		106	63 - 140
Chlorobenzene	10.0	10.2		ug/L		102	80 - 121
Chloroethane	10.0	5.10		ug/L		51	33 - 173
Chloroform	10.0	9.14		ug/L		91	79 - 127

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

Lab Sample ID: LCS 240-403913/4
Matrix: Water
Analysis Batch: 403913

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	6.06		ug/L		61	54 - 143
cis-1,2-Dichloroethene	10.0	10.1		ug/L		101	76 - 128
cis-1,3-Dichloropropene	10.0	9.91		ug/L		99	64 - 132
Cyclohexane	10.0	9.96		ug/L		100	58 - 145
Dibromochloromethane	10.0	10.7		ug/L		107	70 - 132
Dichlorodifluoromethane	10.0	6.73		ug/L		67	29 - 148
Diethyl ether	10.0	9.11		ug/L		91	70 - 146
Ethylbenzene	10.0	10.7		ug/L		107	80 - 120
Isopropylbenzene	10.0	10.3		ug/L		103	74 - 120
Methyl acetate	20.0	18.8		ug/L		94	52 - 145
Methyl tert-butyl ether	10.0	9.23		ug/L		92	51 - 133
Methylcyclohexane	10.0	9.72		ug/L		97	60 - 125
Methylene Chloride	10.0	9.70		ug/L		97	70 - 134
Styrene	10.0	10.7		ug/L		107	79 - 120
Tetrachloroethene	10.0	10.6		ug/L		106	74 - 130
Toluene	10.0	10.3		ug/L		103	78 - 129
trans-1,2-Dichloroethene	10.0	10.4		ug/L		104	78 - 133
trans-1,3-Dichloropropene	10.0	9.09		ug/L		91	55 - 128
Trichloroethene	10.0	10.7		ug/L		107	76 - 125
Trichlorofluoromethane	10.0	8.19		ug/L		82	51 - 164
Vinyl chloride	10.0	5.99		ug/L		60	58 - 143
Xylenes, Total	20.0	21.7		ug/L		109	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*59 - 120*
Dibromofluoromethane (Surr)	*102*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*81*		*70 - 121*
Toluene-d8 (Surr)	*101*		*70 - 123*

Lab Sample ID: 240-119518-E-3 MS
Matrix: Water
Analysis Batch: 403913

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	9.30		ug/L		93	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	10.0		ug/L		100	64 - 130
Tetrachloroethene	1.0	U	10.0	8.00		ug/L		80	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	10.0		ug/L		100	68 - 133
Trichloroethene	0.17	J	10.0	9.53		ug/L		94	55 - 131
Vinyl chloride	1.0	U	10.0	6.05		ug/L		60	43 - 154

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*59 - 120*
Dibromofluoromethane (Surr)	*97*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 121*
Toluene-d8 (Surr)	*99*		*70 - 123*

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

Lab Sample ID: 240-119518-F-3 MSD
Matrix: Water
Analysis Batch: 403913

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	8.56		ug/L		86	53 - 140	8	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.55		ug/L		96	64 - 130	5	21
Tetrachloroethene	1.0	U	10.0	6.98		ug/L		70	51 - 136	14	23
trans-1,2-Dichloroethene	1.0	U	10.0	9.10		ug/L		91	68 - 133	10	24
Trichloroethene	0.17	J	10.0	8.47		ug/L		83	55 - 131	12	23
Vinyl chloride	1.0	U	10.0	5.65		ug/L		57	43 - 154	7	29

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*59 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 121*
Toluene-d8 (Surr)	*100*		*70 - 123*

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

Lab Sample ID: MB 240-403637/5
Matrix: Water
Analysis Batch: 403637

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 11:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 125*		*10/02/19 11:53*	*1*

Lab Sample ID: LCS 240-403637/4
Matrix: Water
Analysis Batch: 403637

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	10.4		ug/L		104	59 - 131		

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

Lab Sample ID: 240-119521-C-5 MS
Matrix: Water
Analysis Batch: 403637

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 * F1 F2	10.0	4.73	F1 *	ug/L		47	52 - 129		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*63 - 125*

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

Lab Sample ID: 240-119521-C-5 MSD
Client Sample ID: Matrix Spike Duplicate
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 403637

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 * F1 F2	10.0	5.43	F2 *	ug/L		54	52 - 129	14	13

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 125*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-119512-1
Project/Site: Ford LTP Livonia MI - E203728

GC/MS VOA

Analysis Batch: 403637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119512-1	MW-32_092419	Total/NA	Water	8260B SIM	
240-119512-2	MW-39_092419	Total/NA	Water	8260B SIM	
MB 240-403637/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-403637/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119521-C-5 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-119521-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 403913

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119512-1	MW-32_092419	Total/NA	Water	8260B	
240-119512-2	MW-39_092419	Total/NA	Water	8260B	
240-119512-3	TRIP BLANK	Total/NA	Water	8260B	
MB 240-403913/7	Method Blank	Total/NA	Water	8260B	
LCS 240-403913/4	Lab Control Sample	Total/NA	Water	8260B	
240-119518-E-3 MS	Matrix Spike	Total/NA	Water	8260B	
240-119518-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 240-119512-1
Project/Site: Ford LTP Livonia MI - E203728

Client Sample ID: MW-32_092419
Lab Sample ID: 240-119512-1
Date Collected: 09/24/19 13:39
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	403913	10/03/19 17:22	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	403637	10/02/19 18:35	SAM	TAL CAN

Client Sample ID: MW-39_092419
Lab Sample ID: 240-119512-2
Date Collected: 09/24/19 15:02
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	403913	10/03/19 17:46	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	403637	10/02/19 18:59	SAM	TAL CAN

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-119512-3
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	403913	10/03/19 18:10	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: 240-119512-1
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	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

MICHIGAN
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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

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Rachel Bielak	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 244-946-6331	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com			
Phone: 248-994-2240				
Project Name: Ford LTP				
Project Number: MI001454.0004.0001B	Method of Shipment/Carrier:			
PO # MI001454.0004.0001B	Shipping/Tracking No:			

Analysis Turnaround Time

TAT if different from below: 10 day

☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

For lab use only: Walk-in client ____ Lab sampling ____ Job/SDG No: ____

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	VOCs 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
MW-32_092419	9/24/19	1339		X						X							X	X	6 bottles
MW-39_092419	9/24/19	1502		X						X							X	X	6 bottles
Trip Blank																			

240-119512 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 jim.tomalia@cadena.com. Cadena #E203728
Level IV Reporting.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Xenia Chan	Arcadis	9/24/19/1546		Arcadis	9/24/19/1546
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	9/24/19/1820	Novi Cold Storage	Arcadis	9/24/19/1820
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Relinquished	ARCADIS	09/25/19 1137	Molly Maslow	ETAL-MI	9/25/19 1137
Molly Maslow	ETAL-MI	9/25/19 1250		ETAC	9-26-19 950

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 119512

Client Arcadis Site Name _____

Cooler unpacked by:

Cooler Received on 9-26-19 Opened on 9-26-19

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

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

TestAmerica Cooler # 18 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)
   -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# **HC991818**
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: Marston

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 # : ______________

Eurofins 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-10 IR-11~~	~~4.3~~	~~5.0~~	~~Wet Ice Blue Ice Dry Ice Water None~~
TA Client Box Other	IR-10 IR-11	3.2	3.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None

This Job

☐ See Temperature Excursion Form

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