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ANALYTICAL REPORT

Eurofins TestAmerica, Edison
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Laboratory Job ID: 460-197009-1
Client Project/Site: Ford LTP Off-Site

For:
ARCADIS U.S., Inc.
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Attn: Kristoffer Hinskey

Authorized for release by:
12/4/2019 4:11:56 PM

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Definitions/Glossary

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

Job ID: 460-197009-1

Qualifiers

GC/MS VOA

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

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: 460-197009-1

Laboratory: Eurofins TestAmerica, Edison

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Off-Site

Report Number: 460-197009-1

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, Edison 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 11/19/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.4º C and 3.5º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (460-197009-1) and MW-117S_111519 (460-197009-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 11/28/2019 and 11/29/2019.

The continuing calibration verification (CCV) associated with batch 460-658953 recovered above the upper control limit for Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Sample MW-117S_111519 (460-197009-2) was analyzed for Volatile organic compounds (GC/MS) in accordance with SW-846 Method 8260C SIM. The sample was analyzed on 11/27/2019.

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

Detection Summary

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

Job ID: 460-197009-1

Client Sample ID: TRIP BLANK — Lab Sample ID: 460-197009-1

No Detections.

Client Sample ID: MW-117S_111519 — Lab Sample ID: 460-197009-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	0.28	J	1.0	0.25	ug/L	1		8260C	Total/NA
Trichloroethene	0.57	J	1.0	0.31	ug/L	1		8260C	Total/NA
Vinyl chloride	0.80	J	1.0	0.17	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: TRIP BLANK

Lab Sample ID: 460-197009-1

Date Collected: 11/15/19 00:00

Matrix: Water

Date Received: 11/19/19 09:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/29/19 14:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/29/19 14:45	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/29/19 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/29/19 14:45	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/29/19 14:45	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/29/19 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*74 - 132*		*11/29/19 14:45*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/29/19 14:45*	*1*
Dibromofluoromethane (Surr)	*97*		*72 - 131*		*11/29/19 14:45*	*1*
4-Bromofluorobenzene	*98*		*77 - 124*		*11/29/19 14:45*	*1*

Client Sample ID: MW-117S_111519

Lab Sample ID: 460-197009-2

Date Collected: 11/15/19 13:58

Matrix: Water

Date Received: 11/19/19 09:10

Method: 8260C 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	0.33	ug/L			11/27/19 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*94*		*72 - 133*		*11/27/19 14:16*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/28/19 03:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/28/19 03:36	1
Tetrachloroethene	**0.28**	**J**	1.0	0.25	ug/L			11/28/19 03:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/28/19 03:36	1
Trichloroethene	**0.57**	**J**	1.0	0.31	ug/L			11/28/19 03:36	1
Vinyl chloride	**0.80**	**J**	1.0	0.17	ug/L			11/28/19 03:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*74 - 132*		*11/28/19 03:36*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*11/28/19 03:36*	*1*
Dibromofluoromethane (Surr)	*100*		*72 - 131*		*11/28/19 03:36*	*1*
4-Bromofluorobenzene	*100*		*77 - 124*		*11/28/19 03:36*	*1*

Surrogate Summary

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

Job ID: 460-197009-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	DBFM	BFB
Lab Sample ID	Client Sample ID	(74-132)	(80-120)	(72-131)	(77-124)
460-197009-1	TRIP BLANK	95	97	97	98
460-197009-2	MW-117S_111519	92	98	100	100
LCS 460-658881/3	Lab Control Sample	98	98	101	102
LCS 460-658953/19	Lab Control Sample	93	97	96	100
LCSD 460-658881/4	Lab Control Sample Dup	99	100	101	106
LCSD 460-658953/20	Lab Control Sample Dup	92	97	94	98
MB 460-658881/7	Method Blank	94	101	102	104
MB 460-658953/9	Method Blank	98	91	99	101

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		BFB
Lab Sample ID	Client Sample ID	(72-133)
460-197009-2	MW-117S_111519	94
LCS 460-658641/4	Lab Control Sample	97
LCSD 460-658641/5	Lab Control Sample Dup	95
MB 460-658641/8	Method Blank	95

Surrogate Legend

BFB = 4-Bromofluorobenzene

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 460-658881/7
Matrix: Water
Analysis Batch: 658881

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	0.26	ug/L			11/28/19 02:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/28/19 02:16	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/28/19 02:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/28/19 02:16	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/28/19 02:16	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/28/19 02:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*74 - 132*		*11/28/19 02:16*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/28/19 02:16*	*1*
Dibromofluoromethane (Surr)	*102*		*72 - 131*		*11/28/19 02:16*	*1*
4-Bromofluorobenzene	*104*		*77 - 124*		*11/28/19 02:16*	*1*

Lab Sample ID: LCS 460-658881/3
Matrix: Water
Analysis Batch: 658881

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	20.0	21.5		ug/L		107	74 - 123
cis-1,2-Dichloroethene	20.0	20.9		ug/L		104	80 - 120
Tetrachloroethene	20.0	20.5		ug/L		102	78 - 122
trans-1,2-Dichloroethene	20.0	21.5		ug/L		107	79 - 120
Trichloroethene	20.0	21.2		ug/L		106	77 - 120
Vinyl chloride	20.0	19.1		ug/L		95	62 - 138

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*74 - 132*
Toluene-d8 (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*72 - 131*
4-Bromofluorobenzene	*102*		*77 - 124*

Lab Sample ID: LCSD 460-658881/4
Matrix: Water
Analysis Batch: 658881

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	20.0	22.4		ug/L		112	74 - 123	4	30
cis-1,2-Dichloroethene	20.0	21.0		ug/L		105	80 - 120	1	30
Tetrachloroethene	20.0	21.3		ug/L		107	78 - 122	4	30
trans-1,2-Dichloroethene	20.0	22.1		ug/L		111	79 - 120	3	30
Trichloroethene	20.0	22.4		ug/L		112	77 - 120	5	30
Vinyl chloride	20.0	20.6		ug/L		103	62 - 138	8	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*74 - 132*
Toluene-d8 (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*72 - 131*

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

Lab Sample ID: LCSD 460-658881/4
Matrix: Water
Analysis Batch: 658881

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene	*106*		*77 - 124*

Lab Sample ID: MB 460-658953/9
Matrix: Water
Analysis Batch: 658953

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	0.26	ug/L			11/29/19 09:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/29/19 09:32	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/29/19 09:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/29/19 09:32	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/29/19 09:32	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/29/19 09:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*98*		*74 - 132*		*11/29/19 09:32*	*1*
Toluene-d8 (Surr)	*91*		*80 - 120*		*11/29/19 09:32*	*1*
Dibromofluoromethane (Surr)	*99*		*72 - 131*		*11/29/19 09:32*	*1*
4-Bromofluorobenzene	*101*		*77 - 124*		*11/29/19 09:32*	*1*

Lab Sample ID: LCS 460-658953/19
Matrix: Water
Analysis Batch: 658953

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	20.0	19.7		ug/L		98	74 - 123
cis-1,2-Dichloroethene	20.0	19.4		ug/L		97	80 - 120
Tetrachloroethene	20.0	19.1		ug/L		96	78 - 122
trans-1,2-Dichloroethene	20.0	19.2		ug/L		96	79 - 120
Trichloroethene	20.0	17.2		ug/L		86	77 - 120
Vinyl chloride	20.0	22.1		ug/L		111	62 - 138

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*74 - 132*
Toluene-d8 (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*72 - 131*
4-Bromofluorobenzene	*100*		*77 - 124*

Lab Sample ID: LCSD 460-658953/20
Matrix: Water
Analysis Batch: 658953

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	20.0	19.7		ug/L		99	74 - 123	0	30
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	80 - 120	3	30
Tetrachloroethene	20.0	19.6		ug/L		98	78 - 122	2	30
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	79 - 120	1	30
Trichloroethene	20.0	16.9		ug/L		85	77 - 120	2	30

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

Lab Sample ID: LCSD 460-658953/20
Matrix: Water
Analysis Batch: 658953

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride			20.0	22.5		ug/L		113	62 - 138	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*74 - 132*
Toluene-d8 (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*94*		*72 - 131*
4-Bromofluorobenzene	*98*		*77 - 124*

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

Lab Sample ID: MB 460-658641/8
Matrix: Water
Analysis Batch: 658641

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	0.33	ug/L			11/27/19 13:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*95*		*72 - 133*		*11/27/19 13:26*	*1*

Lab Sample ID: LCS 460-658641/4
Matrix: Water
Analysis Batch: 658641

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			5.00	4.63		ug/L		93	66 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*97*		*72 - 133*

Lab Sample ID: LCSD 460-658641/5
Matrix: Water
Analysis Batch: 658641

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane			5.00	4.06		ug/L		81	66 - 135	13	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*95*		*72 - 133*

QC Association Summary

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

Job ID: 460-197009-1

GC/MS VOA

Analysis Batch: 658641

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-197009-2	MW-117S_111519	Total/NA	Water	8260C SIM	
MB 460-658641/8	Method Blank	Total/NA	Water	8260C SIM	
LCS 460-658641/4	Lab Control Sample	Total/NA	Water	8260C SIM	
LCSD 460-658641/5	Lab Control Sample Dup	Total/NA	Water	8260C SIM	

Analysis Batch: 658881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-197009-2	MW-117S_111519	Total/NA	Water	8260C	
MB 460-658881/7	Method Blank	Total/NA	Water	8260C	
LCS 460-658881/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 460-658881/4	Lab Control Sample Dup	Total/NA	Water	8260C	

Analysis Batch: 658953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-197009-1	TRIP BLANK	Total/NA	Water	8260C	
MB 460-658953/9	Method Blank	Total/NA	Water	8260C	
LCS 460-658953/19	Lab Control Sample	Total/NA	Water	8260C	
LCSD 460-658953/20	Lab Control Sample Dup	Total/NA	Water	8260C	

Lab Chronicle

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

Job ID: 460-197009-1

Client Sample ID: TRIP BLANK
Date Collected: 11/15/19 00:00
Date Received: 11/19/19 09:10

Lab Sample ID: 460-197009-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658953	11/29/19 14:45	SZD	TAL EDI

Client Sample ID: MW-117S_111519
Date Collected: 11/15/19 13:58
Date Received: 11/19/19 09:10

Lab Sample ID: 460-197009-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	658881	11/28/19 03:36	MZS	TAL EDI
Total/NA	Analysis	8260C SIM		1	658641	11/27/19 14:16	KLB	TAL EDI

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

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

Job ID: 460-197009-1

Laboratory: Eurofins TestAmerica, Edison

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

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-20
DE Haz. Subst. Cleanup Act (HSCA)	State	<cert No.>	12-31-21
Georgia	State	12028 (NJ)	06-30-20
Massachusetts	State Program	M-NJ312	06-30-20
New Jersey	NELAP	12028	06-30-20
New York	NELAP	11452	04-01-20
Pennsylvania	NELAP	68-00522	02-28-20
Rhode Island	State	LAO00132	12-30-19
USDA	US Federal Programs	P330-18-00135	05-03-21

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

Method Summary

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

Job ID: 460-197009-1

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

Protocol References:

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

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

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

Job ID: 460-197009-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
460-197009-1	TRIP BLANK	Water	11/15/19 00:00	11/19/19 09:10	
460-197009-2	MW-117S_111519	Water	11/15/19 13:58	11/19/19 09:10	

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				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-946-6331	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Juli Ryan	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30016346.0002B	Shipping/Tracking No:			Job/SDG No: 197009
PO # 30016346.0002B				

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/Grab (C/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:	
TRIP BLANK	—	—		X						X					N	G	X	X	X	X	X	X	X	1 trip blank	1
MW-1175_111519	11/15/19	1358		X						X					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM	2

460-197009 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 #E203631
Level IV Reporting requested.

Fedex

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/15/19 1440	Heather Woodrum	Arcadis	11/15/19 1440
Heather Woodrum	Arcadis	11/15/19 1615	Novi Cold Storage	Arcadis	11/15/19 1615
RACHEL BIELAK [signature] Relinquished	ARCADIS	11/18/19 1240	Molly Maslow	ETAL-MI	11/18/19 1240
Molly Maslow	ETAL MI	11/18/19 1516	Kyara Knerdle	ETA	11/19/19 910

Seal - 1055338, 1055339 1/2#11-3 1/2.4

3.2/3.5

12/4/2019

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 197009

Number of Coolers: 2 IR Gun # 11

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	3.2 °C	3.4 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	3.1 °C	3.4 °C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

* *Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: KK Date: 11/19/19

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 460-197009-1

Login Number: 197009
List Number: 1
Creator: Infante, Warleny M

List Source: Eurofins TestAmerica, Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	CS#1055339,1055338
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VERIFICATION REPORT

December 04, 2019

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30016346.0002B
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - Edison
Laboratory submittal: 197009-1
Sample date: 2019-11-15
Report received by CADENA: 2019-12-04
Initial Data Verification completed by CADENA: 2019-12-04
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, LCS/LCD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

SAMPLING AND ANALYSIS SUMMARY

CADENA Project ID: E203631
Laboratory: TestAmerica-Edison
Laboratory Submittal: 197009-1

Lab Sample ID	Sample ID	Collection Date (mm/yy/dd)	Collection Time (hh:mm:ss)	GCMS VOC Volatiles	GCMS VOC SIM	Comment
4601970091	TRIP BLANK	11/15/2019	12:00:00	X		
4601970092	MW-117S_111519	11/15/2019	1:58:00	X	X	

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203631
Laboratory: TestAmerica - Edison
Laboratory Submittal: 197009-1

		Sample Name:	TRIP BLANK				MW-117S_111519			
		Lab Sample ID:	4601970091				4601970092			
		Sample Date:	11/15/2019				11/15/2019			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260C									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	0.28	1.0	ug/l	J
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	0.57	1.0	ug/l	J
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.80	1.0	ug/l	J
GC/MS SVOC									
OSW-8260CSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

ARCADIS Design & Consultancy for natural and built assets

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

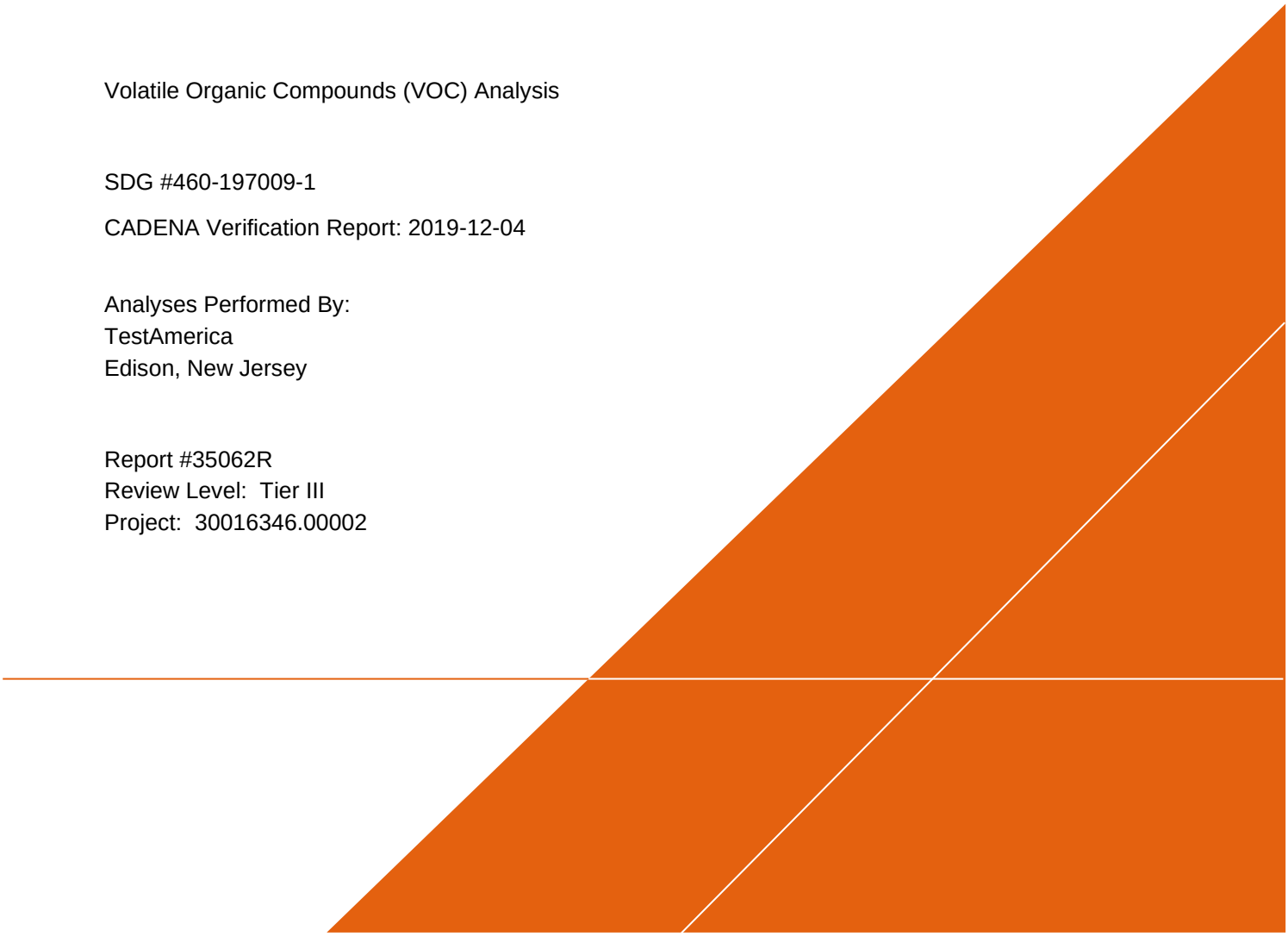
Volatile Organic Compounds (VOC) Analysis

SDG #460-197009-1

CADENA Verification Report: 2019-12-04

Analyses Performed By:
TestAmerica
Edison, New Jersey

Report #35062R
Review Level: Tier III
Project: 30016346.00002



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 460-197009-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
460-197009-1	TRIP BLANK	460-197009-1	Water	11/15/2019		X		
	MW-117S_111519	460-197009-2	Water	11/15/2019		X	X	

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
TRIP BLANK	CCV %D	Vinyl chloride	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D >90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

4. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE: 

DATE: December 10, 2019

PEER REVIEW: Dennis Capria

DATE: December 12, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

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			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Rachel Bielak	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-946-6331	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	
Phone: 248-994-2240	Sampler Name: Juli Ryan	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30016346.0002B	Shipping/Tracking No:		
PO # 30016346.0002B			

COC No: ___ of ___ COCs

For lab use only: Walk-in client / Lab sampling / Job/SDG No: 197009

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/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:
TRIP BLANK	—	—		X						X					N	G	X	X	X	X	X	X	X	1 trip blank
MW-117S_111519	11/15/19	1358		X						X					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM

1
2

460-197009 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 #E203631
Level IV Reporting requested.

Via fedex

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
J. Ryan	Arcadis	11/15/19/1440	Heather Woodrum	Arcadis	11/15/19/1440
Heather Woodrum	Arcadis	11/15/19/1615	Novi Cold Storage	Arcadis	11/15/19 1615
RACHEL BIELAK Paul Bielak	ARCADIS	11/18/19 1240	Received in Laboratory by: Molly Marlow	ETAL-MI	11/18/19 1240

Relinquished Molly Marlow ETAL MI 11/18/19 1516 Kyara Knurdie ETA 11/19/19 910

3.2/3.5

Seal - 1055338, 1055339 IR#11-3.1/3.4

Client Sample ID: TRIP BLANK

Lab Sample ID: 460-197009-1

Date Collected: 11/15/19 00:00

Matrix: Water

Date Received: 11/19/19 09:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/29/19 14:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/29/19 14:45	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			11/29/19 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/29/19 14:45	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			11/29/19 14:45	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			11/29/19 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*74 - 132*		*11/29/19 14:45*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/29/19 14:45*	*1*
Dibromofluoromethane (Surr)	*97*		*72 - 131*		*11/29/19 14:45*	*1*
4-Bromofluorobenzene	*98*		*77 - 124*		*11/29/19 14:45*	*1*

Client Sample ID: MW-117S_111519

Lab Sample ID: 460-197009-2

Date Collected: 11/15/19 13:58

Matrix: Water

Date Received: 11/19/19 09:10

Method: 8260C 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	0.33	ug/L			11/27/19 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*94*		*72 - 133*		*11/27/19 14:16*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			11/28/19 03:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			11/28/19 03:36	1
Tetrachloroethene	**0.28**	**J**	1.0	0.25	ug/L			11/28/19 03:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			11/28/19 03:36	1
Trichloroethene	**0.57**	**J**	1.0	0.31	ug/L			11/28/19 03:36	1
Vinyl chloride	**0.80**	**J**	1.0	0.17	ug/L			11/28/19 03:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*74 - 132*		*11/28/19 03:36*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*11/28/19 03:36*	*1*
Dibromofluoromethane (Surr)	*100*		*72 - 131*		*11/28/19 03:36*	*1*
4-Bromofluorobenzene	*100*		*77 - 124*		*11/28/19 03:36*	*1*