

10/2/2018
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford
Project #: MI001454.0003.0001
Workorder #: 1809452A

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 9/25/2018 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 1809452A

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	MI001454.0003.0001
FAX:		PROJECT #	MI001454.0003.0001 Ford
DATE RECEIVED:	09/25/2018	CONTACT:	Ausha Scott
DATE COMPLETED:	10/02/2018		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	IA-35000Plymouth-01_092018	Modified TO-15	8.0 "Hg	5 psi
02A	IA-35000Plymouth-02_092018	Modified TO-15	7.5 "Hg	5 psi
03A	IA-35000Plymouth-03_092018	Modified TO-15	6.5 "Hg	5 psi
04A	IA-35000Plymouth-04_092018	Modified TO-15	5.0 "Hg	5 psi
05A	IA-35000Plymouth-05_092018	Modified TO-15	7.0 "Hg	5 psi
06A	AA-35000Plymouth-01_092018	Modified TO-15	8.5 "Hg	5 psi
07A	Lab Blank	Modified TO-15	NA	NA
08A	CCV	Modified TO-15	NA	NA
09A	LCS	Modified TO-15	NA	NA
09AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 10/02/18

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
 TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Arcadis U.S., Inc.
Workorder# 1809452A

Six 6 Liter Summa Canister (100% Certified) samples were received on September 25, 2018. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Initial Calibration	$\leq 30\%$ RSD with 2 compounds allowed out to <math>< 40\%</math> RSD	$\leq 30\%$ RSD with 4 compounds allowed out to <math>< 40\%</math> RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

The Chain of Custody (COC) information for samples IA-35000Plymouth-01_092018, IA-35000Plymouth-02_092018, IA-35000Plymouth-03_092018, IA-35000Plymouth-04_092018, IA-35000Plymouth-05_092018, and AA-35000Plymouth-01_092018 did not match the entries on the sample tags with regard to sample identification. Therefore the information on the COC was used to process and report the samples.

Analytical Notes

Dilution was performed on samples IA-35000Plymouth-03_092018 and IA-35000Plymouth-05_092018 due to the presence of high level non-target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

- B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
- UJ- Non-detected compound associated with low bias in the CCV
- N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates

as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: IA-35000Plymouth-01_092018

Lab ID#: 1809452A-01A

No Detections Were Found.

Client Sample ID: IA-35000Plymouth-02_092018

Lab ID#: 1809452A-02A

No Detections Were Found.

Client Sample ID: IA-35000Plymouth-03_092018

Lab ID#: 1809452A-03A

No Detections Were Found.

Client Sample ID: IA-35000Plymouth-04_092018

Lab ID#: 1809452A-04A

No Detections Were Found.

Client Sample ID: IA-35000Plymouth-05_092018

Lab ID#: 1809452A-05A

No Detections Were Found.

Client Sample ID: AA-35000Plymouth-01_092018

Lab ID#: 1809452A-06A

No Detections Were Found.



Air Toxics

Client Sample ID: IA-35000Plymouth-01_092018

Lab ID#: 1809452A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092609	Date of Collection:	9/20/18 8:00:00 PM
Dil. Factor:	1.83	Date of Analysis:	9/26/18 02:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.18	Not Detected	0.47	Not Detected
1,1-Dichloroethene	0.18	Not Detected	0.72	Not Detected
trans-1,2-Dichloroethene	0.18	Not Detected	0.72	Not Detected
cis-1,2-Dichloroethene	0.18	Not Detected	0.72	Not Detected
Trichloroethene	0.18	Not Detected	0.98	Not Detected
1,4-Dioxane	0.18	Not Detected	0.66	Not Detected
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: IA-35000Plymouth-02_092018

Lab ID#: 1809452A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092612	Date of Collection:	9/20/18 8:04:00 PM
Dil. Factor:	1.79	Date of Analysis:	9/26/18 04:19 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.18	Not Detected	0.46	Not Detected
1,1-Dichloroethene	0.18	Not Detected	0.71	Not Detected
trans-1,2-Dichloroethene	0.18	Not Detected	0.71	Not Detected
cis-1,2-Dichloroethene	0.18	Not Detected	0.71	Not Detected
Trichloroethene	0.18	Not Detected	0.96	Not Detected
1,4-Dioxane	0.18	Not Detected	0.64	Not Detected
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: IA-35000Plymouth-03_092018

Lab ID#: 1809452A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092613	Date of Collection:	9/20/18 8:06:00 PM
Dil. Factor:	3.42	Date of Analysis:	9/26/18 04:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.34	Not Detected	0.87	Not Detected
1,1-Dichloroethene	0.34	Not Detected	1.4	Not Detected
trans-1,2-Dichloroethene	0.34	Not Detected	1.4	Not Detected
cis-1,2-Dichloroethene	0.34	Not Detected	1.4	Not Detected
Trichloroethene	0.34	Not Detected	1.8	Not Detected
1,4-Dioxane	0.34	Not Detected	1.2	Not Detected
Tetrachloroethene	0.34	Not Detected	2.3	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: IA-35000Plymouth-04_092018

Lab ID#: 1809452A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092611	Date of Collection:	9/20/18 8:09:00 PM
Dil. Factor:	1.61	Date of Analysis:	9/26/18 03:43 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.16	Not Detected	0.41	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.64	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Trichloroethene	0.16	Not Detected	0.86	Not Detected
1,4-Dioxane	0.16	Not Detected	0.58	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: IA-35000Plymouth-05_092018

Lab ID#: 1809452A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092614	Date of Collection:	9/20/18 8:13:00 PM
Dil. Factor:	4.38	Date of Analysis:	9/26/18 05:32 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.44	Not Detected	1.1	Not Detected
1,1-Dichloroethene	0.44	Not Detected	1.7	Not Detected
trans-1,2-Dichloroethene	0.44	Not Detected	1.7	Not Detected
cis-1,2-Dichloroethene	0.44	Not Detected	1.7	Not Detected
Trichloroethene	0.44	Not Detected	2.4	Not Detected
1,4-Dioxane	0.44	Not Detected	1.6	Not Detected
Tetrachloroethene	0.44	Not Detected	3.0	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: AA-35000Plymouth-01_092018

Lab ID#: 1809452A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092610	Date of Collection:	9/20/18 8:18:00 PM
Dil. Factor:	1.87	Date of Analysis:	9/26/18 03:07 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.19	Not Detected	0.48	Not Detected
1,1-Dichloroethene	0.19	Not Detected	0.74	Not Detected
trans-1,2-Dichloroethene	0.19	Not Detected	0.74	Not Detected
cis-1,2-Dichloroethene	0.19	Not Detected	0.74	Not Detected
Trichloroethene	0.19	Not Detected	1.0	Not Detected
1,4-Dioxane	0.19	Not Detected	0.67	Not Detected
Tetrachloroethene	0.19	Not Detected	1.3	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: Lab Blank

Lab ID#: 1809452A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092606	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	9/26/18 11:04 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected
1,4-Dioxane	0.10	Not Detected	0.36	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1809452A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092602	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/26/18 08:40 AM

Compound	%Recovery
Vinyl Chloride	85
1,1-Dichloroethene	96
trans-1,2-Dichloroethene	94
cis-1,2-Dichloroethene	95
Trichloroethene	97
1,4-Dioxane	97
Tetrachloroethene	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: LCS

Lab ID#: 1809452A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092603	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/26/18 09:16 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	84	70-130
1,1-Dichloroethene	94	70-130
trans-1,2-Dichloroethene	103	70-130
cis-1,2-Dichloroethene	88	70-130
Trichloroethene	92	70-130
1,4-Dioxane	102	70-130
Tetrachloroethene	95	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: LCSD

Lab ID#: 1809452A-09AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	22092604	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/26/18 09:52 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	89	70-130
1,1-Dichloroethene	93	70-130
trans-1,2-Dichloroethene	102	70-130
cis-1,2-Dichloroethene	88	70-130
Trichloroethene	92	70-130
1,4-Dioxane	102	70-130
Tetrachloroethene	93	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130



October 02, 2018

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: MI001454.0002/3/4.00002/2B/3B
Client project scope reference: Sample COC only was used to define project analytical requirements.
Laboratory: Eurofins Air Toxics - Folsom
Laboratory submittal: 1809452A
Sample date: 2018-09-20
Report received by CADENA: 2018-10-02
Initial Data Verification completed by CADENA: 2018-10-02

6 Air samples were analyzed for TO-15 parameters.

There were no significant QC anomalies or exceptions to report.

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.

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 contaminants) 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 contaminants) 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.

10/1/2018
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford VI
Project #: MI001454.0003.0001
Workorder #: 1809452B

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 9/25/2018 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 1809452B

Work Order Summary

CLIENT:	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:	517-819-0356	P.O. #	MI001454.0003.0001
FAX:		PROJECT #	MI001454.0003.0001 Ford VI
DATE RECEIVED:	09/25/2018	CONTACT:	Ausha Scott
DATE COMPLETED:	10/01/2018		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
07A	SSMP-35000Plymouth-02_092118	TO-15	4.5 "Hg	15 psi
08A	SSMP-35000Plymouth-01_092118	TO-15	6.0 "Hg	15 psi
09A	SSMP-35000Plymouth-03_092118	TO-15	5.5 "Hg	15 psi
10A	SSMP-35000Plymouth-04_092118	TO-15	6.0 "Hg	15 psi
11A	SSMP-35000Plymouth-05_092118	TO-15	6.0 "Hg	15 psi
12A	Lab Blank	TO-15	NA	NA
13A	CCV	TO-15	NA	NA
14A	LCS	TO-15	NA	NA
14AA	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 10/01/18

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
 TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 1809452B

Five 1 Liter Summa Canister (100% Certified) samples were received on September 25, 2018. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SSMP-35000Plymouth-02_092118

Lab ID#: 1809452B-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	1.9	8.1	13

Client Sample ID: SSMP-35000Plymouth-01_092118

Lab ID#: 1809452B-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.3	5.6	8.5	38

Client Sample ID: SSMP-35000Plymouth-03_092118

Lab ID#: 1809452B-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	5.7	8.4	39

Client Sample ID: SSMP-35000Plymouth-04_092118

Lab ID#: 1809452B-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.3	9.2	8.5	63

Client Sample ID: SSMP-35000Plymouth-05_092118

Lab ID#: 1809452B-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.3	2.1	8.5	14



Air Toxics

Client Sample ID: SSMP-35000Plymouth-02_092118

Lab ID#: 1809452B-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092708	Date of Collection:	9/21/18 11:33:00 AM
Dil. Factor:	2.38	Date of Analysis:	9/27/18 03:39 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Trichloroethene	1.2	Not Detected	6.4	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Tetrachloroethene	1.2	1.9	8.1	13
1,4-Dioxane	4.8	Not Detected	17	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: SSMP-35000Plymouth-01_092118

Lab ID#: 1809452B-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092709	Date of Collection:	9/21/18 11:59:00 AM
Dil. Factor:	2.52	Date of Analysis:	9/27/18 04:06 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Trichloroethene	1.3	Not Detected	6.8	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrachloroethene	1.3	5.6	8.5	38
1,4-Dioxane	5.0	Not Detected	18	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	101	70-130



Air Toxics

Client Sample ID: SSMP-35000Plymouth-03_092118

Lab ID#: 1809452B-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092710	Date of Collection:	9/21/18 12:14:00 PM
Dil. Factor:	2.47	Date of Analysis:	9/27/18 04:32 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	Not Detected	6.6	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Tetrachloroethene	1.2	5.7	8.4	39
1,4-Dioxane	4.9	Not Detected	18	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: SSMP-35000Plymouth-04_092118

Lab ID#: 1809452B-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092711	Date of Collection:	9/21/18 1:07:00 PM
Dil. Factor:	2.52	Date of Analysis:	9/27/18 04:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Trichloroethene	1.3	Not Detected	6.8	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrachloroethene	1.3	9.2	8.5	63
1,4-Dioxane	5.0	Not Detected	18	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: SSMP-35000Plymouth-05_092118

Lab ID#: 1809452B-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092712	Date of Collection:	9/21/18 1:03:00 PM
Dil. Factor:	2.52	Date of Analysis:	9/27/18 05:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Trichloroethene	1.3	Not Detected	6.8	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrachloroethene	1.3	2.1	8.5	14
1,4-Dioxane	5.0	Not Detected	18	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: Lab Blank

Lab ID#: 1809452B-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092705	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	9/27/18 12:32 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: CCV

Lab ID#: 1809452B-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092702	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/27/18 10:43 AM

Compound	%Recovery
Vinyl Chloride	111
1,1-Dichloroethene	104
cis-1,2-Dichloroethene	106
Trichloroethene	102
trans-1,2-Dichloroethene	106
Tetrachloroethene	99
1,4-Dioxane	103

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: LCS

Lab ID#: 1809452B-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092703	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/27/18 11:21 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	115	70-130
1,1-Dichloroethene	108	70-130
cis-1,2-Dichloroethene	99	70-130
Trichloroethene	105	70-130
trans-1,2-Dichloroethene	119	70-130
Tetrachloroethene	100	70-130
1,4-Dioxane	111	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: LCSD

Lab ID#: 1809452B-14AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092704	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/27/18 11:46 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	114	70-130
1,1-Dichloroethene	108	70-130
cis-1,2-Dichloroethene	100	70-130
Trichloroethene	105	70-130
trans-1,2-Dichloroethene	119	70-130
Tetrachloroethene	101	70-130
1,4-Dioxane	108	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	101	70-130



October 02, 2018

Kris Hinskey
Arcadis Inc
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Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: MI001454.0002/3/4.00002/2B/3B
Client project scope reference: Sample COC only was used to define project analytical requirements.
Laboratory: Eurofins Air Toxics - Folsom
Laboratory submittal: 1809452B
Sample date: 2018-09-21
Report received by CADENA: 2018-10-01
Initial Data Verification completed by CADENA: 2018-10-02

5 Air samples were analyzed for TO-15 parameters.

There were no significant QC anomalies or exceptions to report.

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.

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 contaminants) 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 contaminants) 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.