eurofins | Air Toxics

10/19/2018
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford
Project #: MI001454.0003.00001
Workorder #: 1810280A

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 10/12/2018 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

eurofins | Air Toxics

WORK ORDER #: 1810280A

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. #**	MI001454.0003.00001
FAX:		**PROJECT #**	MI001454.0003.00001 Ford
DATE RECEIVED:	10/12/2018	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/19/2018		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	IAF-11881BeldenCt-01_101018	Modified TO-15	6.5 "Hg	5 psi
02A	IAF-11881BeldenCt-02_101018	Modified TO-15	6.5 "Hg	5 psi
03A	IAF-11881BeldenCt-03_101018	Modified TO-15	7.0 "Hg	5 psi
04A	IAF-11881BeldenCt-04_101018	Modified TO-15	7.0 "Hg	5 psi
05A	AA-11881BeldenCt-01_101018	Modified TO-15	7.5 "Hg	5 psi
06A	Lab Blank	Modified TO-15	NA	NA
06B	Lab Blank	Modified TO-15	NA	NA
07A	CCV	Modified TO-15	NA	NA
07B	CCV	Modified TO-15	NA	NA
08A	LCS	Modified TO-15	NA	NA
08AA	LCSD	Modified TO-15	NA	NA
08B	LCS	Modified TO-15	NA	NA
08BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:  DATE: 10/19/18

Technical Director

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

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# 1810280A

Five 6 Liter Summa Canister (100% Certified) samples were received on October 12, 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.

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

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. All The canisters used for this project have been certified to the Reporting Limit for the target analytes included in this workorder. Concentrations that are below the level at which the canister was certified may be false positives.

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

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	IAF-11881BeldenCt-01_101018		
Lab ID:	1810280A-01A	**Date/Time Analyzed:**	10/15/18 10:52 PM
Date/Time Collected:	10/10/18 03:44 PM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdv.i / v101519

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.33	0.61	0.68	Not Detected
1,4-Dioxane	123-91-1	0.36	0.55	0.62	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.41	0.61	0.68	Not Detected
Tetrachloroethene	127-18-4	0.58	1.0	1.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.57	0.61	0.68	Not Detected
Trichloroethene	79-01-6	0.42	0.83	0.92	Not Detected
Vinyl Chloride	75-01-4	0.33	0.39	0.44	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	116
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	99

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	IAF-11881BeldenCt-02_101018		
Lab ID:	1810280A-02A	**Date/Time Analyzed:**	10/16/18 06:52 AM
Date/Time Collected:	10/10/18 03:40 PM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdv.i / v101520

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.33	0.61	0.68	Not Detected
1,4-Dioxane	123-91-1	0.36	0.55	0.62	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.41	0.61	0.68	Not Detected
Tetrachloroethene	127-18-4	0.58	1.0	1.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.57	0.61	0.68	Not Detected
Trichloroethene	79-01-6	0.42	0.83	0.92	Not Detected
Vinyl Chloride	75-01-4	0.33	0.39	0.44	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	98

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	IAF-11881BeldenCt-03_101018		
Lab ID:	1810280A-03A	**Date/Time Analyzed:**	10/16/18 07:35 AM
Date/Time Collected:	10/10/18 03:49 PM	**Dilution Factor:**	1.75
Media:	6 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdv.i / v101521

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.34	0.62	0.69	Not Detected
1,4-Dioxane	123-91-1	0.37	0.57	0.63	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.42	0.62	0.69	Not Detected
Tetrachloroethene	127-18-4	0.59	1.1	1.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.59	0.62	0.69	Not Detected
Trichloroethene	79-01-6	0.43	0.85	0.94	Not Detected
Vinyl Chloride	75-01-4	0.34	0.40	0.45	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	92

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	IAF-11881BeldenCt-04_101018		
Lab ID:	1810280A-04A	**Date/Time Analyzed:**	10/16/18 08:29 AM
Date/Time Collected:	10/10/18 03:48 PM	**Dilution Factor:**	1.75
Media:	6 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdv.i / v101522

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.34	0.62	0.69	Not Detected
1,4-Dioxane	123-91-1	0.37	0.57	0.63	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.42	0.62	0.69	Not Detected
Tetrachloroethene	127-18-4	0.59	1.1	1.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.59	0.62	0.69	Not Detected
Trichloroethene	79-01-6	0.43	0.85	0.94	Not Detected
Vinyl Chloride	75-01-4	0.34	0.40	0.45	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	98

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	AA-11881BeldenCt-01_101018		
Lab ID:	1810280A-05A	**Date/Time Analyzed:**	10/16/18 01:56 PM
Date/Time Collected:	10/10/18 03:46 PM	**Dilution Factor:**	1.79
Media:	6 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdv.i / v101607

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.34	0.64	0.71	Not Detected
1,4-Dioxane	123-91-1	0.38	0.58	0.64	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.43	0.64	0.71	Not Detected
Tetrachloroethene	127-18-4	0.60	1.1	1.2	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.60	0.64	0.71	Not Detected
Trichloroethene	79-01-6	0.44	0.86	0.96	Not Detected
Vinyl Chloride	75-01-4	0.35	0.41	0.46	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	100

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	Lab Blank		
Lab ID:	1810280A-06A	**Date/Time Analyzed:**	10/15/18 12:39 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101506a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.19	0.36	0.40	Not Detected
1,4-Dioxane	123-91-1	0.21	0.32	0.36	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.24	0.36	0.40	Not Detected
Tetrachloroethene	127-18-4	0.34	0.61	0.68	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.34	0.36	0.40	Not Detected
Trichloroethene	79-01-6	0.25	0.48	0.54	Not Detected
Vinyl Chloride	75-01-4	0.19	0.23	0.26	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	94
Toluene-d8	2037-26-5	70-130	97

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	Lab Blank		
Lab ID:	1810280A-06B	**Date/Time Analyzed:**	10/16/18 12:31 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101606a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.19	0.36	0.40	Not Detected
1,4-Dioxane	123-91-1	0.21	0.32	0.36	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.24	0.36	0.40	Not Detected
Tetrachloroethene	127-18-4	0.34	0.61	0.68	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.34	0.36	0.40	Not Detected
Trichloroethene	79-01-6	0.25	0.48	0.54	Not Detected
Vinyl Chloride	75-01-4	0.19	0.23	0.26	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	102

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	CCV		
Lab ID:	1810280A-07A	**Date/Time Analyzed:**	10/15/18 09:16 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101502

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	89
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	92
Tetrachloroethene	127-18-4	100
trans-1,2-Dichloroethene	156-60-5	95
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	93

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	101

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	CCV		
Lab ID:	1810280A-07B	**Date/Time Analyzed:**	10/16/18 09:46 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101602

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	90
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	93
Tetrachloroethene	127-18-4	104
trans-1,2-Dichloroethene	156-60-5	98
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	89

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	98

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	LCS		
Lab ID:	1810280A-08A	**Date/Time Analyzed:**	10/15/18 10:05 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101503

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	92
1,4-Dioxane	123-91-1	104
cis-1,2-Dichloroethene	156-59-2	90
Tetrachloroethene	127-18-4	106
trans-1,2-Dichloroethene	156-60-5	112
Trichloroethene	79-01-6	111
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	97

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	LCSD		
Lab ID:	1810280A-08AA	**Date/Time Analyzed:**	10/15/18 10:50 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101504

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	94
1,4-Dioxane	123-91-1	103
cis-1,2-Dichloroethene	156-59-2	90
Tetrachloroethene	127-18-4	104
trans-1,2-Dichloroethene	156-60-5	110
Trichloroethene	79-01-6	111
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	102

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	LCS		
Lab ID:	1810280A-08B	**Date/Time Analyzed:**	10/16/18 10:24 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101603

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	91
1,4-Dioxane	123-91-1	101
cis-1,2-Dichloroethene	156-59-2	86
Tetrachloroethene	127-18-4	105
trans-1,2-Dichloroethene	156-60-5	102
Trichloroethene	79-01-6	109
Vinyl Chloride	75-01-4	90

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	97

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	LCSD		
Lab ID:	1810280A-08BB	**Date/Time Analyzed:**	10/16/18 11:01 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdv.i / v101604

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	93
1,4-Dioxane	123-91-1	99
cis-1,2-Dichloroethene	156-59-2	90
Tetrachloroethene	127-18-4	112
trans-1,2-Dichloroethene	156-60-5	106
Trichloroethene	79-01-6	111
Vinyl Chloride	75-01-4	94

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

* % Recovery is calculated using unrounded analytical results.

October 20, 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: 1810280A
Sample date: 2018-10-10
Report received by CADENA: 2018-10-19
Initial Data Verification completed by CADENA: 2018-10-20

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.

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 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.

eurofins | Air Toxics

10/19/2018
Mr. Jim Tomalia
Arcadis U.S., Inc.
28550 Cabot Dr.
Suite 500
Novi MI 48377

Project Name: Ford
Project #: MI001454.0003.00001
Workorder #: 1810280B

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 10/12/2018 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

eurofins | Air Toxics

WORK ORDER #: 1810280B

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. #**	MI001454.0003.00001
FAX:		**PROJECT #**	MI001454.0003.00001 Ford
DATE RECEIVED:	10/12/2018	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/19/2018		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
06A	SSMP-11881BeldenCt-01_101018	TO-15	3.5 "Hg	15.2 psi
07A	SSMP-11881BeldenCt-02_101018	TO-15	4.3 "Hg	15.3 psi
08A	SSMP-11881BeldenCt-04_101018	TO-15	5.9 "Hg	15 psi
09A	SSMP-11881BeldenCt-03_101018	TO-15	4.1 "Hg	14.8 psi
10A	Lab Blank	TO-15	NA	NA
11A	CCV	TO-15	NA	NA
12A	LCS	TO-15	NA	NA
12AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 10/19/18

Technical Director

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

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# 1810280B

Three 1 Liter Summa Canister and one 1 Liter Summa Canister (100% Certified) samples were received on October 12, 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

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv and 0.8 ppbv for compounds reported at 2.0 ppbv) may be false positives.

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

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	SSMP-11881BeldenCt-01_101018		
Lab ID:	1810280B-06A	**Date/Time Analyzed:**	10/16/18 12:00 AM
Date/Time Collected:	10/10/18 10:00 AM	**Dilution Factor:**	2.30
Media:	1 Liter Summa Canister	**Instrument/Filename:**	msdp.i / p101523

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.7	4.6	Not Detected
1,4-Dioxane	123-91-1	2.5	13	16	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.91	2.7	4.6	Not Detected
Tetrachloroethene	127-18-4	1.1	4.7	7.8	3.8 J
trans-1,2-Dichloroethene	156-60-5	1.9	2.7	4.6	Not Detected
Trichloroethene	79-01-6	1.1	3.7	6.2	Not Detected
Vinyl Chloride	75-01-4	0.47	1.8	2.9	Not Detected

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	SSMP-11881BeldenCt-02_101018		
Lab ID:	1810280B-07A	**Date/Time Analyzed:**	10/16/18 12:26 AM
Date/Time Collected:	10/10/18 10:02 AM	**Dilution Factor:**	2.38
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdp.i / p101524

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.8	4.7	Not Detected
1,4-Dioxane	123-91-1	2.6	14	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.94	2.8	4.7	Not Detected
Tetrachloroethene	127-18-4	1.1	4.8	8.1	5.8 J
trans-1,2-Dichloroethene	156-60-5	2.0	2.8	4.7	Not Detected
Trichloroethene	79-01-6	1.2	3.8	6.4	Not Detected
Vinyl Chloride	75-01-4	0.49	1.8	3.0	Not Detected

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	98
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	SSMP-11881BeldenCt-04_101018		
Lab ID:	1810280B-08A	**Date/Time Analyzed:**	10/16/18 12:53 AM
Date/Time Collected:	10/10/18 10:36 AM	**Dilution Factor:**	2.52
Media:	1 Liter Summa Canister	**Instrument/Filename:**	msdp.i / p101525

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.7	3.0	5.0	Not Detected
1,4-Dioxane	123-91-1	2.7	14	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.0	3.0	5.0	Not Detected
Tetrachloroethene	127-18-4	1.2	5.1	8.5	9.2
trans-1,2-Dichloroethene	156-60-5	2.1	3.0	5.0	Not Detected
Trichloroethene	79-01-6	1.2	4.1	6.8	Not Detected
Vinyl Chloride	75-01-4	0.52	1.9	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	109
Toluene-d8	2037-26-5	70-130	98

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	SSMP-11881BeldenCt-03_101018		
Lab ID:	1810280B-09A	**Date/Time Analyzed:**	10/16/18 01:19 AM
Date/Time Collected:	10/10/18 10:38 AM	**Dilution Factor:**	2.32
Media:	1 Liter Summa Canister	**Instrument/Filename:**	msdp.i / p101526

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	1.6	2.8	4.6	Not Detected
1,4-Dioxane	123-91-1	2.5	13	17	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.92	2.8	4.6	Not Detected
Tetrachloroethene	127-18-4	1.1	4.7	7.9	12
trans-1,2-Dichloroethene	156-60-5	1.9	2.8	4.6	Not Detected
Trichloroethene	79-01-6	1.1	3.7	6.2	Not Detected
Vinyl Chloride	75-01-4	0.47	1.8	3.0	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	Lab Blank		
Lab ID:	1810280B-10A	**Date/Time Analyzed:**	10/15/18 10:17 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p101505a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.67	1.2	2.0	Not Detected
1,4-Dioxane	123-91-1	1.1	5.8	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.40	1.2	2.0	Not Detected
Tetrachloroethene	127-18-4	0.47	2.0	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.83	1.2	2.0	Not Detected
Trichloroethene	79-01-6	0.48	1.6	2.7	Not Detected
Vinyl Chloride	75-01-4	0.20	0.77	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	96
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	CCV		
Lab ID:	1810280B-11A	**Date/Time Analyzed:**	10/15/18 08:58 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p101502

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	107
1,4-Dioxane	123-91-1	91
cis-1,2-Dichloroethene	156-59-2	103
Tetrachloroethene	127-18-4	95
trans-1,2-Dichloroethene	156-60-5	104
Trichloroethene	79-01-6	94
Vinyl Chloride	75-01-4	118

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	102
Toluene-d8	2037-26-5	70-130	101

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	LCS		
Lab ID:	1810280B-12A	**Date/Time Analyzed:**	10/15/18 09:25 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p101503

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	106
1,4-Dioxane	123-91-1	96
cis-1,2-Dichloroethene	156-59-2	95
Tetrachloroethene	127-18-4	97
trans-1,2-Dichloroethene	156-60-5	116
Trichloroethene	79-01-6	95
Vinyl Chloride	75-01-4	122

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	99

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Ford

Client ID:	LCSD		
Lab ID:	1810280B-12AA	**Date/Time Analyzed:**	10/15/18 09:51 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdp.i / p101504

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	100
1,4-Dioxane	123-91-1	93
cis-1,2-Dichloroethene	156-59-2	92
Tetrachloroethene	127-18-4	93
trans-1,2-Dichloroethene	156-60-5	110
Trichloroethene	79-01-6	91
Vinyl Chloride	75-01-4	115

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	100

* % Recovery is calculated using unrounded analytical results.

October 20, 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: 1810280B
Sample date: 2018-10-10
Report received by CADENA: 2018-10-19
Initial Data Verification completed by CADENA: 2018-10-20

4 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.

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 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.