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May 14, 2015

Illinois Department of Transportation
Kirk H. Brown, PE
Project Support Engineer
Division of Highways/Region 5/District 8
1102 Eastport Plaza Drive
Collinsville, Illinois 62234-6198

Subject: Analytical Data for Soil and Soil Vapor Sampling according to Illinois Department of Transportation (IDOT) Permits No. 8-28548 and No. 8-28875

Dear Mr. Brown,

AECOM (formerly URS Corporation), on behalf of Shell Oil Products US (SOPUS), is submitting analytical results for soil and soil vapor sampling conducted according to IDOT Permits No. 8-28548 and No. 8-28875. Enclosed are the analytical results for the following sampling activities recently conducted:

- VMP-15 (Soil Vapor Samples)
- VMP-55 (Soil Vapor Samples)

If you have any questions or require further information please contact Nick Eldred at nicholas.eldred@urs.com (314/743-7753).

Sincerely,
AECOM, on behalf of Shell Oil Products US

Michael Currier
Environmental Scientist

Nicholas Eldred
Senior Project Manager

Attachments

cc: Kevin Dyer, SOPUS
Repositories – Roxana Public Works, Roxana Public Library, website
Project File

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2/25/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04201
Workorder #: 1502156AR1

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 2/9/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1502156AR1

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04201 Roxana Soil Vapor
DATE RECEIVED:	02/09/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/20/2015		
DATE REISSUED:	02/25/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-020615	TO-15	6.5 "Hg	15 psi
02A	VMP-15-21.5-020615	TO-15	9.0 "Hg	15 psi
03A	VMP-15-25.5-020615	TO-15	8.0 "Hg	15 psi
03B	VMP-15-25.5-020615	TO-15	8.0 "Hg	15 psi
04A	VMP-15-29-020615	TO-15	5.0 "Hg	15 psi
04B	VMP-15-29-020615	TO-15	5.0 "Hg	15 psi
05A	VMP-15-29-020615-DUP	TO-15	6.5 "Hg	15 psi
06A	VMP-55-5-020515	TO-15	6.5 "Hg	15 psi
07A	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 02/25/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1502156AR1

Six 1 Liter Summa Canister samples were received on February 09, 2015. 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.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Due to high-level target compounds, samples VMP-15-25.5-020615 and VMP-15-29-020615 were analyzed twice. In the "A" fraction, the sample was diluted to bring the highest-level compounds within the calibration range. The "B" fraction is also reported by client request and may be reported with "E" flags indicating the compound exceeds the calibration range. Both runs and associated QC are reported.

The work order was reissued on February 25, 2015 to correct identification of samples VMP-15-25.5-020615 (03B) and VMP-15-29-020615 (04B) due to laboratory error.

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

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

Client Sample ID: VMP-15-5-020615

Lab ID#: 1502156AR1-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.38 J	6.4	1.9 J
2-Propanol	5.2	3.9 J	13	9.6 J
Chloroform	1.3	0.33 J	6.3	1.6 J
2,2,4-Trimethylpentane	1.3	0.32 J	6.0	1.5 J
1,2,4-Trimethylbenzene	1.3	0.21 J	6.3	1.0 J

Client Sample ID: VMP-15-21.5-020615

Lab ID#: 1502156AR1-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.44 J	7.1	2.2 J
Acetone	14	3.2 J	34	7.7 J
2-Propanol	5.8	35	14	86
Chloroform	1.4	1.3 J	7.0	6.4 J

Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156AR1-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.8	0.74 J	14	3.7 J
2-Propanol	11	8.8 J	27	22 J
Carbon Disulfide	11	7.6 J	34	24 J
Hexane	2.8	1.5 J	9.7	5.4 J
Chloroform	2.8	0.86 J	13	4.2 J
Cyclohexane	2.8	61	9.5	210
2,2,4-Trimethylpentane	2.8	410	13	1900
Benzene	2.8	1.0 J	8.8	3.3 J
Butane	11	34	26	80
Isopentane	11	560	32	1700

Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156AR1-03B

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

Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156AR1-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.65 J	6.8	3.2 J
Ethanol	5.5	4.1 J	10	7.8 J
2-Propanol	5.5	9.3	14	23
Carbon Disulfide	5.5	8.8	17	27
Hexane	1.4	1.3 J	4.9	4.6 J
Chloroform	1.4	0.92 J	6.7	4.5 J
Cyclohexane	1.4	66	4.8	230
2,2,4-Trimethylpentane	1.4	430	6.4	2000
Benzene	1.4	0.97 J	4.4	3.1 J
Toluene	1.4	0.27 J	5.2	1.0 J
Butane	5.5	35	13	82
Isopentane	5.5	600 E	16	1800 E

Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156AR1-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.4	0.61 J	12	3.0 J
Ethanol	9.7	19	18	36
2-Propanol	9.7	76	24	180
Carbon Disulfide	9.7	8.7 J	30	27 J
Hexane	2.4	1.6 J	8.5	5.7 J
Chloroform	2.4	1.0 J	12	4.9 J
Cyclohexane	2.4	23	8.3	80
2,2,4-Trimethylpentane	2.4	140	11	680
Benzene	2.4	4.8	7.7	15
Toluene	2.4	0.52 J	9.1	2.0 J
Butane	9.7	40	23	94
Isopentane	9.7	480	28	1400

Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156AR1-04B

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

Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156AR1-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.49 J	6.0	2.4 J
Ethanol	4.8	21	9.1	39
2-Propanol	4.8	91	12	220
Carbon Disulfide	4.8	10	15	32
Hexane	1.2	1.7	4.3	6.0
Chloroform	1.2	1.1 J	5.9	5.3 J
Cyclohexane	1.2	26	4.2	88
2,2,4-Trimethylpentane	1.2	160	5.6	740
Benzene	1.2	5.2	3.9	16
Toluene	1.2	0.51 J	4.6	1.9 J
m,p-Xylene	1.2	0.49 J	5.2	2.1 J
o-Xylene	1.2	0.21 J	5.2	0.93 J
1,2,4-Trimethylbenzene	1.2	0.23 J	5.9	1.1 J
Butane	4.8	41	12	98
Isopentane	4.8	520 E	14	1500 E

Client Sample ID: VMP-15-29-020615-DUP

Lab ID#: 1502156AR1-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.58 J	6.4	2.8 J
Ethanol	5.2	16	9.7	29
2-Propanol	5.2	70	13	170
Carbon Disulfide	5.2	6.8	16	21
Hexane	1.3	1.8	4.5	6.2
Chloroform	1.3	0.98 J	6.3	4.8 J
Cyclohexane	1.3	25	4.4	87
2,2,4-Trimethylpentane	1.3	160	6.0	730
Benzene	1.3	5.2	4.1	17
Heptane	1.3	0.33 J	5.3	1.3 J
Toluene	1.3	0.88 J	4.9	3.3 J
Butane	5.2	40	12	96
Isopentane	5.2	510	15	1500

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

Client Sample ID: VMP-55-5-020515

Lab ID#: 1502156AR1-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.56 J	6.4	2.7 J
2-Propanol	5.2	27	13	67
2,2,4-Trimethylpentane	1.3	1.3	6.0	6.3

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Client Sample ID: VMP-15-5-020615

Lab ID#: 1502156AR1-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021309**	**Date of Collection:**	**2/6/15 10:21:00 AM**
Dil. Factor:	**2.58**	**Date of Analysis:**	**2/13/15 04:56 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.38 J	6.4	1.9 J
Freon 114	1.3	Not Detected	9.0	Not Detected
Chloromethane	13	Not Detected	27	Not Detected
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	13	Not Detected	50	Not Detected
Chloroethane	5.2	Not Detected	14	Not Detected
Freon 11	1.3	Not Detected	7.2	Not Detected
Ethanol	5.2	Not Detected	9.7	Not Detected
Freon 113	1.3	Not Detected	9.9	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Acetone	13	Not Detected	31	Not Detected
2-Propanol	5.2	3.9 J	13	9.6 J
Carbon Disulfide	5.2	Not Detected	16	Not Detected
3-Chloropropene	5.2	Not Detected	16	Not Detected
Methylene Chloride	13	Not Detected	45	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Hexane	1.3	Not Detected	4.5	Not Detected
1,1-Dichloroethane	1.3	Not Detected	5.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.2	Not Detected	15	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.8	Not Detected
Chloroform	1.3	0.33 J	6.3	1.6 J
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.1	Not Detected
2,2,4-Trimethylpentane	1.3	0.32 J	6.0	1.5 J
Benzene	1.3	Not Detected	4.1	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.2	Not Detected
Heptane	1.3	Not Detected	5.3	Not Detected
Trichloroethene	1.3	Not Detected	6.9	Not Detected
1,2-Dichloropropane	1.3	Not Detected	6.0	Not Detected
1,4-Dioxane	5.2	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.6	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.3	Not Detected
Toluene	1.3	Not Detected	4.9	Not Detected
trans-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Tetrachloroethene	1.3	Not Detected	8.8	Not Detected
2-Hexanone	5.2	Not Detected	21	Not Detected

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Client Sample ID: VMP-15-5-020615

Lab ID#: 1502156AR1-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021309**	**Date of Collection:**	**2/6/15 10:21:00 AM**
Dil. Factor:	**2.58**	**Date of Analysis:**	**2/13/15 04:56 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.9	Not Detected
Chlorobenzene	1.3	Not Detected	5.9	Not Detected
Ethyl Benzene	1.3	Not Detected	5.6	Not Detected
m,p-Xylene	1.3	Not Detected	5.6	Not Detected
o-Xylene	1.3	Not Detected	5.6	Not Detected
Styrene	1.3	Not Detected	5.5	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.3	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.8	Not Detected
Propylbenzene	1.3	Not Detected	6.3	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.3	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.3	Not Detected
1,2,4-Trimethylbenzene	1.3	0.21 J	6.3	1.0 J
1,3-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.7	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,2,4-Trichlorobenzene	5.2	Not Detected	38	Not Detected
Hexachlorobutadiene	5.2	Not Detected	55	Not Detected
Butane	5.2	Not Detected	12	Not Detected
Isopentane	5.2	Not Detected	15	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: VMP-15-21.5-020615

Lab ID#: 1502156AR1-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021310**	**Date of Collection:**	**2/6/15 10:44:00 AM**
Dil. Factor:	**2.89**	**Date of Analysis:**	**2/13/15 06:00 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.44 J	7.1	2.2 J
Freon 114	1.4	Not Detected	10	Not Detected
Chloromethane	14	Not Detected	30	Not Detected
Vinyl Chloride	1.4	Not Detected	3.7	Not Detected
1,3-Butadiene	1.4	Not Detected	3.2	Not Detected
Bromomethane	14	Not Detected	56	Not Detected
Chloroethane	5.8	Not Detected	15	Not Detected
Freon 11	1.4	Not Detected	8.1	Not Detected
Ethanol	5.8	Not Detected	11	Not Detected
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Acetone	14	3.2 J	34	7.7 J
2-Propanol	5.8	35	14	86
Carbon Disulfide	5.8	Not Detected	18	Not Detected
3-Chloropropene	5.8	Not Detected	18	Not Detected
Methylene Chloride	14	Not Detected	50	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.2	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Hexane	1.4	Not Detected	5.1	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.3	Not Detected
Chloroform	1.4	1.3 J	7.0	6.4 J
1,1,1-Trichloroethane	1.4	Not Detected	7.9	Not Detected
Cyclohexane	1.4	Not Detected	5.0	Not Detected
Carbon Tetrachloride	1.4	Not Detected	9.1	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.8	Not Detected
Benzene	1.4	Not Detected	4.6	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.8	Not Detected
Heptane	1.4	Not Detected	5.9	Not Detected
Trichloroethene	1.4	Not Detected	7.8	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.7	Not Detected
1,4-Dioxane	5.8	Not Detected	21	Not Detected
Bromodichloromethane	1.4	Not Detected	9.7	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.9	Not Detected
Toluene	1.4	Not Detected	5.4	Not Detected
trans-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.9	Not Detected
Tetrachloroethene	1.4	Not Detected	9.8	Not Detected
2-Hexanone	5.8	Not Detected	24	Not Detected

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Client Sample ID: VMP-15-21.5-020615

Lab ID#: 1502156AR1-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021310**	**Date of Collection:**	**2/6/15 10:44:00 AM**
Dil. Factor:	**2.89**	**Date of Analysis:**	**2/13/15 06:00 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.6	Not Detected
Ethyl Benzene	1.4	Not Detected	6.3	Not Detected
m,p-Xylene	1.4	Not Detected	6.3	Not Detected
o-Xylene	1.4	Not Detected	6.3	Not Detected
Styrene	1.4	Not Detected	6.2	Not Detected
Bromoform	1.4	Not Detected	15	Not Detected
Cumene	1.4	Not Detected	7.1	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.9	Not Detected
Propylbenzene	1.4	Not Detected	7.1	Not Detected
4-Ethyltoluene	1.4	Not Detected	7.1	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.5	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	43	Not Detected
Hexachlorobutadiene	5.8	Not Detected	62	Not Detected
Butane	5.8	Not Detected	14	Not Detected
Isopentane	5.8	Not Detected	17	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156AR1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021313**	**Date of Collection:**	**2/6/15 9:29:00 AM**
Dil. Factor:	**5.52**	**Date of Analysis:**	**2/13/15 08:59 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.8	0.74 J	14	3.7 J
Freon 114	2.8	Not Detected	19	Not Detected
Chloromethane	28	Not Detected	57	Not Detected
Vinyl Chloride	2.8	Not Detected	7.0	Not Detected
1,3-Butadiene	2.8	Not Detected	6.1	Not Detected
Bromomethane	28	Not Detected	110	Not Detected
Chloroethane	11	Not Detected	29	Not Detected
Freon 11	2.8	Not Detected	16	Not Detected
Ethanol	11	Not Detected	21	Not Detected
Freon 113	2.8	Not Detected	21	Not Detected
1,1-Dichloroethene	2.8	Not Detected	11	Not Detected
Acetone	28	Not Detected	66	Not Detected
2-Propanol	11	8.8 J	27	22 J
Carbon Disulfide	11	7.6 J	34	24 J
3-Chloropropene	11	Not Detected	34	Not Detected
Methylene Chloride	28	Not Detected	96	Not Detected
Methyl tert-butyl ether	2.8	Not Detected	10	Not Detected
trans-1,2-Dichloroethene	2.8	Not Detected	11	Not Detected
Hexane	2.8	1.5 J	9.7	5.4 J
1,1-Dichloroethane	2.8	Not Detected	11	Not Detected
2-Butanone (Methyl Ethyl Ketone)	11	Not Detected	32	Not Detected
cis-1,2-Dichloroethene	2.8	Not Detected	11	Not Detected
Tetrahydrofuran	2.8	Not Detected	8.1	Not Detected
Chloroform	2.8	0.86 J	13	4.2 J
1,1,1-Trichloroethane	2.8	Not Detected	15	Not Detected
Cyclohexane	2.8	61	9.5	210
Carbon Tetrachloride	2.8	Not Detected	17	Not Detected
2,2,4-Trimethylpentane	2.8	410	13	1900
Benzene	2.8	1.0 J	8.8	3.3 J
1,2-Dichloroethane	2.8	Not Detected	11	Not Detected
Heptane	2.8	Not Detected	11	Not Detected
Trichloroethene	2.8	Not Detected	15	Not Detected
1,2-Dichloropropane	2.8	Not Detected	13	Not Detected
1,4-Dioxane	11	Not Detected	40	Not Detected
Bromodichloromethane	2.8	Not Detected	18	Not Detected
cis-1,3-Dichloropropene	2.8	Not Detected	12	Not Detected
4-Methyl-2-pentanone	2.8	Not Detected	11	Not Detected
Toluene	2.8	Not Detected	10	Not Detected
trans-1,3-Dichloropropene	2.8	Not Detected	12	Not Detected
1,1,2-Trichloroethane	2.8	Not Detected	15	Not Detected
Tetrachloroethene	2.8	Not Detected	19	Not Detected
2-Hexanone	11	Not Detected	45	Not Detected

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Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156AR1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021313**	**Date of Collection:**	**2/6/15 9:29:00 AM**
Dil. Factor:	**5.52**	**Date of Analysis:**	**2/13/15 08:59 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	2.8	Not Detected	24	Not Detected
1,2-Dibromoethane (EDB)	2.8	Not Detected	21	Not Detected
Chlorobenzene	2.8	Not Detected	13	Not Detected
Ethyl Benzene	2.8	Not Detected	12	Not Detected
m,p-Xylene	2.8	Not Detected	12	Not Detected
o-Xylene	2.8	Not Detected	12	Not Detected
Styrene	2.8	Not Detected	12	Not Detected
Bromoform	2.8	Not Detected	28	Not Detected
Cumene	2.8	Not Detected	14	Not Detected
1,1,2,2-Tetrachloroethane	2.8	Not Detected	19	Not Detected
Propylbenzene	2.8	Not Detected	14	Not Detected
4-Ethyltoluene	2.8	Not Detected	14	Not Detected
1,3,5-Trimethylbenzene	2.8	Not Detected	14	Not Detected
1,2,4-Trimethylbenzene	2.8	Not Detected	14	Not Detected
1,3-Dichlorobenzene	2.8	Not Detected	16	Not Detected
1,4-Dichlorobenzene	2.8	Not Detected	16	Not Detected
alpha-Chlorotoluene	2.8	Not Detected	14	Not Detected
1,2-Dichlorobenzene	2.8	Not Detected	16	Not Detected
1,2,4-Trichlorobenzene	11	Not Detected	82	Not Detected
Hexachlorobutadiene	11	Not Detected	120	Not Detected
Butane	11	34	26	80
Isopentane	11	560	32	1700

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	89	70-130

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Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156AR1-03B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021311**	**Date of Collection:**	**2/6/15 9:29:00 AM**
Dil. Factor:	**2.76**	**Date of Analysis:**	**2/13/15 07:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.65 J	6.8	3.2 J
Freon 114	1.4	Not Detected	9.6	Not Detected
Chloromethane	14	Not Detected	28	Not Detected
Vinyl Chloride	1.4	Not Detected	3.5	Not Detected
1,3-Butadiene	1.4	Not Detected	3.0	Not Detected
Bromomethane	14	Not Detected	54	Not Detected
Chloroethane	5.5	Not Detected	14	Not Detected
Freon 11	1.4	Not Detected	7.8	Not Detected
Ethanol	5.5	4.1 J	10	7.8 J
Freon 113	1.4	Not Detected	10	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.5	Not Detected
Acetone	14	Not Detected	33	Not Detected
2-Propanol	5.5	9.3	14	23
Carbon Disulfide	5.5	8.8	17	27
3-Chloropropene	5.5	Not Detected	17	Not Detected
Methylene Chloride	14	Not Detected	48	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.0	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.5	Not Detected
Hexane	1.4	1.3 J	4.9	4.6 J
1,1-Dichloroethane	1.4	Not Detected	5.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.5	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.5	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.1	Not Detected
Chloroform	1.4	0.92 J	6.7	4.5 J
1,1,1-Trichloroethane	1.4	Not Detected	7.5	Not Detected
Cyclohexane	1.4	66	4.8	230
Carbon Tetrachloride	1.4	Not Detected	8.7	Not Detected
2,2,4-Trimethylpentane	1.4	430	6.4	2000
Benzene	1.4	0.97 J	4.4	3.1 J
1,2-Dichloroethane	1.4	Not Detected	5.6	Not Detected
Heptane	1.4	Not Detected	5.6	Not Detected
Trichloroethene	1.4	Not Detected	7.4	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.4	Not Detected
1,4-Dioxane	5.5	Not Detected	20	Not Detected
Bromodichloromethane	1.4	Not Detected	9.2	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.3	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.6	Not Detected
Toluene	1.4	0.27 J	5.2	1.0 J
trans-1,3-Dichloropropene	1.4	Not Detected	6.3	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.5	Not Detected
Tetrachloroethene	1.4	Not Detected	9.4	Not Detected
2-Hexanone	5.5	Not Detected	23	Not Detected

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Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156AR1-03B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021311**	**Date of Collection:**	**2/6/15 9:29:00 AM**
Dil. Factor:	**2.76**	**Date of Analysis:**	**2/13/15 07:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.4	Not Detected
Ethyl Benzene	1.4	Not Detected	6.0	Not Detected
m,p-Xylene	1.4	Not Detected	6.0	Not Detected
o-Xylene	1.4	Not Detected	6.0	Not Detected
Styrene	1.4	Not Detected	5.9	Not Detected
Bromoform	1.4	Not Detected	14	Not Detected
Cumene	1.4	Not Detected	6.8	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.5	Not Detected
Propylbenzene	1.4	Not Detected	6.8	Not Detected
4-Ethyltoluene	1.4	Not Detected	6.8	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	6.8	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	6.8	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.3	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.3	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.1	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.3	Not Detected
1,2,4-Trichlorobenzene	5.5	Not Detected	41	Not Detected
Hexachlorobutadiene	5.5	Not Detected	59	Not Detected
Butane	5.5	35	13	82
Isopentane	5.5	600 E	16	1800 E

J = Estimated value.
E = Exceeds instrument calibration range.
Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156AR1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021314**	**Date of Collection:**	**2/6/15 9:55:00 AM**
Dil. Factor:	**4.84**	**Date of Analysis:**	**2/13/15 10:13 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.4	0.61 J	12	3.0 J
Freon 114	2.4	Not Detected	17	Not Detected
Chloromethane	24	Not Detected	50	Not Detected
Vinyl Chloride	2.4	Not Detected	6.2	Not Detected
1,3-Butadiene	2.4	Not Detected	5.4	Not Detected
Bromomethane	24	Not Detected	94	Not Detected
Chloroethane	9.7	Not Detected	26	Not Detected
Freon 11	2.4	Not Detected	14	Not Detected
Ethanol	9.7	19	18	36
Freon 113	2.4	Not Detected	18	Not Detected
1,1-Dichloroethene	2.4	Not Detected	9.6	Not Detected
Acetone	24	Not Detected	57	Not Detected
2-Propanol	9.7	76	24	180
Carbon Disulfide	9.7	8.7 J	30	27 J
3-Chloropropene	9.7	Not Detected	30	Not Detected
Methylene Chloride	24	Not Detected	84	Not Detected
Methyl tert-butyl ether	2.4	Not Detected	8.7	Not Detected
trans-1,2-Dichloroethene	2.4	Not Detected	9.6	Not Detected
Hexane	2.4	1.6 J	8.5	5.7 J
1,1-Dichloroethane	2.4	Not Detected	9.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	9.7	Not Detected	28	Not Detected
cis-1,2-Dichloroethene	2.4	Not Detected	9.6	Not Detected
Tetrahydrofuran	2.4	Not Detected	7.1	Not Detected
Chloroform	2.4	1.0 J	12	4.9 J
1,1,1-Trichloroethane	2.4	Not Detected	13	Not Detected
Cyclohexane	2.4	23	8.3	80
Carbon Tetrachloride	2.4	Not Detected	15	Not Detected
2,2,4-Trimethylpentane	2.4	140	11	680
Benzene	2.4	4.8	7.7	15
1,2-Dichloroethane	2.4	Not Detected	9.8	Not Detected
Heptane	2.4	Not Detected	9.9	Not Detected
Trichloroethene	2.4	Not Detected	13	Not Detected
1,2-Dichloropropane	2.4	Not Detected	11	Not Detected
1,4-Dioxane	9.7	Not Detected	35	Not Detected
Bromodichloromethane	2.4	Not Detected	16	Not Detected
cis-1,3-Dichloropropene	2.4	Not Detected	11	Not Detected
4-Methyl-2-pentanone	2.4	Not Detected	9.9	Not Detected
Toluene	2.4	0.52 J	9.1	2.0 J
trans-1,3-Dichloropropene	2.4	Not Detected	11	Not Detected
1,1,2-Trichloroethane	2.4	Not Detected	13	Not Detected
Tetrachloroethene	2.4	Not Detected	16	Not Detected
2-Hexanone	9.7	Not Detected	40	Not Detected

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Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156AR1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021314**	**Date of Collection:**	**2/6/15 9:55:00 AM**
Dil. Factor:	**4.84**	**Date of Analysis:**	**2/13/15 10:13 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	2.4	Not Detected	21	Not Detected
1,2-Dibromoethane (EDB)	2.4	Not Detected	18	Not Detected
Chlorobenzene	2.4	Not Detected	11	Not Detected
Ethyl Benzene	2.4	Not Detected	10	Not Detected
m,p-Xylene	2.4	Not Detected	10	Not Detected
o-Xylene	2.4	Not Detected	10	Not Detected
Styrene	2.4	Not Detected	10	Not Detected
Bromoform	2.4	Not Detected	25	Not Detected
Cumene	2.4	Not Detected	12	Not Detected
1,1,2,2-Tetrachloroethane	2.4	Not Detected	17	Not Detected
Propylbenzene	2.4	Not Detected	12	Not Detected
4-Ethyltoluene	2.4	Not Detected	12	Not Detected
1,3,5-Trimethylbenzene	2.4	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	2.4	Not Detected	12	Not Detected
1,3-Dichlorobenzene	2.4	Not Detected	14	Not Detected
1,4-Dichlorobenzene	2.4	Not Detected	14	Not Detected
alpha-Chlorotoluene	2.4	Not Detected	12	Not Detected
1,2-Dichlorobenzene	2.4	Not Detected	14	Not Detected
1,2,4-Trichlorobenzene	9.7	Not Detected	72	Not Detected
Hexachlorobutadiene	9.7	Not Detected	100	Not Detected
Butane	9.7	40	23	94
Isopentane	9.7	480	28	1400

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156AR1-04B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021312**	**Date of Collection:**	**2/6/15 9:55:00 AM**
Dil. Factor:	**2.42**	**Date of Analysis:**	**2/13/15 08:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.49 J	6.0	2.4 J
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	Not Detected	2.7	Not Detected
Bromomethane	12	Not Detected	47	Not Detected
Chloroethane	4.8	Not Detected	13	Not Detected
Freon 11	1.2	Not Detected	6.8	Not Detected
Ethanol	4.8	21	9.1	39
Freon 113	1.2	Not Detected	9.3	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	Not Detected	29	Not Detected
2-Propanol	4.8	91	12	220
Carbon Disulfide	4.8	10	15	32
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	42	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.4	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	1.7	4.3	6.0
1,1-Dichloroethane	1.2	Not Detected	4.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	1.2	1.1 J	5.9	5.3 J
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Cyclohexane	1.2	26	4.2	88
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
2,2,4-Trimethylpentane	1.2	160	5.6	740
Benzene	1.2	5.2	3.9	16
1,2-Dichloroethane	1.2	Not Detected	4.9	Not Detected
Heptane	1.2	Not Detected	5.0	Not Detected
Trichloroethene	1.2	Not Detected	6.5	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.6	Not Detected
1,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.1	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	5.0	Not Detected
Toluene	1.2	0.51 J	4.6	1.9 J
trans-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Tetrachloroethene	1.2	Not Detected	8.2	Not Detected
2-Hexanone	4.8	Not Detected	20	Not Detected

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Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156AR1-04B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021312**	**Date of Collection:**	**2/6/15 9:55:00 AM**
Dil. Factor:	**2.42**	**Date of Analysis:**	**2/13/15 08:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.3	Not Detected
Chlorobenzene	1.2	Not Detected	5.6	Not Detected
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1.2	0.49 J	5.2	2.1 J
o-Xylene	1.2	0.21 J	5.2	0.93 J
Styrene	1.2	Not Detected	5.2	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.9	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.3	Not Detected
Propylbenzene	1.2	Not Detected	5.9	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.9	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.9	Not Detected
1,2,4-Trimethylbenzene	1.2	0.23 J	5.9	1.1 J
1,3-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.3	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected
Hexachlorobutadiene	4.8	Not Detected	52	Not Detected
Butane	4.8	41	12	98
Isopentane	4.8	520 E	14	1500 E

J = Estimated value.
E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: VMP-15-29-020615-DUP

Lab ID#: 1502156AR1-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021315**	**Date of Collection:**	**2/6/15 9:55:00 AM**
Dil. Factor:	**2.58**	**Date of Analysis:**	**2/13/15 10:57 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.58 J	6.4	2.8 J
Freon 114	1.3	Not Detected	9.0	Not Detected
Chloromethane	13	Not Detected	27	Not Detected
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	13	Not Detected	50	Not Detected
Chloroethane	5.2	Not Detected	14	Not Detected
Freon 11	1.3	Not Detected	7.2	Not Detected
Ethanol	5.2	16	9.7	29
Freon 113	1.3	Not Detected	9.9	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Acetone	13	Not Detected	31	Not Detected
2-Propanol	5.2	70	13	170
Carbon Disulfide	5.2	6.8	16	21
3-Chloropropene	5.2	Not Detected	16	Not Detected
Methylene Chloride	13	Not Detected	45	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Hexane	1.3	1.8	4.5	6.2
1,1-Dichloroethane	1.3	Not Detected	5.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.2	Not Detected	15	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.8	Not Detected
Chloroform	1.3	0.98 J	6.3	4.8 J
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Cyclohexane	1.3	25	4.4	87
Carbon Tetrachloride	1.3	Not Detected	8.1	Not Detected
2,2,4-Trimethylpentane	1.3	160	6.0	730
Benzene	1.3	5.2	4.1	17
1,2-Dichloroethane	1.3	Not Detected	5.2	Not Detected
Heptane	1.3	0.33 J	5.3	1.3 J
Trichloroethene	1.3	Not Detected	6.9	Not Detected
1,2-Dichloropropane	1.3	Not Detected	6.0	Not Detected
1,4-Dioxane	5.2	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.6	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.3	Not Detected
Toluene	1.3	0.88 J	4.9	3.3 J
trans-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Tetrachloroethene	1.3	Not Detected	8.8	Not Detected
2-Hexanone	5.2	Not Detected	21	Not Detected

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Client Sample ID: VMP-15-29-020615-DUP

Lab ID#: 1502156AR1-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021315**	**Date of Collection:**	**2/6/15 9:55:00 AM**
Dil. Factor:	**2.58**	**Date of Analysis:**	**2/13/15 10:57 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.9	Not Detected
Chlorobenzene	1.3	Not Detected	5.9	Not Detected
Ethyl Benzene	1.3	Not Detected	5.6	Not Detected
m,p-Xylene	1.3	Not Detected	5.6	Not Detected
o-Xylene	1.3	Not Detected	5.6	Not Detected
Styrene	1.3	Not Detected	5.5	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.3	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.8	Not Detected
Propylbenzene	1.3	Not Detected	6.3	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.3	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.3	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.3	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.7	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,2,4-Trichlorobenzene	5.2	Not Detected	38	Not Detected
Hexachlorobutadiene	5.2	Not Detected	55	Not Detected
Butane	5.2	40	12	96
Isopentane	5.2	510	15	1500

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: VMP-55-5-020515

Lab ID#: 1502156AR1-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021316**	**Date of Collection:**	**2/5/15 3:51:00 PM**
Dil. Factor:	**2.58**	**Date of Analysis:**	**2/14/15 08:26 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.56 J	6.4	2.7 J
Freon 114	1.3	Not Detected	9.0	Not Detected
Chloromethane	13	Not Detected	27	Not Detected
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	13	Not Detected	50	Not Detected
Chloroethane	5.2	Not Detected	14	Not Detected
Freon 11	1.3	Not Detected	7.2	Not Detected
Ethanol	5.2	Not Detected	9.7	Not Detected
Freon 113	1.3	Not Detected	9.9	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Acetone	13	Not Detected	31	Not Detected
2-Propanol	5.2	27	13	67
Carbon Disulfide	5.2	Not Detected	16	Not Detected
3-Chloropropene	5.2	Not Detected	16	Not Detected
Methylene Chloride	13	Not Detected	45	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Hexane	1.3	Not Detected	4.5	Not Detected
1,1-Dichloroethane	1.3	Not Detected	5.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.2	Not Detected	15	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.8	Not Detected
Chloroform	1.3	Not Detected	6.3	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.1	Not Detected
2,2,4-Trimethylpentane	1.3	1.3	6.0	6.3
Benzene	1.3	Not Detected	4.1	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.2	Not Detected
Heptane	1.3	Not Detected	5.3	Not Detected
Trichloroethene	1.3	Not Detected	6.9	Not Detected
1,2-Dichloropropane	1.3	Not Detected	6.0	Not Detected
1,4-Dioxane	5.2	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.6	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.3	Not Detected
Toluene	1.3	Not Detected	4.9	Not Detected
trans-1,3-Dichloropropene	1.3	Not Detected	5.8	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Tetrachloroethene	1.3	Not Detected	8.8	Not Detected
2-Hexanone	5.2	Not Detected	21	Not Detected

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Client Sample ID: VMP-55-5-020515

Lab ID#: 1502156AR1-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021316**	**Date of Collection:**	**2/5/15 3:51:00 PM**
Dil. Factor:	**2.58**	**Date of Analysis:**	**2/14/15 08:26 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.9	Not Detected
Chlorobenzene	1.3	Not Detected	5.9	Not Detected
Ethyl Benzene	1.3	Not Detected	5.6	Not Detected
m,p-Xylene	1.3	Not Detected	5.6	Not Detected
o-Xylene	1.3	Not Detected	5.6	Not Detected
Styrene	1.3	Not Detected	5.5	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.3	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.8	Not Detected
Propylbenzene	1.3	Not Detected	6.3	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.3	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.3	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.3	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.7	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,2,4-Trichlorobenzene	5.2	Not Detected	38	Not Detected
Hexachlorobutadiene	5.2	Not Detected	55	Not Detected
Butane	5.2	Not Detected	12	Not Detected
Isopentane	5.2	Not Detected	15	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	88	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1502156AR1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021308a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 03:38 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 1502156AR1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021308a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 03:38 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Butane	2.0	Not Detected	4.8	Not Detected
Isopentane	2.0	Not Detected	5.9	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: CCV

Lab ID#: 1502156AR1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 09:56 AM**	

Compound	%Recovery
Freon 12	96
Freon 114	95
Chloromethane	93
Vinyl Chloride	92
1,3-Butadiene	102
Bromomethane	92
Chloroethane	101
Freon 11	98
Ethanol	98
Freon 113	94
1,1-Dichloroethene	97
Acetone	99
2-Propanol	97
Carbon Disulfide	106
3-Chloropropene	107
Methylene Chloride	92
Methyl tert-butyl ether	92
trans-1,2-Dichloroethene	93
Hexane	100
1,1-Dichloroethane	95
2-Butanone (Methyl Ethyl Ketone)	98
cis-1,2-Dichloroethene	96
Tetrahydrofuran	104
Chloroform	96
1,1,1-Trichloroethane	95
Cyclohexane	99
Carbon Tetrachloride	98
2,2,4-Trimethylpentane	101
Benzene	94
1,2-Dichloroethane	96
Heptane	101
Trichloroethene	97
1,2-Dichloropropane	96
1,4-Dioxane	102
Bromodichloromethane	97
cis-1,3-Dichloropropene	99
4-Methyl-2-pentanone	109
Toluene	98
trans-1,3-Dichloropropene	106
1,1,2-Trichloroethane	101
Tetrachloroethene	94
2-Hexanone	111

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Client Sample ID: CCV

Lab ID#: 1502156AR1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 09:56 AM**	

Compound	%Recovery
Dibromochloromethane	102
1,2-Dibromoethane (EDB)	103
Chlorobenzene	97
Ethyl Benzene	104
m,p-Xylene	106
o-Xylene	104
Styrene	107
Bromoform	99
Cumene	104
1,1,2,2-Tetrachloroethane	102
Propylbenzene	110
4-Ethyltoluene	108
1,3,5-Trimethylbenzene	102
1,2,4-Trimethylbenzene	105
1,3-Dichlorobenzene	114
1,4-Dichlorobenzene	103
alpha-Chlorotoluene	115
1,2-Dichlorobenzene	109
1,2,4-Trichlorobenzene	75
Hexachlorobutadiene	96
Butane	104
Isopentane	99

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 1502156AR1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 11:08 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	95	70-130
Chloromethane	94	70-130
Vinyl Chloride	94	70-130
1,3-Butadiene	98	70-130
Bromomethane	91	70-130
Chloroethane	101	70-130
Freon 11	98	70-130
Ethanol	122	70-130
Freon 113	97	70-130
1,1-Dichloroethene	100	70-130
Acetone	94	70-130
2-Propanol	108	70-130
Carbon Disulfide	96	70-130
3-Chloropropene	100	70-130
Methylene Chloride	94	70-130
Methyl tert-butyl ether	90	70-130
trans-1,2-Dichloroethene	87	70-130
Hexane	98	70-130
1,1-Dichloroethane	95	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
cis-1,2-Dichloroethene	97	70-130
Tetrahydrofuran	104	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	95	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	98	70-130
2,2,4-Trimethylpentane	100	70-130
Benzene	93	70-130
1,2-Dichloroethane	93	70-130
Heptane	99	70-130
Trichloroethene	94	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	106	70-130
Bromodichloromethane	94	70-130
cis-1,3-Dichloropropene	104	70-130
4-Methyl-2-pentanone	112	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	102	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	93	70-130
2-Hexanone	122	70-130

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Client Sample ID: LCS

Lab ID#: 1502156AR1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 11:08 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	102	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	104	70-130
o-Xylene	102	70-130
Styrene	118	70-130
Bromoform	102	70-130
Cumene	105	70-130
1,1,2,2-Tetrachloroethane	100	70-130
Propylbenzene	110	70-130
4-Ethyltoluene	111	70-130
1,3,5-Trimethylbenzene	113	70-130
1,2,4-Trimethylbenzene	112	70-130
1,3-Dichlorobenzene	111	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	202 Q	70-130
1,2-Dichlorobenzene	110	70-130
1,2,4-Trichlorobenzene	120	70-130
Hexachlorobutadiene	136 Q	70-130
Butane	108	60-140
Isopentane	97	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1502156AR1-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 12:04 PM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	96	70-130
Chloromethane	94	70-130
Vinyl Chloride	97	70-130
1,3-Butadiene	99	70-130
Bromomethane	92	70-130
Chloroethane	102	70-130
Freon 11	97	70-130
Ethanol	106	70-130
Freon 113	98	70-130
1,1-Dichloroethene	101	70-130
Acetone	96	70-130
2-Propanol	110	70-130
Carbon Disulfide	97	70-130
3-Chloropropene	101	70-130
Methylene Chloride	96	70-130
Methyl tert-butyl ether	92	70-130
trans-1,2-Dichloroethene	90	70-130
Hexane	99	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
cis-1,2-Dichloroethene	97	70-130
Tetrahydrofuran	105	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	99	70-130
Carbon Tetrachloride	99	70-130
2,2,4-Trimethylpentane	101	70-130
Benzene	93	70-130
1,2-Dichloroethane	94	70-130
Heptane	99	70-130
Trichloroethene	94	70-130
1,2-Dichloropropane	96	70-130
1,4-Dioxane	106	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	105	70-130
4-Methyl-2-pentanone	113	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	102	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	93	70-130
2-Hexanone	121	70-130

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Client Sample ID: LCSD

Lab ID#: 1502156AR1-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**2021304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/13/15 12:04 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	101	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	101	70-130
o-Xylene	99	70-130
Styrene	114	70-130
Bromoform	101	70-130
Cumene	101	70-130
1,1,2,2-Tetrachloroethane	100	70-130
Propylbenzene	107	70-130
4-Ethyltoluene	108	70-130
1,3,5-Trimethylbenzene	111	70-130
1,2,4-Trimethylbenzene	112	70-130
1,3-Dichlorobenzene	108	70-130
1,4-Dichlorobenzene	101	70-130
alpha-Chlorotoluene	198 Q	70-130
1,2-Dichlorobenzene	108	70-130
1,2,4-Trichlorobenzene	121	70-130
Hexachlorobutadiene	134 Q	70-130
Butane	106	60-140
Isopentane	98	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	100	70-130

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2/20/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04201
Workorder #: 1502156B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 2/9/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1502156B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04201 Roxana Soil Vapor
DATE RECEIVED:	02/09/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/20/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-020615	Modified ASTM D-1946	6.5 "Hg	15 psi
02A	VMP-15-21.5-020615	Modified ASTM D-1946	9.0 "Hg	15 psi
03A	VMP-15-25.5-020615	Modified ASTM D-1946	8.0 "Hg	15 psi
04A	VMP-15-29-020615	Modified ASTM D-1946	5.0 "Hg	15 psi
05A	VMP-15-29-020615-DUP	Modified ASTM D-1946	6.5 "Hg	15 psi
06A	VMP-55-5-020515	Modified ASTM D-1946	6.5 "Hg	15 psi
07A	Lab Blank	Modified ASTM D-1946	NA	NA
07B	Lab Blank	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 02/20/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1502156B

Six 1 Liter Summa Canister samples were received on February 09, 2015. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

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

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

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.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
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 detection limit.
M - Reported value may be biased due to apparent matrix interferences.
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

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-15-5-020615

Lab ID#: 1502156B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	16
Nitrogen	0.26	82
Methane	0.00026	0.000019 J
Carbon Dioxide	0.026	1.8

Client Sample ID: VMP-15-21.5-020615

Lab ID#: 1502156B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	2.7
Nitrogen	0.29	86
Methane	0.00029	0.000094 J
Carbon Dioxide	0.029	11

Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	3.2
Nitrogen	0.28	86
Methane	0.00028	0.018
Carbon Dioxide	0.028	11

Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	7.0
Nitrogen	0.24	83
Methane	0.00024	0.0080
Carbon Dioxide	0.024	9.5

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-15-29-020615-DUP

Lab ID#: 1502156B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	7.6
Nitrogen	0.26	83
Methane	0.00026	0.0076
Carbon Dioxide	0.026	9.1

Client Sample ID: VMP-55-5-020515

Lab ID#: 1502156B-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	3.0
Nitrogen	0.26	82
Methane	0.00026	0.00038
Carbon Dioxide	0.026	15

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Client Sample ID: VMP-15-5-020615

Lab ID#: 1502156B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021917**	**Date of Collection: 2/6/15 10:21:00 AM**	
Dil. Factor:	**2.58**	**Date of Analysis: 2/19/15 03:56 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	16
Nitrogen	0.26	82
Carbon Monoxide	0.026	Not Detected
Methane	0.00026	0.000019 J
Carbon Dioxide	0.026	1.8
Ethane	0.0026	Not Detected
Ethene	0.0026	Not Detected
Helium	0.13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-020615

Lab ID#: 1502156B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021918**	**Date of Collection: 2/6/15 10:44:00 AM**	
Dil. Factor:	**2.89**	**Date of Analysis: 2/19/15 04:17 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	2.7
Nitrogen	0.29	86
Carbon Monoxide	0.029	Not Detected
Methane	0.00029	0.000094 J
Carbon Dioxide	0.029	11
Ethane	0.0029	Not Detected
Ethene	0.0029	Not Detected
Helium	0.14	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-020615

Lab ID#: 1502156B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021919**	**Date of Collection: 2/6/15 9:29:00 AM**	
Dil. Factor:	**2.76**	**Date of Analysis: 2/19/15 04:39 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	3.2
Nitrogen	0.28	86
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	0.018
Carbon Dioxide	0.028	11
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-29-020615

Lab ID#: 1502156B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021920**	**Date of Collection: 2/6/15 9:55:00 AM**	
Dil. Factor:	**2.42**	**Date of Analysis: 2/19/15 05:12 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	7.0
Nitrogen	0.24	83
Carbon Monoxide	0.024	Not Detected
Methane	0.00024	0.0080
Carbon Dioxide	0.024	9.5
Ethane	0.0024	Not Detected
Ethene	0.0024	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-29-020615-DUP

Lab ID#: 1502156B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021921**	**Date of Collection: 2/6/15 9:55:00 AM**	
Dil. Factor:	**2.58**	**Date of Analysis: 2/19/15 05:40 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	7.6
Nitrogen	0.26	83
Carbon Monoxide	0.026	Not Detected
Methane	0.00026	0.0076
Carbon Dioxide	0.026	9.1
Ethane	0.0026	Not Detected
Ethene	0.0026	Not Detected
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-5-020515

Lab ID#: 1502156B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021922**	**Date of Collection: 2/5/15 3:51:00 PM**	
Dil. Factor:	**2.58**	**Date of Analysis: 2/19/15 06:01 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	3.0
Nitrogen	0.26	82
Carbon Monoxide	0.026	Not Detected
Methane	0.00026	0.00038
Carbon Dioxide	0.026	15
Ethane	0.0026	Not Detected
Ethene	0.0026	Not Detected
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1502156B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 08:32 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	0.041 J
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1502156B-07B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021903b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 08:11 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1502156B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 07:48 AM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	93	85-115
Carbon Monoxide	103	85-115
Methane	98	85-115
Carbon Dioxide	102	85-115
Ethane	100	85-115
Ethene	103	85-115
Helium	102	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1502156B-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021923**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 06:27 PM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	93	85-115
Carbon Monoxide	103	85-115
Methane	97	85-115
Carbon Dioxide	102	85-115
Ethane	100	85-115
Ethene	103	85-115
Helium	102	85-115

Container Type: NA - Not Applicable

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2/24/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04201
Workorder #: 1502187A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 2/11/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1502187A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04201 Roxana Soil Vapor
DATE RECEIVED:	02/11/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/24/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07A	VMP-55-20-020515	TO-15	6.7 "Hg	14.8 psi
09A	Lab Blank	TO-15	NA	NA
09B	Lab Blank	TO-15	NA	NA
10A	CCV	TO-15	NA	NA
10B	CCV	TO-15	NA	NA
11A	LCS	TO-15	NA	NA
11AA	LCSD	TO-15	NA	NA
11B	LCS	TO-15	NA	NA
11BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/24/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1502187A

Eight 1 Liter Summa Canister samples were received on February 11, 2015. 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.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Dilution was performed on all samples due to the presence of high level 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

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

Client Sample ID: VMP-55-20-020515

Lab ID#: 1502187A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	1300	460 J	3100	1100 J
2-Propanol	520	170 J	1300	410 J
Methylene Chloride	1300	130 J	4500	440 J

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

Client Sample ID: VMP-55-20-020515

Lab ID#: 1502187A-07A

Methyl tert-butyl ether	130	45 J	460	160 J
1,1,1-Trichloroethane	130	42 J	700	230 J
2,2,4-Trimethylpentane	130	50000	600	230000
Benzene	130	69 J	410	220 J
Trichloroethene	130	56 J	690	300 J
Toluene	130	190	490	720
Ethyl Benzene	130	22 J	560	94 J
m,p-Xylene	130	40 J	560	170 J
o-Xylene	130	30 J	560	130 J
Styrene	130	36 J	550	150 J
Propylbenzene	130	22 J	630	110 J
4-Ethyltoluene	130	83 J	630	410 J
1,3,5-Trimethylbenzene	130	28 J	630	140 J
1,2,4-Trimethylbenzene	130	110 J	630	540 J
Butane	520	380 J	1200	900 J
Isopentane	520	620	1500	1800

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Client Sample ID: VMP-55-20-020515

Lab ID#: 1502187A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021915**	**Date of Collection:**	**2/5/15 4:16:00 PM**
Dil. Factor:	**258**	**Date of Analysis:**	**2/19/15 04:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	130	Not Detected	640	Not Detected
Freon 114	130	Not Detected	900	Not Detected
Chloromethane	1300	Not Detected	2700	Not Detected
Vinyl Chloride	130	Not Detected	330	Not Detected
1,3-Butadiene	130	Not Detected	280	Not Detected
Bromomethane	1300	Not Detected	5000	Not Detected
Chloroethane	520	Not Detected	1400	Not Detected
Freon 11	130	Not Detected	720	Not Detected
Ethanol	520	Not Detected	970	Not Detected
Freon 113	130	Not Detected	990	Not Detected
1,1-Dichloroethene	130	Not Detected	510	Not Detected
Acetone	1300	460 J	3100	1100 J
2-Propanol	520	170 J	1300	410 J
Carbon Disulfide	520	Not Detected	1600	Not Detected
3-Chloropropene	520	Not Detected	1600	Not Detected
Methylene Chloride	1300	130 J	4500	440 J
Methyl tert-butyl ether	130	45 J	460	160 J
trans-1,2-Dichloroethene	130	Not Detected	510	Not Detected
Hexane	130	Not Detected	450	Not Detected
1,1-Dichloroethane	130	Not Detected	520	Not Detected
2-Butanone (Methyl Ethyl Ketone)	520	Not Detected	1500	Not Detected
cis-1,2-Dichloroethene	130	Not Detected	510	Not Detected
Tetrahydrofuran	130	Not Detected	380	Not Detected
Chloroform	130	Not Detected	630	Not Detected
1,1,1-Trichloroethane	130	42 J	700	230 J
Cyclohexane	130	Not Detected	440	Not Detected
Carbon Tetrachloride	130	Not Detected	810	Not Detected
2,2,4-Trimethylpentane	130	50000	600	230000
Benzene	130	69 J	410	220 J
1,2-Dichloroethane	130	Not Detected	520	Not Detected
Heptane	130	Not Detected	530	Not Detected
Trichloroethene	130	56 J	690	300 J
1,2-Dichloropropane	130	Not Detected	600	Not Detected
1,4-Dioxane	520	Not Detected	1800	Not Detected
Bromodichloromethane	130	Not Detected	860	Not Detected
cis-1,3-Dichloropropene	130	Not Detected	580	Not Detected
4-Methyl-2-pentanone	130	Not Detected	530	Not Detected
Toluene	130	190	490	720
trans-1,3-Dichloropropene	130	Not Detected	580	Not Detected
1,1,2-Trichloroethane	130	Not Detected	700	Not Detected
Tetrachloroethene	130	Not Detected	880	Not Detected
2-Hexanone	520	Not Detected	2100	Not Detected

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Client Sample ID: VMP-55-20-020515

Lab ID#: 1502187A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021915**	**Date of Collection:**	**2/5/15 4:16:00 PM**
Dil. Factor:	**258**	**Date of Analysis:**	**2/19/15 04:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	130	Not Detected	1100	Not Detected
1,2-Dibromoethane (EDB)	130	Not Detected	990	Not Detected
Chlorobenzene	130	Not Detected	590	Not Detected
Ethyl Benzene	130	22 J	560	94 J
m,p-Xylene	130	40 J	560	170 J
o-Xylene	130	30 J	560	130 J
Styrene	130	36 J	550	150 J
Bromoform	130	Not Detected	1300	Not Detected
Cumene	130	Not Detected	630	Not Detected
1,1,2,2-Tetrachloroethane	130	Not Detected	880	Not Detected
Propylbenzene	130	22 J	630	110 J
4-Ethyltoluene	130	83 J	630	410 J
1,3,5-Trimethylbenzene	130	28 J	630	140 J
1,2,4-Trimethylbenzene	130	110 J	630	540 J
1,3-Dichlorobenzene	130	Not Detected	780	Not Detected
1,4-Dichlorobenzene	130	Not Detected	780	Not Detected
alpha-Chlorotoluene	130	Not Detected	670	Not Detected
1,2-Dichlorobenzene	130	Not Detected	780	Not Detected
1,2,4-Trichlorobenzene	520	Not Detected	3800	Not Detected
Hexachlorobutadiene	520	Not Detected	5500	Not Detected
Butane	520	380 J	1200	900 J
Isopentane	520	620	1500	1800

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1502187A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021910d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 01:46 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	0.18 J	3.5	1.2 J
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	0.19 J	2.8	1.0 J
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	0.13 J	3.8	0.97 J
1,1-Dichloroethene	0.50	0.26 J	2.0	1.0 J
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	0.14 J	1.8	0.49 J
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	0.18 J	2.0	0.71 J
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	0.20 J	2.0	0.81 J
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	0.16 J	2.4	0.77 J
1,1,1-Trichloroethane	0.50	0.16 J	2.7	0.90 J
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	0.13 J	3.1	0.83 J
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	0.17 J	1.6	0.55 J
1,2-Dichloroethane	0.50	0.21 J	2.0	0.84 J
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	0.16 J	2.3	0.72 J
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	0.21 J	3.4	1.4 J
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	0.11 J	2.7	0.61 J
Tetrachloroethene	0.50	0.12 J	3.4	0.82 J
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 1502187A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021910d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 01:46 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	0.098 J	4.2	0.84 J
1,2-Dibromoethane (EDB)	0.50	0.098 J	3.8	0.76 J
Chlorobenzene	0.50	0.092 J	2.3	0.42 J
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	0.099 J	5.2	1.0 J
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	0.12 J	2.4	0.57 J
1,2,4-Trimethylbenzene	0.50	0.078 J	2.4	0.38 J
1,3-Dichlorobenzene	0.50	0.10 J	3.0	0.61 J
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	0.091 J	2.6	0.47 J
1,2-Dichlorobenzene	0.50	0.088 J	3.0	0.53 J
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Butane	2.0	Not Detected	4.8	Not Detected
Isopentane	2.0	Not Detected	5.9	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1502187A-09B

EPA METHOD TO-15 GC/MS

File Name:	**14021935d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 04:25 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected	38	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	5.0	Not Detected	16	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	72	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	82	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 1502187A-09B

EPA METHOD TO-15 GC/MS

File Name:	**14021935d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 04:25 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected
Butane	20	Not Detected	48	Not Detected
Isopentane	20	Not Detected	59	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: CCV

Lab ID#: 1502187A-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021902**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 08:46 AM**

Compound	%Recovery
Freon 12	105
Freon 114	104
Chloromethane	93
Vinyl Chloride	94
1,3-Butadiene	84
Bromomethane	99
Chloroethane	91
Freon 11	101
Ethanol	75
Freon 113	99
1,1-Dichloroethene	94
Acetone	80
2-Propanol	79
Carbon Disulfide	91
3-Chloropropene	92
Methylene Chloride	78
Methyl tert-butyl ether	95
trans-1,2-Dichloroethene	96
Hexane	87
1,1-Dichloroethane	90
2-Butanone (Methyl Ethyl Ketone)	90
cis-1,2-Dichloroethene	94
Tetrahydrofuran	80
Chloroform	96
1,1,1-Trichloroethane	101
Cyclohexane	95
Carbon Tetrachloride	103
2,2,4-Trimethylpentane	96
Benzene	95
1,2-Dichloroethane	100
Heptane	103
Trichloroethene	96
1,2-Dichloropropane	86
1,4-Dioxane	93
Bromodichloromethane	98
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	83
Toluene	95
trans-1,3-Dichloropropene	99
1,1,2-Trichloroethane	93
Tetrachloroethene	103
2-Hexanone	88

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Client Sample ID: CCV

Lab ID#: 1502187A-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 08:46 AM**	

Compound	%Recovery
Dibromochloromethane	102
1,2-Dibromoethane (EDB)	98
Chlorobenzene	94
Ethyl Benzene	96
m,p-Xylene	99
o-Xylene	99
Styrene	108
Bromoform	101
Cumene	102
1,1,2,2-Tetrachloroethane	85
Propylbenzene	92
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	104
1,2,4-Trimethylbenzene	101
1,3-Dichlorobenzene	95
1,4-Dichlorobenzene	96
alpha-Chlorotoluene	129
1,2-Dichlorobenzene	93
1,2,4-Trichlorobenzene	121
Hexachlorobutadiene	123
Butane	113
Isopentane	78

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 1502187A-10B

EPA METHOD TO-15 GC/MS

File Name:	**14021931**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 02:38 PM**

Compound	%Recovery
Freon 12	85
Freon 114	90
Chloromethane	80
Vinyl Chloride	92
1,3-Butadiene	86
Bromomethane	73
Chloroethane	84
Freon 11	88
Ethanol	70
Freon 113	96
1,1-Dichloroethene	86
Acetone	91
2-Propanol	82
Carbon Disulfide	94
3-Chloropropene	89
Methylene Chloride	83
Methyl tert-butyl ether	121
trans-1,2-Dichloroethene	93
Hexane	86
1,1-Dichloroethane	92
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	85
Tetrahydrofuran	84
Chloroform	90
1,1,1-Trichloroethane	90
Cyclohexane	93
Carbon Tetrachloride	90
2,2,4-Trimethylpentane	88
Benzene	95
1,2-Dichloroethane	85
Heptane	92
Trichloroethene	83
1,2-Dichloropropane	92
1,4-Dioxane	94
Bromodichloromethane	87
cis-1,3-Dichloropropene	95
4-Methyl-2-pentanone	86
Toluene	93
trans-1,3-Dichloropropene	95
1,1,2-Trichloroethane	95
Tetrachloroethene	96
2-Hexanone	87

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Client Sample ID: CCV

Lab ID#: 1502187A-10B

EPA METHOD TO-15 GC/MS

File Name:	**14021931**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 02:38 PM**	

Compound	%Recovery
Dibromochloromethane	92
1,2-Dibromoethane (EDB)	95
Chlorobenzene	94
Ethyl Benzene	94
m,p-Xylene	95
o-Xylene	94
Styrene	102
Bromoform	96
Cumene	94
1,1,2,2-Tetrachloroethane	111
Propylbenzene	98
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	102
1,2,4-Trimethylbenzene	99
1,3-Dichlorobenzene	95
1,4-Dichlorobenzene	95
alpha-Chlorotoluene	98
1,2-Dichlorobenzene	97
1,2,4-Trichlorobenzene	88
Hexachlorobutadiene	105
Butane	88
Isopentane	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 1502187A-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 09:36 AM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 114	101	70-130
Chloromethane	86	70-130
Vinyl Chloride	89	70-130
1,3-Butadiene	78	70-130
Bromomethane	99	70-130
Chloroethane	87	70-130
Freon 11	98	70-130
Ethanol	73	70-130
Freon 113	94	70-130
1,1-Dichloroethene	92	70-130
Acetone	74	70-130
2-Propanol	81	70-130
Carbon Disulfide	75	70-130
3-Chloropropene	86	70-130
Methylene Chloride	76	70-130
Methyl tert-butyl ether	90	70-130
trans-1,2-Dichloroethene	79	70-130
Hexane	83	70-130
1,1-Dichloroethane	84	70-130
2-Butanone (Methyl Ethyl Ketone)	86	70-130
cis-1,2-Dichloroethene	101	70-130
Tetrahydrofuran	75	70-130
Chloroform	92	70-130
1,1,1-Trichloroethane	96	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	99	70-130
2,2,4-Trimethylpentane	93	70-130
Benzene	92	70-130
1,2-Dichloroethane	98	70-130
Heptane	100	70-130
Trichloroethene	96	70-130
1,2-Dichloropropane	85	70-130
1,4-Dioxane	95	70-130
Bromodichloromethane	99	70-130
cis-1,3-Dichloropropene	91	70-130
4-Methyl-2-pentanone	85	70-130
Toluene	95	70-130
trans-1,3-Dichloropropene	97	70-130
1,1,2-Trichloroethane	94	70-130
Tetrachloroethene	102	70-130
2-Hexanone	95	70-130

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Client Sample ID: LCS

Lab ID#: 1502187A-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 09:36 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	98	70-130
Chlorobenzene	94	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	100	70-130
o-Xylene	101	70-130
Styrene	114	70-130
Bromoform	103	70-130
Cumene	103	70-130
1,1,2,2-Tetrachloroethane	86	70-130
Propylbenzene	95	70-130
4-Ethyltoluene	99	70-130
1,3,5-Trimethylbenzene	106	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	96	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	137 Q	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	100	70-130
Hexachlorobutadiene	105	70-130
Butane	110	70-130
Isopentane	73	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1502187A-11AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021909**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 01:20 PM**	

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Freon 114	100	70-130
Chloromethane	87	70-130
Vinyl Chloride	89	70-130
1,3-Butadiene	78	70-130
Bromomethane	97	70-130
Chloroethane	90	70-130
Freon 11	96	70-130
Ethanol	74	70-130
Freon 113	93	70-130
1,1-Dichloroethene	90	70-130
Acetone	76	70-130
2-Propanol	80	70-130
Carbon Disulfide	75	70-130
3-Chloropropene	83	70-130
Methylene Chloride	75	70-130
Methyl tert-butyl ether	88	70-130
trans-1,2-Dichloroethene	77	70-130
Hexane	81	70-130
1,1-Dichloroethane	84	70-130
2-Butanone (Methyl Ethyl Ketone)	80	70-130
cis-1,2-Dichloroethene	97	70-130
Tetrahydrofuran	74	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	95	70-130
Cyclohexane	91	70-130
Carbon Tetrachloride	97	70-130
2,2,4-Trimethylpentane	91	70-130
Benzene	92	70-130
1,2-Dichloroethane	97	70-130
Heptane	101	70-130
Trichloroethene	94	70-130
1,2-Dichloropropane	83	70-130
1,4-Dioxane	95	70-130
Bromodichloromethane	98	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	85	70-130
Toluene	95	70-130
trans-1,3-Dichloropropene	96	70-130
1,1,2-Trichloroethane	92	70-130
Tetrachloroethene	101	70-130
2-Hexanone	92	70-130

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Client Sample ID: LCSD

Lab ID#: 1502187A-11AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3021909**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 01:20 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	98	70-130
Chlorobenzene	92	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	97	70-130
o-Xylene	100	70-130
Styrene	110	70-130
Bromoform	101	70-130
Cumene	101	70-130
1,1,2,2-Tetrachloroethane	84	70-130
Propylbenzene	93	70-130
4-Ethyltoluene	98	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	101	70-130
1,3-Dichlorobenzene	95	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	136 Q	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	111	70-130
Hexachlorobutadiene	115	70-130
Butane	110	70-130
Isopentane	74	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 1502187A-11B

EPA METHOD TO-15 GC/MS

File Name:	**14021932**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 02:57 PM**	

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Freon 114	106	70-130
Chloromethane	85	70-130
Vinyl Chloride	104	70-130
1,3-Butadiene	94	70-130
Bromomethane	82	70-130
Chloroethane	98	70-130
Freon 11	101	70-130
Ethanol	80	70-130
Freon 113	105	70-130
1,1-Dichloroethene	96	70-130
Acetone	98	70-130
2-Propanol	93	70-130
Carbon Disulfide	91	70-130
3-Chloropropene	95	70-130
Methylene Chloride	92	70-130
Methyl tert-butyl ether	132 Q	70-130
trans-1,2-Dichloroethene	90	70-130
Hexane	96	70-130
1,1-Dichloroethane	101	70-130
2-Butanone (Methyl Ethyl Ketone)	106	70-130
cis-1,2-Dichloroethene	102	70-130
Tetrahydrofuran	89	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	104	70-130
Carbon Tetrachloride	100	70-130
2,2,4-Trimethylpentane	97	70-130
Benzene	105	70-130
1,2-Dichloroethane	93	70-130
Heptane	99	70-130
Trichloroethene	92	70-130
1,2-Dichloropropane	102	70-130
1,4-Dioxane	103	70-130
Bromodichloromethane	98	70-130
cis-1,3-Dichloropropene	96	70-130
4-Methyl-2-pentanone	96	70-130
Toluene	103	70-130
trans-1,3-Dichloropropene	98	70-130
1,1,2-Trichloroethane	103	70-130
Tetrachloroethene	108	70-130
2-Hexanone	92	70-130

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Client Sample ID: LCS

Lab ID#: 1502187A-11B

EPA METHOD TO-15 GC/MS

File Name:	**14021932**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 02:57 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	99	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	104	70-130
o-Xylene	105	70-130
Styrene	111	70-130
Bromoform	103	70-130
Cumene	102	70-130
1,1,2,2-Tetrachloroethane	123	70-130
Propylbenzene	108	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	108	70-130
1,2,4-Trimethylbenzene	105	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	101	70-130
alpha-Chlorotoluene	95	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	85	70-130
Hexachlorobutadiene	97	70-130
Butane	95	60-140
Isopentane	97	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 1502187A-11BB

EPA METHOD TO-15 GC/MS

File Name:	**14021933**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 03:15 PM**	

Compound	%Recovery	Method Limits
Freon 12	90	70-130
Freon 114	104	70-130
Chloromethane	86	70-130
Vinyl Chloride	104	70-130
1,3-Butadiene	89	70-130
Bromomethane	84	70-130
Chloroethane	87	70-130
Freon 11	99	70-130
Ethanol	74	70-130
Freon 113	104	70-130
1,1-Dichloroethene	92	70-130
Acetone	96	70-130
2-Propanol	92	70-130
Carbon Disulfide	91	70-130
3-Chloropropene	88	70-130
Methylene Chloride	92	70-130
Methyl tert-butyl ether	131 Q	70-130
trans-1,2-Dichloroethene	88	70-130
Hexane	91	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	102	70-130
cis-1,2-Dichloroethene	101	70-130
Tetrahydrofuran	90	70-130
Chloroform	96	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	97	70-130
2,2,4-Trimethylpentane	95	70-130
Benzene	102	70-130
1,2-Dichloroethane	90	70-130
Heptane	100	70-130
Trichloroethene	88	70-130
1,2-Dichloropropane	102	70-130
1,4-Dioxane	101	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	94	70-130
4-Methyl-2-pentanone	91	70-130
Toluene	100	70-130
trans-1,3-Dichloropropene	95	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	101	70-130
2-Hexanone	88	70-130

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Client Sample ID: LCSD

Lab ID#: 1502187A-11BB

EPA METHOD TO-15 GC/MS

File Name:	**14021933**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/19/15 03:15 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	98	70-130
1,2-Dibromoethane (EDB)	100	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	100	70-130
o-Xylene	99	70-130
Styrene	108	70-130
Bromoform	100	70-130
Cumene	102	70-130
1,1,2,2-Tetrachloroethane	121	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	106	70-130
1,2,4-Trimethylbenzene	104	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	95	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	83	70-130
Hexachlorobutadiene	105	70-130
Butane	89	60-140
Isopentane	94	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	104	70-130

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2/24/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04201
Workorder #: 1502187B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 2/11/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1502187B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04201 Roxana Soil Vapor
DATE RECEIVED:	02/11/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/24/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07A	VMP-55-20-020515	Modified ASTM D-1946	6.7 "Hg	14.8 psi
09A	Lab Blank	Modified ASTM D-1946	NA	NA
09B	Lab Blank	Modified ASTM D-1946	NA	NA
10A	LCS	Modified ASTM D-1946	NA	NA
10AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 02/24/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1502187B

Eight 1 Liter Summa Canister samples were received on February 11, 2015. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

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

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

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.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
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 detection limit.
M - Reported value may be biased due to apparent matrix interferences.
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

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-55-20-020515

Lab ID#: 1502187B-07A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	2.4
Nitrogen	0.26	77
Methane	0.00026	0.92
Carbon Dioxide	0.026	17
Ethane	0.0026	0.0062
Helium	0.13	2.5

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Client Sample ID: VMP-55-20-020515

Lab ID#: 1502187B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021828**	**Date of Collection: 2/5/15 4:16:00 PM**	
Dil. Factor:	**2.59**	**Date of Analysis: 2/18/15 08:41 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	2.4
Nitrogen	0.26	77
Carbon Monoxide	0.026	Not Detected
Methane	0.00026	0.92
Carbon Dioxide	0.026	17
Ethane	0.0026	0.0062
Ethene	0.0026	Not Detected
Helium	0.13	2.5

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1502187B-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021806a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/18/15 09:19 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	0.045 J
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1502187B-09B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021805b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/18/15 08:58 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1502187B-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/18/15 07:51 AM**	

Compound	%Recovery	Method Limits
Oxygen	98	85-115
Nitrogen	93	85-115
Carbon Monoxide	102	85-115
Methane	96	85-115
Carbon Dioxide	102	85-115
Ethane	99	85-115
Ethene	102	85-115
Helium	101	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1502187B-10AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9021831**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/18/15 09:54 PM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	93	85-115
Carbon Monoxide	102	85-115
Methane	97	85-115
Carbon Dioxide	102	85-115
Ethane	100	85-115
Ethene	102	85-115
Helium	102	85-115

Container Type: NA - Not Applicable

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3/17/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04201
Workorder #: 1503148A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 3/10/2015 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1503148A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04201 Roxana Soil Vapor
DATE RECEIVED:	03/10/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	03/17/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-30-030915	TO-15	8.2 "Hg	14.9 psi
01B	VMP-55-30-030915	TO-15	8.2 "Hg	14.9 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY:  DATE: 03/17/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1503148A

One 1 Liter Summa Canister sample was received on March 10, 2015. 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

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Dilution was performed on sample VMP-55-30-030915 due to the presence of high level target species.

Due to high-level target compounds, sample VMP-55-30-030915 was analyzed twice. In the "A" fraction, the sample was diluted to bring the highest-level compounds within the calibration range. The "B" fraction is also reported by client request and may be reported with "E" flags indicating the compound exceeds the calibration range. Both runs and associated QC are reported.

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. 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

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

Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Cyclohexane	690	26000	2400	89000
2,2,4-Trimethylpentane	690	72000	3200	340000
Butane	2800	230000	6600	540000
Isopentane	2800	380000	8100	1100000

Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148A-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	350	700	1200	2400
Cyclohexane	350	26000	1200	91000
2,2,4-Trimethylpentane	350	73000	1600	340000
Heptane	350	440	1400	1800
Tetrachloroethene	350	1400	2300	9300
Butane	1400	230000	3300	550000
Isopentane	1400	390000 E	4100	1100000 E

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Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148A-01A

EPA METHOD TO-15 GC/MS

File Name:	**14031229**	**Date of Collection:**	**3/9/15 2:47:00 PM**
Dil. Factor:	**138**	**Date of Analysis:**	**3/12/15 08:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	690	Not Detected	3400	Not Detected
Freon 114	690	Not Detected	4800	Not Detected
Chloromethane	2800	Not Detected	5700	Not Detected
Vinyl Chloride	690	Not Detected	1800	Not Detected
1,3-Butadiene	690	Not Detected	1500	Not Detected
Bromomethane	690	Not Detected	2700	Not Detected
Chloroethane	2800	Not Detected	7300	Not Detected
Freon 11	690	Not Detected	3900	Not Detected
Ethanol	2800	Not Detected UJ	5200	Not Detected UJ
Freon 113	690	Not Detected	5300	Not Detected
1,1-Dichloroethene	690	Not Detected	2700	Not Detected
Acetone	2800	Not Detected	6600	Not Detected
2-Propanol	2800	Not Detected	6800	Not Detected
Carbon Disulfide	690	Not Detected	2100	Not Detected
3-Chloropropene	2800	Not Detected	8600	Not Detected
Methylene Chloride	690	Not Detected	2400	Not Detected
Methyl tert-butyl ether	690	Not Detected	2500	Not Detected
trans-1,2-Dichloroethene	690	Not Detected	2700	Not Detected
Hexane	690	Not Detected	2400	Not Detected
1,1-Dichloroethane	690	Not Detected	2800	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2800	Not Detected	8100	Not Detected
cis-1,2-Dichloroethene	690	Not Detected	2700	Not Detected
Tetrahydrofuran	690	Not Detected	2000	Not Detected
Chloroform	690	Not Detected	3400	Not Detected
1,1,1-Trichloroethane	690	Not Detected	3800	Not Detected
Cyclohexane	690	26000	2400	89000
Carbon Tetrachloride	690	Not Detected	4300	Not Detected
2,2,4-Trimethylpentane	690	72000	3200	340000
Benzene	690	Not Detected	2200	Not Detected
1,2-Dichloroethane	690	Not Detected	2800	Not Detected
Heptane	690	Not Detected	2800	Not Detected
Trichloroethene	690	Not Detected	3700	Not Detected
1,2-Dichloropropane	690	Not Detected	3200	Not Detected
1,4-Dioxane	2800	Not Detected	9900	Not Detected
Bromodichloromethane	690	Not Detected	4600	Not Detected
cis-1,3-Dichloropropene	690	Not Detected	3100	Not Detected
4-Methyl-2-pentanone	690	Not Detected	2800	Not Detected
Toluene	690	Not Detected	2600	Not Detected
trans-1,3-Dichloropropene	690	Not Detected	3100	Not Detected
1,1,2-Trichloroethane	690	Not Detected	3800	Not Detected
Tetrachloroethene	690	Not Detected	4700	Not Detected
2-Hexanone	2800	Not Detected UJ	11000	Not Detected UJ

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Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148A-01A

EPA METHOD TO-15 GC/MS

File Name:	**14031229**	**Date of Collection:**	**3/9/15 2:47:00 PM**
Dil. Factor:	**138**	**Date of Analysis:**	**3/12/15 08:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	690	Not Detected	5900	Not Detected
1,2-Dibromoethane (EDB)	690	Not Detected	5300	Not Detected
Chlorobenzene	690	Not Detected	3200	Not Detected
Ethyl Benzene	690	Not Detected	3000	Not Detected
m,p-Xylene	690	Not Detected	3000	Not Detected
o-Xylene	690	Not Detected	3000	Not Detected
Styrene	690	Not Detected	2900	Not Detected
Bromoform	690	Not Detected	7100	Not Detected
Cumene	690	Not Detected	3400	Not Detected
1,1,2,2-Tetrachloroethane	690	Not Detected	4700	Not Detected
Propylbenzene	690	Not Detected	3400	Not Detected
4-Ethyltoluene	690	Not Detected	3400	Not Detected
1,3,5-Trimethylbenzene	690	Not Detected	3400	Not Detected
1,2,4-Trimethylbenzene	690	Not Detected	3400	Not Detected
1,3-Dichlorobenzene	690	Not Detected	4100	Not Detected
1,4-Dichlorobenzene	690	Not Detected	4100	Not Detected
alpha-Chlorotoluene	690	Not Detected	3600	Not Detected
1,2-Dichlorobenzene	690	Not Detected	4100	Not Detected
1,2,4-Trichlorobenzene	2800	Not Detected	20000	Not Detected
Hexachlorobutadiene	2800	Not Detected	29000	Not Detected
Butane	2800	230000	6600	540000
Isopentane	2800	380000	8100	1100000

UJ = Analyte associated with low bias in the CCV and/or LCS.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148A-01B

EPA METHOD TO-15 GC/MS

File Name:	**14031219**	**Date of Collection:**	**3/9/15 2:47:00 PM**
Dil. Factor:	**69.2**	**Date of Analysis:**	**3/12/15 04:03 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	350	Not Detected	1700	Not Detected
Freon 114	350	Not Detected	2400	Not Detected
Chloromethane	1400	Not Detected	2800	Not Detected
Vinyl Chloride	350	Not Detected	880	Not Detected
1,3-Butadiene	350	Not Detected	760	Not Detected
Bromomethane	350	Not Detected	1300	Not Detected
Chloroethane	1400	Not Detected	3600	Not Detected
Freon 11	350	Not Detected	1900	Not Detected
Ethanol	1400	Not Detected UJ	2600	Not Detected UJ
Freon 113	350	Not Detected	2600	Not Detected
1,1-Dichloroethene	350	Not Detected	1400	Not Detected
Acetone	1400	Not Detected	3300	Not Detected
2-Propanol	1400	Not Detected	3400	Not Detected
Carbon Disulfide	350	Not Detected	1100	Not Detected
3-Chloropropene	1400	Not Detected	4300	Not Detected
Methylene Chloride	350	Not Detected	1200	Not Detected
Methyl tert-butyl ether	350	Not Detected	1200	Not Detected
trans-1,2-Dichloroethene	350	Not Detected	1400	Not Detected
Hexane	350	700	1200	2400
1,1-Dichloroethane	350	Not Detected	1400	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1400	Not Detected	4100	Not Detected
cis-1,2-Dichloroethene	350	Not Detected	1400	Not Detected
Tetrahydrofuran	350	Not Detected	1000	Not Detected
Chloroform	350	Not Detected	1700	Not Detected
1,1,1-Trichloroethane	350	Not Detected	1900	Not Detected
Cyclohexane	350	26000	1200	91000
Carbon Tetrachloride	350	Not Detected	2200	Not Detected
2,2,4-Trimethylpentane	350	73000	1600	340000
Benzene	350	Not Detected	1100	Not Detected
1,2-Dichloroethane	350	Not Detected	1400	Not Detected
Heptane	350	440	1400	1800
Trichloroethene	350	Not Detected	1800	Not Detected
1,2-Dichloropropane	350	Not Detected	1600	Not Detected
1,4-Dioxane	1400	Not Detected	5000	Not Detected
Bromodichloromethane	350	Not Detected	2300	Not Detected
cis-1,3-Dichloropropene	350	Not Detected	1600	Not Detected
4-Methyl-2-pentanone	350	Not Detected	1400	Not Detected
Toluene	350	Not Detected	1300	Not Detected
trans-1,3-Dichloropropene	350	Not Detected	1600	Not Detected
1,1,2-Trichloroethane	350	Not Detected	1900	Not Detected
Tetrachloroethene	350	1400	2300	9300
2-Hexanone	1400	Not Detected UJ	5700	Not Detected UJ

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Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148A-01B

EPA METHOD TO-15 GC/MS

File Name:	**14031219**	**Date of Collection:**	**3/9/15 2:47:00 PM**
Dil. Factor:	**69.2**	**Date of Analysis:**	**3/12/15 04:03 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	350	Not Detected	2900	Not Detected
1,2-Dibromoethane (EDB)	350	Not Detected	2600	Not Detected
Chlorobenzene	350	Not Detected	1600	Not Detected
Ethyl Benzene	350	Not Detected	1500	Not Detected
m,p-Xylene	350	Not Detected	1500	Not Detected
o-Xylene	350	Not Detected	1500	Not Detected
Styrene	350	Not Detected	1500	Not Detected
Bromoform	350	Not Detected	3600	Not Detected
Cumene	350	Not Detected	1700	Not Detected
1,1,2,2-Tetrachloroethane	350	Not Detected	2400	Not Detected
Propylbenzene	350	Not Detected	1700	Not Detected
4-Ethyltoluene	350	Not Detected	1700	Not Detected
1,3,5-Trimethylbenzene	350	Not Detected	1700	Not Detected
1,2,4-Trimethylbenzene	350	Not Detected	1700	Not Detected
1,3-Dichlorobenzene	350	Not Detected	2100	Not Detected
1,4-Dichlorobenzene	350	Not Detected	2100	Not Detected
alpha-Chlorotoluene	350	Not Detected	1800	Not Detected
1,2-Dichlorobenzene	350	Not Detected	2100	Not Detected
1,2,4-Trichlorobenzene	1400	Not Detected	10000	Not Detected
Hexachlorobutadiene	1400	Not Detected	15000	Not Detected
Butane	1400	230000	3300	550000
Isopentane	1400	390000 E	4100	1100000 E

UJ = Analyte associated with low bias in the CCV and/or LCS.
E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1503148A-02A

EPA METHOD TO-15 GC/MS

File Name:	**14031205a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 09:09 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected UJ	38	Not Detected UJ
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	5.0	Not Detected	16	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	72	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected UJ	82	Not Detected UJ

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Client Sample ID: Lab Blank

Lab ID#: 1503148A-02A

EPA METHOD TO-15 GC/MS

File Name:	**14031205a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 09:09 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected
Butane	20	Not Detected	48	Not Detected
Isopentane	20	Not Detected	59	Not Detected

UJ = Analyte associated with low bias in the CCV and/or LCS.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: CCV

Lab ID#: 1503148A-03A

EPA METHOD TO-15 GC/MS

File Name:	**14031202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 07:29 AM**	

Compound	%Recovery
Freon 12	81
Freon 114	84
Chloromethane	83
Vinyl Chloride	90
1,3-Butadiene	86
Bromomethane	70
Chloroethane	88
Freon 11	85
Ethanol	64 Q
Freon 113	87
1,1-Dichloroethene	78
Acetone	84
2-Propanol	73
Carbon Disulfide	87
3-Chloropropene	76
Methylene Chloride	80
Methyl tert-butyl ether	116
trans-1,2-Dichloroethene	88
Hexane	74
1,1-Dichloroethane	83
2-Butanone (Methyl Ethyl Ketone)	80
cis-1,2-Dichloroethene	76
Tetrahydrofuran	79
Chloroform	81
1,1,1-Trichloroethane	80
Cyclohexane	80
Carbon Tetrachloride	77
2,2,4-Trimethylpentane	75
Benzene	86
1,2-Dichloroethane	78
Heptane	79
Trichloroethene	76
1,2-Dichloropropane	83
1,4-Dioxane	84
Bromodichloromethane	80
cis-1,3-Dichloropropene	79
4-Methyl-2-pentanone	70
Toluene	82
trans-1,3-Dichloropropene	77
1,1,2-Trichloroethane	88
Tetrachloroethene	89
2-Hexanone	69 Q

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Client Sample ID: CCV
Lab ID#: 1503148A-03A
EPA METHOD TO-15 GC/MS

File Name:	**14031202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 07:29 AM**	

Compound	%Recovery
Dibromochloromethane	85
1,2-Dibromoethane (EDB)	86
Chlorobenzene	89
Ethyl Benzene	84
m,p-Xylene	85
o-Xylene	84
Styrene	89
Bromoform	87
Cumene	85
1,1,2,2-Tetrachloroethane	102
Propylbenzene	87
4-Ethyltoluene	90
1,3,5-Trimethylbenzene	92
1,2,4-Trimethylbenzene	89
1,3-Dichlorobenzene	87
1,4-Dichlorobenzene	92
alpha-Chlorotoluene	76
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	95
Hexachlorobutadiene	111
Butane	86
Isopentane	80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1503148A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14031203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 08:00 AM**	

Compound	%Recovery	Method Limits
Freon 12	84	70-130
Freon 114	91	70-130
Chloromethane	83	70-130
Vinyl Chloride	96	70-130
1,3-Butadiene	87	70-130
Bromomethane	74	70-130
Chloroethane	85	70-130
Freon 11	87	70-130
Ethanol	72	70-130
Freon 113	90	70-130
1,1-Dichloroethene	80	70-130
Acetone	87	70-130
2-Propanol	78	70-130
Carbon Disulfide	79	70-130
3-Chloropropene	74	70-130
Methylene Chloride	83	70-130
Methyl tert-butyl ether	114	70-130
trans-1,2-Dichloroethene	78	70-130
Hexane	79	70-130
1,1-Dichloroethane	87	70-130
2-Butanone (Methyl Ethyl Ketone)	87	70-130
cis-1,2-Dichloroethene	86	70-130
Tetrahydrofuran	78	70-130
Chloroform	84	70-130
1,1,1-Trichloroethane	82	70-130
Cyclohexane	87	70-130
Carbon Tetrachloride	85	70-130
2,2,4-Trimethylpentane	84	70-130
Benzene	92	70-130
1,2-Dichloroethane	79	70-130
Heptane	86	70-130
Trichloroethene	79	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	91	70-130
Bromodichloromethane	86	70-130
cis-1,3-Dichloropropene	83	70-130
4-Methyl-2-pentanone	79	70-130
Toluene	89	70-130
trans-1,3-Dichloropropene	84	70-130
1,1,2-Trichloroethane	89	70-130
Tetrachloroethene	88	70-130
2-Hexanone	82	70-130

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Client Sample ID: LCS

Lab ID#: 1503148A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14031203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 08:00 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	89	70-130
1,2-Dibromoethane (EDB)	89	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	85	70-130
m,p-Xylene	87	70-130
o-Xylene	88	70-130
Styrene	93	70-130
Bromoform	91	70-130
Cumene	89	70-130
1,1,2,2-Tetrachloroethane	109	70-130
Propylbenzene	93	70-130
4-Ethyltoluene	91	70-130
1,3,5-Trimethylbenzene	96	70-130
1,2,4-Trimethylbenzene	91	70-130
1,3-Dichlorobenzene	93	70-130
1,4-Dichlorobenzene	90	70-130
alpha-Chlorotoluene	86	70-130
1,2-Dichlorobenzene	92	70-130
1,2,4-Trichlorobenzene	92	70-130
Hexachlorobutadiene	104	70-130
Butane	87	60-140
Isopentane	85	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1503148A-04AA

EPA METHOD TO-15 GC/MS

File Name:	**14031204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 08:45 AM**	

Compound	%Recovery	Method Limits
Freon 12	85	70-130
Freon 114	91	70-130
Chloromethane	84	70-130
Vinyl Chloride	94	70-130
1,3-Butadiene	86	70-130
Bromomethane	76	70-130
Chloroethane	84	70-130
Freon 11	87	70-130
Ethanol	68 Q	70-130
Freon 113	88	70-130
1,1-Dichloroethene	82	70-130
Acetone	89	70-130
2-Propanol	80	70-130
Carbon Disulfide	80	70-130
3-Chloropropene	81	70-130
Methylene Chloride	83	70-130
Methyl tert-butyl ether	115	70-130
trans-1,2-Dichloroethene	79	70-130
Hexane	83	70-130
1,1-Dichloroethane	85	70-130
2-Butanone (Methyl Ethyl Ketone)	87	70-130
cis-1,2-Dichloroethene	85	70-130
Tetrahydrofuran	79	70-130
Chloroform	83	70-130
1,1,1-Trichloroethane	83	70-130
Cyclohexane	88	70-130
Carbon Tetrachloride	85	70-130
2,2,4-Trimethylpentane	82	70-130
Benzene	91	70-130
1,2-Dichloroethane	77	70-130
Heptane	82	70-130
Trichloroethene	78	70-130
1,2-Dichloropropane	87	70-130
1,4-Dioxane	83	70-130
Bromodichloromethane	86	70-130
cis-1,3-Dichloropropene	82	70-130
4-Methyl-2-pentanone	75	70-130
Toluene	87	70-130
trans-1,3-Dichloropropene	86	70-130
1,1,2-Trichloroethane	89	70-130
Tetrachloroethene	91	70-130
2-Hexanone	81	70-130

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Client Sample ID: LCSD

Lab ID#: 1503148A-04AA

EPA METHOD TO-15 GC/MS

File Name:	**14031204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/12/15 08:45 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	88	70-130
1,2-Dibromoethane (EDB)	89	70-130
Chlorobenzene	88	70-130
Ethyl Benzene	89	70-130
m,p-Xylene	90	70-130
o-Xylene	89	70-130
Styrene	97	70-130
Bromoform	93	70-130
Cumene	89	70-130
1,1,2,2-Tetrachloroethane	109	70-130
Propylbenzene	92	70-130
4-Ethyltoluene	90	70-130
1,3,5-Trimethylbenzene	95	70-130
1,2,4-Trimethylbenzene	92	70-130
1,3-Dichlorobenzene	91	70-130
1,4-Dichlorobenzene	92	70-130
alpha-Chlorotoluene	92	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	96	70-130
Hexachlorobutadiene	105	70-130
Butane	90	60-140
Isopentane	85	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130

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3/17/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04201
Workorder #: 1503148B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 3/10/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1503148B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04201 Roxana Soil Vapor
DATE RECEIVED:	03/10/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	03/17/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-30-030915	Modified ASTM D-1946	8.2 "Hg	14.9 psi
02A	Lab Blank	Modified ASTM D-1946	NA	NA
02B	Lab Blank	Modified ASTM D-1946	NA	NA
03A	LCS	Modified ASTM D-1946	NA	NA
03AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 03/17/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
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 - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1503148B

One 1 Liter Summa Canister sample was received on March 10, 2015. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

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

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

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.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
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 detection limit.
M - Reported value may be biased due to apparent matrix interferences.
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

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	2.1
Nitrogen	0.28	85
Methane	0.00028	2.0
Carbon Dioxide	0.028	11
Ethane	0.0028	0.013

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Client Sample ID: VMP-55-30-030915

Lab ID#: 1503148B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9031117**	**Date of Collection: 3/9/15 2:47:00 PM**	
Dil. Factor:	**2.77**	**Date of Analysis: 3/11/15 08:26 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	2.1
Nitrogen	0.28	85
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	2.0
Carbon Dioxide	0.028	11
Ethane	0.0028	0.013
Ethene	0.0028	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1503148B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9031104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/11/15 11:51 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.010 J
Nitrogen	0.10	0.054 J
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	0.000013 J
Carbon Dioxide	0.010	Not Detected
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1503148B-02B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9031103b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/11/15 11:27 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1503148B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9031102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/11/15 09:58 AM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	93	85-115
Carbon Monoxide	102	85-115
Methane	96	85-115
Carbon Dioxide	102	85-115
Ethane	99	85-115
Ethene	102	85-115
Helium	101	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1503148B-03AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9031119**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/11/15 09:14 PM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	93	85-115
Carbon Monoxide	102	85-115
Methane	96	85-115
Carbon Dioxide	102	85-115
Ethane	99	85-115
Ethene	101	85-115
Helium	102	85-115

Container Type: NA - Not Applicable