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May 10, 2018

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 Vapor Sampling According to Illinois Department of Transportation (IDOT) Permits No. 8-28548 and No. 8-28875

Dear Mr. Brown,

AECOM, on behalf of Shell Oil Products US (SOPUS), is submitting the attached analytical results for soil vapor samples collected from the following vapor monitoring points in accordance with IDOT Permits No. 8-28548 and No. 8-28875:

- VMP-15
- VMP-55

If you have any questions or require further information, please contact Robert Mooshegian at robert.mooshegian@aecom.com (314/802-1185) or Samuel Fisher at samuel.fisher@aecom.com (314/296-1969).

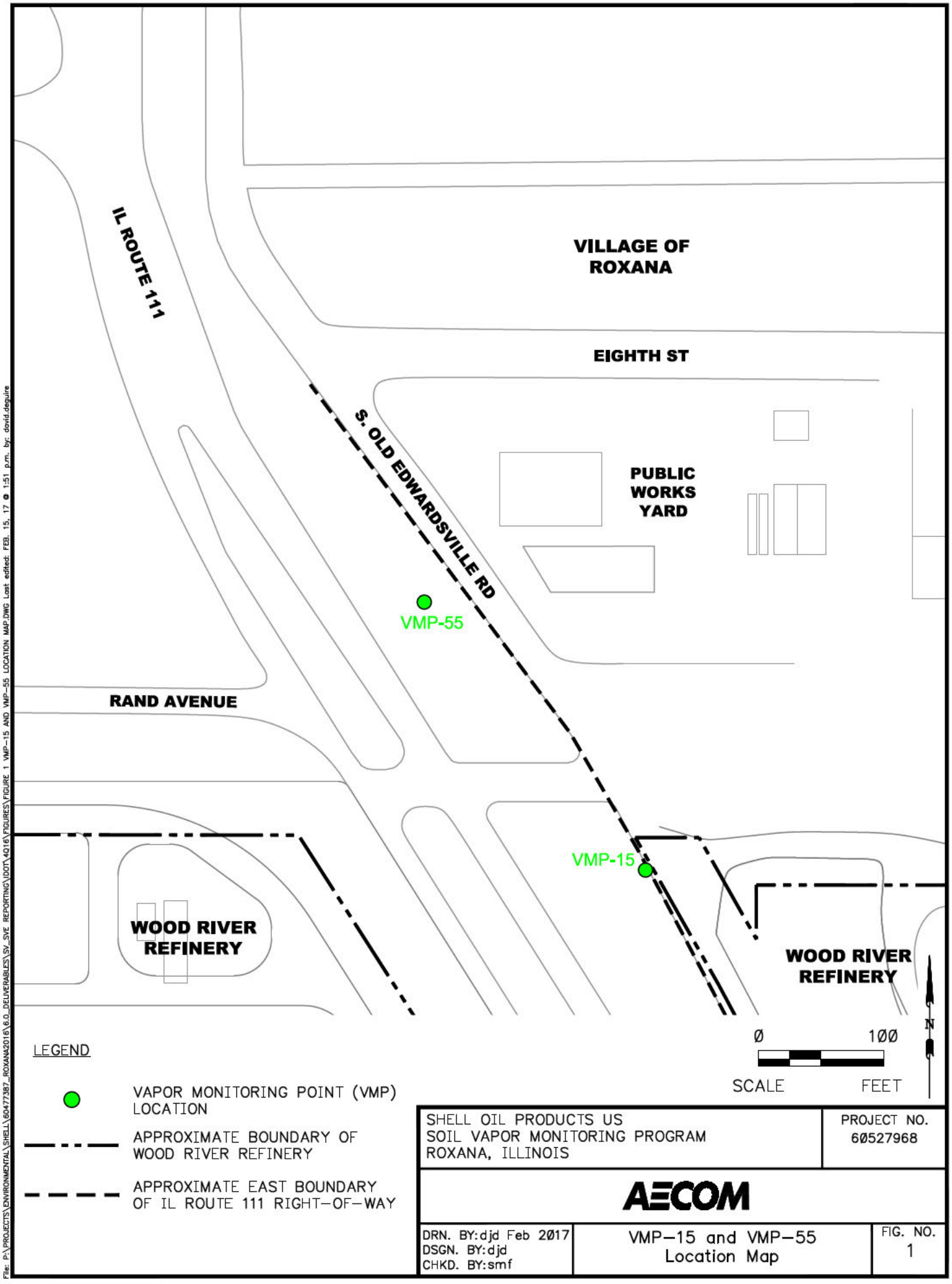
Sincerely,
AECOM, on behalf of Shell Oil Products US

Samuel Fisher
Environmental Scientist

Robert E. Mooshegian, STS
Senior Program Manager

Attachments

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



SHELL OIL PRODUCTS US
SOIL VAPOR MONITORING PROGRAM
ROXANA, ILLINOIS

PROJECT NO.
60527968

AECOM

DRN. BY: djd Feb 2017
DSGN. BY: djd
CHKD. BY: smf

VMP-15 and VMP-55
Location Map

FIG. NO.
1

File: P:\PROJECTS\ENVIRONMENTAL\SHELL\60477387_ROXANA2016\6.0_DELIVERABLES\SV_SVE REPORTING\IDOT\4Q16\FIGURES\FIGURE 1 VMP-15 AND VMP-55 LOCATION MAP.DWG Last edited: FEB. 15, 17 @ 1:51 p.m. by: dovid.depuire

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2/15/2018

Ms. Elizabeth Kunkel
AECOM
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Quarterly Soil Vapor
Project #: 60527968-01.04.001
Workorder #: 1802054A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 2/2/2018 at Air Toxics Ltd.

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

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 1802054A

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 PO Box 203970 Austin, TX 78720
PHONE:	314-743-4179	**P.O. #**	60527968-0104001
FAX:		**PROJECT #**	60527968-01.04.001 Roxana Quarterly Soil Vapor
DATE RECEIVED:	02/02/2018	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/13/2018		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-5-013018	TO-15	2.4 "Hg	15.1 psi
02A	VMP-55-20-013018	TO-15	5.3 "Hg	15.1 psi
03A	VMP-15-5-013018	TO-15	3.9 "Hg	15.1 psi
04A	VMP-15-21.5-013018	TO-15	4.1 "Hg	14.9 psi
05A	VMP-15-25.5-013018	TO-15	3.9 "Hg	15 psi
06A	VMP-15-29-013018	TO-15	3.5 "Hg	15.4 psi
07A	Lab Blank	TO-15	NA	NA
07B	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
08B	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA
09B	LCS	TO-15	NA	NA
09BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/15/18

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 1802054A

Six 1 Liter Summa Canister samples were received on February 02, 2018. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

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

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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

Dilution was performed on sample VMP-55-20-013018 due to the presence of high level target species.

The recovery of surrogate Toluene-d8 in sample VMP-55-20-013018 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

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 CCV analyses have not been flagged.

Definition of Data Qualifying Flags

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

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

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

as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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

Client Sample ID: VMP-55-5-013018

Lab ID#: 1802054A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.47 J	5.5	2.3 J
Acetone	11	4.9 J	26	12 J
Hexane	1.1	0.81 J	3.9	2.9 J
Chloroform	1.1	0.24 J	5.4	1.2 J
Cyclohexane	1.1	0.31 J	3.8	1.1 J
2,2,4-Trimethylpentane	1.1	4.3	5.2	20
Benzene	1.1	0.14 J	3.5	0.46 J
Heptane	1.1	0.37 J	4.5	1.5 J
Butane	4.4	2.4 J	10	5.8 J
Isopentane	4.4	1.8 J	13	5.4 J

Client Sample ID: VMP-55-20-013018

Lab ID#: 1802054A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	490	2200	1200	5200
Hexane	120	22000	430	77000
Cyclohexane	120	49000	420	170000
2,2,4-Trimethylpentane	120	45000	570	210000
Heptane	120	7100	500	29000
Cumene	120	27 J	600	130 J
Butane	490	58000	1200	140000
Isopentane	490	140000	1400	430000

Client Sample ID: VMP-15-5-013018

Lab ID#: 1802054A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.61 J	5.8	3.0 J
Acetone	12	4.5 J	28	11 J
Toluene	1.2	0.15 J	4.4	0.57 J

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

Client Sample ID: VMP-15-21.5-013018

Lab ID#: 1802054A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.44 J	5.8	2.2 J
Ethanol	4.7	33	8.8	63
Acetone	12	2.8 J	28	6.7 J
Hexane	1.2	0.35 J	4.1	1.2 J
Chloroform	1.2	3.4	5.7	17
Cyclohexane	1.2	0.36 J	4.0	1.2 J
2,2,4-Trimethylpentane	1.2	0.49 J	5.4	2.3 J
Benzene	1.2	0.13 J	3.7	0.40 J
Toluene	1.2	0.20 J	4.4	0.75 J
Isopentane	4.7	1.7 J	14	5.0 J

Client Sample ID: VMP-15-25.5-013018

Lab ID#: 1802054A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.50 J	5.7	2.5 J
Ethanol	4.6	30	8.7	57
Acetone	12	2.3 J	28	5.4 J
Benzene	1.2	0.40 J	3.7	1.3 J

Client Sample ID: VMP-15-29-013018

Lab ID#: 1802054A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.58 J	5.7	2.8 J
Acetone	12	2.1 J	28	5.0 J
Chloroform	1.2	0.41 J	5.7	2.0 J
2,2,4-Trimethylpentane	1.2	1.6	5.4	7.7
Benzene	1.2	0.69 J	3.7	2.2 J
Butane	4.6	2.6 J	11	6.1 J
Isopentane	4.6	1.9 J	14	5.7 J

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Client Sample ID: VMP-55-5-013018

Lab ID#: 1802054A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020711**	**Date of Collection:**	**1/30/18 12:49:00 PM**
Dil. Factor:	**2.21**	**Date of Analysis:**	**2/7/18 03:54 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.47 J	5.5	2.3 J
Freon 114	1.1	Not Detected	7.7	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	43	Not Detected
Chloroethane	4.4	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.2	Not Detected
Ethanol	4.4	Not Detected	8.3	Not Detected
Freon 113	1.1	Not Detected	8.5	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	4.9 J	26	12 J
2-Propanol	4.4	Not Detected	11	Not Detected
Carbon Disulfide	4.4	Not Detected	14	Not Detected
3-Chloropropene	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	4.4	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Hexane	1.1	0.81 J	3.9	2.9 J
1,1-Dichloroethane	1.1	Not Detected	4.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	0.24 J	5.4	1.2 J
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Cyclohexane	1.1	0.31 J	3.8	1.1 J
Carbon Tetrachloride	1.1	Not Detected	7.0	Not Detected
2,2,4-Trimethylpentane	1.1	4.3	5.2	20
Benzene	1.1	0.14 J	3.5	0.46 J
1,2-Dichloroethane	1.1	Not Detected	4.5	Not Detected
Heptane	1.1	0.37 J	4.5	1.5 J
Trichloroethene	1.1	Not Detected	5.9	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.1	Not Detected
1,4-Dioxane	4.4	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.4	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.5	Not Detected
Toluene	1.1	Not Detected	4.2	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	Not Detected	7.5	Not Detected
2-Hexanone	4.4	Not Detected	18	Not Detected

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Client Sample ID: VMP-55-5-013018

Lab ID#: 1802054A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020711**	**Date of Collection:**	**1/30/18 12:49:00 PM**
Dil. Factor:	**2.21**	**Date of Analysis:**	**2/7/18 03:54 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.4	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.5	Not Detected
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.6	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.4	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.7	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
1,2,4-Trichlorobenzene	4.4	Not Detected	33	Not Detected
Hexachlorobutadiene	4.4	Not Detected	47	Not Detected
Butane	4.4	2.4 J	10	5.8 J
Isopentane	4.4	1.8 J	13	5.4 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: VMP-55-20-013018

Lab ID#: 1802054A-02A

EPA METHOD TO-15 GC/MS

File Name:	**j020611**	**Date of Collection:**	**1/30/18 1:10:00 PM**
Dil. Factor:	**24.6**	**Date of Analysis:**	**2/6/18 11:09 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	120	Not Detected	610	Not Detected
Freon 114	120	Not Detected	860	Not Detected
Chloromethane	490	Not Detected	1000	Not Detected
Vinyl Chloride	120	Not Detected	310	Not Detected
1,3-Butadiene	120	Not Detected	270	Not Detected
Bromomethane	490	Not Detected	1900	Not Detected
Chloroethane	490	Not Detected	1300	Not Detected
Freon 11	120	Not Detected	690	Not Detected
Ethanol	490	Not Detected	930	Not Detected
Freon 113	120	Not Detected	940	Not Detected
1,1-Dichloroethene	120	Not Detected	490	Not Detected
Acetone	490	2200	1200	5200
2-Propanol	490	Not Detected	1200	Not Detected
Carbon Disulfide	490	Not Detected	1500	Not Detected
3-Chloropropene	490	Not Detected	1500	Not Detected
Methylene Chloride	490	Not Detected	1700	Not Detected
Methyl tert-butyl ether	120	Not Detected	440	Not Detected
trans-1,2-Dichloroethene	120	Not Detected	490	Not Detected
Hexane	120	22000	430	77000
1,1-Dichloroethane	120	Not Detected	500	Not Detected
2-Butanone (Methyl Ethyl Ketone)	490	Not Detected	1400	Not Detected
cis-1,2-Dichloroethene	120	Not Detected	490	Not Detected
Tetrahydrofuran	120	Not Detected	360	Not Detected
Chloroform	120	Not Detected	600	Not Detected
1,1,1-Trichloroethane	120	Not Detected	670	Not Detected
Cyclohexane	120	49000	420	170000
Carbon Tetrachloride	120	Not Detected	770	Not Detected
2,2,4-Trimethylpentane	120	45000	570	210000
Benzene	120	Not Detected	390	Not Detected
1,2-Dichloroethane	120	Not Detected	500	Not Detected
Heptane	120	7100	500	29000
Trichloroethene	120	Not Detected	660	Not Detected
1,2-Dichloropropane	120	Not Detected	570	Not Detected
1,4-Dioxane	490	Not Detected	1800	Not Detected
Bromodichloromethane	120	Not Detected	820	Not Detected
cis-1,3-Dichloropropene	120	Not Detected	560	Not Detected
4-Methyl-2-pentanone	120	Not Detected	500	Not Detected
Toluene	120	Not Detected	460	Not Detected
trans-1,3-Dichloropropene	120	Not Detected	560	Not Detected
1,1,2-Trichloroethane	120	Not Detected	670	Not Detected
Tetrachloroethene	120	Not Detected	830	Not Detected
2-Hexanone	490	Not Detected	2000	Not Detected

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Client Sample ID: VMP-55-20-013018

Lab ID#: 1802054A-02A

EPA METHOD TO-15 GC/MS

File Name:	**j020611**	**Date of Collection:**	**1/30/18 1:10:00 PM**
Dil. Factor:	**24.6**	**Date of Analysis:**	**2/6/18 11:09 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	120	Not Detected	1000	Not Detected
1,2-Dibromoethane (EDB)	120	Not Detected	940	Not Detected
Chlorobenzene	120	Not Detected	570	Not Detected
Ethyl Benzene	120	Not Detected	530	Not Detected
m,p-Xylene	120	Not Detected	530	Not Detected
o-Xylene	120	Not Detected	530	Not Detected
Styrene	120	Not Detected	520	Not Detected
Bromoform	120	Not Detected	1300	Not Detected
Cumene	120	27 J	600	130 J
1,1,2,2-Tetrachloroethane	120	Not Detected	840	Not Detected
Propylbenzene	120	Not Detected	600	Not Detected
4-Ethyltoluene	120	Not Detected	600	Not Detected
1,3,5-Trimethylbenzene	120	Not Detected	600	Not Detected
1,2,4-Trimethylbenzene	120	Not Detected	600	Not Detected
1,3-Dichlorobenzene	120	Not Detected	740	Not Detected
1,4-Dichlorobenzene	120	Not Detected	740	Not Detected
alpha-Chlorotoluene	120	Not Detected	640	Not Detected
1,2-Dichlorobenzene	120	Not Detected	740	Not Detected
1,2,4-Trichlorobenzene	490	Not Detected	3600	Not Detected
Hexachlorobutadiene	490	Not Detected	5200	Not Detected
Butane	490	58000	1200	140000
Isopentane	490	140000	1400	430000

J = Estimated value.
Q = Exceeds Quality Control limits.
Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	145 Q	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: VMP-15-5-013018

Lab ID#: 1802054A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020712**	**Date of Collection:**	**1/30/18 2:04:00 PM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**2/7/18 04:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.61 J	5.8	3.0 J
Freon 114	1.2	Not Detected	8.1	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.7	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.5	Not Detected
Ethanol	4.7	Not Detected	8.8	Not Detected
Freon 113	1.2	Not Detected	8.9	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	4.5 J	28	11 J
2-Propanol	4.7	Not Detected	11	Not Detected
Carbon Disulfide	4.7	Not Detected	14	Not Detected
3-Chloropropene	4.7	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	40	Not Detected
Methyl tert-butyl ether	4.7	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	Not Detected	5.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Cyclohexane	1.2	Not Detected	4.0	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.3	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.4	Not Detected
Benzene	1.2	Not Detected	3.7	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.7	Not Detected
Heptane	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.3	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
1,4-Dioxane	4.7	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	7.8	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.8	Not Detected
Toluene	1.2	0.15 J	4.4	0.57 J
trans-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	Not Detected	7.9	Not Detected
2-Hexanone	4.7	Not Detected	19	Not Detected

eurofins | Air Toxics

Client Sample ID: VMP-15-5-013018

Lab ID#: 1802054A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020712**	**Date of Collection:**	**1/30/18 2:04:00 PM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**2/7/18 04:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	9.9	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.0	Not Detected
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Styrene	1.2	Not Detected	5.0	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.7	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.0	Not Detected
Propylbenzene	1.2	Not Detected	5.7	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.7	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.0	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,2,4-Trichlorobenzene	4.7	Not Detected	34	Not Detected
Hexachlorobutadiene	4.7	Not Detected	50	Not Detected
Butane	4.7	Not Detected	11	Not Detected
Isopentane	4.7	Not Detected	14	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: VMP-15-21.5-013018

Lab ID#: 1802054A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020713**	**Date of Collection:**	**1/30/18 2:32:00 PM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**2/7/18 04:46 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.44 J	5.8	2.2 J
Freon 114	1.2	Not Detected	8.1	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.7	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.5	Not Detected
Ethanol	4.7	33	8.8	63
Freon 113	1.2	Not Detected	8.9	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	2.8 J	28	6.7 J
2-Propanol	4.7	Not Detected	11	Not Detected
Carbon Disulfide	4.7	Not Detected	14	Not Detected
3-Chloropropene	4.7	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	40	Not Detected
Methyl tert-butyl ether	4.7	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	0.35 J	4.1	1.2 J
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	3.4	5.7	17
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Cyclohexane	1.2	0.36 J	4.0	1.2 J
Carbon Tetrachloride	1.2	Not Detected	7.3	Not Detected
2,2,4-Trimethylpentane	1.2	0.49 J	5.4	2.3 J
Benzene	1.2	0.13 J	3.7	0.40 J
1,2-Dichloroethane	1.2	Not Detected	4.7	Not Detected
Heptane	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.3	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
1,4-Dioxane	4.7	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	7.8	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.8	Not Detected
Toluene	1.2	0.20 J	4.4	0.75 J
trans-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	Not Detected	7.9	Not Detected
2-Hexanone	4.7	Not Detected	19	Not Detected

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Client Sample ID: VMP-15-21.5-013018

Lab ID#: 1802054A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020713**	**Date of Collection:**	**1/30/18 2:32:00 PM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**2/7/18 04:46 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	9.9	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.0	Not Detected
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Styrene	1.2	Not Detected	5.0	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.7	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.0	Not Detected
Propylbenzene	1.2	Not Detected	5.7	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.7	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.0	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,2,4-Trichlorobenzene	4.7	Not Detected	34	Not Detected
Hexachlorobutadiene	4.7	Not Detected	50	Not Detected
Butane	4.7	Not Detected	11	Not Detected
Isopentane	4.7	1.7 J	14	5.0 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: VMP-15-25.5-013018

Lab ID#: 1802054A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020714**	**Date of Collection:**	**1/30/18 3:14:00 PM**
Dil. Factor:	**2.32**	**Date of Analysis:**	**2/7/18 05:13 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.50 J	5.7	2.5 J
Freon 114	1.2	Not Detected	8.1	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.6	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.5	Not Detected
Ethanol	4.6	30	8.7	57
Freon 113	1.2	Not Detected	8.9	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	2.3 J	28	5.4 J
2-Propanol	4.6	Not Detected	11	Not Detected
Carbon Disulfide	4.6	Not Detected	14	Not Detected
3-Chloropropene	4.6	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	40	Not Detected
Methyl tert-butyl ether	4.6	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.6	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	Not Detected	5.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.3	Not Detected
Cyclohexane	1.2	Not Detected	4.0	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.3	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.4	Not Detected
Benzene	1.2	0.40 J	3.7	1.3 J
1,2-Dichloroethane	1.2	Not Detected	4.7	Not Detected
Heptane	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.2	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
1,4-Dioxane	4.6	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	7.8	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.8	Not Detected
Toluene	1.2	Not Detected	4.4	Not Detected
trans-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.3	Not Detected
Tetrachloroethene	1.2	Not Detected	7.9	Not Detected
2-Hexanone	4.6	Not Detected	19	Not Detected

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Client Sample ID: VMP-15-25.5-013018

Lab ID#: 1802054A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020714**	**Date of Collection:**	**1/30/18 3:14:00 PM**
Dil. Factor:	**2.32**	**Date of Analysis:**	**2/7/18 05:13 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	9.9	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	8.9	Not Detected
Chlorobenzene	1.2	Not Detected	5.3	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Styrene	1.2	Not Detected	4.9	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.7	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.0	Not Detected
Propylbenzene	1.2	Not Detected	5.7	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.7	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.0	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,2,4-Trichlorobenzene	4.6	Not Detected	34	Not Detected
Hexachlorobutadiene	4.6	Not Detected	49	Not Detected
Butane	4.6	Not Detected	11	Not Detected
Isopentane	4.6	Not Detected	14	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: VMP-15-29-013018

Lab ID#: 1802054A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020715**	**Date of Collection:**	**1/30/18 3:39:00 PM**
Dil. Factor:	**2.32**	**Date of Analysis:**	**2/7/18 05:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.58 J	5.7	2.8 J
Freon 114	1.2	Not Detected	8.1	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.6	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.5	Not Detected
Ethanol	4.6	Not Detected	8.7	Not Detected
Freon 113	1.2	Not Detected	8.9	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	2.1 J	28	5.0 J
2-Propanol	4.6	Not Detected	11	Not Detected
Carbon Disulfide	4.6	Not Detected	14	Not Detected
3-Chloropropene	4.6	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	40	Not Detected
Methyl tert-butyl ether	4.6	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.6	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	0.41 J	5.7	2.0 J
1,1,1-Trichloroethane	1.2	Not Detected	6.3	Not Detected
Cyclohexane	1.2	Not Detected	4.0	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.3	Not Detected
2,2,4-Trimethylpentane	1.2	1.6	5.4	7.7
Benzene	1.2	0.69 J	3.7	2.2 J
1,2-Dichloroethane	1.2	Not Detected	4.7	Not Detected
Heptane	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.2	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
1,4-Dioxane	4.6	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	7.8	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.8	Not Detected
Toluene	1.2	Not Detected	4.4	Not Detected
trans-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.3	Not Detected
Tetrachloroethene	1.2	Not Detected	7.9	Not Detected
2-Hexanone	4.6	Not Detected	19	Not Detected

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Client Sample ID: VMP-15-29-013018

Lab ID#: 1802054A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020715**	**Date of Collection:**	**1/30/18 3:39:00 PM**
Dil. Factor:	**2.32**	**Date of Analysis:**	**2/7/18 05:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	9.9	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	8.9	Not Detected
Chlorobenzene	1.2	Not Detected	5.3	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Styrene	1.2	Not Detected	4.9	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.7	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.0	Not Detected
Propylbenzene	1.2	Not Detected	5.7	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.7	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.0	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,2,4-Trichlorobenzene	4.6	Not Detected	34	Not Detected
Hexachlorobutadiene	4.6	Not Detected	49	Not Detected
Butane	4.6	2.6 J	11	6.1 J
Isopentane	4.6	1.9 J	14	5.7 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1802054A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020707a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 12:09 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	0.40 J	10	0.83 J
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	0.61 J	3.8	1.2 J
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	0.78 J	12	1.9 J
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	0.28 J	6.2	0.87 J
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.2	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	0.041 J	1.6	0.13 J
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#: 1802054A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020707a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 12:09 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	0.17 J	2.4	0.84 J
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

J = Estimated value.

Container Type: NA - Not Applicable

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

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Client Sample ID: Lab Blank

Lab ID#: 1802054A-07B

EPA METHOD TO-15 GC/MS

File Name:	**j020605a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 05:16 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	20	Not Detected	78	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	20	Not Detected	62	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	20	Not Detected	69	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	0.75 J	19	2.8 J
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#: 1802054A-07B

EPA METHOD TO-15 GC/MS

File Name:	**j020605a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 05:16 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	0.93 J	22	4.0 J
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	0.76 J	24	3.8 J
1,2,4-Trimethylbenzene	5.0	0.62 J	24	3.1 J
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

J = Estimated value.

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1802054A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 08:20 AM**	

Compound	%Recovery
Freon 12	115
Freon 114	105
Chloromethane	133 Q
Vinyl Chloride	116
1,3-Butadiene	113
Bromomethane	113
Chloroethane	112
Freon 11	112
Ethanol	118
Freon 113	106
1,1-Dichloroethene	105
Acetone	110
2-Propanol	121
Carbon Disulfide	107
3-Chloropropene	102
Methylene Chloride	113
Methyl tert-butyl ether	104
trans-1,2-Dichloroethene	103
Hexane	103
1,1-Dichloroethane	106
2-Butanone (Methyl Ethyl Ketone)	98
cis-1,2-Dichloroethene	98
Tetrahydrofuran	100
Chloroform	104
1,1,1-Trichloroethane	100
Cyclohexane	94
Carbon Tetrachloride	101
2,2,4-Trimethylpentane	99
Benzene	106
1,2-Dichloroethane	110
Heptane	100
Trichloroethene	103
1,2-Dichloropropane	101
1,4-Dioxane	114
Bromodichloromethane	104
cis-1,3-Dichloropropene	99
4-Methyl-2-pentanone	115
Toluene	101
trans-1,3-Dichloropropene	104
1,1,2-Trichloroethane	107
Tetrachloroethene	108
2-Hexanone	128

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Client Sample ID: CCV

Lab ID#: 1802054A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 08:20 AM**	

Compound	%Recovery
Dibromochloromethane	107
1,2-Dibromoethane (EDB)	107
Chlorobenzene	105
Ethyl Benzene	96
m,p-Xylene	98
o-Xylene	96
Styrene	100
Bromoform	110
Cumene	105
1,1,2,2-Tetrachloroethane	113
Propylbenzene	107
4-Ethyltoluene	105
1,3,5-Trimethylbenzene	110
1,2,4-Trimethylbenzene	107
1,3-Dichlorobenzene	111
1,4-Dichlorobenzene	112
alpha-Chlorotoluene	88
1,2-Dichlorobenzene	112
1,2,4-Trichlorobenzene	119
Hexachlorobutadiene	120
Butane	96
Isopentane	111

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV
Lab ID#: 1802054A-08B
EPA METHOD TO-15 GC/MS

File Name:	**j020602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 03:39 PM**	

Compound	%Recovery
Freon 12	101
Freon 114	101
Chloromethane	99
Vinyl Chloride	104
1,3-Butadiene	102
Bromomethane	108
Chloroethane	115
Freon 11	109
Ethanol	104
Freon 113	112
1,1-Dichloroethene	121
Acetone	106
2-Propanol	116
Carbon Disulfide	105
3-Chloropropene	106
Methylene Chloride	130
Methyl tert-butyl ether	114
trans-1,2-Dichloroethene	107
Hexane	111
1,1-Dichloroethane	116
2-Butanone (Methyl Ethyl Ketone)	99
cis-1,2-Dichloroethene	121
Tetrahydrofuran	95
Chloroform	113
1,1,1-Trichloroethane	113
Cyclohexane	116
Carbon Tetrachloride	111
2,2,4-Trimethylpentane	108
Benzene	110
1,2-Dichloroethane	99
Heptane	90
Trichloroethene	119
1,2-Dichloropropane	98
1,4-Dioxane	98
Bromodichloromethane	94
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	94
Toluene	107
trans-1,3-Dichloropropene	102
1,1,2-Trichloroethane	94
Tetrachloroethene	117
2-Hexanone	102

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Client Sample ID: CCV
Lab ID#: 1802054A-08B
EPA METHOD TO-15 GC/MS

File Name:	**j020602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 03:39 PM**	

Compound	%Recovery
Dibromochloromethane	95
1,2-Dibromoethane (EDB)	98
Chlorobenzene	96
Ethyl Benzene	98
m,p-Xylene	108
o-Xylene	108
Styrene	99
Bromoform	101
Cumene	97
1,1,2,2-Tetrachloroethane	95
Propylbenzene	96
4-Ethyltoluene	94
1,3,5-Trimethylbenzene	118
1,2,4-Trimethylbenzene	106
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	97
alpha-Chlorotoluene	102
1,2-Dichlorobenzene	96
1,2,4-Trichlorobenzene	96
Hexachlorobutadiene	95
Butane	120
Isopentane	117

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 1802054A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 09:29 AM**	

Compound	%Recovery	Method Limits
Freon 12	116	70-130
Freon 114	111	70-130
Chloromethane	129	70-130
Vinyl Chloride	102	70-130
1,3-Butadiene	118	70-130
Bromomethane	113	70-130
Chloroethane	114	70-130
Freon 11	114	70-130
Ethanol	116	70-130
Freon 113	104	70-130
1,1-Dichloroethene	103	70-130
Acetone	109	70-130
2-Propanol	114	70-130
Carbon Disulfide	95	70-130
3-Chloropropene	97	70-130
Methylene Chloride	111	70-130
Methyl tert-butyl ether	99	70-130
trans-1,2-Dichloroethene	89	70-130
Hexane	102	70-130
1,1-Dichloroethane	105	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
cis-1,2-Dichloroethene	107	70-130
Tetrahydrofuran	96	70-130
Chloroform	102	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	98	70-130
2,2,4-Trimethylpentane	93	70-130
Benzene	104	70-130
1,2-Dichloroethane	107	70-130
Heptane	96	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	96	70-130
Bromodichloromethane	105	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	97	70-130
trans-1,3-Dichloropropene	101	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	104	70-130
2-Hexanone	101	70-130

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Client Sample ID: LCS

Lab ID#: 1802054A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 09:29 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	105	70-130
1,2-Dibromoethane (EDB)	105	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	96	70-130
o-Xylene	94	70-130
Styrene	95	70-130
Bromoform	108	70-130
Cumene	99	70-130
1,1,2,2-Tetrachloroethane	104	70-130
Propylbenzene	102	70-130
4-Ethyltoluene	97	70-130
1,3,5-Trimethylbenzene	102	70-130
1,2,4-Trimethylbenzene	97	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	98	70-130
1,2-Dichlorobenzene	104	70-130
1,2,4-Trichlorobenzene	105	70-130
Hexachlorobutadiene	102	70-130
Butane	101	60-140
Isopentane	110	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 1802054A-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020706**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 10:42 AM**	

Compound	%Recovery	Method Limits
Freon 12	121	70-130
Freon 114	115	70-130
Chloromethane	134 Q	70-130
Vinyl Chloride	120	70-130
1,3-Butadiene	114	70-130
Bromomethane	118	70-130
Chloroethane	119	70-130
Freon 11	118	70-130
Ethanol	121	70-130
Freon 113	107	70-130
1,1-Dichloroethene	108	70-130
Acetone	113	70-130
2-Propanol	116	70-130
Carbon Disulfide	97	70-130
3-Chloropropene	99	70-130
Methylene Chloride	115	70-130
Methyl tert-butyl ether	102	70-130
trans-1,2-Dichloroethene	89	70-130
Hexane	105	70-130
1,1-Dichloroethane	108	70-130
2-Butanone (Methyl Ethyl Ketone)	98	70-130
cis-1,2-Dichloroethene	110	70-130
Tetrahydrofuran	100	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	94	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	98	70-130
Benzene	106	70-130
1,2-Dichloroethane	109	70-130
Heptane	98	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	99	70-130
1,4-Dioxane	99	70-130
Bromodichloromethane	106	70-130
cis-1,3-Dichloropropene	92	70-130
4-Methyl-2-pentanone	97	70-130
Toluene	99	70-130
trans-1,3-Dichloropropene	102	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	105	70-130
2-Hexanone	103	70-130

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Client Sample ID: LCSD

Lab ID#: 1802054A-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p020706**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 10:42 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	108	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	94	70-130
o-Xylene	94	70-130
Styrene	96	70-130
Bromoform	108	70-130
Cumene	99	70-130
1,1,2,2-Tetrachloroethane	104	70-130
Propylbenzene	102	70-130
4-Ethyltoluene	97	70-130
1,3,5-Trimethylbenzene	103	70-130
1,2,4-Trimethylbenzene	98	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	105	70-130
alpha-Chlorotoluene	97	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	98	70-130
Hexachlorobutadiene	93	70-130
Butane	102	60-140
Isopentane	112	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 1802054A-09B

EPA METHOD TO-15 GC/MS

File Name:	**j020603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 04:04 PM**	

Compound	%Recovery	Method Limits
Freon 12	99	70-130
Freon 114	104	70-130
Chloromethane	98	70-130
Vinyl Chloride	105	70-130
1,3-Butadiene	96	70-130
Bromomethane	102	70-130
Chloroethane	116	70-130
Freon 11	108	70-130
Ethanol	101	70-130
Freon 113	113	70-130
1,1-Dichloroethene	113	70-130
Acetone	103	70-130
2-Propanol	116	70-130
Carbon Disulfide	90	70-130
3-Chloropropene	94	70-130
Methylene Chloride	123	70-130
Methyl tert-butyl ether	108	70-130
trans-1,2-Dichloroethene	85	70-130
Hexane	107	70-130
1,1-Dichloroethane	114	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
cis-1,2-Dichloroethene	128	70-130
Tetrahydrofuran	95	70-130
Chloroform	110	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	108	70-130
Carbon Tetrachloride	105	70-130
2,2,4-Trimethylpentane	103	70-130
Benzene	105	70-130
1,2-Dichloroethane	93	70-130
Heptane	92	70-130
Trichloroethene	116	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	94	70-130
Bromodichloromethane	94	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	90	70-130
Toluene	107	70-130
trans-1,3-Dichloropropene	98	70-130
1,1,2-Trichloroethane	90	70-130
Tetrachloroethene	112	70-130
2-Hexanone	98	70-130

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Client Sample ID: LCS

Lab ID#: 1802054A-09B

EPA METHOD TO-15 GC/MS

File Name:	**j020603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 04:04 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	94	70-130
1,2-Dibromoethane (EDB)	96	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	94	70-130
m,p-Xylene	99	70-130
o-Xylene	105	70-130
Styrene	93	70-130
Bromoform	96	70-130
Cumene	92	70-130
1,1,2,2-Tetrachloroethane	92	70-130
Propylbenzene	92	70-130
4-Ethyltoluene	88	70-130
1,3,5-Trimethylbenzene	117	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	94	70-130
1,4-Dichlorobenzene	94	70-130
alpha-Chlorotoluene	104	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	98	70-130
Hexachlorobutadiene	93	70-130
Butane	100	60-140
Isopentane	114	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: LCSD

Lab ID#: 1802054A-09BB

EPA METHOD TO-15 GC/MS

File Name:	**j020604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 04:29 PM**	

Compound	%Recovery	Method Limits
Freon 12	99	70-130
Freon 114	102	70-130
Chloromethane	99	70-130
Vinyl Chloride	98	70-130
1,3-Butadiene	95	70-130
Bromomethane	101	70-130
Chloroethane	107	70-130
Freon 11	106	70-130
Ethanol	98	70-130
Freon 113	112	70-130
1,1-Dichloroethene	117	70-130
Acetone	102	70-130
2-Propanol	115	70-130
Carbon Disulfide	88	70-130
3-Chloropropene	89	70-130
Methylene Chloride	121	70-130
Methyl tert-butyl ether	111	70-130
trans-1,2-Dichloroethene	82	70-130
Hexane	106	70-130
1,1-Dichloroethane	115	70-130
2-Butanone (Methyl Ethyl Ketone)	95	70-130
cis-1,2-Dichloroethene	128	70-130
Tetrahydrofuran	94	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	110	70-130
Carbon Tetrachloride	108	70-130
2,2,4-Trimethylpentane	104	70-130
Benzene	108	70-130
1,2-Dichloroethane	98	70-130
Heptane	90	70-130
Trichloroethene	117	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	96	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	89	70-130
4-Methyl-2-pentanone	88	70-130
Toluene	106	70-130
trans-1,3-Dichloropropene	98	70-130
1,1,2-Trichloroethane	91	70-130
Tetrachloroethene	110	70-130
2-Hexanone	98	70-130

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Client Sample ID: LCSD
Lab ID#: 1802054A-09BB
EPA METHOD TO-15 GC/MS

File Name:	**j020604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 04:29 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	89	70-130
1,2-Dibromoethane (EDB)	92	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	103	70-130
o-Xylene	110	70-130
Styrene	97	70-130
Bromoform	95	70-130
Cumene	94	70-130
1,1,2,2-Tetrachloroethane	92	70-130
Propylbenzene	94	70-130
4-Ethyltoluene	92	70-130
1,3,5-Trimethylbenzene	105	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	94	70-130
1,4-Dichlorobenzene	98	70-130
alpha-Chlorotoluene	104	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	98	70-130
Hexachlorobutadiene	98	70-130
Butane	115	60-140
Isopentane	112	60-140

Container Type: NA - Not Applicable

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

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2/15/2018
Ms. Elizabeth Kunkel
AECOM
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Quarterly Soil Vapor
Project #: 60527968-01.04.001
Workorder #: 1802054B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 2/2/2018 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 1802054B

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 PO Box 203970 Austin, TX 78720
PHONE:	314-743-4179	**P.O. #**	60527968-0104001
FAX:		**PROJECT #**	60527968-01.04.001 Roxana Quarterly Soil Vapor
DATE RECEIVED:	02/02/2018	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/15/2018		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-5-013018	Modified ASTM D-1946	2.4 "Hg	15.1 psi
02A	VMP-55-20-013018	Modified ASTM D-1946	5.3 "Hg	15.1 psi
03A	VMP-15-5-013018	Modified ASTM D-1946	3.9 "Hg	15.1 psi
04A	VMP-15-21.5-013018	Modified ASTM D-1946	4.1 "Hg	14.9 psi
05A	VMP-15-25.5-013018	Modified ASTM D-1946	3.9 "Hg	15 psi
06A	VMP-15-29-013018	Modified ASTM D-1946	3.5 "Hg	15.4 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 Hayes DATE: 02/15/18

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 1802054B

Six 1 Liter Summa Canister samples were received on February 02, 2018. 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-55-5-013018

Lab ID#: 1802054B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	4.1
Nitrogen	0.22	82
Methane	0.00022	0.00011 J
Carbon Dioxide	0.022	14

Client Sample ID: VMP-55-20-013018

Lab ID#: 1802054B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.4
Nitrogen	0.25	77
Methane	0.00025	3.1
Carbon Dioxide	0.025	18
Ethane	0.0025	0.00079 J

Client Sample ID: VMP-15-5-013018

Lab ID#: 1802054B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	19
Nitrogen	0.23	79
Carbon Dioxide	0.023	1.8

Client Sample ID: VMP-15-21.5-013018

Lab ID#: 1802054B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	5.8
Nitrogen	0.23	81
Carbon Dioxide	0.023	13

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

Client Sample ID: VMP-15-25.5-013018

Lab ID#: 1802054B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	7.6
Nitrogen	0.23	80
Carbon Dioxide	0.023	12

Client Sample ID: VMP-15-29-013018

Lab ID#: 1802054B-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	8.2
Nitrogen	0.23	81
Methane	0.00023	0.00035
Carbon Dioxide	0.023	11

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Client Sample ID: VMP-55-5-013018

Lab ID#: 1802054B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020712**	**Date of Collection: 1/30/18 12:49:00 PM**	
Dil. Factor:	**2.21**	**Date of Analysis: 2/7/18 07:01 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	4.1
Nitrogen	0.22	82
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	0.00011 J
Carbon Dioxide	0.022	14
Ethane	0.0022	Not Detected
Ethene	0.0022	Not Detected
Helium	0.11	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-20-013018

Lab ID#: 1802054B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020710**	**Date of Collection: 1/30/18 1:10:00 PM**	
Dil. Factor:	**2.46**	**Date of Analysis: 2/6/18 09:52 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.4
Nitrogen	0.25	77
Carbon Monoxide	0.025	Not Detected
Methane	0.00025	3.1
Carbon Dioxide	0.025	18
Ethane	0.0025	0.00079 J
Ethene	0.0025	Not Detected
Helium	0.12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-5-013018

Lab ID#: 1802054B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020713**	**Date of Collection: 1/30/18 2:04:00 PM**	
Dil. Factor:	**2.33**	**Date of Analysis: 2/7/18 07:28 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	19
Nitrogen	0.23	79
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	Not Detected
Carbon Dioxide	0.023	1.8
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-013018

Lab ID#: 1802054B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020714**	**Date of Collection: 1/30/18 2:32:00 PM**	
Dil. Factor:	**2.33**	**Date of Analysis: 2/7/18 07:50 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	5.8
Nitrogen	0.23	81
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	Not Detected
Carbon Dioxide	0.023	13
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-013018

Lab ID#: 1802054B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020715**	**Date of Collection: 1/30/18 3:14:00 PM**	
Dil. Factor:	**2.32**	**Date of Analysis: 2/7/18 08:12 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	7.6
Nitrogen	0.23	80
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	Not Detected
Carbon Dioxide	0.023	12
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-29-013018

Lab ID#: 1802054B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020716**	**Date of Collection: 1/30/18 3:39:00 PM**	
Dil. Factor:	**2.32**	**Date of Analysis: 2/7/18 08:34 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	8.2
Nitrogen	0.23	81
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	0.00035
Carbon Dioxide	0.023	11
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1802054B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020706a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 08:10 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.0077 J
Nitrogen	0.10	0.077 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#: 1802054B-07B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020705c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 07:33 PM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1802054B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/6/18 06:02 PM**	

Compound	%Recovery	Method Limits
Oxygen	104	85-115
Nitrogen	90	85-115
Carbon Monoxide	91	85-115
Methane	104	85-115
Carbon Dioxide	99	85-115
Ethane	101	85-115
Ethene	99	85-115
Helium	103	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1802054B-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020729**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/18 02:33 PM**	

Compound	%Recovery	Method Limits
Oxygen	104	85-115
Nitrogen	90	85-115
Carbon Monoxide	90	85-115
Methane	109	85-115
Carbon Dioxide	99	85-115
Ethane	106	85-115
Ethene	104	85-115
Helium	102	85-115

Container Type: NA - Not Applicable