

August 12, 2019

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 (314/802-1152).

Sincerely,
AECOM, on behalf of Shell Oil Products US



Samuel Fisher
Environmental Scientist

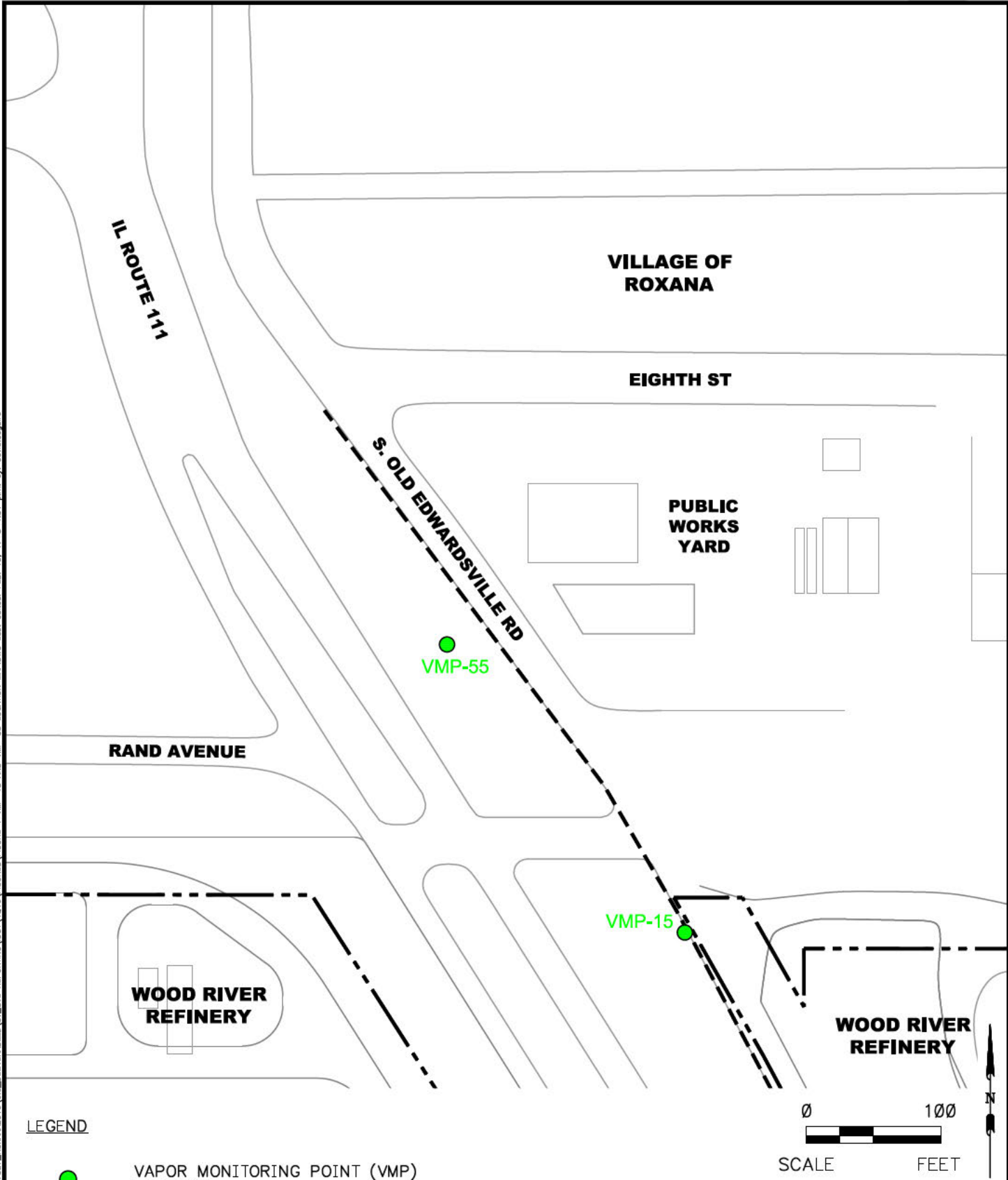


Robert E. Mooshegian, STS
Senior Program Manager




Attachments

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

File: P:\PROJECTS\ENVIRONMENTAL\SHLL\60477367_ROXANA2016\6.0_DELIVERABLES\SV_SVE_REPORTING\DOT\4016\FIGURES\FIGURE 1 VMP-15 AND VMP-55 LOCATION MAP.DWG Last edited: FEB. 15, 17 @ 1:51 p.m. by: david.dequire



LEGEND

-  VAPOR MONITORING POINT (VMP) LOCATION
-  APPROXIMATE BOUNDARY OF WOOD RIVER REFINERY
-  APPROXIMATE EAST BOUNDARY OF IL ROUTE 111 RIGHT-OF-WAY

SHELL OIL PRODUCTS US SOIL VAPOR MONITORING PROGRAM ROXANA, ILLINOIS	PROJECT NO. 60527968
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DRN. BY:djd Feb 2017 DSGN. BY:djd CHKD. BY:smf	VMP-15 and VMP-55 Location Map	FIG. NO. 1
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5/15/2019

Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60592794-1.04.002
Workorder #: 1905059A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/2/2019 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

WORK ORDER #: 1905059A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	BILL TO:	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-802-1171	P.O. #	110116ACM
FAX:		PROJECT #	60592794-1.04.002 Roxana Quarterly
DATE RECEIVED:	05/02/2019	CONTACT:	Soil Vapor Kelly Buettner
DATE COMPLETED:	05/15/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	VMP-55-20-050119	TO-15	4.9 "Hg	15.9 psi
02A	VMP-15-5-050119	TO-15	4.9 "Hg	14.6 psi
03A	VMP-15-21.5-050119	TO-15	4.9 "Hg	14.8 psi
04A	VMP-15-25.5-050119	TO-15	4.3 "Hg	15.2 psi
04B	VMP-15-25.5-050119	TO-15	4.3 "Hg	15.2 psi
05A	VMP-15-25.5-050119-Dup	TO-15	2.8 "Hg	16.2 psi
05B	VMP-15-25.5-050119-Dup	TO-15	2.8 "Hg	16.2 psi
06A	Lab Blank	TO-15	NA	NA
06B	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
07B	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA
08B	LCS	TO-15	NA	NA
08BB	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 05/15/19

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

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

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

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

**LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 1905059A**

Five 1 Liter Summa Canister samples were received on May 02, 2019. 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 may be false positives.

Due to high-level target compounds, samples VMP-15-25.5-050119 and VMP-15-25.5-050119-Dup 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.

Dilution was performed on samples VMP-55-20-050119 and VMP-15-21.5-050119 due to the presence of high level target species.

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.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: VMP-55-20-050119

Lab ID#: 1905059A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	500	3400	1200	8100
Methyl tert-butyl ether	120	23 J	450	82 J
Hexane	120	400	440	1400
Cyclohexane	120	5500	430	19000
2,2,4-Trimethylpentane	120	31000	580	140000
Butane	500	21000	1200	50000
Isopentane	500	92000	1500	270000

Client Sample ID: VMP-15-5-050119

Lab ID#: 1905059A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.44 J	5.9	2.2 J
Ethanol	4.8	8.6	9.0	16
Acetone	12	8.3 J	28	20 J
2-Propanol	4.8	1.2 J	12	2.8 J

Client Sample ID: VMP-15-21.5-050119

Lab ID#: 1905059A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	80	42 J	190	100 J
2,2,4-Trimethylpentane	8.0	2800	37	13000
Benzene	8.0	7.6 J	26	24 J
Heptane	8.0	2.2 J	33	8.9 J
Toluene	8.0	25	30	94
m,p-Xylene	8.0	4.1 J	35	18 J
Isopentane	32	21 J	94	62 J

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059A-04A

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

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	160	20 J	380	47 J
Cyclohexane	16	30	54	100
2,2,4-Trimethylpentane	16	4200	74	20000
Benzene	16	11 J	50	34 J
Butane	63	930	150	2200
Isopentane	63	920	190	2700

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059A-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	32	13 J	60	25 J
Acetone	79	16 J	190	39 J
Cyclohexane	7.9	25	27	86
2,2,4-Trimethylpentane	7.9	4200 E	37	20000 E
Benzene	7.9	9.2	25	30
Toluene	7.9	1.7 J	30	6.3 J
Butane	32	920	75	2200
Isopentane	32	910	93	2700

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	150	16 J	370	38 J
Cyclohexane	15	28	53	95
2,2,4-Trimethylpentane	15	4400	72	20000
Benzene	15	11 J	49	34 J
Butane	62	940	150	2200
Isopentane	62	960	180	2800

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

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059A-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	31	13 J	58	24 J
Acetone	77	15 J	180	36 J
Cyclohexane	7.7	24	26	82
2,2,4-Trimethylpentane	7.7	4200 E	36	19000 E
Benzene	7.7	9.9	24	32
Toluene	7.7	1.8 J	29	7.0 J
Butane	31	930	73	2200
Isopentane	31	910	91	2700



Air Toxics

Client Sample ID: VMP-55-20-050119

Lab ID#: 1905059A-01A

EPA METHOD TO-15 GC/MS

File Name:	j051424	Date of Collection:	5/1/19 9:04:00 AM
Dil. Factor:	24.9	Date of Analysis:	5/15/19 02:30 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	120	Not Detected	620	Not Detected
Freon 114	120	Not Detected	870	Not Detected
Chloromethane	500	Not Detected	1000	Not Detected
Vinyl Chloride	120	Not Detected	320	Not Detected
1,3-Butadiene	120	Not Detected	280	Not Detected
Bromomethane	500	Not Detected	1900	Not Detected
Chloroethane	500	Not Detected	1300	Not Detected
Freon 11	120	Not Detected	700	Not Detected
Ethanol	500	Not Detected	940	Not Detected
Freon 113	120	Not Detected	950	Not Detected
1,1-Dichloroethene	120	Not Detected	490	Not Detected
Acetone	500	3400	1200	8100
2-Propanol	500	Not Detected	1200	Not Detected
Carbon Disulfide	500	Not Detected	1600	Not Detected
3-Chloropropene	500	Not Detected	1600	Not Detected
Methylene Chloride	500	Not Detected	1700	Not Detected
Methyl tert-butyl ether	120	23 J	450	82 J
trans-1,2-Dichloroethene	120	Not Detected	490	Not Detected
Hexane	120	400	440	1400
1,1-Dichloroethane	120	Not Detected	500	Not Detected
2-Butanone (Methyl Ethyl Ketone)	500	Not Detected	1500	Not Detected
cis-1,2-Dichloroethene	120	Not Detected	490	Not Detected
Tetrahydrofuran	120	Not Detected	370	Not Detected
Chloroform	120	Not Detected	610	Not Detected
1,1,1-Trichloroethane	120	Not Detected	680	Not Detected
Cyclohexane	120	5500	430	19000
Carbon Tetrachloride	120	Not Detected	780	Not Detected
2,2,4-Trimethylpentane	120	31000	580	140000
Benzene	120	Not Detected	400	Not Detected
1,2-Dichloroethane	120	Not Detected	500	Not Detected
Heptane	120	Not Detected	510	Not Detected
Trichloroethene	120	Not Detected	670	Not Detected
1,2-Dichloropropane	120	Not Detected	580	Not Detected
1,4-Dioxane	500	Not Detected	1800	Not Detected
Bromodichloromethane	120	Not Detected	830	Not Detected
cis-1,3-Dichloropropene	120	Not Detected	560	Not Detected
4-Methyl-2-pentanone	120	Not Detected	510	Not Detected
Toluene	120	Not Detected	470	Not Detected
trans-1,3-Dichloropropene	120	Not Detected	560	Not Detected
1,1,2-Trichloroethane	120	Not Detected	680	Not Detected
Tetrachloroethene	120	Not Detected	840	Not Detected
2-Hexanone	500	Not Detected	2000	Not Detected

Client Sample ID: VMP-55-20-050119

Lab ID#: 1905059A-01A

EPA METHOD TO-15 GC/MS

File Name:	j051424	Date of Collection:	5/1/19 9:04:00 AM
Dil. Factor:	24.9	Date of Analysis:	5/15/19 02:30 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	120	Not Detected	1100	Not Detected
1,2-Dibromoethane (EDB)	120	Not Detected	960	Not Detected
Chlorobenzene	120	Not Detected	570	Not Detected
Ethyl Benzene	120	Not Detected	540	Not Detected
m,p-Xylene	120	Not Detected	540	Not Detected
o-Xylene	120	Not Detected	540	Not Detected
Styrene	120	Not Detected	530	Not Detected
Bromoform	120	Not Detected	1300	Not Detected
Cumene	120	Not Detected	610	Not Detected
1,1,2,2-Tetrachloroethane	120	Not Detected	850	Not Detected
Propylbenzene	120	Not Detected	610	Not Detected
4-Ethyltoluene	120	Not Detected	610	Not Detected
1,3,5-Trimethylbenzene	120	Not Detected	610	Not Detected
1,2,4-Trimethylbenzene	120	Not Detected	610	Not Detected
1,3-Dichlorobenzene	120	Not Detected	750	Not Detected
1,4-Dichlorobenzene	120	Not Detected	750	Not Detected
alpha-Chlorotoluene	120	Not Detected	640	Not Detected
1,2-Dichlorobenzene	120	Not Detected	750	Not Detected
1,2,4-Trichlorobenzene	500	Not Detected UJ	3700	Not Detected UJ
Hexachlorobutadiene	500	Not Detected	5300	Not Detected
Butane	500	21000	1200	50000
Isopentane	500	92000	1500	270000

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: VMP-15-5-050119

Lab ID#: 1905059A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050712	Date of Collection:	5/1/19 10:12:00 AM
Dil. Factor:	2.38	Date of Analysis:	5/7/19 03:42 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.44 J	5.9	2.2 J
Freon 114	1.2	Not Detected	8.3	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	46	Not Detected
Chloroethane	4.8	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.7	Not Detected
Ethanol	4.8	8.6	9.0	16
Freon 113	1.2	Not Detected	9.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Acetone	12	8.3 J	28	20 J
2-Propanol	4.8	1.2 J	12	2.8 J
Carbon Disulfide	4.8	Not Detected	15	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	41	Not Detected
Methyl tert-butyl ether	4.8	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Hexane	1.2	Not Detected	4.2	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.5	Not Detected
Chloroform	1.2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Cyclohexane	1.2	Not Detected	4.1	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.5	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.6	Not Detected
Benzene	1.2	Not Detected	3.8	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.8	Not Detected
Heptane	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	Not Detected	6.4	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.5	Not Detected
1,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.0	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.9	Not Detected
Toluene	1.2	Not Detected	4.5	Not Detected
trans-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Tetrachloroethene	1.2	Not Detected	8.1	Not Detected
2-Hexanone	4.8	Not Detected	19	Not Detected

Client Sample ID: VMP-15-5-050119

Lab ID#: 1905059A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050712	Date of Collection:	5/1/19 10:12:00 AM
Dil. Factor:	2.38	Date of Analysis:	5/7/19 03:42 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	9.1	Not Detected
Chlorobenzene	1.2	Not Detected	5.5	Not Detected
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1.2	Not Detected	5.2	Not Detected
o-Xylene	1.2	Not Detected	5.2	Not Detected
Styrene	1.2	Not Detected	5.1	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.8	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.2	Not Detected
Propylbenzene	1.2	Not Detected	5.8	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.8	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.2	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	35	Not Detected
Hexachlorobutadiene	4.8	Not Detected	51	Not Detected
Butane	4.8	Not Detected	11	Not Detected
Isopentane	4.8	Not Detected	14	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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



Air Toxics

Client Sample ID: VMP-15-21.5-050119

Lab ID#: 1905059A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050713	Date of Collection:	5/1/19 10:29:00 AM
Dil. Factor:	16.0	Date of Analysis:	5/7/19 04:08 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	8.0	Not Detected	40	Not Detected
Freon 114	8.0	Not Detected	56	Not Detected
Chloromethane	80	Not Detected	160	Not Detected
Vinyl Chloride	8.0	Not Detected	20	Not Detected
1,3-Butadiene	8.0	Not Detected	18	Not Detected
Bromomethane	80	Not Detected	310	Not Detected
Chloroethane	32	Not Detected	84	Not Detected
Freon 11	8.0	Not Detected	45	Not Detected
Ethanol	32	Not Detected	60	Not Detected
Freon 113	8.0	Not Detected	61	Not Detected
1,1-Dichloroethene	8.0	Not Detected	32	Not Detected
Acetone	80	42 J	190	100 J
2-Propanol	32	Not Detected	79	Not Detected
Carbon Disulfide	32	Not Detected	100	Not Detected
3-Chloropropene	32	Not Detected	100	Not Detected
Methylene Chloride	80	Not Detected	280	Not Detected
Methyl tert-butyl ether	32	Not Detected	120	Not Detected
trans-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
Hexane	8.0	Not Detected	28	Not Detected
1,1-Dichloroethane	8.0	Not Detected	32	Not Detected
2-Butanone (Methyl Ethyl Ketone)	32	Not Detected	94	Not Detected
cis-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
Tetrahydrofuran	8.0	Not Detected	24	Not Detected
Chloroform	8.0	Not Detected	39	Not Detected
1,1,1-Trichloroethane	8.0	Not Detected	44	Not Detected
Cyclohexane	8.0	Not Detected	28	Not Detected
Carbon Tetrachloride	8.0	Not Detected	50	Not Detected
2,2,4-Trimethylpentane	8.0	2800	37	13000
Benzene	8.0	7.6 J	26	24 J
1,2-Dichloroethane	8.0	Not Detected	32	Not Detected
Heptane	8.0	2.2 J	33	8.9 J
Trichloroethene	8.0	Not Detected	43	Not Detected
1,2-Dichloropropane	8.0	Not Detected	37	Not Detected
1,4-Dioxane	32	Not Detected	120	Not Detected
Bromodichloromethane	8.0	Not Detected	54	Not Detected
cis-1,3-Dichloropropene	8.0	Not Detected	36	Not Detected
4-Methyl-2-pentanone	8.0	Not Detected	33	Not Detected
Toluene	8.0	25	30	94
trans-1,3-Dichloropropene	8.0	Not Detected	36	Not Detected
1,1,2-Trichloroethane	8.0	Not Detected	44	Not Detected
Tetrachloroethene	8.0	Not Detected	54	Not Detected
2-Hexanone	32	Not Detected	130	Not Detected



Air Toxics

Client Sample ID: VMP-15-21.5-050119

Lab ID#: 1905059A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050713	Date of Collection:	5/1/19 10:29:00 AM
Dil. Factor:	16.0	Date of Analysis:	5/7/19 04:08 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	8.0	Not Detected	68	Not Detected
1,2-Dibromoethane (EDB)	8.0	Not Detected	61	Not Detected
Chlorobenzene	8.0	Not Detected	37	Not Detected
Ethyl Benzene	8.0	Not Detected	35	Not Detected
m,p-Xylene	8.0	4.1 J	35	18 J
o-Xylene	8.0	Not Detected	35	Not Detected
Styrene	8.0	Not Detected	34	Not Detected
Bromoform	8.0	Not Detected	83	Not Detected
Cumene	8.0	Not Detected	39	Not Detected
1,1,2,2-Tetrachloroethane	8.0	Not Detected	55	Not Detected
Propylbenzene	8.0	Not Detected	39	Not Detected
4-Ethyltoluene	8.0	Not Detected	39	Not Detected
1,3,5-Trimethylbenzene	8.0	Not Detected	39	Not Detected
1,2,4-Trimethylbenzene	8.0	Not Detected	39	Not Detected
1,3-Dichlorobenzene	8.0	Not Detected	48	Not Detected
1,4-Dichlorobenzene	8.0	Not Detected	48	Not Detected
alpha-Chlorotoluene	8.0	Not Detected	41	Not Detected
1,2-Dichlorobenzene	8.0	Not Detected	48	Not Detected
1,2,4-Trichlorobenzene	32	Not Detected	240	Not Detected
Hexachlorobutadiene	32	Not Detected	340	Not Detected
Butane	32	Not Detected	76	Not Detected
Isopentane	32	21 J	94	62 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050722	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	31.6	Date of Analysis:	5/7/19 08:57 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	16	Not Detected	78	Not Detected
Freon 114	16	Not Detected	110	Not Detected
Chloromethane	160	Not Detected	330	Not Detected
Vinyl Chloride	16	Not Detected	40	Not Detected
1,3-Butadiene	16	Not Detected	35	Not Detected
Bromomethane	160	Not Detected	610	Not Detected
Chloroethane	63	Not Detected	170	Not Detected
Freon 11	16	Not Detected	89	Not Detected
Ethanol	63	Not Detected	120	Not Detected
Freon 113	16	Not Detected	120	Not Detected
1,1-Dichloroethene	16	Not Detected	63	Not Detected
Acetone	160	20 J	380	47 J
2-Propanol	63	Not Detected	160	Not Detected
Carbon Disulfide	63	Not Detected	200	Not Detected
3-Chloropropene	63	Not Detected	200	Not Detected
Methylene Chloride	160	Not Detected	550	Not Detected
Methyl tert-butyl ether	63	Not Detected	230	Not Detected
trans-1,2-Dichloroethene	16	Not Detected	63	Not Detected
Hexane	16	Not Detected	56	Not Detected
1,1-Dichloroethane	16	Not Detected	64	Not Detected
2-Butanone (Methyl Ethyl Ketone)	63	Not Detected	190	Not Detected
cis-1,2-Dichloroethene	16	Not Detected	63	Not Detected
Tetrahydrofuran	16	Not Detected	46	Not Detected
Chloroform	16	Not Detected	77	Not Detected
1,1,1-Trichloroethane	16	Not Detected	86	Not Detected
Cyclohexane	16	30	54	100
Carbon Tetrachloride	16	Not Detected	99	Not Detected
2,2,4-Trimethylpentane	16	4200	74	20000
Benzene	16	11 J	50	34 J
1,2-Dichloroethane	16	Not Detected	64	Not Detected
Heptane	16	Not Detected	65	Not Detected
Trichloroethene	16	Not Detected	85	Not Detected
1,2-Dichloropropane	16	Not Detected	73	Not Detected
1,4-Dioxane	63	Not Detected	230	Not Detected
Bromodichloromethane	16	Not Detected	100	Not Detected
cis-1,3-Dichloropropene	16	Not Detected	72	Not Detected
4-Methyl-2-pentanone	16	Not Detected	65	Not Detected
Toluene	16	Not Detected	60	Not Detected
trans-1,3-Dichloropropene	16	Not Detected	72	Not Detected
1,1,2-Trichloroethane	16	Not Detected	86	Not Detected
Tetrachloroethene	16	Not Detected	110	Not Detected
2-Hexanone	63	Not Detected	260	Not Detected



Air Toxics

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050722	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	31.6	Date of Analysis:	5/7/19 08:57 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	16	Not Detected	130	Not Detected
1,2-Dibromoethane (EDB)	16	Not Detected	120	Not Detected
Chlorobenzene	16	Not Detected	73	Not Detected
Ethyl Benzene	16	Not Detected	69	Not Detected
m,p-Xylene	16	Not Detected	69	Not Detected
o-Xylene	16	Not Detected	69	Not Detected
Styrene	16	Not Detected	67	Not Detected
Bromoform	16	Not Detected	160	Not Detected
Cumene	16	Not Detected	78	Not Detected
1,1,2,2-Tetrachloroethane	16	Not Detected	110	Not Detected
Propylbenzene	16	Not Detected	78	Not Detected
4-Ethyltoluene	16	Not Detected	78	Not Detected
1,3,5-Trimethylbenzene	16	Not Detected	78	Not Detected
1,2,4-Trimethylbenzene	16	Not Detected	78	Not Detected
1,3-Dichlorobenzene	16	Not Detected	95	Not Detected
1,4-Dichlorobenzene	16	Not Detected	95	Not Detected
alpha-Chlorotoluene	16	Not Detected	82	Not Detected
1,2-Dichlorobenzene	16	Not Detected	95	Not Detected
1,2,4-Trichlorobenzene	63	Not Detected	470	Not Detected
Hexachlorobutadiene	63	Not Detected	670	Not Detected
Butane	63	930	150	2200
Isopentane	63	920	190	2700

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059A-04B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050714	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	15.8	Date of Analysis:	5/7/19 04:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	7.9	Not Detected	39	Not Detected
Freon 114	7.9	Not Detected	55	Not Detected
Chloromethane	79	Not Detected	160	Not Detected
Vinyl Chloride	7.9	Not Detected	20	Not Detected
1,3-Butadiene	7.9	Not Detected	17	Not Detected
Bromomethane	79	Not Detected	310	Not Detected
Chloroethane	32	Not Detected	83	Not Detected
Freon 11	7.9	Not Detected	44	Not Detected
Ethanol	32	13 J	60	25 J
Freon 113	7.9	Not Detected	60	Not Detected
1,1-Dichloroethene	7.9	Not Detected	31	Not Detected
Acetone	79	16 J	190	39 J
2-Propanol	32	Not Detected	78	Not Detected
Carbon Disulfide	32	Not Detected	98	Not Detected
3-Chloropropene	32	Not Detected	99	Not Detected
Methylene Chloride	79	Not Detected	270	Not Detected
Methyl tert-butyl ether	32	Not Detected	110	Not Detected
trans-1,2-Dichloroethene	7.9	Not Detected	31	Not Detected
Hexane	7.9	Not Detected	28	Not Detected
1,1-Dichloroethane	7.9	Not Detected	32	Not Detected
2-Butanone (Methyl Ethyl Ketone)	32	Not Detected	93	Not Detected
cis-1,2-Dichloroethene	7.9	Not Detected	31	Not Detected
Tetrahydrofuran	7.9	Not Detected	23	Not Detected
Chloroform	7.9	Not Detected	38	Not Detected
1,1,1-Trichloroethane	7.9	Not Detected	43	Not Detected
Cyclohexane	7.9	25	27	86
Carbon Tetrachloride	7.9	Not Detected	50	Not Detected
2,2,4-Trimethylpentane	7.9	4200 E	37	20000 E
Benzene	7.9	9.2	25	30
1,2-Dichloroethane	7.9	Not Detected	32	Not Detected
Heptane	7.9	Not Detected	32	Not Detected
Trichloroethene	7.9	Not Detected	42	Not Detected
1,2-Dichloropropane	7.9	Not Detected	36	Not Detected
1,4-Dioxane	32	Not Detected	110	Not Detected
Bromodichloromethane	7.9	Not Detected	53	Not Detected
cis-1,3-Dichloropropene	7.9	Not Detected	36	Not Detected
4-Methyl-2-pentanone	7.9	Not Detected	32	Not Detected
Toluene	7.9	1.7 J	30	6.3 J
trans-1,3-Dichloropropene	7.9	Not Detected	36	Not Detected
1,1,2-Trichloroethane	7.9	Not Detected	43	Not Detected
Tetrachloroethene	7.9	Not Detected	54	Not Detected
2-Hexanone	32	Not Detected	130	Not Detected



Air Toxics

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059A-04B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050714	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	15.8	Date of Analysis:	5/7/19 04:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	7.9	Not Detected	67	Not Detected
1,2-Dibromoethane (EDB)	7.9	Not Detected	61	Not Detected
Chlorobenzene	7.9	Not Detected	36	Not Detected
Ethyl Benzene	7.9	Not Detected	34	Not Detected
m,p-Xylene	7.9	Not Detected	34	Not Detected
o-Xylene	7.9	Not Detected	34	Not Detected
Styrene	7.9	Not Detected	34	Not Detected
Bromoform	7.9	Not Detected	82	Not Detected
Cumene	7.9	Not Detected	39	Not Detected
1,1,2,2-Tetrachloroethane	7.9	Not Detected	54	Not Detected
Propylbenzene	7.9	Not Detected	39	Not Detected
4-Ethyltoluene	7.9	Not Detected	39	Not Detected
1,3,5-Trimethylbenzene	7.9	Not Detected	39	Not Detected
1,2,4-Trimethylbenzene	7.9	Not Detected	39	Not Detected
1,3-Dichlorobenzene	7.9	Not Detected	48	Not Detected
1,4-Dichlorobenzene	7.9	Not Detected	48	Not Detected
alpha-Chlorotoluene	7.9	Not Detected	41	Not Detected
1,2-Dichlorobenzene	7.9	Not Detected	47	Not Detected
1,2,4-Trichlorobenzene	32	Not Detected	230	Not Detected
Hexachlorobutadiene	32	Not Detected	340	Not Detected
Butane	32	920	75	2200
Isopentane	32	910	93	2700

J = Estimated value.

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050723	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	30.9	Date of Analysis:	5/7/19 09:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	15	Not Detected	76	Not Detected
Freon 114	15	Not Detected	110	Not Detected
Chloromethane	150	Not Detected	320	Not Detected
Vinyl Chloride	15	Not Detected	39	Not Detected
1,3-Butadiene	15	Not Detected	34	Not Detected
Bromomethane	150	Not Detected	600	Not Detected
Chloroethane	62	Not Detected	160	Not Detected
Freon 11	15	Not Detected	87	Not Detected
Ethanol	62	Not Detected	120	Not Detected
Freon 113	15	Not Detected	120	Not Detected
1,1-Dichloroethene	15	Not Detected	61	Not Detected
Acetone	150	16 J	370	38 J
2-Propanol	62	Not Detected	150	Not Detected
Carbon Disulfide	62	Not Detected	190	Not Detected
3-Chloropropene	62	Not Detected	190	Not Detected
Methylene Chloride	150	Not Detected	540	Not Detected
Methyl tert-butyl ether	62	Not Detected	220	Not Detected
trans-1,2-Dichloroethene	15	Not Detected	61	Not Detected
Hexane	15	Not Detected	54	Not Detected
1,1-Dichloroethane	15	Not Detected	62	Not Detected
2-Butanone (Methyl Ethyl Ketone)	62	Not Detected	180	Not Detected
cis-1,2-Dichloroethene	15	Not Detected	61	Not Detected
Tetrahydrofuran	15	Not Detected	46	Not Detected
Chloroform	15	Not Detected	75	Not Detected
1,1,1-Trichloroethane	15	Not Detected	84	Not Detected
Cyclohexane	15	28	53	95
Carbon Tetrachloride	15	Not Detected	97	Not Detected
2,2,4-Trimethylpentane	15	4400	72	20000
Benzene	15	11 J	49	34 J
1,2-Dichloroethane	15	Not Detected	62	Not Detected
Heptane	15	Not Detected	63	Not Detected
Trichloroethene	15	Not Detected	83	Not Detected
1,2-Dichloropropane	15	Not Detected	71	Not Detected
1,4-Dioxane	62	Not Detected	220	Not Detected
Bromodichloromethane	15	Not Detected	100	Not Detected
cis-1,3-Dichloropropene	15	Not Detected	70	Not Detected
4-Methyl-2-pentanone	15	Not Detected	63	Not Detected
Toluene	15	Not Detected	58	Not Detected
trans-1,3-Dichloropropene	15	Not Detected	70	Not Detected
1,1,2-Trichloroethane	15	Not Detected	84	Not Detected
Tetrachloroethene	15	Not Detected	100	Not Detected
2-Hexanone	62	Not Detected	250	Not Detected



Air Toxics

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050723	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	30.9	Date of Analysis:	5/7/19 09:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	15	Not Detected	130	Not Detected
1,2-Dibromoethane (EDB)	15	Not Detected	120	Not Detected
Chlorobenzene	15	Not Detected	71	Not Detected
Ethyl Benzene	15	Not Detected	67	Not Detected
m,p-Xylene	15	Not Detected	67	Not Detected
o-Xylene	15	Not Detected	67	Not Detected
Styrene	15	Not Detected	66	Not Detected
Bromoform	15	Not Detected	160	Not Detected
Cumene	15	Not Detected	76	Not Detected
1,1,2,2-Tetrachloroethane	15	Not Detected	110	Not Detected
Propylbenzene	15	Not Detected	76	Not Detected
4-Ethyltoluene	15	Not Detected	76	Not Detected
1,3,5-Trimethylbenzene	15	Not Detected	76	Not Detected
1,2,4-Trimethylbenzene	15	Not Detected	76	Not Detected
1,3-Dichlorobenzene	15	Not Detected	93	Not Detected
1,4-Dichlorobenzene	15	Not Detected	93	Not Detected
alpha-Chlorotoluene	15	Not Detected	80	Not Detected
1,2-Dichlorobenzene	15	Not Detected	93	Not Detected
1,2,4-Trichlorobenzene	62	Not Detected	460	Not Detected
Hexachlorobutadiene	62	Not Detected	660	Not Detected
Butane	62	940	150	2200
Isopentane	62	960	180	2800

J = Estimated value.

Container Type: 1 Liter Summa Canister

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



Air Toxics

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059A-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050715	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	15.4	Date of Analysis:	5/7/19 05:00 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	7.7	Not Detected	38	Not Detected
Freon 114	7.7	Not Detected	54	Not Detected
Chloromethane	77	Not Detected	160	Not Detected
Vinyl Chloride	7.7	Not Detected	20	Not Detected
1,3-Butadiene	7.7	Not Detected	17	Not Detected
Bromomethane	77	Not Detected	300	Not Detected
Chloroethane	31	Not Detected	81	Not Detected
Freon 11	7.7	Not Detected	43	Not Detected
Ethanol	31	13 J	58	24 J
Freon 113	7.7	Not Detected	59	Not Detected
1,1-Dichloroethene	7.7	Not Detected	30	Not Detected
Acetone	77	15 J	180	36 J
2-Propanol	31	Not Detected	76	Not Detected
Carbon Disulfide	31	Not Detected	96	Not Detected
3-Chloropropene	31	Not Detected	96	Not Detected
Methylene Chloride	77	Not Detected	270	Not Detected
Methyl tert-butyl ether	31	Not Detected	110	Not Detected
trans-1,2-Dichloroethene	7.7	Not Detected	30	Not Detected
Hexane	7.7	Not Detected	27	Not Detected
1,1-Dichloroethane	7.7	Not Detected	31	Not Detected
2-Butanone (Methyl Ethyl Ketone)	31	Not Detected	91	Not Detected
cis-1,2-Dichloroethene	7.7	Not Detected	30	Not Detected
Tetrahydrofuran	7.7	Not Detected	23	Not Detected
Chloroform	7.7	Not Detected	38	Not Detected
1,1,1-Trichloroethane	7.7	Not Detected	42	Not Detected
Cyclohexane	7.7	24	26	82
Carbon Tetrachloride	7.7	Not Detected	48	Not Detected
2,2,4-Trimethylpentane	7.7	4200 E	36	19000 E
Benzene	7.7	9.9	24	32
1,2-Dichloroethane	7.7	Not Detected	31	Not Detected
Heptane	7.7	Not Detected	32	Not Detected
Trichloroethene	7.7	Not Detected	41	Not Detected
1,2-Dichloropropane	7.7	Not Detected	36	Not Detected
1,4-Dioxane	31	Not Detected	110	Not Detected
Bromodichloromethane	7.7	Not Detected	52	Not Detected
cis-1,3-Dichloropropene	7.7	Not Detected	35	Not Detected
4-Methyl-2-pentanone	7.7	Not Detected	32	Not Detected
Toluene	7.7	1.8 J	29	7.0 J
trans-1,3-Dichloropropene	7.7	Not Detected	35	Not Detected
1,1,2-Trichloroethane	7.7	Not Detected	42	Not Detected
Tetrachloroethene	7.7	Not Detected	52	Not Detected
2-Hexanone	31	Not Detected	130	Not Detected



Air Toxics

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059A-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050715	Date of Collection:	5/1/19 10:46:00 AM
Dil. Factor:	15.4	Date of Analysis:	5/7/19 05:00 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	7.7	Not Detected	66	Not Detected
1,2-Dibromoethane (EDB)	7.7	Not Detected	59	Not Detected
Chlorobenzene	7.7	Not Detected	35	Not Detected
Ethyl Benzene	7.7	Not Detected	33	Not Detected
m,p-Xylene	7.7	Not Detected	33	Not Detected
o-Xylene	7.7	Not Detected	33	Not Detected
Styrene	7.7	Not Detected	33	Not Detected
Bromoform	7.7	Not Detected	80	Not Detected
Cumene	7.7	Not Detected	38	Not Detected
1,1,2,2-Tetrachloroethane	7.7	Not Detected	53	Not Detected
Propylbenzene	7.7	Not Detected	38	Not Detected
4-Ethyltoluene	7.7	Not Detected	38	Not Detected
1,3,5-Trimethylbenzene	7.7	Not Detected	38	Not Detected
1,2,4-Trimethylbenzene	7.7	Not Detected	38	Not Detected
1,3-Dichlorobenzene	7.7	Not Detected	46	Not Detected
1,4-Dichlorobenzene	7.7	Not Detected	46	Not Detected
alpha-Chlorotoluene	7.7	Not Detected	40	Not Detected
1,2-Dichlorobenzene	7.7	Not Detected	46	Not Detected
1,2,4-Trichlorobenzene	31	Not Detected	230	Not Detected
Hexachlorobutadiene	31	Not Detected	330	Not Detected
Butane	31	930	73	2200
Isopentane	31	910	91	2700

J = Estimated value.

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	119	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: Lab Blank

Lab ID#: 1905059A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050708f	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/7/19 11:49 AM

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	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	0.13 J	2.3	0.62 J
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

Client Sample ID: Lab Blank

Lab ID#: 1905059A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050708f	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/7/19 11:49 AM

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

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1905059A-06B

EPA METHOD TO-15 GC/MS

File Name:	j051407a	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/14/19 02:36 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	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

Client Sample ID: Lab Blank

Lab ID#: 1905059A-06B

EPA METHOD TO-15 GC/MS

File Name:	j051407a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/14/19 02:36 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 UJ	150	Not Detected UJ
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.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	89	70-130

Client Sample ID: CCV

Lab ID#: 1905059A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050704	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/7/19 10:02 AM

Compound	%Recovery
Freon 12	93
Freon 114	94
Chloromethane	103
Vinyl Chloride	96
1,3-Butadiene	98
Bromomethane	102
Chloroethane	92
Freon 11	94
Ethanol	88
Freon 113	91
1,1-Dichloroethene	97
Acetone	95
2-Propanol	95
Carbon Disulfide	92
3-Chloropropene	100
Methylene Chloride	93
Methyl tert-butyl ether	100
trans-1,2-Dichloroethene	98
Hexane	102
1,1-Dichloroethane	93
2-Butanone (Methyl Ethyl Ketone)	95
cis-1,2-Dichloroethene	102
Tetrahydrofuran	96
Chloroform	94
1,1,1-Trichloroethane	92
Cyclohexane	104
Carbon Tetrachloride	98
2,2,4-Trimethylpentane	105
Benzene	93
1,2-Dichloroethane	88
Heptane	103
Trichloroethene	93
1,2-Dichloropropane	92
1,4-Dioxane	96
Bromodichloromethane	91
cis-1,3-Dichloropropene	98
4-Methyl-2-pentanone	96
Toluene	94
trans-1,3-Dichloropropene	100
1,1,2-Trichloroethane	93
Tetrachloroethene	98
2-Hexanone	98

Client Sample ID: CCV

Lab ID#: 1905059A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050704	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/7/19 10:02 AM

Compound	%Recovery
Dibromochloromethane	97
1,2-Dibromoethane (EDB)	98
Chlorobenzene	97
Ethyl Benzene	100
m,p-Xylene	105
o-Xylene	108
Styrene	106
Bromoform	99
Cumene	107
1,1,2,2-Tetrachloroethane	94
Propylbenzene	101
4-Ethyltoluene	106
1,3,5-Trimethylbenzene	106
1,2,4-Trimethylbenzene	110
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	101
alpha-Chlorotoluene	101
1,2-Dichlorobenzene	99
1,2,4-Trichlorobenzene	104
Hexachlorobutadiene	100
Butane	112
Isopentane	92

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	103	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1905059A-07B

EPA METHOD TO-15 GC/MS

File Name:	j051402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/14/19 10:45 AM

Compound	%Recovery
Freon 12	96
Freon 114	96
Chloromethane	99
Vinyl Chloride	91
1,3-Butadiene	90
Bromomethane	99
Chloroethane	98
Freon 11	102
Ethanol	94
Freon 113	101
1,1-Dichloroethene	90
Acetone	109
2-Propanol	77
Carbon Disulfide	98
3-Chloropropene	87
Methylene Chloride	101
Methyl tert-butyl ether	82
trans-1,2-Dichloroethene	96
Hexane	84
1,1-Dichloroethane	98
2-Butanone (Methyl Ethyl Ketone)	79
cis-1,2-Dichloroethene	94
Tetrahydrofuran	78
Chloroform	100
1,1,1-Trichloroethane	100
Cyclohexane	88
Carbon Tetrachloride	104
2,2,4-Trimethylpentane	88
Benzene	99
1,2-Dichloroethane	97
Heptane	86
Trichloroethene	103
1,2-Dichloropropane	95
1,4-Dioxane	90
Bromodichloromethane	98
cis-1,3-Dichloropropene	84
4-Methyl-2-pentanone	84
Toluene	98
trans-1,3-Dichloropropene	86
1,1,2-Trichloroethane	97
Tetrachloroethene	102
2-Hexanone	71

Client Sample ID: CCV

Lab ID#: 1905059A-07B

EPA METHOD TO-15 GC/MS

File Name:	j051402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/14/19 10:45 AM

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	96
Chlorobenzene	97
Ethyl Benzene	92
m,p-Xylene	92
o-Xylene	91
Styrene	88
Bromoform	98
Cumene	87
1,1,2,2-Tetrachloroethane	92
Propylbenzene	86
4-Ethyltoluene	89
1,3,5-Trimethylbenzene	94
1,2,4-Trimethylbenzene	84
1,3-Dichlorobenzene	96
1,4-Dichlorobenzene	93
alpha-Chlorotoluene	78
1,2-Dichlorobenzene	94
1,2,4-Trichlorobenzene	66 Q
Hexachlorobutadiene	81
Butane	92
Isopentane	97

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: LCS

Lab ID#: 1905059A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050705	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/7/19 10:29 AM

Compound	%Recovery	Method Limits
Freon 12	99	70-130
Freon 114	104	70-130
Chloromethane	103	70-130
Vinyl Chloride	114	70-130
1,3-Butadiene	100	70-130
Bromomethane	108	70-130
Chloroethane	101	70-130
Freon 11	101	70-130
Ethanol	94	70-130
Freon 113	95	70-130
1,1-Dichloroethene	102	70-130
Acetone	98	70-130
2-Propanol	100	70-130
Carbon Disulfide	85	70-130
3-Chloropropene	99	70-130
Methylene Chloride	96	70-130
Methyl tert-butyl ether	103	70-130
trans-1,2-Dichloroethene	89	70-130
Hexane	107	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	100	70-130
cis-1,2-Dichloroethene	118	70-130
Tetrahydrofuran	99	70-130
Chloroform	98	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	110	70-130
Carbon Tetrachloride	103	70-130
2,2,4-Trimethylpentane	112	70-130
Benzene	97	70-130
1,2-Dichloroethane	91	70-130
Heptane	106	70-130
Trichloroethene	97	70-130
1,2-Dichloropropane	96	70-130
1,4-Dioxane	98	70-130
Bromodichloromethane	97	70-130
cis-1,3-Dichloropropene	96	70-130
4-Methyl-2-pentanone	97	70-130
Toluene	99	70-130
trans-1,3-Dichloropropene	102	70-130
1,1,2-Trichloroethane	97	70-130
Tetrachloroethene	101	70-130
2-Hexanone	100	70-130

Client Sample ID: LCS

Lab ID#: 1905059A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050705	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/7/19 10:29 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	101	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	105	70-130
m,p-Xylene	108	70-130
o-Xylene	113	70-130
Styrene	109	70-130
Bromoform	104	70-130
Cumene	111	70-130
1,1,2,2-Tetrachloroethane	98	70-130
Propylbenzene	107	70-130
4-Ethyltoluene	108	70-130
1,3,5-Trimethylbenzene	110	70-130
1,2,4-Trimethylbenzene	113	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	106	70-130
alpha-Chlorotoluene	108	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	102	70-130
Hexachlorobutadiene	98	70-130
Butane	121	70-130
Isopentane	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	103	70-130

Client Sample ID: LCSD

Lab ID#: 1905059A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050706	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/7/19 10:55 AM

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	103	70-130
Chloromethane	103	70-130
Vinyl Chloride	97	70-130
1,3-Butadiene	106	70-130
Bromomethane	107	70-130
Chloroethane	98	70-130
Freon 11	99	70-130
Ethanol	94	70-130
Freon 113	94	70-130
1,1-Dichloroethene	100	70-130
Acetone	97	70-130
2-Propanol	99	70-130
Carbon Disulfide	84	70-130
3-Chloropropene	98	70-130
Methylene Chloride	94	70-130
Methyl tert-butyl ether	102	70-130
trans-1,2-Dichloroethene	88	70-130
Hexane	105	70-130
1,1-Dichloroethane	94	70-130
2-Butanone (Methyl Ethyl Ketone)	100	70-130
cis-1,2-Dichloroethene	116	70-130
Tetrahydrofuran	98	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	96	70-130
Cyclohexane	109	70-130
Carbon Tetrachloride	102	70-130
2,2,4-Trimethylpentane	111	70-130
Benzene	95	70-130
1,2-Dichloroethane	90	70-130
Heptane	107	70-130
Trichloroethene	96	70-130
1,2-Dichloropropane	95	70-130
1,4-Dioxane	98	70-130
Bromodichloromethane	96	70-130
cis-1,3-Dichloropropene	96	70-130
4-Methyl-2-pentanone	96	70-130
Toluene	97	70-130
trans-1,3-Dichloropropene	102	70-130
1,1,2-Trichloroethane	95	70-130
Tetrachloroethene	100	70-130
2-Hexanone	99	70-130

Client Sample ID: LCSD

Lab ID#: 1905059A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p050706	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/7/19 10:55 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	101	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	106	70-130
o-Xylene	111	70-130
Styrene	109	70-130
Bromoform	104	70-130
Cumene	109	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Propylbenzene	105	70-130
4-Ethyltoluene	108	70-130
1,3,5-Trimethylbenzene	109	70-130
1,2,4-Trimethylbenzene	112	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	105	70-130
alpha-Chlorotoluene	107	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	104	70-130
Hexachlorobutadiene	99	70-130
Butane	120	70-130
Isopentane	96	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	103	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1905059A-08B

EPA METHOD TO-15 GC/MS

File Name:	j051403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/14/19 11:43 AM

Compound	%Recovery	Method Limits
Freon 12	93	70-130
Freon 114	99	70-130
Chloromethane	96	70-130
Vinyl Chloride	94	70-130
1,3-Butadiene	91	70-130
Bromomethane	102	70-130
Chloroethane	100	70-130
Freon 11	104	70-130
Ethanol	94	70-130
Freon 113	101	70-130
1,1-Dichloroethene	93	70-130
Acetone	104	70-130
2-Propanol	85	70-130
Carbon Disulfide	83	70-130
3-Chloropropene	82	70-130
Methylene Chloride	102	70-130
Methyl tert-butyl ether	83	70-130
trans-1,2-Dichloroethene	86	70-130
Hexane	84	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	80	70-130
cis-1,2-Dichloroethene	98	70-130
Tetrahydrofuran	79	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	91	70-130
Carbon Tetrachloride	103	70-130
2,2,4-Trimethylpentane	91	70-130
Benzene	96	70-130
1,2-Dichloroethane	99	70-130
Heptane	91	70-130
Trichloroethene	97	70-130
1,2-Dichloropropane	89	70-130
1,4-Dioxane	91	70-130
Bromodichloromethane	98	70-130
cis-1,3-Dichloropropene	76	70-130
4-Methyl-2-pentanone	86	70-130
Toluene	97	70-130
trans-1,3-Dichloropropene	87	70-130
1,1,2-Trichloroethane	96	70-130
Tetrachloroethene	102	70-130
2-Hexanone	68 Q	70-130

Client Sample ID: LCS

Lab ID#: 1905059A-08B

EPA METHOD TO-15 GC/MS

File Name:	j051403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/14/19 11:43 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	99	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	99	70-130
o-Xylene	99	70-130
Styrene	98	70-130
Bromoform	101	70-130
Cumene	94	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Propylbenzene	95	70-130
4-Ethyltoluene	95	70-130
1,3,5-Trimethylbenzene	100	70-130
1,2,4-Trimethylbenzene	94	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	99	70-130
alpha-Chlorotoluene	95	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	92	70-130
Hexachlorobutadiene	101	70-130
Butane	92	70-130
Isopentane	99	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1905059A-08BB

EPA METHOD TO-15 GC/MS

File Name:	j051404	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/14/19 12:11 PM

Compound	%Recovery	Method Limits
Freon 12	96	70-130
Freon 114	101	70-130
Chloromethane	104	70-130
Vinyl Chloride	94	70-130
1,3-Butadiene	94	70-130
Bromomethane	102	70-130
Chloroethane	99	70-130
Freon 11	105	70-130
Ethanol	98	70-130
Freon 113	100	70-130
1,1-Dichloroethene	96	70-130
Acetone	103	70-130
2-Propanol	86	70-130
Carbon Disulfide	87	70-130
3-Chloropropene	90	70-130
Methylene Chloride	103	70-130
Methyl tert-butyl ether	87	70-130
trans-1,2-Dichloroethene	90	70-130
Hexane	88	70-130
1,1-Dichloroethane	95	70-130
2-Butanone (Methyl Ethyl Ketone)	79	70-130
cis-1,2-Dichloroethene	106	70-130
Tetrahydrofuran	78	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	93	70-130
Carbon Tetrachloride	104	70-130
2,2,4-Trimethylpentane	91	70-130
Benzene	102	70-130
1,2-Dichloroethane	97	70-130
Heptane	92	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	94	70-130
Bromodichloromethane	101	70-130
cis-1,3-Dichloropropene	82	70-130
4-Methyl-2-pentanone	80	70-130
Toluene	98	70-130
trans-1,3-Dichloropropene	90	70-130
1,1,2-Trichloroethane	98	70-130
Tetrachloroethene	102	70-130
2-Hexanone	73	70-130

Client Sample ID: LCSD

Lab ID#: 1905059A-08BB

EPA METHOD TO-15 GC/MS

File Name:	j051404	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/14/19 12:11 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	98	70-130
Chlorobenzene	98	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	100	70-130
o-Xylene	102	70-130
Styrene	101	70-130
Bromoform	103	70-130
Cumene	98	70-130
1,1,2,2-Tetrachloroethane	98	70-130
Propylbenzene	96	70-130
4-Ethyltoluene	98	70-130
1,3,5-Trimethylbenzene	102	70-130
1,2,4-Trimethylbenzene	98	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	100	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	102	70-130
Hexachlorobutadiene	106	70-130
Butane	92	70-130
Isopentane	103	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	105	70-130

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5/15/2019

Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60592794-1.04.002
Workorder #: 1905059B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/2/2019 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

WORK ORDER #: 1905059B

Work Order Summary

CLIENT: Ms. Elizabeth Kunkel
 AECOM
 100 N. Broadway, 20th Floor
 St. Louis, MO 63102

BILL TO: Accounts Payable Austin
 AECOM
 PO Box 203970
 Austin, TX 78720

PHONE: 314-802-1171

P.O. # 110116ACM

FAX:

PROJECT # 60592794-1.04.002 Roxana Quarterly

DATE RECEIVED: 05/02/2019

CONTACT: Soil Vapor
 Kelly Buettner

DATE COMPLETED: 05/15/2019

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	VMP-55-20-050119	Modified ASTM D-1946	4.9 "Hg	15.9 psi
02A	VMP-15-5-050119	Modified ASTM D-1946	4.9 "Hg	14.6 psi
03A	VMP-15-21.5-050119	Modified ASTM D-1946	4.9 "Hg	14.8 psi
04A	VMP-15-25.5-050119	Modified ASTM D-1946	4.3 "Hg	15.2 psi
05A	VMP-15-25.5-050119-Dup	Modified ASTM D-1946	2.8 "Hg	16.2 psi
06A	Lab Blank	Modified ASTM D-1946	NA	NA
06B	Lab Blank	Modified ASTM D-1946	NA	NA
07A	LCS	Modified ASTM D-1946	NA	NA
07AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY:



Technical Director

DATE: 05/15/19

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

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

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

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

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 1905059B

Five 1 Liter Summa Canister samples were received on May 02, 2019. 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.

<i>Requirement</i>	<i>ASTM D-1946</i>	<i>ATL Modifications</i>
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 $\geq 95\%$ 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

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

Client Sample ID: VMP-55-20-050119

Lab ID#: 1905059B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.9
Nitrogen	0.25	79
Methane	0.00025	3.4
Carbon Dioxide	0.025	16
Ethane	0.0025	0.0019 J

Client Sample ID: VMP-15-5-050119

Lab ID#: 1905059B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	16
Nitrogen	0.24	82
Carbon Dioxide	0.024	2.0
Helium	0.12	0.013 J

Client Sample ID: VMP-15-21.5-050119

Lab ID#: 1905059B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.4
Nitrogen	0.24	85
Methane	0.00024	6.8
Carbon Dioxide	0.024	7.2
Ethane	0.0024	0.00060 J

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.6
Nitrogen	0.24	75
Methane	0.00024	7.1

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

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059B-04A

Carbon Dioxide	0.024	16
Ethane	0.0024	0.0030

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.7
Nitrogen	0.23	75
Methane	0.00023	7.1
Carbon Dioxide	0.023	16
Ethane	0.0023	0.0030



Air Toxics

Client Sample ID: VMP-55-20-050119

Lab ID#: 1905059B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050406	Date of Collection: 5/1/19 9:04:00 AM
Dil. Factor:	2.49	Date of Analysis: 5/4/19 10:22 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.9
Nitrogen	0.25	79
Carbon Monoxide	0.025	Not Detected
Methane	0.00025	3.4
Carbon Dioxide	0.025	16
Ethane	0.0025	0.0019 J
Ethene	0.0025	Not Detected
Helium	0.12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-5-050119

Lab ID#: 1905059B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050407	Date of Collection:	5/1/19 10:12:00 AM
Dil. Factor:	2.38	Date of Analysis:	5/4/19 10:46 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	16
Nitrogen	0.24	82
Carbon Monoxide	0.024	Not Detected
Methane	0.00024	Not Detected
Carbon Dioxide	0.024	2.0
Ethane	0.0024	Not Detected
Ethene	0.0024	Not Detected
Helium	0.12	0.013 J

J = Estimated value.

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-21.5-050119

Lab ID#: 1905059B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050408	Date of Collection:	5/1/19 10:29:00 AM
Dil. Factor:	2.40	Date of Analysis:	5/4/19 11:09 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.4
Nitrogen	0.24	85
Carbon Monoxide	0.024	Not Detected
Methane	0.00024	6.8
Carbon Dioxide	0.024	7.2
Ethane	0.0024	0.00060 J
Ethene	0.0024	Not Detected
Helium	0.12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-25.5-050119

Lab ID#: 1905059B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050409	Date of Collection: 5/1/19 10:46:00 AM
Dil. Factor:	2.37	Date of Analysis: 5/4/19 11:34 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.6
Nitrogen	0.24	75
Carbon Monoxide	0.024	Not Detected
Methane	0.00024	7.1
Carbon Dioxide	0.024	16
Ethane	0.0024	0.0030
Ethene	0.0024	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-25.5-050119-Dup

Lab ID#: 1905059B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050410	Date of Collection: 5/1/19 10:46:00 AM
Dil. Factor:	2.32	Date of Analysis: 5/4/19 11:58 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.7
Nitrogen	0.23	75
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	7.1
Carbon Dioxide	0.023	16
Ethane	0.0023	0.0030
Ethene	0.0023	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1905059B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050404	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/4/19 09:25 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
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

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1905059B-06B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050403c	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/4/19 09:01 AM

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

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCS

Lab ID#: 1905059B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/4/19 08:34 AM

Compound	%Recovery	Method Limits
Oxygen	103	85-115
Nitrogen	99	85-115
Carbon Monoxide	88	85-115
Methane	102	85-115
Carbon Dioxide	97	85-115
Ethane	101	85-115
Ethene	100	85-115
Helium	99	85-115

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1905059B-07AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10050417	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/4/19 02:48 PM

Compound	%Recovery	Method Limits
Oxygen	102	85-115
Nitrogen	99	85-115
Carbon Monoxide	88	85-115
Methane	102	85-115
Carbon Dioxide	97	85-115
Ethane	101	85-115
Ethene	100	85-115
Helium	97	

Container Type: NA - Not Applicable