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St. Louis, MO 63102
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January 26, 2022

Illinois Department of Transportation
Keith Roberts, PE
Acting Regional 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. Roberts,

AECOM, on behalf of Shell Oil Products US (SOPUS), is submitting the attached analytical results for soil vapor samples collected in 2021 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 Wendy Pennington at wendy.pennington@aecom.com (314-452-8929) or Samuel Fisher at samuel.fisher@aecom.com (314-802-1152).

Sincerely,
AECOM, on behalf of Shell Oil Products US

Samuel Fisher, CHMM
Environmental Scientist

Wendy Pennington, PE
Project Manager

cc:
Leroy Bealer, SOPUS
Repositories – Roxana Public Library, Website
Project File

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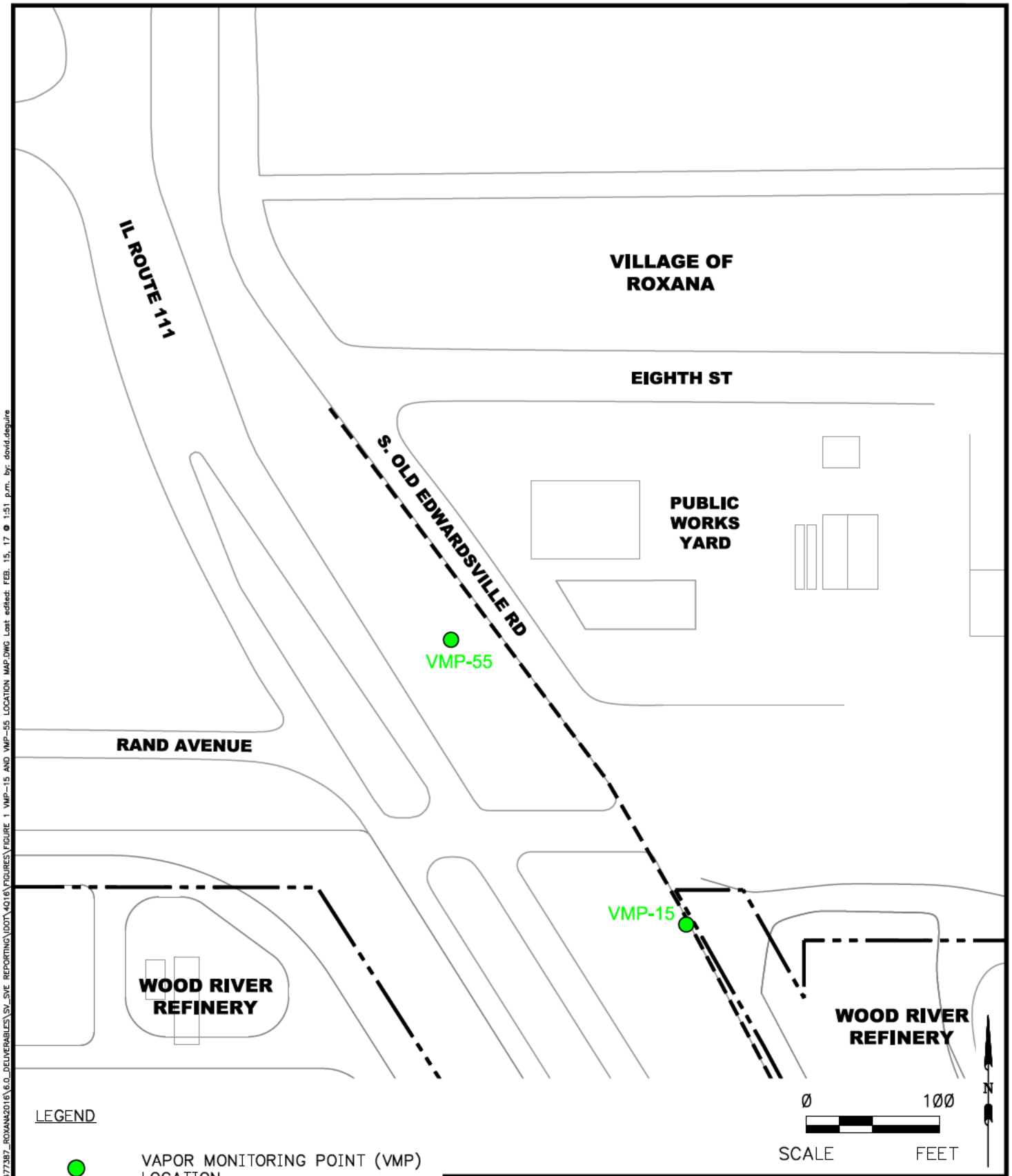

SHELL OIL PRODUCTS US
SOIL VAPOR MONITORING PROGRAM
ROXANA, ILLINOIS

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

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2/11/2021
Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.1F
Workorder #: 2101663A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 1/29/2021 at Eurofins Air Toxics LLC.

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 LLC. 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: Fatima Burhan at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Fatima Burhan

Project Manager

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WORK ORDER #: 2101663A

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. #**	121921
FAX:		**PROJECT #**	60648474-4.2.1F Roxana Quarterly Soil Vapor
DATE RECEIVED:	01/29/2021	**CONTACT:**	Fatima Burhan
DATE COMPLETED:	02/11/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-012821	TO-15	0.6 "Hg	14.8 psi
02A	VMP-15-21.5-012821	TO-15	7.3 "Hg	15 psi
03A	VMP-15-25.5-012821	TO-15	4.7 "Hg	14.9 psi
04A	VMP-55-20-012821	TO-15	3.7 "Hg	14.8 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/11/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2101663A

Four 1 Liter Summa Canister samples were received on January 29, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for sample VMP-15-5-012821 did not match the information on the canister with regard to canister barcode. The sample labeled 8032 on the COC is labeled as 8033 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

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.

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

Dilution was performed on sample VMP-55-20-012821 due to the presence of high level target species.

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-15-5-012821

Lab ID#: 2101663A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.37 J	5.1	1.8 J
Freon 11	1.0	0.17 J	5.8	0.97 J
Acetone	10	3.3 J	24	7.9 J
2-Propanol	4.1	8.5	10	21
Carbon Disulfide	4.1	0.41 J	13	1.3 J
2-Butanone (Methyl Ethyl Ketone)	4.1	0.44 J	12	1.3 J
Butane	4.1	2.2 J	9.7	5.2 J

Client Sample ID: VMP-15-21.5-012821

Lab ID#: 2101663A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.36 J	6.6	1.8 J
Acetone	13	1.6 J	32	3.9 J
2-Propanol	5.3	2.8 J	13	7.0 J
Methylene Chloride	13	0.36 J	46	1.2 J
2,2,4-Trimethylpentane	1.3	0.39 J	6.2	1.8 J
Trichloroethene	1.3	0.20 J	7.2	1.1 J
Tetrachloroethene	1.3	0.47 J	9.0	3.2 J
Cumene	1.3	0.13 J	6.6	0.64 J
Propylbenzene	1.3	0.40 J	6.6	2.0 J

Client Sample ID: VMP-15-25.5-012821

Lab ID#: 2101663A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.42 J	5.9	2.1 J
Freon 11	1.2	0.16 J	6.7	0.92 J
Acetone	12	5.2 J	28	12 J
2-Propanol	4.8	7.1	12	17
Methylene Chloride	12	0.34 J	42	1.2 J
2,2,4-Trimethylpentane	1.2	0.24 J	5.6	1.1 J
Benzene	1.2	0.17 J	3.8	0.55 J

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

Client Sample ID: VMP-15-25.5-012821

Lab ID#: 2101663A-03A

Client Sample ID: VMP-55-20-012821

Lab ID#: 2101663A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2,2,4-Trimethylpentane	11	12000	53	57000
Butane	46	41 J	110	98 J
Isopentane	46	270	140	810

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Client Sample ID: VMP-15-5-012821

Lab ID#: 2101663A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020906**	**Date of Collection:**	**1/28/21 9:31:00 AM**
Dil. Factor:	**2.05**	**Date of Analysis:**	**2/9/21 12:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.37 J	5.1	1.8 J
Freon 114	1.0	Not Detected	7.2	Not Detected
Chloromethane	10	Not Detected	21	Not Detected
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,3-Butadiene	1.0	Not Detected	2.3	Not Detected
Bromomethane	10	Not Detected	40	Not Detected
Chloroethane	4.1	Not Detected	11	Not Detected
Freon 11	1.0	0.17 J	5.8	0.97 J
Ethanol	10	Not Detected	19	Not Detected
Freon 113	1.0	Not Detected	7.8	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Acetone	10	3.3 J	24	7.9 J
2-Propanol	4.1	8.5	10	21
Carbon Disulfide	4.1	0.41 J	13	1.3 J
3-Chloropropene	4.1	Not Detected	13	Not Detected
Methylene Chloride	10	Not Detected	36	Not Detected
Methyl tert-butyl ether	4.1	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Hexane	1.0	Not Detected	3.6	Not Detected
1,1-Dichloroethane	1.0	Not Detected	4.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.1	0.44 J	12	1.3 J
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrahydrofuran	1.0	Not Detected	3.0	Not Detected
Chloroform	1.0	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Cyclohexane	1.0	Not Detected	3.5	Not Detected
Carbon Tetrachloride	1.0	Not Detected	6.4	Not Detected
2,2,4-Trimethylpentane	1.0	Not Detected	4.8	Not Detected
Benzene	1.0	Not Detected	3.3	Not Detected
1,2-Dichloroethane	1.0	Not Detected	4.1	Not Detected
Heptane	1.0	Not Detected	4.2	Not Detected
Trichloroethene	1.0	Not Detected	5.5	Not Detected
1,2-Dichloropropane	1.0	Not Detected	4.7	Not Detected
1,4-Dioxane	4.1	Not Detected	15	Not Detected
Bromodichloromethane	1.0	Not Detected	6.9	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected	4.6	Not Detected
4-Methyl-2-pentanone	1.0	Not Detected	4.2	Not Detected
Toluene	1.0	Not Detected	3.9	Not Detected
trans-1,3-Dichloropropene	1.0	Not Detected	4.6	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected
2-Hexanone	4.1	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-5-012821

Lab ID#: 2101663A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020906**	**Date of Collection:**	**1/28/21 9:31:00 AM**
Dil. Factor:	**2.05**	**Date of Analysis:**	**2/9/21 12:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.0	Not Detected	8.7	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	7.9	Not Detected
Chlorobenzene	1.0	Not Detected	4.7	Not Detected
Ethyl Benzene	1.0	Not Detected	4.4	Not Detected
m,p-Xylene	1.0	Not Detected	4.4	Not Detected
o-Xylene	1.0	Not Detected	4.4	Not Detected
Styrene	1.0	Not Detected	4.4	Not Detected
Bromoform	1.0	Not Detected	10	Not Detected
Cumene	1.0	Not Detected	5.0	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected	7.0	Not Detected
Propylbenzene	1.0	Not Detected	5.0	Not Detected
4-Ethyltoluene	1.0	Not Detected	5.0	Not Detected
1,3,5-Trimethylbenzene	1.0	Not Detected	5.0	Not Detected
1,2,4-Trimethylbenzene	1.0	Not Detected	5.0	Not Detected
1,3-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
alpha-Chlorotoluene	1.0	Not Detected	5.3	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,2,4-Trichlorobenzene	4.1	Not Detected	30	Not Detected
Hexachlorobutadiene	4.1	Not Detected	44	Not Detected
Butane	4.1	2.2 J	9.7	5.2 J
Isopentane	4.1	Not Detected	12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: VMP-15-21.5-012821

Lab ID#: 2101663A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020907**	**Date of Collection:**	**1/28/21 9:42:00 AM**
Dil. Factor:	**2.67**	**Date of Analysis:**	**2/9/21 01:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.36 J	6.6	1.8 J
Freon 114	1.3	Not Detected	9.3	Not Detected
Chloromethane	13	Not Detected	28	Not Detected
Vinyl Chloride	1.3	Not Detected	3.4	Not Detected
1,3-Butadiene	1.3	Not Detected	3.0	Not Detected
Bromomethane	13	Not Detected	52	Not Detected
Chloroethane	5.3	Not Detected	14	Not Detected
Freon 11	1.3	Not Detected	7.5	Not Detected
Ethanol	13	Not Detected	25	Not Detected
Freon 113	1.3	Not Detected	10	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Acetone	13	1.6 J	32	3.9 J
2-Propanol	5.3	2.8 J	13	7.0 J
Carbon Disulfide	5.3	Not Detected	17	Not Detected
3-Chloropropene	5.3	Not Detected	17	Not Detected
Methylene Chloride	13	0.36 J	46	1.2 J
Methyl tert-butyl ether	5.3	Not Detected	19	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Hexane	1.3	Not Detected	4.7	Not Detected
1,1-Dichloroethane	1.3	Not Detected	5.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.3	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.9	Not Detected
Chloroform	1.3	Not Detected	6.5	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Cyclohexane	1.3	Not Detected	4.6	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.4	Not Detected
2,2,4-Trimethylpentane	1.3	0.39 J	6.2	1.8 J
Benzene	1.3	Not Detected	4.3	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.4	Not Detected
Heptane	1.3	Not Detected	5.5	Not Detected
Trichloroethene	1.3	0.20 J	7.2	1.1 J
1,2-Dichloropropane	1.3	Not Detected	6.2	Not Detected
1,4-Dioxane	5.3	Not Detected	19	Not Detected
Bromodichloromethane	1.3	Not Detected	8.9	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	6.0	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.5	Not Detected
Toluene	1.3	Not Detected	5.0	Not Detected
trans-1,3-Dichloropropene	1.3	Not Detected	6.0	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Tetrachloroethene	1.3	0.47 J	9.0	3.2 J
2-Hexanone	5.3	Not Detected	22	Not Detected

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Client Sample ID: VMP-15-21.5-012821

Lab ID#: 2101663A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020907**	**Date of Collection:**	**1/28/21 9:42:00 AM**
Dil. Factor:	**2.67**	**Date of Analysis:**	**2/9/21 01:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	10	Not Detected
Chlorobenzene	1.3	Not Detected	6.1	Not Detected
Ethyl Benzene	1.3	Not Detected	5.8	Not Detected
m,p-Xylene	1.3	Not Detected	5.8	Not Detected
o-Xylene	1.3	Not Detected	5.8	Not Detected
Styrene	1.3	Not Detected	5.7	Not Detected
Bromoform	1.3	Not Detected	14	Not Detected
Cumene	1.3	0.13 J	6.6	0.64 J
1,1,2,2-Tetrachloroethane	1.3	Not Detected	9.2	Not Detected
Propylbenzene	1.3	0.40 J	6.6	2.0 J
4-Ethyltoluene	1.3	Not Detected	6.6	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	8.0	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	8.0	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.9	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	8.0	Not Detected
1,2,4-Trichlorobenzene	5.3	Not Detected	40	Not Detected
Hexachlorobutadiene	5.3	Not Detected	57	Not Detected
Butane	5.3	Not Detected	13	Not Detected
Isopentane	5.3	Not Detected	16	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: VMP-15-25.5-012821

Lab ID#: 2101663A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020908**	**Date of Collection:**	**1/28/21 9:56:00 AM**
Dil. Factor:	**2.39**	**Date of Analysis:**	**2/9/21 01:44 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.42 J	5.9	2.1 J
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	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	13	Not Detected
Freon 11	1.2	0.16 J	6.7	0.92 J
Ethanol	12	Not Detected	22	Not Detected
Freon 113	1.2	Not Detected	9.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Acetone	12	5.2 J	28	12 J
2-Propanol	4.8	7.1	12	17
Carbon Disulfide	4.8	Not Detected	15	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	0.34 J	42	1.2 J
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	0.24 J	5.6	1.1 J
Benzene	1.2	0.17 J	3.8	0.55 J
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	20	Not Detected

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Client Sample ID: VMP-15-25.5-012821

Lab ID#: 2101663A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020908**	**Date of Collection: 1/28/21 9:56:00 AM**	
Dil. Factor:	**2.39**	**Date of Analysis: 2/9/21 01:44 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	9.2	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	5.9	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.2	Not Detected
Propylbenzene	1.2	Not Detected	5.9	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.9	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.9	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.9	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	100	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: VMP-55-20-012821

Lab ID#: 2101663A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14021006**	**Date of Collection:**	**1/28/21 10:25:00 AM**
Dil. Factor:	**2.29**	**Date of Analysis:**	**2/10/21 10:18 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	11	Not Detected	57	Not Detected
Freon 114	11	Not Detected	80	Not Detected
Chloromethane	46	Not Detected	94	Not Detected
Vinyl Chloride	11	Not Detected	29	Not Detected
1,3-Butadiene	11	Not Detected	25	Not Detected
Bromomethane	46	Not Detected	180	Not Detected
Chloroethane	46	Not Detected	120	Not Detected
Freon 11	11	Not Detected	64	Not Detected
Ethanol	46	Not Detected	86	Not Detected
Freon 113	11	Not Detected	88	Not Detected
1,1-Dichloroethene	11	Not Detected	45	Not Detected
Acetone	46	Not Detected	110	Not Detected
2-Propanol	46	Not Detected	110	Not Detected
Carbon Disulfide	46	Not Detected	140	Not Detected
3-Chloropropene	46	Not Detected	140	Not Detected
Methylene Chloride	46	Not Detected	160	Not Detected
Methyl tert-butyl ether	11	Not Detected	41	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Hexane	11	Not Detected	40	Not Detected
1,1-Dichloroethane	11	Not Detected	46	Not Detected
2-Butanone (Methyl Ethyl Ketone)	46	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Tetrahydrofuran	11	Not Detected	34	Not Detected
Chloroform	11	Not Detected	56	Not Detected
1,1,1-Trichloroethane	11	Not Detected	62	Not Detected
Cyclohexane	11	Not Detected	39	Not Detected
Carbon Tetrachloride	11	Not Detected	72	Not Detected
2,2,4-Trimethylpentane	11	12000	53	57000
Benzene	11	Not Detected	36	Not Detected
1,2-Dichloroethane	11	Not Detected	46	Not Detected
Heptane	11	Not Detected	47	Not Detected
Trichloroethene	11	Not Detected	62	Not Detected
1,2-Dichloropropane	11	Not Detected	53	Not Detected
1,4-Dioxane	46	Not Detected	160	Not Detected
Bromodichloromethane	11	Not Detected	77	Not Detected
cis-1,3-Dichloropropene	11	Not Detected	52	Not Detected
4-Methyl-2-pentanone	11	Not Detected	47	Not Detected
Toluene	11	Not Detected	43	Not Detected
trans-1,3-Dichloropropene	11	Not Detected	52	Not Detected
1,1,2-Trichloroethane	11	Not Detected	62	Not Detected
Tetrachloroethene	11	Not Detected	78	Not Detected
2-Hexanone	46	Not Detected	190	Not Detected

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Client Sample ID: VMP-55-20-012821

Lab ID#: 2101663A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14021006**	**Date of Collection:**	**1/28/21 10:25:00 AM**
Dil. Factor:	**2.29**	**Date of Analysis:**	**2/10/21 10:18 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	11	Not Detected	98	Not Detected
1,2-Dibromoethane (EDB)	11	Not Detected	88	Not Detected
Chlorobenzene	11	Not Detected	53	Not Detected
Ethyl Benzene	11	Not Detected	50	Not Detected
m,p-Xylene	11	Not Detected	50	Not Detected
o-Xylene	11	Not Detected	50	Not Detected
Styrene	11	Not Detected	49	Not Detected
Bromoform	11	Not Detected	120	Not Detected
Cumene	11	Not Detected	56	Not Detected
1,1,2,2-Tetrachloroethane	11	Not Detected	79	Not Detected
Propylbenzene	11	Not Detected	56	Not Detected
4-Ethyltoluene	11	Not Detected	56	Not Detected
1,3,5-Trimethylbenzene	11	Not Detected	56	Not Detected
1,2,4-Trimethylbenzene	11	Not Detected	56	Not Detected
1,3-Dichlorobenzene	11	Not Detected	69	Not Detected
1,4-Dichlorobenzene	11	Not Detected	69	Not Detected
alpha-Chlorotoluene	11	Not Detected	59	Not Detected
1,2-Dichlorobenzene	11	Not Detected	69	Not Detected
1,2,4-Trichlorobenzene	46	Not Detected	340	Not Detected
Hexachlorobutadiene	46	Not Detected	490	Not Detected
Butane	46	41 J	110	98 J
Isopentane	46	270	140	810

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	112	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2101663A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020905a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 11:33 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	5.0	Not Detected	9.4	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	0.40 J	12	0.94 J
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	0.090 J	17	0.31 J
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	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2101663A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020905a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 11:33 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	100	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2101663A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14021005a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 09:54 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	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

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Client Sample ID: Lab Blank

Lab ID#: 2101663A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14021005a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 09:54 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	5.3 J	150	39 J
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	96	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: CCV

Lab ID#: 2101663A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020902**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 09:43 AM**

Compound	%Recovery
Freon 12	100
Freon 114	98
Chloromethane	86
Vinyl Chloride	94
1,3-Butadiene	103
Bromomethane	89
Chloroethane	88
Freon 11	107
Ethanol	81
Freon 113	97
1,1-Dichloroethene	90
Acetone	83
2-Propanol	93
Carbon Disulfide	86
3-Chloropropene	85
Methylene Chloride	95
Methyl tert-butyl ether	94
trans-1,2-Dichloroethene	90
Hexane	91
1,1-Dichloroethane	94
2-Butanone (Methyl Ethyl Ketone)	92
cis-1,2-Dichloroethene	96
Tetrahydrofuran	94
Chloroform	99
1,1,1-Trichloroethane	103
Cyclohexane	93
Carbon Tetrachloride	110
2,2,4-Trimethylpentane	93
Benzene	90
1,2-Dichloroethane	108
Heptane	90
Trichloroethene	97
1,2-Dichloropropane	94
1,4-Dioxane	96
Bromodichloromethane	100
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	98
Toluene	95
trans-1,3-Dichloropropene	97
1,1,2-Trichloroethane	96
Tetrachloroethene	97
2-Hexanone	100

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Client Sample ID: CCV

Lab ID#: 2101663A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 09:43 AM**	

Compound	%Recovery
Dibromochloromethane	102
1,2-Dibromoethane (EDB)	96
Chlorobenzene	95
Ethyl Benzene	94
m,p-Xylene	96
o-Xylene	94
Styrene	97
Bromoform	102
Cumene	97
1,1,2,2-Tetrachloroethane	94
Propylbenzene	96
4-Ethyltoluene	100
1,3,5-Trimethylbenzene	99
1,2,4-Trimethylbenzene	100
1,3-Dichlorobenzene	102
1,4-Dichlorobenzene	102
alpha-Chlorotoluene	103
1,2-Dichlorobenzene	101
1,2,4-Trichlorobenzene	103
Hexachlorobutadiene	103
Butane	85
Isopentane	95

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: CCV

Lab ID#: 2101663A-06B

EPA METHOD TO-15 GC/MS

File Name:	**14021002**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 08:37 AM**

Compound	%Recovery
Freon 12	100
Freon 114	100
Chloromethane	97
Vinyl Chloride	103
1,3-Butadiene	102
Bromomethane	112
Chloroethane	103
Freon 11	109
Ethanol	104
Freon 113	103
1,1-Dichloroethene	103
Acetone	106
2-Propanol	99
Carbon Disulfide	102
3-Chloropropene	104
Methylene Chloride	107
Methyl tert-butyl ether	106
trans-1,2-Dichloroethene	104
Hexane	102
1,1-Dichloroethane	102
2-Butanone (Methyl Ethyl Ketone)	104
cis-1,2-Dichloroethene	101
Tetrahydrofuran	101
Chloroform	105
1,1,1-Trichloroethane	100
Cyclohexane	99
Carbon Tetrachloride	101
2,2,4-Trimethylpentane	99
Benzene	104
1,2-Dichloroethane	103
Heptane	97
Trichloroethene	100
1,2-Dichloropropane	103
1,4-Dioxane	107
Bromodichloromethane	101
cis-1,3-Dichloropropene	105
4-Methyl-2-pentanone	108
Toluene	99
trans-1,3-Dichloropropene	104
1,1,2-Trichloroethane	101
Tetrachloroethene	99
2-Hexanone	106

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Client Sample ID: CCV
Lab ID#: 2101663A-06B
EPA METHOD TO-15 GC/MS

File Name:	**14021002**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 08:37 AM**

Compound	%Recovery
Dibromochloromethane	103
1,2-Dibromoethane (EDB)	102
Chlorobenzene	101
Ethyl Benzene	95
m,p-Xylene	97
o-Xylene	96
Styrene	103
Bromoform	103
Cumene	101
1,1,2,2-Tetrachloroethane	101
Propylbenzene	98
4-Ethyltoluene	102
1,3,5-Trimethylbenzene	97
1,2,4-Trimethylbenzene	100
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	102
alpha-Chlorotoluene	114
1,2-Dichlorobenzene	99
1,2,4-Trichlorobenzene	105
Hexachlorobutadiene	101
Butane	100
Isopentane	114

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 2101663A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 10:10 AM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Freon 114	100	70-130
Chloromethane	88	70-130
Vinyl Chloride	99	70-130
1,3-Butadiene	105	70-130
Bromomethane	89	70-130
Chloroethane	91	70-130
Freon 11	108	70-130
Ethanol	70	70-130
Freon 113	100	70-130
1,1-Dichloroethene	95	70-130
Acetone	86	70-130
2-Propanol	97	70-130
Carbon Disulfide	89	70-130
3-Chloropropene	91	70-130
Methylene Chloride	94	70-130
Methyl tert-butyl ether	96	70-130
trans-1,2-Dichloroethene	93	70-130
Hexane	94	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	93	70-130
cis-1,2-Dichloroethene	99	70-130
Tetrahydrofuran	95	70-130
Chloroform	101	70-130
1,1,1-Trichloroethane	106	70-130
Cyclohexane	95	70-130
Carbon Tetrachloride	113	70-130
2,2,4-Trimethylpentane	95	70-130
Benzene	92	70-130
1,2-Dichloroethane	110	70-130
Heptane	94	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	96	70-130
1,4-Dioxane	97	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	101	70-130
4-Methyl-2-pentanone	100	70-130
Toluene	97	70-130
trans-1,3-Dichloropropene	101	70-130
1,1,2-Trichloroethane	97	70-130
Tetrachloroethene	101	70-130
2-Hexanone	103	70-130

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Client Sample ID: LCS

Lab ID#: 2101663A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 10:10 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	100	70-130
Chlorobenzene	98	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	100	70-130
o-Xylene	96	70-130
Styrene	101	70-130
Bromoform	107	70-130
Cumene	99	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Propylbenzene	99	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	101	70-130
1,2,4-Trimethylbenzene	105	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	107	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	116	70-130
Hexachlorobutadiene	118	70-130
Butane	89	60-140
Isopentane	98	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 2101663A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 10:37 AM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 114	102	70-130
Chloromethane	89	70-130
Vinyl Chloride	99	70-130
1,3-Butadiene	105	70-130
Bromomethane	89	70-130
Chloroethane	92	70-130
Freon 11	108	70-130
Ethanol	68 Q	70-130
Freon 113	100	70-130
1,1-Dichloroethene	96	70-130
Acetone	85	70-130
2-Propanol	97	70-130
Carbon Disulfide	90	70-130
3-Chloropropene	92	70-130
Methylene Chloride	94	70-130
Methyl tert-butyl ether	98	70-130
trans-1,2-Dichloroethene	93	70-130
Hexane	95	70-130
1,1-Dichloroethane	95	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
cis-1,2-Dichloroethene	96	70-130
Tetrahydrofuran	95	70-130
Chloroform	102	70-130
1,1,1-Trichloroethane	105	70-130
Cyclohexane	95	70-130
Carbon Tetrachloride	114	70-130
2,2,4-Trimethylpentane	96	70-130
Benzene	93	70-130
1,2-Dichloroethane	110	70-130
Heptane	95	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	99	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	102	70-130
4-Methyl-2-pentanone	100	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	101	70-130
1,1,2-Trichloroethane	98	70-130
Tetrachloroethene	101	70-130
2-Hexanone	103	70-130

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Client Sample ID: LCSD

Lab ID#: 2101663A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/9/21 10:37 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	100	70-130
Chlorobenzene	98	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	101	70-130
o-Xylene	96	70-130
Styrene	100	70-130
Bromoform	106	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	100	70-130
1,2,4-Trimethylbenzene	104	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	107	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	117	70-130
Hexachlorobutadiene	120	70-130
Butane	89	60-140
Isopentane	98	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 2101663A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14021003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 09:03 AM**	

Compound	%Recovery	Method Limits
Freon 12	101	70-130
Freon 114	102	70-130
Chloromethane	101	70-130
Vinyl Chloride	106	70-130
1,3-Butadiene	106	70-130
Bromomethane	112	70-130
Chloroethane	103	70-130
Freon 11	110	70-130
Ethanol	94	70-130
Freon 113	105	70-130
1,1-Dichloroethene	106	70-130
Acetone	103	70-130
2-Propanol	106	70-130
Carbon Disulfide	102	70-130
3-Chloropropene	105	70-130
Methylene Chloride	100	70-130
Methyl tert-butyl ether	106	70-130
trans-1,2-Dichloroethene	106	70-130
Hexane	103	70-130
1,1-Dichloroethane	104	70-130
2-Butanone (Methyl Ethyl Ketone)	107	70-130
cis-1,2-Dichloroethene	102	70-130
Tetrahydrofuran	102	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	102	70-130
Cyclohexane	102	70-130
Carbon Tetrachloride	100	70-130
2,2,4-Trimethylpentane	99	70-130
Benzene	101	70-130
1,2-Dichloroethane	101	70-130
Heptane	104	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	104	70-130
1,4-Dioxane	106	70-130
Bromodichloromethane	102	70-130
cis-1,3-Dichloropropene	107	70-130
4-Methyl-2-pentanone	109	70-130
Toluene	100	70-130
trans-1,3-Dichloropropene	109	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	100	70-130
2-Hexanone	103	70-130

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Client Sample ID: LCS

Lab ID#: 2101663A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14021003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 09:03 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	104	70-130
1,2-Dibromoethane (EDB)	105	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	100	70-130
o-Xylene	99	70-130
Styrene	106	70-130
Bromoform	105	70-130
Cumene	102	70-130
1,1,2,2-Tetrachloroethane	102	70-130
Propylbenzene	100	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	98	70-130
1,2,4-Trimethylbenzene	105	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	116	70-130
1,2-Dichlorobenzene	97	70-130
1,2,4-Trichlorobenzene	105	70-130
Hexachlorobutadiene	106	70-130
Butane	106	60-140
Isopentane	118	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2101663A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14021004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 09:29 AM**	

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

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Client Sample ID: LCSD

Lab ID#: 2101663A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14021004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/21 09:29 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	100	70-130
o-Xylene	98	70-130
Styrene	104	70-130
Bromoform	105	70-130
Cumene	101	70-130
1,1,2,2-Tetrachloroethane	102	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	99	70-130
1,2,4-Trimethylbenzene	106	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	101	70-130
alpha-Chlorotoluene	120	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	122	70-130
Hexachlorobutadiene	124	70-130
Butane	97	60-140
Isopentane	118	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130

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2/11/2021
Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.1F
Workorder #: 2101663B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 1/29/2021 at Eurofins Air Toxics LLC.

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 LLC. 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: Fatima Burhan at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Fatima Burhan

Project Manager

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WORK ORDER #: 2101663B

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. #**	121921
FAX:		**PROJECT #**	60648474-4.2.1F Roxana Quarterly Soil Vapor
DATE RECEIVED:	01/29/2021	**CONTACT:**	Fatima Burhan
DATE COMPLETED:	02/11/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-012821	Modified ASTM D-1946	0.6 "Hg	14.8 psi
02A	VMP-15-21.5-012821	Modified ASTM D-1946	7.3 "Hg	15 psi
03A	VMP-15-25.5-012821	Modified ASTM D-1946	4.7 "Hg	14.9 psi
04A	VMP-55-20-012821	Modified ASTM D-1946	3.7 "Hg	14.8 psi
05A	Lab Blank	Modified ASTM D-1946	NA	NA
05B	Lab Blank	Modified ASTM D-1946	NA	NA
06A	LCS	Modified ASTM D-1946	NA	NA
06AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/11/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2101663B

Four 1 Liter Summa Canister samples were received on January 29, 2021. 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 EATL 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

The Chain of Custody (COC) information for sample VMP-15-5-012821 did not match the information on the canister with regard to canister barcode. The sample labeled 8032 on the COC is labeled as 8033 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

As per 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.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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

Client Sample ID: VMP-15-5-012821

Lab ID#: 2101663B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	15
Nitrogen	0.20	82
Carbon Dioxide	0.020	3.0
Helium	0.10	0.036 J

Client Sample ID: VMP-15-21.5-012821

Lab ID#: 2101663B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	2.3
Nitrogen	0.27	82
Carbon Dioxide	0.027	16

Client Sample ID: VMP-15-25.5-012821

Lab ID#: 2101663B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	7.1
Nitrogen	0.24	78
Carbon Dioxide	0.024	15

Client Sample ID: VMP-55-20-012821

Lab ID#: 2101663B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	6.9
Nitrogen	0.23	77
Methane	0.00023	1.4
Carbon Dioxide	0.023	15
Ethane	0.0023	0.00026 J
Helium	0.11	0.069 J

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Client Sample ID: VMP-15-5-012821

Lab ID#: 2101663B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020417**	**Date of Collection: 1/28/21 9:31:00 AM**	
Dil. Factor:	**2.05**	**Date of Analysis: 2/4/21 03:43 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	15
Nitrogen	0.20	82
Carbon Monoxide	0.020	Not Detected
Methane	0.00020	Not Detected
Carbon Dioxide	0.020	3.0
Ethane	0.0020	Not Detected
Ethene	0.0020	Not Detected
Helium	0.10	0.036 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-012821

Lab ID#: 2101663B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020418**	**Date of Collection: 1/28/21 9:42:00 AM**	
Dil. Factor:	**2.68**	**Date of Analysis: 2/4/21 04:05 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	2.3
Nitrogen	0.27	82
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	Not Detected
Carbon Dioxide	0.027	16
Ethane	0.0027	Not Detected
Ethene	0.0027	Not Detected
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-012821

Lab ID#: 2101663B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020419**	**Date of Collection: 1/28/21 9:56:00 AM**	
Dil. Factor:	**2.39**	**Date of Analysis: 2/4/21 04:28 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	7.1
Nitrogen	0.24	78
Carbon Monoxide	0.024	Not Detected
Methane	0.00024	Not Detected
Carbon Dioxide	0.024	15
Ethane	0.0024	Not Detected
Ethene	0.0024	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-20-012821

Lab ID#: 2101663B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020420**	**Date of Collection:**	**1/28/21 10:25:00 AM**
Dil. Factor:	**2.29**	**Date of Analysis:**	**2/4/21 04:50 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	6.9
Nitrogen	0.23	77
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	1.4
Carbon Dioxide	0.023	15
Ethane	0.0023	0.00026 J
Ethene	0.0023	Not Detected
Helium	0.11	0.069 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2101663B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020405**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/21 09:54 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

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Client Sample ID: Lab Blank

Lab ID#: 2101663B-05B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020404c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/21 09:32 AM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2101663B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/21 08:39 AM**	

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Nitrogen	98	85-115
Carbon Monoxide	92	85-115
Methane	100	85-115
Carbon Dioxide	111	85-115
Ethane	103	85-115
Ethene	103	85-115
Helium	100	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2101663B-06AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/21 09:02 AM**	

Compound	%Recovery	Method Limits
Oxygen	99	85-115
Nitrogen	98	85-115
Carbon Monoxide	92	85-115
Methane	99	85-115
Carbon Dioxide	112	85-115
Ethane	102	85-115
Ethene	102	85-115
Helium	100	85-115

Container Type: NA - Not Applicable

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5/27/2021
Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.2F
Workorder #: 2105345A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/14/2021 at Eurofins Air Toxics LLC.

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 LLC. 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 #: 2105345A

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. #**	132530
FAX:		**PROJECT #**	60648474-4.2.2F Roxana Quarterly Soil Vapor
DATE RECEIVED:	05/14/2021	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/27/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-051121	TO-15	5.1 "Hg	10 psi
02A	VMP-15-21.5-051121	TO-15	5.1 "Hg	9.9 psi
03A	VMP-15-25.5-051121	TO-15	3.5 "Hg	10 psi
04A	VMP-55-20-051121	TO-15	5.1 "Hg	9.8 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 05/27/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2105345A

Four 1 Liter Summa Canister samples were received on May 14, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

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.

Dilution was performed on samples VMP-15-21.5-051121 and VMP-15-25.5-051121 due to the presence of high level target species.

Dilution was performed on sample VMP-55-20-051121 due to the presence of high level non-target species.

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-15-5-051121

Lab ID#: 2105345A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.48 J	5.0	2.4 J
Freon 11	1.0	0.19 J	5.7	1.1 J
Ethanol	10	2.8 J	19	5.3 J
Acetone	10	4.6 J	24	11 J
2-Propanol	4.0	3.9 J	9.9	9.6 J

Client Sample ID: VMP-15-21.5-051121

Lab ID#: 2105345A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Propanol	20	6.2 J	50	15 J
2,2,4-Trimethylpentane	5.0	1400	24	6500
Butane	20	14 J	48	33 J
Isopentane	20	4.9 J	60	14 J

Client Sample ID: VMP-15-25.5-051121

Lab ID#: 2105345A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Propanol	76	10 J	190	24 J
2,2,4-Trimethylpentane	19	3000	89	14000
Butane	76	78	180	180
Isopentane	76	26 J	220	76 J

Client Sample ID: VMP-55-20-051121

Lab ID#: 2105345A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	500	830	1800	2900
2,2,4-Trimethylpentane	500	55000	2300	260000
Butane	2000	4000	4800	9500
Isopentane	2000	280000	5900	830000

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Client Sample ID: VMP-15-5-051121

Lab ID#: 2105345A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052427**	**Date of Collection:**	**5/11/21 9:10:00 AM**
Dil. Factor:	**2.02**	**Date of Analysis:**	**5/25/21 02:48 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.48 J	5.0	2.4 J
Freon 114	1.0	Not Detected	7.1	Not Detected
Chloromethane	10	Not Detected	21	Not Detected
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,3-Butadiene	1.0	Not Detected	2.2	Not Detected
Bromomethane	10	Not Detected	39	Not Detected
Chloroethane	4.0	Not Detected	11	Not Detected
Freon 11	1.0	0.19 J	5.7	1.1 J
Ethanol	10	2.8 J	19	5.3 J
Freon 113	1.0	Not Detected	7.7	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Acetone	10	4.6 J	24	11 J
2-Propanol	4.0	3.9 J	9.9	9.6 J
Carbon Disulfide	4.0	Not Detected	12	Not Detected
3-Chloropropene	4.0	Not Detected	13	Not Detected
Methylene Chloride	10	Not Detected	35	Not Detected
Methyl tert-butyl ether	4.0	Not Detected	14	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Hexane	1.0	Not Detected	3.6	Not Detected
1,1-Dichloroethane	1.0	Not Detected	4.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.0	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrahydrofuran	1.0	Not Detected	3.0	Not Detected
Chloroform	1.0	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.5	Not Detected
Cyclohexane	1.0	Not Detected	3.5	Not Detected
Carbon Tetrachloride	1.0	Not Detected	6.4	Not Detected
2,2,4-Trimethylpentane	1.0	Not Detected	4.7	Not Detected
Benzene	1.0	Not Detected	3.2	Not Detected
1,2-Dichloroethane	1.0	Not Detected	4.1	Not Detected
Heptane	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.4	Not Detected
1,2-Dichloropropane	1.0	Not Detected	4.7	Not Detected
1,4-Dioxane	4.0	Not Detected	14	Not Detected
Bromodichloromethane	1.0	Not Detected	6.8	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected	4.6	Not Detected
4-Methyl-2-pentanone	1.0	Not Detected	4.1	Not Detected
Toluene	1.0	Not Detected	3.8	Not Detected
trans-1,3-Dichloropropene	1.0	Not Detected	4.6	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.5	Not Detected
Tetrachloroethene	1.0	Not Detected	6.8	Not Detected
2-Hexanone	4.0	Not Detected	16	Not Detected

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Client Sample ID: VMP-15-5-051121

Lab ID#: 2105345A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052427**	**Date of Collection:**	**5/11/21 9:10:00 AM**
Dil. Factor:	**2.02**	**Date of Analysis:**	**5/25/21 02:48 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.0	Not Detected	8.6	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	7.8	Not Detected
Chlorobenzene	1.0	Not Detected	4.6	Not Detected
Ethyl Benzene	1.0	Not Detected	4.4	Not Detected
m,p-Xylene	1.0	Not Detected	4.4	Not Detected
o-Xylene	1.0	Not Detected	4.4	Not Detected
Styrene	1.0	Not Detected	4.3	Not Detected
Bromoform	1.0	Not Detected	10	Not Detected
Cumene	1.0	Not Detected	5.0	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected	6.9	Not Detected
Propylbenzene	1.0	Not Detected	5.0	Not Detected
4-Ethyltoluene	1.0	Not Detected	5.0	Not Detected
1,3,5-Trimethylbenzene	1.0	Not Detected	5.0	Not Detected
1,2,4-Trimethylbenzene	1.0	Not Detected	5.0	Not Detected
1,3-Dichlorobenzene	1.0	Not Detected	6.1	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected	6.1	Not Detected
alpha-Chlorotoluene	1.0	Not Detected	5.2	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected	6.1	Not Detected
1,2,4-Trichlorobenzene	4.0	Not Detected	30	Not Detected
Hexachlorobutadiene	4.0	Not Detected	43	Not Detected
Butane	4.0	Not Detected	9.6	Not Detected
Isopentane	4.0	Not Detected	12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	85	70-130

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Client Sample ID: VMP-15-21.5-051121

Lab ID#: 2105345A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052428**	**Date of Collection:**	**5/11/21 9:30:00 AM**
Dil. Factor:	**10.1**	**Date of Analysis:**	**5/25/21 03:15 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	50	Not Detected	100	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	50	Not Detected	200	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	50	Not Detected	95	Not Detected
Freon 113	5.0	Not Detected	39	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	50	Not Detected	120	Not Detected
2-Propanol	20	6.2 J	50	15 J
Carbon Disulfide	20	Not Detected	63	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	50	Not Detected	180	Not Detected
Methyl tert-butyl ether	20	Not Detected	73	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	60	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	25	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	28	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	32	Not Detected
2,2,4-Trimethylpentane	5.0	1400	24	6500
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	21	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	73	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	21	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	28	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	83	Not Detected

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Client Sample ID: VMP-15-21.5-051121

Lab ID#: 2105345A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052428**	**Date of Collection: 5/11/21 9:30:00 AM**	
Dil. Factor:	**10.1**	**Date of Analysis: 5/25/21 03:15 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	43	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	39	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	22	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	25	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	35	Not Detected
Propylbenzene	5.0	Not Detected	25	Not Detected
4-Ethyltoluene	5.0	Not Detected	25	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	25	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	25	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	220	Not Detected
Butane	20	14 J	48	33 J
Isopentane	20	4.9 J	60	14 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	117	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	85	70-130

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Client Sample ID: VMP-15-25.5-051121

Lab ID#: 2105345A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052429**	**Date of Collection:**	**5/11/21 9:51:00 AM**
Dil. Factor:	**38.0**	**Date of Analysis:**	**5/25/21 03:42 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	19	Not Detected	94	Not Detected
Freon 114	19	Not Detected	130	Not Detected
Chloromethane	190	Not Detected	390	Not Detected
Vinyl Chloride	19	Not Detected	48	Not Detected
1,3-Butadiene	19	Not Detected	42	Not Detected
Bromomethane	190	Not Detected	740	Not Detected
Chloroethane	76	Not Detected	200	Not Detected
Freon 11	19	Not Detected	110	Not Detected
Ethanol	190	Not Detected	360	Not Detected
Freon 113	19	Not Detected	140	Not Detected
1,1-Dichloroethene	19	Not Detected	75	Not Detected
Acetone	190	Not Detected	450	Not Detected
2-Propanol	76	10 J	190	24 J
Carbon Disulfide	76	Not Detected	240	Not Detected
3-Chloropropene	76	Not Detected	240	Not Detected
Methylene Chloride	190	Not Detected	660	Not Detected
Methyl tert-butyl ether	76	Not Detected	270	Not Detected
trans-1,2-Dichloroethene	19	Not Detected	75	Not Detected
Hexane	19	Not Detected	67	Not Detected
1,1-Dichloroethane	19	Not Detected	77	Not Detected
2-Butanone (Methyl Ethyl Ketone)	76	Not Detected	220	Not Detected
cis-1,2-Dichloroethene	19	Not Detected	75	Not Detected
Tetrahydrofuran	19	Not Detected	56	Not Detected
Chloroform	19	Not Detected	93	Not Detected
1,1,1-Trichloroethane	19	Not Detected	100	Not Detected
Cyclohexane	19	Not Detected	65	Not Detected
Carbon Tetrachloride	19	Not Detected	120	Not Detected
2,2,4-Trimethylpentane	19	3000	89	14000
Benzene	19	Not Detected	61	Not Detected
1,2-Dichloroethane	19	Not Detected	77	Not Detected
Heptane	19	Not Detected	78	Not Detected
Trichloroethene	19	Not Detected	100	Not Detected
1,2-Dichloropropane	19	Not Detected	88	Not Detected
1,4-Dioxane	76	Not Detected	270	Not Detected
Bromodichloromethane	19	Not Detected	130	Not Detected
cis-1,3-Dichloropropene	19	Not Detected	86	Not Detected
4-Methyl-2-pentanone	19	Not Detected	78	Not Detected
Toluene	19	Not Detected	72	Not Detected
trans-1,3-Dichloropropene	19	Not Detected	86	Not Detected
1,1,2-Trichloroethane	19	Not Detected	100	Not Detected
Tetrachloroethene	19	Not Detected	130	Not Detected
2-Hexanone	76	Not Detected	310	Not Detected

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Client Sample ID: VMP-15-25.5-051121

Lab ID#: 2105345A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052429**	**Date of Collection:**	**5/11/21 9:51:00 AM**
Dil. Factor:	**38.0**	**Date of Analysis:**	**5/25/21 03:42 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	19	Not Detected	160	Not Detected
1,2-Dibromoethane (EDB)	19	Not Detected	150	Not Detected
Chlorobenzene	19	Not Detected	87	Not Detected
Ethyl Benzene	19	Not Detected	82	Not Detected
m,p-Xylene	19	Not Detected	82	Not Detected
o-Xylene	19	Not Detected	82	Not Detected
Styrene	19	Not Detected	81	Not Detected
Bromoform	19	Not Detected	200	Not Detected
Cumene	19	Not Detected	93	Not Detected
1,1,2,2-Tetrachloroethane	19	Not Detected	130	Not Detected
Propylbenzene	19	Not Detected	93	Not Detected
4-Ethyltoluene	19	Not Detected	93	Not Detected
1,3,5-Trimethylbenzene	19	Not Detected	93	Not Detected
1,2,4-Trimethylbenzene	19	Not Detected	93	Not Detected
1,3-Dichlorobenzene	19	Not Detected	110	Not Detected
1,4-Dichlorobenzene	19	Not Detected	110	Not Detected
alpha-Chlorotoluene	19	Not Detected	98	Not Detected
1,2-Dichlorobenzene	19	Not Detected	110	Not Detected
1,2,4-Trichlorobenzene	76	Not Detected	560	Not Detected
Hexachlorobutadiene	76	Not Detected	810	Not Detected
Butane	76	78	180	180
Isopentane	76	26 J	220	76 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	117	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	86	70-130

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Client Sample ID: VMP-55-20-051121

Lab ID#: 2105345A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14052422**	**Date of Collection:**	**5/11/21 12:42:00 PM**
Dil. Factor:	**100**	**Date of Analysis:**	**5/24/21 11:00 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	500	Not Detected	2500	Not Detected
Freon 114	500	Not Detected	3500	Not Detected
Chloromethane	2000	Not Detected	4100	Not Detected
Vinyl Chloride	500	Not Detected	1300	Not Detected
1,3-Butadiene	500	Not Detected	1100	Not Detected
Bromomethane	2000	Not Detected	7800	Not Detected
Chloroethane	2000	Not Detected	5300	Not Detected
Freon 11	500	Not Detected	2800	Not Detected
Ethanol	2000	Not Detected	3800	Not Detected
Freon 113	500	Not Detected	3800	Not Detected
1,1-Dichloroethene	500	Not Detected	2000	Not Detected
Acetone	2000	Not Detected	4800	Not Detected
2-Propanol	2000	Not Detected	4900	Not Detected
Carbon Disulfide	2000	Not Detected	6200	Not Detected
3-Chloropropene	2000	Not Detected	6300	Not Detected
Methylene Chloride	2000	Not Detected	6900	Not Detected
Methyl tert-butyl ether	500	Not Detected	1800	Not Detected
trans-1,2-Dichloroethene	500	Not Detected	2000	Not Detected
Hexane	500	830	1800	2900
1,1-Dichloroethane	500	Not Detected	2000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2000	Not Detected	5900	Not Detected
cis-1,2-Dichloroethene	500	Not Detected	2000	Not Detected
Tetrahydrofuran	500	Not Detected	1500	Not Detected
Chloroform	500	Not Detected	2400	Not Detected
1,1,1-Trichloroethane	500	Not Detected	2700	Not Detected
Cyclohexane	500	Not Detected	1700	Not Detected
Carbon Tetrachloride	500	Not Detected	3100	Not Detected
2,2,4-Trimethylpentane	500	55000	2300	260000
Benzene	500	Not Detected	1600	Not Detected
1,2-Dichloroethane	500	Not Detected	2000	Not Detected
Heptane	500	Not Detected	2000	Not Detected
Trichloroethene	500	Not Detected	2700	Not Detected
1,2-Dichloropropane	500	Not Detected	2300	Not Detected
1,4-Dioxane	2000	Not Detected	7200	Not Detected
Bromodichloromethane	500	Not Detected	3400	Not Detected
cis-1,3-Dichloropropene	500	Not Detected	2300	Not Detected
4-Methyl-2-pentanone	500	Not Detected	2000	Not Detected
Toluene	500	Not Detected	1900	Not Detected
trans-1,3-Dichloropropene	500	Not Detected	2300	Not Detected
1,1,2-Trichloroethane	500	Not Detected	2700	Not Detected
Tetrachloroethene	500	Not Detected	3400	Not Detected
2-Hexanone	2000	Not Detected	8200	Not Detected

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Client Sample ID: VMP-55-20-051121

Lab ID#: 2105345A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14052422**	**Date of Collection:**	**5/11/21 12:42:00 PM**
Dil. Factor:	**100**	**Date of Analysis:**	**5/24/21 11:00 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	500	Not Detected	4200	Not Detected
1,2-Dibromoethane (EDB)	500	Not Detected	3800	Not Detected
Chlorobenzene	500	Not Detected	2300	Not Detected
Ethyl Benzene	500	Not Detected	2200	Not Detected
m,p-Xylene	500	Not Detected	2200	Not Detected
o-Xylene	500	Not Detected	2200	Not Detected
Styrene	500	Not Detected	2100	Not Detected
Bromoform	500	Not Detected	5200	Not Detected
Cumene	500	Not Detected	2400	Not Detected
1,1,2,2-Tetrachloroethane	500	Not Detected	3400	Not Detected
Propylbenzene	500	Not Detected	2400	Not Detected
4-Ethyltoluene	500	Not Detected	2400	Not Detected
1,3,5-Trimethylbenzene	500	Not Detected	2400	Not Detected
1,2,4-Trimethylbenzene	500	Not Detected	2400	Not Detected
1,3-Dichlorobenzene	500	Not Detected	3000	Not Detected
1,4-Dichlorobenzene	500	Not Detected	3000	Not Detected
alpha-Chlorotoluene	500	Not Detected	2600	Not Detected
1,2-Dichlorobenzene	500	Not Detected	3000	Not Detected
1,2,4-Trichlorobenzene	2000	Not Detected	15000	Not Detected
Hexachlorobutadiene	2000	Not Detected	21000	Not Detected
Butane	2000	4000	4800	9500
Isopentane	2000	280000	5900	830000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2105345A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052407a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 01:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	5.0	Not Detected	9.4	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	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2105345A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052407a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 01:59 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	0.13 J	2.4	0.66 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	102	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2105345A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14052405d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 03:24 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

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Client Sample ID: Lab Blank

Lab ID#: 2105345A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14052405d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 03:24 PM**	

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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	89	70-130

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Client Sample ID: CCV

Lab ID#: 2105345A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052402**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 10:44 AM**

Compound	%Recovery
Freon 12	107
Freon 114	100
Chloromethane	98
Vinyl Chloride	107
1,3-Butadiene	102
Bromomethane	100
Chloroethane	101
Freon 11	101
Ethanol	82
Freon 113	95
1,1-Dichloroethene	89
Acetone	92
2-Propanol	83
Carbon Disulfide	102
3-Chloropropene	88
Methylene Chloride	108
Methyl tert-butyl ether	88
trans-1,2-Dichloroethene	100
Hexane	84
1,1-Dichloroethane	102
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	100
Tetrahydrofuran	88
Chloroform	104
1,1,1-Trichloroethane	101
Cyclohexane	88
Carbon Tetrachloride	102
2,2,4-Trimethylpentane	107
Benzene	107
1,2-Dichloroethane	113
Heptane	103
Trichloroethene	107
1,2-Dichloropropane	119
1,4-Dioxane	105
Bromodichloromethane	111
cis-1,3-Dichloropropene	95
4-Methyl-2-pentanone	103
Toluene	106
trans-1,3-Dichloropropene	104
1,1,2-Trichloroethane	112
Tetrachloroethene	107
2-Hexanone	106

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Client Sample ID: CCV

Lab ID#: 2105345A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 10:44 AM**	

Compound	%Recovery
Dibromochloromethane	111
1,2-Dibromoethane (EDB)	111
Chlorobenzene	102
Ethyl Benzene	101
m,p-Xylene	108
o-Xylene	103
Styrene	110
Bromoform	109
Cumene	103
1,1,2,2-Tetrachloroethane	124
Propylbenzene	116
4-Ethyltoluene	108
1,3,5-Trimethylbenzene	120
1,2,4-Trimethylbenzene	107
1,3-Dichlorobenzene	119
1,4-Dichlorobenzene	113
alpha-Chlorotoluene	108
1,2-Dichlorobenzene	119
1,2,4-Trichlorobenzene	102
Hexachlorobutadiene	111
Butane	97
Isopentane	93

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: CCV

Lab ID#: 2105345A-06B

EPA METHOD TO-15 GC/MS

File Name:	**14052402**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 02:01 PM**

Compound	%Recovery
Freon 12	107
Freon 114	104
Chloromethane	105
Vinyl Chloride	111
1,3-Butadiene	103
Bromomethane	119
Chloroethane	108
Freon 11	113
Ethanol	107
Freon 113	111
1,1-Dichloroethene	109
Acetone	110
2-Propanol	105
Carbon Disulfide	107
3-Chloropropene	106
Methylene Chloride	108
Methyl tert-butyl ether	109
trans-1,2-Dichloroethene	108
Hexane	109
1,1-Dichloroethane	109
2-Butanone (Methyl Ethyl Ketone)	110
cis-1,2-Dichloroethene	105
Tetrahydrofuran	106
Chloroform	110
1,1,1-Trichloroethane	108
Cyclohexane	108
Carbon Tetrachloride	109
2,2,4-Trimethylpentane	108
Benzene	114
1,2-Dichloroethane	113
Heptane	112
Trichloroethene	110
1,2-Dichloropropane	112
1,4-Dioxane	123
Bromodichloromethane	110
cis-1,3-Dichloropropene	114
4-Methyl-2-pentanone	119
Toluene	110
trans-1,3-Dichloropropene	117
1,1,2-Trichloroethane	110
Tetrachloroethene	106
2-Hexanone	111

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Client Sample ID: CCV
Lab ID#: 2105345A-06B
EPA METHOD TO-15 GC/MS

File Name:	**14052402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 02:01 PM**	

Compound	%Recovery
Dibromochloromethane	110
1,2-Dibromoethane (EDB)	113
Chlorobenzene	107
Ethyl Benzene	107
m,p-Xylene	120
o-Xylene	107
Styrene	122
Bromoform	110
Cumene	116
1,1,2,2-Tetrachloroethane	111
Propylbenzene	115
4-Ethyltoluene	128
1,3,5-Trimethylbenzene	122
1,2,4-Trimethylbenzene	120
1,3-Dichlorobenzene	112
1,4-Dichlorobenzene	112
alpha-Chlorotoluene	121
1,2-Dichlorobenzene	111
1,2,4-Trichlorobenzene	93
Hexachlorobutadiene	90
Butane	104
Isopentane	128

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: LCS

Lab ID#: 2105345A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 11:10 AM**	

Compound	%Recovery	Method Limits
Freon 12	101	70-130
Freon 114	95	70-130
Chloromethane	97	70-130
Vinyl Chloride	91	70-130
1,3-Butadiene	79	70-130
Bromomethane	86	70-130
Chloroethane	101	70-130
Freon 11	97	70-130
Ethanol	72	70-130
Freon 113	92	70-130
1,1-Dichloroethene	90	70-130
Acetone	90	70-130
2-Propanol	88	70-130
Carbon Disulfide	99	70-130
3-Chloropropene	89	70-130
Methylene Chloride	103	70-130
Methyl tert-butyl ether	90	70-130
trans-1,2-Dichloroethene	96	70-130
Hexane	86	70-130
1,1-Dichloroethane	100	70-130
2-Butanone (Methyl Ethyl Ketone)	93	70-130
cis-1,2-Dichloroethene	97	70-130
Tetrahydrofuran	89	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	91	70-130
Carbon Tetrachloride	99	70-130
2,2,4-Trimethylpentane	92	70-130
Benzene	106	70-130
1,2-Dichloroethane	110	70-130
Heptane	97	70-130
Trichloroethene	109	70-130
1,2-Dichloropropane	115	70-130
1,4-Dioxane	104	70-130
Bromodichloromethane	109	70-130
cis-1,3-Dichloropropene	98	70-130
4-Methyl-2-pentanone	106	70-130
Toluene	103	70-130
trans-1,3-Dichloropropene	105	70-130
1,1,2-Trichloroethane	110	70-130
Tetrachloroethene	104	70-130
2-Hexanone	108	70-130

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Client Sample ID: LCS

Lab ID#: 2105345A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 11:10 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	109	70-130
1,2-Dibromoethane (EDB)	110	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	106	70-130
o-Xylene	97	70-130
Styrene	108	70-130
Bromoform	106	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	118	70-130
Propylbenzene	110	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	116	70-130
1,2,4-Trimethylbenzene	104	70-130
1,3-Dichlorobenzene	113	70-130
1,4-Dichlorobenzene	109	70-130
alpha-Chlorotoluene	109	70-130
1,2-Dichlorobenzene	112	70-130
1,2,4-Trichlorobenzene	109	70-130
Hexachlorobutadiene	117	70-130
Butane	88	70-130
Isopentane	93	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCSD

Lab ID#: 2105345A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 11:37 AM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 114	94	70-130
Chloromethane	95	70-130
Vinyl Chloride	93	70-130
1,3-Butadiene	84	70-130
Bromomethane	90	70-130
Chloroethane	100	70-130
Freon 11	98	70-130
Ethanol	74	70-130
Freon 113	93	70-130
1,1-Dichloroethene	93	70-130
Acetone	93	70-130
2-Propanol	89	70-130
Carbon Disulfide	101	70-130
3-Chloropropene	92	70-130
Methylene Chloride	104	70-130
Methyl tert-butyl ether	92	70-130
trans-1,2-Dichloroethene	99	70-130
Hexane	88	70-130
1,1-Dichloroethane	100	70-130
2-Butanone (Methyl Ethyl Ketone)	97	70-130
cis-1,2-Dichloroethene	100	70-130
Tetrahydrofuran	93	70-130
Chloroform	100	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	94	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	95	70-130
Benzene	104	70-130
1,2-Dichloroethane	107	70-130
Heptane	95	70-130
Trichloroethene	107	70-130
1,2-Dichloropropane	113	70-130
1,4-Dioxane	105	70-130
Bromodichloromethane	107	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	105	70-130
Toluene	102	70-130
trans-1,3-Dichloropropene	103	70-130
1,1,2-Trichloroethane	104	70-130
Tetrachloroethene	101	70-130
2-Hexanone	105	70-130

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Client Sample ID: LCSD

Lab ID#: 2105345A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j052404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 11:37 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	104	70-130
1,2-Dibromoethane (EDB)	107	70-130
Chlorobenzene	98	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	103	70-130
o-Xylene	96	70-130
Styrene	104	70-130
Bromoform	103	70-130
Cumene	95	70-130
1,1,2,2-Tetrachloroethane	113	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	112	70-130
1,2,4-Trimethylbenzene	98	70-130
1,3-Dichlorobenzene	109	70-130
1,4-Dichlorobenzene	105	70-130
alpha-Chlorotoluene	106	70-130
1,2-Dichlorobenzene	108	70-130
1,2,4-Trichlorobenzene	108	70-130
Hexachlorobutadiene	115	70-130
Butane	85	70-130
Isopentane	95	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 2105345A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14052403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 02:27 PM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 114	103	70-130
Chloromethane	103	70-130
Vinyl Chloride	109	70-130
1,3-Butadiene	97	70-130
Bromomethane	111	70-130
Chloroethane	101	70-130
Freon 11	110	70-130
Ethanol	93	70-130
Freon 113	107	70-130
1,1-Dichloroethene	106	70-130
Acetone	104	70-130
2-Propanol	104	70-130
Carbon Disulfide	103	70-130
3-Chloropropene	103	70-130
Methylene Chloride	106	70-130
Methyl tert-butyl ether	104	70-130
trans-1,2-Dichloroethene	99	70-130
Hexane	99	70-130
1,1-Dichloroethane	104	70-130
2-Butanone (Methyl Ethyl Ketone)	103	70-130
cis-1,2-Dichloroethene	101	70-130
Tetrahydrofuran	93	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	107	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	107	70-130
2,2,4-Trimethylpentane	97	70-130
Benzene	108	70-130
1,2-Dichloroethane	108	70-130
Heptane	99	70-130
Trichloroethene	106	70-130
1,2-Dichloropropane	105	70-130
1,4-Dioxane	108	70-130
Bromodichloromethane	106	70-130
cis-1,3-Dichloropropene	103	70-130
4-Methyl-2-pentanone	105	70-130
Toluene	100	70-130
trans-1,3-Dichloropropene	115	70-130
1,1,2-Trichloroethane	104	70-130
Tetrachloroethene	103	70-130
2-Hexanone	95	70-130

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Client Sample ID: LCS

Lab ID#: 2105345A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14052403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 02:27 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	107	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	106	70-130
o-Xylene	97	70-130
Styrene	105	70-130
Bromoform	106	70-130
Cumene	99	70-130
1,1,2,2-Tetrachloroethane	105	70-130
Propylbenzene	104	70-130
4-Ethyltoluene	112	70-130
1,3,5-Trimethylbenzene	107	70-130
1,2,4-Trimethylbenzene	99	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	103	70-130
1,2-Dichlorobenzene	99	70-130
1,2,4-Trichlorobenzene	80	70-130
Hexachlorobutadiene	86	70-130
Butane	106	70-130
Isopentane	122	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 2105345A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14052404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 02:51 PM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 114	104	70-130
Chloromethane	101	70-130
Vinyl Chloride	110	70-130
1,3-Butadiene	105	70-130
Bromomethane	112	70-130
Chloroethane	110	70-130
Freon 11	113	70-130
Ethanol	103	70-130
Freon 113	108	70-130
1,1-Dichloroethene	105	70-130
Acetone	110	70-130
2-Propanol	106	70-130
Carbon Disulfide	106	70-130
3-Chloropropene	103	70-130
Methylene Chloride	108	70-130
Methyl tert-butyl ether	107	70-130
trans-1,2-Dichloroethene	103	70-130
Hexane	102	70-130
1,1-Dichloroethane	105	70-130
2-Butanone (Methyl Ethyl Ketone)	107	70-130
cis-1,2-Dichloroethene	102	70-130
Tetrahydrofuran	96	70-130
Chloroform	108	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	99	70-130
Carbon Tetrachloride	105	70-130
2,2,4-Trimethylpentane	97	70-130
Benzene	106	70-130
1,2-Dichloroethane	109	70-130
Heptane	100	70-130
Trichloroethene	106	70-130
1,2-Dichloropropane	106	70-130
1,4-Dioxane	113	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	107	70-130
4-Methyl-2-pentanone	102	70-130
Toluene	102	70-130
trans-1,3-Dichloropropene	108	70-130
1,1,2-Trichloroethane	103	70-130
Tetrachloroethene	102	70-130
2-Hexanone	97	70-130

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Client Sample ID: LCSD

Lab ID#: 2105345A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14052404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/21 02:51 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	104	70-130
1,2-Dibromoethane (EDB)	106	70-130
Chlorobenzene	103	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	106	70-130
o-Xylene	96	70-130
Styrene	106	70-130
Bromoform	104	70-130
Cumene	102	70-130
1,1,2,2-Tetrachloroethane	105	70-130
Propylbenzene	105	70-130
4-Ethyltoluene	115	70-130
1,3,5-Trimethylbenzene	110	70-130
1,2,4-Trimethylbenzene	105	70-130
1,3-Dichlorobenzene	110	70-130
1,4-Dichlorobenzene	110	70-130
alpha-Chlorotoluene	115	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	102	70-130
Hexachlorobutadiene	99	70-130
Butane	108	70-130
Isopentane	126	70-130

Container Type: NA - Not Applicable

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

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5/27/2021

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

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.2F
Workorder #: 2105345B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/14/2021 at Eurofins Air Toxics LLC.

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 LLC. 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 #: 2105345B

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. #**	132530
FAX:		**PROJECT #**	60648474-4.2.2F Roxana Quarterly Soil Vapor
DATE RECEIVED:	05/14/2021	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/27/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-051121	Modified ASTM D-1946	5.1 "Hg	10 psi
02A	VMP-15-21.5-051121	Modified ASTM D-1946	5.1 "Hg	9.9 psi
03A	VMP-15-25.5-051121	Modified ASTM D-1946	3.5 "Hg	10 psi
04A	VMP-55-20-051121	Modified ASTM D-1946	5.1 "Hg	9.8 psi
05A	Lab Blank	Modified ASTM D-1946	NA	NA
05B	Lab Blank	Modified ASTM D-1946	NA	NA
06A	CCV	Modified ASTM D-1946	NA	NA
07A	LCS	Modified ASTM D-1946	NA	NA
07AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 05/27/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2105345B

Four 1 Liter Summa Canister samples were received on May 14, 2021. 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 EATL modifications.

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

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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

Client Sample ID: VMP-15-5-051121

Lab ID#: 2105345B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	16
Nitrogen	0.20	81
Carbon Dioxide	0.020	2.9
Helium	0.10	0.0068 J

Client Sample ID: VMP-15-21.5-051121

Lab ID#: 2105345B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	1.4
Nitrogen	0.20	80
Methane	0.00020	3.3
Carbon Dioxide	0.020	15
Ethane	0.0020	0.00028 J
Helium	0.10	0.016 J

Client Sample ID: VMP-15-25.5-051121

Lab ID#: 2105345B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.19	1.4
Nitrogen	0.19	79
Methane	0.00019	2.7
Carbon Dioxide	0.019	17
Ethane	0.0019	0.00072 J

Client Sample ID: VMP-55-20-051121

Lab ID#: 2105345B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	1.6
Nitrogen	0.20	75

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

Client Sample ID: VMP-55-20-051121

Lab ID#: 2105345B-04A

Methane	0.00020	7.3
Carbon Dioxide	0.020	16
Ethane	0.0020	0.0030
Helium	0.10	0.026 J

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Client Sample ID: VMP-15-5-051121

Lab ID#: 2105345B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052128**	**Date of Collection: 5/11/21 9:10:00 AM**	
Dil. Factor:	**2.02**	**Date of Analysis: 5/21/21 10:13 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	16
Nitrogen	0.20	81
Carbon Monoxide	0.020	Not Detected
Methane	0.00020	Not Detected
Carbon Dioxide	0.020	2.9
Ethane	0.0020	Not Detected
Ethene	0.0020	Not Detected
Helium	0.10	0.0068 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-051121

Lab ID#: 2105345B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052130**	**Date of Collection: 5/11/21 9:30:00 AM**	
Dil. Factor:	**2.02**	**Date of Analysis: 5/21/21 10:57 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	1.4
Nitrogen	0.20	80
Carbon Monoxide	0.020	Not Detected
Methane	0.00020	3.3
Carbon Dioxide	0.020	15
Ethane	0.0020	0.00028 J
Ethene	0.0020	Not Detected
Helium	0.10	0.016 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-051121

Lab ID#: 2105345B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052131**	**Date of Collection: 5/11/21 9:51:00 AM**	
Dil. Factor:	**1.90**	**Date of Analysis: 5/22/21 08:02 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.19	1.4
Nitrogen	0.19	79
Carbon Monoxide	0.019	Not Detected
Methane	0.00019	2.7
Carbon Dioxide	0.019	17
Ethane	0.0019	0.00072 J
Ethene	0.0019	Not Detected
Helium	0.095	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-20-051121

Lab ID#: 2105345B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052129**	**Date of Collection:**	**5/11/21 12:42:00 PM**
Dil. Factor:	**2.01**	**Date of Analysis:**	**5/21/21 10:35 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	1.6
Nitrogen	0.20	75
Carbon Monoxide	0.020	Not Detected
Methane	0.00020	7.3
Carbon Dioxide	0.020	16
Ethane	0.0020	0.0030
Ethene	0.0020	Not Detected
Helium	0.10	0.026 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2105345B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052125**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/21/21 08:52 PM**	

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

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Client Sample ID: Lab Blank

Lab ID#: 2105345B-05B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052124c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/21/21 08:28 PM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 2105345B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052122**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/21/21 07:38 PM**

Compound	%Recovery
Oxygen	96
Nitrogen	92
Carbon Monoxide	92
Methane	96
Carbon Dioxide	99
Ethane	99
Ethene	100
Helium	100

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2105345B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052123**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/21/21 08:04 PM**	

Compound	%Recovery	Method Limits
Oxygen	96	85-115
Nitrogen	93	85-115
Carbon Monoxide	88	85-115
Methane	95	85-115
Carbon Dioxide	99	85-115
Ethane	98	85-115
Ethene	98	85-115
Helium	98	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2105345B-07AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052146**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/22/21 02:31 PM**	

Compound	%Recovery	Method Limits
Oxygen	96	85-115
Nitrogen	93	85-115
Carbon Monoxide	88	85-115
Methane	97	85-115
Carbon Dioxide	100	85-115
Ethane	100	85-115
Ethene	100	85-115
Helium	98	85-115

Container Type: NA - Not Applicable

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8/12/2021
Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.3F
Workorder #: 2107683A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 7/30/2021 at Eurofins Air Toxics LLC.

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 LLC. 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

eurofins | Air Toxics

WORK ORDER #: 2107683A

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. #**	132530
FAX:		**PROJECT #**	60648474-4.2.3F Roxana Quarterly Soil Vapor
DATE RECEIVED:	07/30/2021	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	08/12/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-072821	TO-15	7.1 "Hg	9.9 psi
02A	VMP-15-21.5-072821	TO-15	6.3 "Hg	9.9 psi
03A	VMP-15-25.5-072821	TO-15	7.3 "Hg	10.2 psi
04A	VMP-55-20-072821	TO-15	7.1 "Hg	9.8 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/12/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2107683A

Four 1 Liter Summa Canister samples were received on July 30, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

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.

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

Dilution was performed on samples VMP-15-25.5-072821 and VMP-55-20-072821 due to the presence of high level target species.

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-15-5-072821

Lab ID#: 2107683A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.61 J	5.4	3.0 J
Bromomethane	11	0.67 J	42	2.6 J
Freon 11	1.1	0.32 J	6.2	1.8 J
Acetone	11	20	26	46
Carbon Disulfide	4.4	1.2 J	14	3.6 J

Client Sample ID: VMP-15-21.5-072821

Lab ID#: 2107683A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	11	26	20	49
2-Propanol	4.2	5.0	10	12
Carbon Disulfide	4.2	0.61 J	13	1.9 J
2,2,4-Trimethylpentane	1.1	190	5.0	880
Benzene	1.1	0.64 J	3.4	2.0 J
Toluene	1.1	0.44 J	4.0	1.6 J
Butane	4.2	11	10	26
Isopentane	4.2	9.2	12	27

Client Sample ID: VMP-15-25.5-072821

Lab ID#: 2107683A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	110	27 J	270	64 J
2-Propanol	45	5.1 J	110	12 J
Carbon Disulfide	45	3.7 J	140	12 J
2,2,4-Trimethylpentane	11	2100	52	9900
Ethyl Benzene	11	3.1 J	49	13 J
m,p-Xylene	11	11 J	49	46 J
o-Xylene	11	6.0 J	49	26 J
4-Ethyltoluene	11	6.8 J	55	34 J
1,2,4-Trimethylbenzene	11	8.6 J	55	42 J
Butane	45	36 J	110	85 J

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

Client Sample ID: VMP-15-25.5-072821

Lab ID#: 2107683A-03A

Isopentane	45	18 J	130	54 J

Client Sample ID: VMP-55-20-072821

Lab ID#: 2107683A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	550	2700	1900	9500
Cyclohexane	550	15000	1900	50000
2,2,4-Trimethylpentane	550	56000	2600	260000
Butane	2200	76000	5200	180000
Isopentane	2200	500000	6500	1500000

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Client Sample ID: VMP-15-5-072821

Lab ID#: 2107683A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080424**	**Date of Collection:**	**7/28/21 9:15:00 AM**
Dil. Factor:	**2.19**	**Date of Analysis:**	**8/5/21 02:11 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.61 J	5.4	3.0 J
Freon 114	1.1	Not Detected	7.6	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	0.67 J	42	2.6 J
Chloroethane	4.4	Not Detected	12	Not Detected
Freon 11	1.1	0.32 J	6.2	1.8 J
Ethanol	11	Not Detected	21	Not Detected
Freon 113	1.1	Not Detected	8.4	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Acetone	11	20	26	46
2-Propanol	4.4	Not Detected	11	Not Detected
Carbon Disulfide	4.4	1.2 J	14	3.6 J
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	4.3	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	Not Detected	5.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Cyclohexane	1.1	Not Detected	3.8	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.9	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.1	Not Detected
Benzene	1.1	Not Detected	3.5	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.4	Not Detected
Heptane	1.1	Not Detected	4.5	Not Detected
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	7.3	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	4.1	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	7.4	Not Detected
2-Hexanone	4.4	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-5-072821

Lab ID#: 2107683A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080424**	**Date of Collection:**	**7/28/21 9:15:00 AM**
Dil. Factor:	**2.19**	**Date of Analysis:**	**8/5/21 02:11 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.3	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.4	Not Detected
Chlorobenzene	1.1	Not Detected	5.0	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	7.5	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	32	Not Detected
Hexachlorobutadiene	4.4	Not Detected	47	Not Detected
Butane	4.4	Not Detected	10	Not Detected
Isopentane	4.4	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: VMP-15-21.5-072821

Lab ID#: 2107683A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080425**	**Date of Collection:**	**7/28/21 9:28:00 AM**
Dil. Factor:	**2.12**	**Date of Analysis:**	**8/5/21 02:40 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.2	Not Detected
Freon 114	1.1	Not Detected	7.4	Not Detected
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,3-Butadiene	1.1	Not Detected	2.3	Not Detected
Bromomethane	11	Not Detected	41	Not Detected
Chloroethane	4.2	Not Detected	11	Not Detected
Freon 11	1.1	Not Detected	6.0	Not Detected
Ethanol	11	26	20	49
Freon 113	1.1	Not Detected	8.1	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Acetone	11	Not Detected	25	Not Detected
2-Propanol	4.2	5.0	10	12
Carbon Disulfide	4.2	0.61 J	13	1.9 J
3-Chloropropene	4.2	Not Detected	13	Not Detected
Methylene Chloride	11	Not Detected	37	Not Detected
Methyl tert-butyl ether	4.2	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Hexane	1.1	Not Detected	3.7	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.2	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.1	Not Detected
Chloroform	1.1	Not Detected	5.2	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.8	Not Detected
Cyclohexane	1.1	Not Detected	3.6	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.7	Not Detected
2,2,4-Trimethylpentane	1.1	190	5.0	880
Benzene	1.1	0.64 J	3.4	2.0 J
1,2-Dichloroethane	1.1	Not Detected	4.3	Not Detected
Heptane	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	Not Detected	5.7	Not Detected
1,2-Dichloropropane	1.1	Not Detected	4.9	Not Detected
1,4-Dioxane	4.2	Not Detected	15	Not Detected
Bromodichloromethane	1.1	Not Detected	7.1	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	4.8	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.3	Not Detected
Toluene	1.1	0.44 J	4.0	1.6 J
trans-1,3-Dichloropropene	1.1	Not Detected	4.8	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.8	Not Detected
Tetrachloroethene	1.1	Not Detected	7.2	Not Detected
2-Hexanone	4.2	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-21.5-072821

Lab ID#: 2107683A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080425**	**Date of Collection:**	**7/28/21 9:28:00 AM**
Dil. Factor:	**2.12**	**Date of Analysis:**	**8/5/21 02:40 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.0	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.1	Not Detected
Chlorobenzene	1.1	Not Detected	4.9	Not Detected
Ethyl Benzene	1.1	Not Detected	4.6	Not Detected
m,p-Xylene	1.1	Not Detected	4.6	Not Detected
o-Xylene	1.1	Not Detected	4.6	Not Detected
Styrene	1.1	Not Detected	4.5	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.2	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.3	Not Detected
Propylbenzene	1.1	Not Detected	5.2	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.2	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.2	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.2	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.5	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
1,2,4-Trichlorobenzene	4.2	Not Detected	31	Not Detected
Hexachlorobutadiene	4.2	Not Detected	45	Not Detected
Butane	4.2	11	10	26
Isopentane	4.2	9.2	12	27

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: VMP-15-25.5-072821

Lab ID#: 2107683A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080426**	**Date of Collection:**	**7/28/21 9:45:00 AM**
Dil. Factor:	**22.4**	**Date of Analysis:**	**8/5/21 03:06 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	11	Not Detected	55	Not Detected
Freon 114	11	Not Detected	78	Not Detected
Chloromethane	110	Not Detected	230	Not Detected
Vinyl Chloride	11	Not Detected	29	Not Detected
1,3-Butadiene	11	Not Detected	25	Not Detected
Bromomethane	110	Not Detected	430	Not Detected
Chloroethane	45	Not Detected	120	Not Detected
Freon 11	11	Not Detected	63	Not Detected
Ethanol	110	Not Detected	210	Not Detected
Freon 113	11	Not Detected	86	Not Detected
1,1-Dichloroethene	11	Not Detected	44	Not Detected
Acetone	110	27 J	270	64 J
2-Propanol	45	5.1 J	110	12 J
Carbon Disulfide	45	3.7 J	140	12 J
3-Chloropropene	45	Not Detected	140	Not Detected
Methylene Chloride	110	Not Detected	390	Not Detected
Methyl tert-butyl ether	45	Not Detected	160	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	44	Not Detected
Hexane	11	Not Detected	39	Not Detected
1,1-Dichloroethane	11	Not Detected	45	Not Detected
2-Butanone (Methyl Ethyl Ketone)	45	Not Detected	130	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	44	Not Detected
Tetrahydrofuran	11	Not Detected	33	Not Detected
Chloroform	11	Not Detected	55	Not Detected
1,1,1-Trichloroethane	11	Not Detected	61	Not Detected
Cyclohexane	11	Not Detected	38	Not Detected
Carbon Tetrachloride	11	Not Detected	70	Not Detected
2,2,4-Trimethylpentane	11	2100	52	9900
Benzene	11	Not Detected	36	Not Detected
1,2-Dichloroethane	11	Not Detected	45	Not Detected
Heptane	11	Not Detected	46	Not Detected
Trichloroethene	11	Not Detected	60	Not Detected
1,2-Dichloropropane	11	Not Detected	52	Not Detected
1,4-Dioxane	45	Not Detected	160	Not Detected
Bromodichloromethane	11	Not Detected	75	Not Detected
cis-1,3-Dichloropropene	11	Not Detected	51	Not Detected
4-Methyl-2-pentanone	11	Not Detected	46	Not Detected
Toluene	11	Not Detected	42	Not Detected
trans-1,3-Dichloropropene	11	Not Detected	51	Not Detected
1,1,2-Trichloroethane	11	Not Detected	61	Not Detected
Tetrachloroethene	11	Not Detected	76	Not Detected
2-Hexanone	45	Not Detected	180	Not Detected

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Client Sample ID: VMP-15-25.5-072821

Lab ID#: 2107683A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080426**	**Date of Collection: 7/28/21 9:45:00 AM**	
Dil. Factor:	**22.4**	**Date of Analysis: 8/5/21 03:06 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	11	Not Detected	95	Not Detected
1,2-Dibromoethane (EDB)	11	Not Detected	86	Not Detected
Chlorobenzene	11	Not Detected	52	Not Detected
Ethyl Benzene	11	3.1 J	49	13 J
m,p-Xylene	11	11 J	49	46 J
o-Xylene	11	6.0 J	49	26 J
Styrene	11	Not Detected	48	Not Detected
Bromoform	11	Not Detected	120	Not Detected
Cumene	11	Not Detected	55	Not Detected
1,1,2,2-Tetrachloroethane	11	Not Detected	77	Not Detected
Propylbenzene	11	Not Detected	55	Not Detected
4-Ethyltoluene	11	6.8 J	55	34 J
1,3,5-Trimethylbenzene	11	Not Detected	55	Not Detected
1,2,4-Trimethylbenzene	11	8.6 J	55	42 J
1,3-Dichlorobenzene	11	Not Detected	67	Not Detected
1,4-Dichlorobenzene	11	Not Detected	67	Not Detected
alpha-Chlorotoluene	11	Not Detected	58	Not Detected
1,2-Dichlorobenzene	11	Not Detected	67	Not Detected
1,2,4-Trichlorobenzene	45	Not Detected	330	Not Detected
Hexachlorobutadiene	45	Not Detected	480	Not Detected
Butane	45	36 J	110	85 J
Isopentane	45	18 J	130	54 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: VMP-55-20-072821

Lab ID#: 2107683A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14080522**	**Date of Collection:**	**7/28/21 10:24:00 AM**
Dil. Factor:	**110**	**Date of Analysis:**	**8/5/21 06:35 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	550	Not Detected	2700	Not Detected
Freon 114	550	Not Detected	3800	Not Detected
Chloromethane	2200	Not Detected	4500	Not Detected
Vinyl Chloride	550	Not Detected	1400	Not Detected
1,3-Butadiene	550	Not Detected	1200	Not Detected
Bromomethane	2200	Not Detected	8500	Not Detected
Chloroethane	2200	Not Detected	5800	Not Detected
Freon 11	550	Not Detected	3100	Not Detected
Ethanol	2200	Not Detected	4100	Not Detected
Freon 113	550	Not Detected	4200	Not Detected
1,1-Dichloroethene	550	Not Detected	2200	Not Detected
Acetone	2200	Not Detected	5200	Not Detected
2-Propanol	2200	Not Detected	5400	Not Detected
Carbon Disulfide	2200	Not Detected	6800	Not Detected
3-Chloropropene	2200	Not Detected	6900	Not Detected
Methylene Chloride	2200	Not Detected	7600	Not Detected
Methyl tert-butyl ether	550	Not Detected	2000	Not Detected
trans-1,2-Dichloroethene	550	Not Detected	2200	Not Detected
Hexane	550	2700	1900	9500
1,1-Dichloroethane	550	Not Detected	2200	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2200	Not Detected	6500	Not Detected
cis-1,2-Dichloroethene	550	Not Detected	2200	Not Detected
Tetrahydrofuran	550	Not Detected	1600	Not Detected
Chloroform	550	Not Detected	2700	Not Detected
1,1,1-Trichloroethane	550	Not Detected	3000	Not Detected
Cyclohexane	550	15000	1900	50000
Carbon Tetrachloride	550	Not Detected	3500	Not Detected
2,2,4-Trimethylpentane	550	56000	2600	260000
Benzene	550	Not Detected	1800	Not Detected
1,2-Dichloroethane	550	Not Detected	2200	Not Detected
Heptane	550	Not Detected	2200	Not Detected
Trichloroethene	550	Not Detected	3000	Not Detected
1,2-Dichloropropane	550	Not Detected	2500	Not Detected
1,4-Dioxane	2200	Not Detected	7900	Not Detected
Bromodichloromethane	550	Not Detected	3700	Not Detected
cis-1,3-Dichloropropene	550	Not Detected	2500	Not Detected
4-Methyl-2-pentanone	550	Not Detected	2200	Not Detected
Toluene	550	Not Detected	2100	Not Detected
trans-1,3-Dichloropropene	550	Not Detected	2500	Not Detected
1,1,2-Trichloroethane	550	Not Detected	3000	Not Detected
Tetrachloroethene	550	Not Detected	3700	Not Detected
2-Hexanone	2200	Not Detected	9000	Not Detected

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Client Sample ID: VMP-55-20-072821

Lab ID#: 2107683A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14080522**	**Date of Collection:**	**7/28/21 10:24:00 AM**
Dil. Factor:	**110**	**Date of Analysis:**	**8/5/21 06:35 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	550	Not Detected	4700	Not Detected
1,2-Dibromoethane (EDB)	550	Not Detected	4200	Not Detected
Chlorobenzene	550	Not Detected	2500	Not Detected
Ethyl Benzene	550	Not Detected	2400	Not Detected
m,p-Xylene	550	Not Detected	2400	Not Detected
o-Xylene	550	Not Detected	2400	Not Detected
Styrene	550	Not Detected	2300	Not Detected
Bromoform	550	Not Detected	5700	Not Detected
Cumene	550	Not Detected	2700	Not Detected
1,1,2,2-Tetrachloroethane	550	Not Detected	3800	Not Detected
Propylbenzene	550	Not Detected	2700	Not Detected
4-Ethyltoluene	550	Not Detected	2700	Not Detected
1,3,5-Trimethylbenzene	550	Not Detected	2700	Not Detected
1,2,4-Trimethylbenzene	550	Not Detected	2700	Not Detected
1,3-Dichlorobenzene	550	Not Detected	3300	Not Detected
1,4-Dichlorobenzene	550	Not Detected	3300	Not Detected
alpha-Chlorotoluene	550	Not Detected	2800	Not Detected
1,2-Dichlorobenzene	550	Not Detected	3300	Not Detected
1,2,4-Trichlorobenzene	2200	Not Detected UJ	16000	Not Detected UJ
Hexachlorobutadiene	2200	Not Detected	23000	Not Detected
Butane	2200	76000	5200	180000
Isopentane	2200	500000	6500	1500000

UJ = Analyte associated with low bias in the CCV.

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: Lab Blank

Lab ID#: 2107683A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080407e**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 02:15 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	0.33 J	19	1.3 J
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	5.0	Not Detected	9.4	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	0.91 J	12	2.2 J
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	0.36 J	6.2	1.1 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	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2107683A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080407e**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 02:15 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	0.26 J	2.4	1.2 J
1,2,4-Trimethylbenzene	0.50	0.36 J	2.4	1.8 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	0.16 J	15	1.2 J
Hexachlorobutadiene	2.0	0.49 J	21	5.2 J
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	100	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	88	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2107683A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14080505c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 09:18 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	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

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Client Sample ID: Lab Blank

Lab ID#: 2107683A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14080505c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 09:18 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	0.98 J	30	5.9 J
alpha-Chlorotoluene	5.0	1.2 J	26	6.1 J
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

J = Estimated value.
UJ = Analyte associated with low bias in the CCV.
Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	77	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: CCV

Lab ID#: 2107683A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080402**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 11:01 AM**

Compound	%Recovery
Freon 12	104
Freon 114	96
Chloromethane	103
Vinyl Chloride	115
1,3-Butadiene	93
Bromomethane	102
Chloroethane	122
Freon 11	131 Q
Ethanol	127
Freon 113	93
1,1-Dichloroethene	81
Acetone	80
2-Propanol	80
Carbon Disulfide	92
3-Chloropropene	80
Methylene Chloride	92
Methyl tert-butyl ether	90
trans-1,2-Dichloroethene	95
Hexane	80
1,1-Dichloroethane	90
2-Butanone (Methyl Ethyl Ketone)	91
cis-1,2-Dichloroethene	92
Tetrahydrofuran	76
Chloroform	93
1,1,1-Trichloroethane	92
Cyclohexane	83
Carbon Tetrachloride	99
2,2,4-Trimethylpentane	89
Benzene	100
1,2-Dichloroethane	108
Heptane	91
Trichloroethene	101
1,2-Dichloropropane	104
1,4-Dioxane	103
Bromodichloromethane	99
cis-1,3-Dichloropropene	94
4-Methyl-2-pentanone	90
Toluene	97
trans-1,3-Dichloropropene	106
1,1,2-Trichloroethane	105
Tetrachloroethene	105
2-Hexanone	101

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Client Sample ID: CCV

Lab ID#: 2107683A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 11:01 AM**	

Compound	%Recovery
Dibromochloromethane	110
1,2-Dibromoethane (EDB)	106
Chlorobenzene	102
Ethyl Benzene	99
m,p-Xylene	105
o-Xylene	100
Styrene	106
Bromoform	108
Cumene	100
1,1,2,2-Tetrachloroethane	111
Propylbenzene	104
4-Ethyltoluene	107
1,3,5-Trimethylbenzene	103
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	111
1,4-Dichlorobenzene	111
alpha-Chlorotoluene	107
1,2-Dichlorobenzene	111
1,2,4-Trichlorobenzene	70
Hexachlorobutadiene	77
Butane	103
Isopentane	124

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: CCV

Lab ID#: 2107683A-06B

EPA METHOD TO-15 GC/MS

File Name:	**14080502**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 07:56 AM**

Compound	%Recovery
Freon 12	98
Freon 114	109
Chloromethane	104
Vinyl Chloride	102
1,3-Butadiene	95
Bromomethane	121
Chloroethane	113
Freon 11	115
Ethanol	103
Freon 113	111
1,1-Dichloroethene	102
Acetone	98
2-Propanol	94
Carbon Disulfide	99
3-Chloropropene	92
Methylene Chloride	100
Methyl tert-butyl ether	91
trans-1,2-Dichloroethene	94
Hexane	89
1,1-Dichloroethane	93
2-Butanone (Methyl Ethyl Ketone)	90
cis-1,2-Dichloroethene	94
Tetrahydrofuran	88
Chloroform	96
1,1,1-Trichloroethane	101
Cyclohexane	85
Carbon Tetrachloride	105
2,2,4-Trimethylpentane	88
Benzene	101
1,2-Dichloroethane	108
Heptane	88
Trichloroethene	100
1,2-Dichloropropane	94
1,4-Dioxane	101
Bromodichloromethane	103
cis-1,3-Dichloropropene	95
4-Methyl-2-pentanone	80
Toluene	98
trans-1,3-Dichloropropene	91
1,1,2-Trichloroethane	91
Tetrachloroethene	103
2-Hexanone	85

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Client Sample ID: CCV
Lab ID#: 2107683A-06B
EPA METHOD TO-15 GC/MS

File Name:	**14080502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 07:56 AM**	

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	100
Chlorobenzene	103
Ethyl Benzene	96
m,p-Xylene	100
o-Xylene	95
Styrene	97
Bromoform	102
Cumene	95
1,1,2,2-Tetrachloroethane	95
Propylbenzene	95
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	93
1,2,4-Trimethylbenzene	89
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	98
alpha-Chlorotoluene	83
1,2-Dichlorobenzene	95
1,2,4-Trichlorobenzene	64 Q
Hexachlorobutadiene	71
Butane	114
Isopentane	116

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 2107683A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 11:29 AM**	

Compound	%Recovery	Method Limits
Freon 12	112	70-130
Freon 114	108	70-130
Chloromethane	115	70-130
Vinyl Chloride	122	70-130
1,3-Butadiene	103	70-130
Bromomethane	119	70-130
Chloroethane	117	70-130
Freon 11	118	70-130
Ethanol	77	70-130
Freon 113	103	70-130
1,1-Dichloroethene	97	70-130
Acetone	96	70-130
2-Propanol	99	70-130
Carbon Disulfide	105	70-130
3-Chloropropene	91	70-130
Methylene Chloride	101	70-130
Methyl tert-butyl ether	101	70-130
trans-1,2-Dichloroethene	108	70-130
Hexane	91	70-130
1,1-Dichloroethane	99	70-130
2-Butanone (Methyl Ethyl Ketone)	102	70-130
cis-1,2-Dichloroethene	102	70-130
Tetrahydrofuran	85	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	95	70-130
Benzene	107	70-130
1,2-Dichloroethane	114	70-130
Heptane	97	70-130
Trichloroethene	107	70-130
1,2-Dichloropropane	108	70-130
1,4-Dioxane	107	70-130
Bromodichloromethane	105	70-130
cis-1,3-Dichloropropene	101	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	101	70-130
trans-1,3-Dichloropropene	113	70-130
1,1,2-Trichloroethane	111	70-130
Tetrachloroethene	113	70-130
2-Hexanone	111	70-130

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Client Sample ID: LCS

Lab ID#: 2107683A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 11:29 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	116	70-130
1,2-Dibromoethane (EDB)	113	70-130
Chlorobenzene	110	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	109	70-130
o-Xylene	106	70-130
Styrene	108	70-130
Bromoform	112	70-130
Cumene	103	70-130
1,1,2,2-Tetrachloroethane	114	70-130
Propylbenzene	108	70-130
4-Ethyltoluene	113	70-130
1,3,5-Trimethylbenzene	106	70-130
1,2,4-Trimethylbenzene	108	70-130
1,3-Dichlorobenzene	116	70-130
1,4-Dichlorobenzene	114	70-130
alpha-Chlorotoluene	109	70-130
1,2-Dichlorobenzene	114	70-130
1,2,4-Trichlorobenzene	116	70-130
Hexachlorobutadiene	125	70-130
Butane	107	70-130
Isopentane	110	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 2107683A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 11:56 AM**	

Compound	%Recovery	Method Limits
Freon 12	112	70-130
Freon 114	109	70-130
Chloromethane	113	70-130
Vinyl Chloride	118	70-130
1,3-Butadiene	100	70-130
Bromomethane	116	70-130
Chloroethane	115	70-130
Freon 11	117	70-130
Ethanol	79	70-130
Freon 113	104	70-130
1,1-Dichloroethene	99	70-130
Acetone	96	70-130
2-Propanol	100	70-130
Carbon Disulfide	104	70-130
3-Chloropropene	96	70-130
Methylene Chloride	101	70-130
Methyl tert-butyl ether	101	70-130
trans-1,2-Dichloroethene	107	70-130
Hexane	91	70-130
1,1-Dichloroethane	99	70-130
2-Butanone (Methyl Ethyl Ketone)	100	70-130
cis-1,2-Dichloroethene	101	70-130
Tetrahydrofuran	85	70-130
Chloroform	96	70-130
1,1,1-Trichloroethane	99	70-130
Cyclohexane	93	70-130
Carbon Tetrachloride	102	70-130
2,2,4-Trimethylpentane	93	70-130
Benzene	105	70-130
1,2-Dichloroethane	110	70-130
Heptane	95	70-130
Trichloroethene	105	70-130
1,2-Dichloropropane	105	70-130
1,4-Dioxane	105	70-130
Bromodichloromethane	102	70-130
cis-1,3-Dichloropropene	101	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	99	70-130
trans-1,3-Dichloropropene	109	70-130
1,1,2-Trichloroethane	108	70-130
Tetrachloroethene	111	70-130
2-Hexanone	106	70-130

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Client Sample ID: LCSD

Lab ID#: 2107683A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/21 11:56 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	112	70-130
1,2-Dibromoethane (EDB)	109	70-130
Chlorobenzene	105	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	104	70-130
o-Xylene	102	70-130
Styrene	104	70-130
Bromoform	109	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	111	70-130
Propylbenzene	104	70-130
4-Ethyltoluene	109	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	105	70-130
1,3-Dichlorobenzene	112	70-130
1,4-Dichlorobenzene	111	70-130
alpha-Chlorotoluene	108	70-130
1,2-Dichlorobenzene	110	70-130
1,2,4-Trichlorobenzene	121	70-130
Hexachlorobutadiene	129	70-130
Butane	106	70-130
Isopentane	109	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 2107683A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14080503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 08:23 AM**	

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	102	70-130
Chloromethane	95	70-130
Vinyl Chloride	100	70-130
1,3-Butadiene	94	70-130
Bromomethane	111	70-130
Chloroethane	106	70-130
Freon 11	112	70-130
Ethanol	80	70-130
Freon 113	107	70-130
1,1-Dichloroethene	98	70-130
Acetone	90	70-130
2-Propanol	90	70-130
Carbon Disulfide	93	70-130
3-Chloropropene	87	70-130
Methylene Chloride	95	70-130
Methyl tert-butyl ether	81	70-130
trans-1,2-Dichloroethene	90	70-130
Hexane	84	70-130
1,1-Dichloroethane	88	70-130
2-Butanone (Methyl Ethyl Ketone)	89	70-130
cis-1,2-Dichloroethene	92	70-130
Tetrahydrofuran	85	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	85	70-130
Carbon Tetrachloride	100	70-130
2,2,4-Trimethylpentane	86	70-130
Benzene	99	70-130
1,2-Dichloroethane	104	70-130
Heptane	85	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	91	70-130
Bromodichloromethane	99	70-130
cis-1,3-Dichloropropene	91	70-130
4-Methyl-2-pentanone	77	70-130
Toluene	94	70-130
trans-1,3-Dichloropropene	91	70-130
1,1,2-Trichloroethane	93	70-130
Tetrachloroethene	108	70-130
2-Hexanone	88	70-130

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Client Sample ID: LCS

Lab ID#: 2107683A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14080503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 08:23 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	107	70-130
1,2-Dibromoethane (EDB)	100	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	100	70-130
o-Xylene	92	70-130
Styrene	94	70-130
Bromoform	103	70-130
Cumene	95	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	104	70-130
1,3,5-Trimethylbenzene	101	70-130
1,2,4-Trimethylbenzene	99	70-130
1,3-Dichlorobenzene	106	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	92	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	87	70-130
Hexachlorobutadiene	96	70-130
Butane	110	70-130
Isopentane	114	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 2107683A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14080504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 08:53 AM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 114	100	70-130
Chloromethane	94	70-130
Vinyl Chloride	104	70-130
1,3-Butadiene	92	70-130
Bromomethane	113	70-130
Chloroethane	108	70-130
Freon 11	113	70-130
Ethanol	82	70-130
Freon 113	107	70-130
1,1-Dichloroethene	97	70-130
Acetone	89	70-130
2-Propanol	89	70-130
Carbon Disulfide	94	70-130
3-Chloropropene	92	70-130
Methylene Chloride	96	70-130
Methyl tert-butyl ether	93	70-130
trans-1,2-Dichloroethene	90	70-130
Hexane	86	70-130
1,1-Dichloroethane	91	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
cis-1,2-Dichloroethene	93	70-130
Tetrahydrofuran	85	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	102	70-130
Cyclohexane	86	70-130
Carbon Tetrachloride	105	70-130
2,2,4-Trimethylpentane	88	70-130
Benzene	101	70-130
1,2-Dichloroethane	105	70-130
Heptane	87	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	89	70-130
1,4-Dioxane	94	70-130
Bromodichloromethane	98	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	78	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	97	70-130
1,1,2-Trichloroethane	94	70-130
Tetrachloroethene	107	70-130
2-Hexanone	88	70-130

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Client Sample ID: LCSD

Lab ID#: 2107683A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14080504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/21 08:53 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	103	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	99	70-130
o-Xylene	92	70-130
Styrene	94	70-130
Bromoform	100	70-130
Cumene	84	70-130
1,1,2,2-Tetrachloroethane	89	70-130
Propylbenzene	90	70-130
4-Ethyltoluene	91	70-130
1,3,5-Trimethylbenzene	86	70-130
1,2,4-Trimethylbenzene	92	70-130
1,3-Dichlorobenzene	96	70-130
1,4-Dichlorobenzene	95	70-130
alpha-Chlorotoluene	92	70-130
1,2-Dichlorobenzene	91	70-130
1,2,4-Trichlorobenzene	84	70-130
Hexachlorobutadiene	87	70-130
Butane	112	70-130
Isopentane	112	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	100	70-130

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8/12/2021
Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.3F
Workorder #: 2107683B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 7/30/2021 at Eurofins Air Toxics LLC.

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 LLC. 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 #: 2107683B

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. #**	132530
FAX:		**PROJECT #**	60648474-4.2.3F Roxana Quarterly Soil Vapor
DATE RECEIVED:	07/30/2021	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	08/12/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-072821	Modified ASTM D-1946	7.1 "Hg	9.9 psi
02A	VMP-15-21.5-072821	Modified ASTM D-1946	6.3 "Hg	9.9 psi
03A	VMP-15-25.5-072821	Modified ASTM D-1946	7.3 "Hg	10.2 psi
04A	VMP-55-20-072821	Modified ASTM D-1946	7.1 "Hg	9.8 psi
05A	Lab Blank	Modified ASTM D-1946	NA	NA
05B	Lab Blank	Modified ASTM D-1946	NA	NA
06A	CCV	Modified ASTM D-1946	NA	NA
07A	LCS	Modified ASTM D-1946	NA	NA
07AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/12/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2107683B

Four 1 Liter Summa Canister samples were received on July 30, 2021. 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 EATL modifications.

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

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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

Client Sample ID: VMP-15-5-072821

Lab ID#: 2107683B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	13
Nitrogen	0.22	83
Carbon Dioxide	0.022	3.9

Client Sample ID: VMP-15-21.5-072821

Lab ID#: 2107683B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.3
Nitrogen	0.21	84
Methane	0.00021	2.1
Carbon Dioxide	0.021	13
Ethane	0.0021	0.00015 J
Helium	0.11	0.0044 J

Client Sample ID: VMP-15-25.5-072821

Lab ID#: 2107683B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.6
Nitrogen	0.22	78
Methane	0.00022	2.9
Carbon Dioxide	0.022	17
Ethane	0.0022	0.00042 J
Helium	0.11	0.0080 J

Client Sample ID: VMP-55-20-072821

Lab ID#: 2107683B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.3
Nitrogen	0.22	70

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

Client Sample ID: VMP-55-20-072821

Lab ID#: 2107683B-04A

Methane	0.00022	12
Carbon Dioxide	0.022	16
Ethane	0.0022	0.0044
Helium	0.11	0.010 J

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Client Sample ID: VMP-15-5-072821

Lab ID#: 2107683B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080713**	**Date of Collection:**	**7/28/21 9:15:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**8/7/21 01:41 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	13
Nitrogen	0.22	83
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	Not Detected
Carbon Dioxide	0.022	3.9
Ethane	0.0022	Not Detected
Ethene	0.0022	Not Detected
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-072821

Lab ID#: 2107683B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080714**	**Date of Collection: 7/28/21 9:28:00 AM**	
Dil. Factor:	**2.12**	**Date of Analysis: 8/7/21 02:04 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.3
Nitrogen	0.21	84
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	2.1
Carbon Dioxide	0.021	13
Ethane	0.0021	0.00015 J
Ethene	0.0021	Not Detected
Helium	0.11	0.0044 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-072821

Lab ID#: 2107683B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080715**	**Date of Collection: 7/28/21 9:45:00 AM**	
Dil. Factor:	**2.24**	**Date of Analysis: 8/7/21 02:26 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.6
Nitrogen	0.22	78
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	2.9
Carbon Dioxide	0.022	17
Ethane	0.0022	0.00042 J
Ethene	0.0022	Not Detected
Helium	0.11	0.0080 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-20-072821

Lab ID#: 2107683B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080716**	**Date of Collection:**	**7/28/21 10:24:00 AM**
Dil. Factor:	**2.19**	**Date of Analysis:**	**8/7/21 02:51 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.3
Nitrogen	0.22	70
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	12
Carbon Dioxide	0.022	16
Ethane	0.0022	0.0044
Ethene	0.0022	Not Detected
Helium	0.11	0.010 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2107683B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/7/21 09:48 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

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Client Sample ID: Lab Blank

Lab ID#: 2107683B-05B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080703c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/7/21 09:21 AM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 2107683B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080701**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/6/21 10:35 PM**

Compound	%Recovery
Oxygen	96
Nitrogen	92
Carbon Monoxide	93
Methane	97
Carbon Dioxide	103
Ethane	100
Ethene	100
Helium	99

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2107683B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/7/21 08:56 AM**	

Compound	%Recovery	Method Limits
Oxygen	95	85-115
Nitrogen	92	85-115
Carbon Monoxide	90	85-115
Methane	97	85-115
Carbon Dioxide	101	85-115
Ethane	100	85-115
Ethene	100	85-115
Helium	97	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2107683B-07AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080717**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/7/21 03:21 PM**	

Compound	%Recovery	Method Limits
Oxygen	96	85-115
Nitrogen	92	85-115
Carbon Monoxide	89	85-115
Methane	98	85-115
Carbon Dioxide	102	85-115
Ethane	100	85-115
Ethene	101	85-115
Helium	98	85-115

Container Type: NA - Not Applicable

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11/10/2021
Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.4F
Workorder #: 2110676A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 10/28/2021 at Eurofins Air Toxics LLC.

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 LLC. 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

eurofins | Air Toxics

WORK ORDER #: 2110676A

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. #**	132530
FAX:		**PROJECT #**	60648474-4.2.4F Roxana Quarterly Soil Vapor
DATE RECEIVED:	10/28/2021	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	11/10/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-102721	TO-15	5.5 "Hg	10.1 psi
02A	VMP-15-21.5-102721	TO-15	6.5 "Hg	9.9 psi
03A	VMP-15-25.5-102721	TO-15	6.1 "Hg	10 psi
04A	VMP-55-20-102721	TO-15	6.9 "Hg	9.9 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 11/10/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2110676A

Four 1 Liter Summa Canister samples were received on October 28, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

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.

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

Dilution was performed on sample VMP-55-20-102721 due to the presence of high level target species.

The recovery of surrogate 1,2-Dichloroethane-d4 in sample VMP-55-20-102721 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is 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-15-5-102721

Lab ID#: 2110676A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.56 J	5.1	2.7 J
Acetone	10	3.2 J	24	7.7 J
2-Propanol	4.1	7.3	10	18
Hexane	1.0	1.6	3.6	5.5
2,2,4-Trimethylpentane	1.0	2.3	4.8	11
Benzene	1.0	0.42 J	3.3	1.4 J
Heptane	1.0	0.59 J	4.2	2.4 J
Toluene	1.0	0.78 J	3.9	3.0 J
m,p-Xylene	1.0	0.58 J	4.5	2.5 J

Client Sample ID: VMP-15-21.5-102721

Lab ID#: 2110676A-02A

No Detections Were Found.

Client Sample ID: VMP-15-25.5-102721

Lab ID#: 2110676A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.57 J	5.2	2.8 J
Acetone	10	8.8 J	25	21 J
2-Propanol	4.2	10	10	26

Client Sample ID: VMP-55-20-102721

Lab ID#: 2110676A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	360	8500	1300	30000
Cyclohexane	360	30000	1200	100000
2,2,4-Trimethylpentane	360	81000	1700	380000
Tetrachloroethene	360	140 J	2500	960 J
Butane	1400	130000	3400	310000
Isopentane	1400	610000	4300	1800000

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Client Sample ID: VMP-15-5-102721

Lab ID#: 2110676A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110409**	**Date of Collection:**	**10/27/21 9:58:00 AM**
Dil. Factor:	**2.06**	**Date of Analysis:**	**11/4/21 04:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.56 J	5.1	2.7 J
Freon 114	1.0	Not Detected	7.2	Not Detected
Chloromethane	10	Not Detected	21	Not Detected
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,3-Butadiene	1.0	Not Detected	2.3	Not Detected
Bromomethane	10	Not Detected	40	Not Detected
Chloroethane	4.1	Not Detected	11	Not Detected
Freon 11	1.0	Not Detected	5.8	Not Detected
Ethanol	10	Not Detected	19	Not Detected
Freon 113	1.0	Not Detected	7.9	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Acetone	10	3.2 J	24	7.7 J
2-Propanol	4.1	7.3	10	18
Carbon Disulfide	4.1	Not Detected	13	Not Detected
3-Chloropropene	4.1	Not Detected	13	Not Detected
Methylene Chloride	10	Not Detected	36	Not Detected
Methyl tert-butyl ether	4.1	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Hexane	1.0	1.6	3.6	5.5
1,1-Dichloroethane	1.0	Not Detected	4.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.1	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrahydrofuran	1.0	Not Detected	3.0	Not Detected
Chloroform	1.0	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Cyclohexane	1.0	Not Detected	3.5	Not Detected
Carbon Tetrachloride	1.0	Not Detected	6.5	Not Detected
2,2,4-Trimethylpentane	1.0	2.3	4.8	11
Benzene	1.0	0.42 J	3.3	1.4 J
1,2-Dichloroethane	1.0	Not Detected	4.2	Not Detected
Heptane	1.0	0.59 J	4.2	2.4 J
Trichloroethene	1.0	Not Detected	5.5	Not Detected
1,2-Dichloropropane	1.0	Not Detected	4.8	Not Detected
1,4-Dioxane	4.1	Not Detected	15	Not Detected
Bromodichloromethane	1.0	Not Detected	6.9	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
4-Methyl-2-pentanone	1.0	Not Detected	4.2	Not Detected
Toluene	1.0	0.78 J	3.9	3.0 J
trans-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected
2-Hexanone	4.1	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-5-102721

Lab ID#: 2110676A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110409**	**Date of Collection:**	**10/27/21 9:58:00 AM**
Dil. Factor:	**2.06**	**Date of Analysis:**	**11/4/21 04:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.0	Not Detected	8.8	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	7.9	Not Detected
Chlorobenzene	1.0	Not Detected	4.7	Not Detected
Ethyl Benzene	1.0	Not Detected	4.5	Not Detected
m,p-Xylene	1.0	0.58 J	4.5	2.5 J
o-Xylene	1.0	Not Detected	4.5	Not Detected
Styrene	1.0	Not Detected	4.4	Not Detected
Bromoform	1.0	Not Detected	11	Not Detected
Cumene	1.0	Not Detected	5.1	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected	7.1	Not Detected
Propylbenzene	1.0	Not Detected	5.1	Not Detected
4-Ethyltoluene	1.0	Not Detected	5.1	Not Detected
1,3,5-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,2,4-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,3-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
alpha-Chlorotoluene	1.0	Not Detected	5.3	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,2,4-Trichlorobenzene	4.1	Not Detected	30	Not Detected
Hexachlorobutadiene	4.1	Not Detected	44	Not Detected
Butane	4.1	Not Detected	9.8	Not Detected
Isopentane	4.1	Not Detected	12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: VMP-15-21.5-102721

Lab ID#: 2110676A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110417**	**Date of Collection:**	**10/27/21 10:12:00 A**
Dil. Factor:	**3.62**	**Date of Analysis:**	**11/4/21 10:35 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.8	Not Detected	9.0	Not Detected
Freon 114	1.8	Not Detected	13	Not Detected
Chloromethane	18	Not Detected	37	Not Detected
Vinyl Chloride	1.8	Not Detected	4.6	Not Detected
1,3-Butadiene	1.8	Not Detected	4.0	Not Detected
Bromomethane	18	Not Detected	70	Not Detected
Chloroethane	7.2	Not Detected	19	Not Detected
Freon 11	1.8	Not Detected	10	Not Detected
Ethanol	18	Not Detected	34	Not Detected
Freon 113	1.8	Not Detected	14	Not Detected
1,1-Dichloroethene	1.8	Not Detected	7.2	Not Detected
Acetone	18	Not Detected	43	Not Detected
2-Propanol	7.2	Not Detected	18	Not Detected
Carbon Disulfide	7.2	Not Detected	22	Not Detected
3-Chloropropene	7.2	Not Detected	23	Not Detected
Methylene Chloride	18	Not Detected	63	Not Detected
Methyl tert-butyl ether	7.2	Not Detected	26	Not Detected
trans-1,2-Dichloroethene	1.8	Not Detected	7.2	Not Detected
Hexane	1.8	Not Detected	6.4	Not Detected
1,1-Dichloroethane	1.8	Not Detected	7.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	7.2	Not Detected	21	Not Detected
cis-1,2-Dichloroethene	1.8	Not Detected	7.2	Not Detected
Tetrahydrofuran	1.8	Not Detected	5.3	Not Detected
Chloroform	1.8	Not Detected	8.8	Not Detected
1,1,1-Trichloroethane	1.8	Not Detected	9.9	Not Detected
Cyclohexane	1.8	Not Detected	6.2	Not Detected
Carbon Tetrachloride	1.8	Not Detected	11	Not Detected
2,2,4-Trimethylpentane	1.8	Not Detected	8.4	Not Detected
Benzene	1.8	Not Detected	5.8	Not Detected
1,2-Dichloroethane	1.8	Not Detected	7.3	Not Detected
Heptane	1.8	Not Detected	7.4	Not Detected
Trichloroethene	1.8	Not Detected	9.7	Not Detected
1,2-Dichloropropane	1.8	Not Detected	8.4	Not Detected
1,4-Dioxane	7.2	Not Detected	26	Not Detected
Bromodichloromethane	1.8	Not Detected	12	Not Detected
cis-1,3-Dichloropropene	1.8	Not Detected	8.2	Not Detected
4-Methyl-2-pentanone	1.8	Not Detected	7.4	Not Detected
Toluene	1.8	Not Detected	6.8	Not Detected
trans-1,3-Dichloropropene	1.8	Not Detected	8.2	Not Detected
1,1,2-Trichloroethane	1.8	Not Detected	9.9	Not Detected
Tetrachloroethene	1.8	Not Detected	12	Not Detected
2-Hexanone	7.2	Not Detected	30	Not Detected

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Client Sample ID: VMP-15-21.5-102721

Lab ID#: 2110676A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110417**	**Date of Collection: 10/27/21 10:12:00 A**	
Dil. Factor:	**3.62**	**Date of Analysis: 11/4/21 10:35 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.8	Not Detected	15	Not Detected
1,2-Dibromoethane (EDB)	1.8	Not Detected	14	Not Detected
Chlorobenzene	1.8	Not Detected	8.3	Not Detected
Ethyl Benzene	1.8	Not Detected	7.8	Not Detected
m,p-Xylene	1.8	Not Detected	7.8	Not Detected
o-Xylene	1.8	Not Detected	7.8	Not Detected
Styrene	1.8	Not Detected	7.7	Not Detected
Bromoform	1.8	Not Detected	19	Not Detected
Cumene	1.8	Not Detected	8.9	Not Detected
1,1,2,2-Tetrachloroethane	1.8	Not Detected	12	Not Detected
Propylbenzene	1.8	Not Detected	8.9	Not Detected
4-Ethyltoluene	1.8	Not Detected	8.9	Not Detected
1,3,5-Trimethylbenzene	1.8	Not Detected	8.9	Not Detected
1,2,4-Trimethylbenzene	1.8	Not Detected	8.9	Not Detected
1,3-Dichlorobenzene	1.8	Not Detected	11	Not Detected
1,4-Dichlorobenzene	1.8	Not Detected	11	Not Detected
alpha-Chlorotoluene	1.8	Not Detected	9.4	Not Detected
1,2-Dichlorobenzene	1.8	Not Detected	11	Not Detected
1,2,4-Trichlorobenzene	7.2	Not Detected	54	Not Detected
Hexachlorobutadiene	7.2	Not Detected	77	Not Detected
Butane	7.2	Not Detected	17	Not Detected
Isopentane	7.2	Not Detected	21	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: VMP-15-25.5-102721

Lab ID#: 2110676A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110410**	**Date of Collection:**	**10/27/21 10:28:00 A**
Dil. Factor:	**2.11**	**Date of Analysis:**	**11/4/21 05:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.57 J	5.2	2.8 J
Freon 114	1.0	Not Detected	7.4	Not Detected
Chloromethane	10	Not Detected	22	Not Detected
Vinyl Chloride	1.0	Not Detected	2.7	Not Detected
1,3-Butadiene	1.0	Not Detected	2.3	Not Detected
Bromomethane	10	Not Detected	41	Not Detected
Chloroethane	4.2	Not Detected	11	Not Detected
Freon 11	1.0	Not Detected	5.9	Not Detected
Ethanol	10	Not Detected	20	Not Detected
Freon 113	1.0	Not Detected	8.1	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Acetone	10	8.8 J	25	21 J
2-Propanol	4.2	10	10	26
Carbon Disulfide	4.2	Not Detected	13	Not Detected
3-Chloropropene	4.2	Not Detected	13	Not Detected
Methylene Chloride	10	Not Detected	37	Not Detected
Methyl tert-butyl ether	4.2	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Hexane	1.0	Not Detected	3.7	Not Detected
1,1-Dichloroethane	1.0	Not Detected	4.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.2	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Tetrahydrofuran	1.0	Not Detected	3.1	Not Detected
Chloroform	1.0	Not Detected	5.2	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.8	Not Detected
Cyclohexane	1.0	Not Detected	3.6	Not Detected
Carbon Tetrachloride	1.0	Not Detected	6.6	Not Detected
2,2,4-Trimethylpentane	1.0	Not Detected	4.9	Not Detected
Benzene	1.0	Not Detected	3.4	Not Detected
1,2-Dichloroethane	1.0	Not Detected	4.3	Not Detected
Heptane	1.0	Not Detected	4.3	Not Detected
Trichloroethene	1.0	Not Detected	5.7	Not Detected
1,2-Dichloropropane	1.0	Not Detected	4.9	Not Detected
1,4-Dioxane	4.2	Not Detected	15	Not Detected
Bromodichloromethane	1.0	Not Detected	7.1	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected	4.8	Not Detected
4-Methyl-2-pentanone	1.0	Not Detected	4.3	Not Detected
Toluene	1.0	Not Detected	4.0	Not Detected
trans-1,3-Dichloropropene	1.0	Not Detected	4.8	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.8	Not Detected
Tetrachloroethene	1.0	Not Detected	7.2	Not Detected
2-Hexanone	4.2	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-25.5-102721

Lab ID#: 2110676A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110410**	**Date of Collection: 10/27/21 10:28:00 A**	
Dil. Factor:	**2.11**	**Date of Analysis: 11/4/21 05:15 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.0	Not Detected	9.0	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	8.1	Not Detected
Chlorobenzene	1.0	Not Detected	4.8	Not Detected
Ethyl Benzene	1.0	Not Detected	4.6	Not Detected
m,p-Xylene	1.0	Not Detected	4.6	Not Detected
o-Xylene	1.0	Not Detected	4.6	Not Detected
Styrene	1.0	Not Detected	4.5	Not Detected
Bromoform	1.0	Not Detected	11	Not Detected
Cumene	1.0	Not Detected	5.2	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected	7.2	Not Detected
Propylbenzene	1.0	Not Detected	5.2	Not Detected
4-Ethyltoluene	1.0	Not Detected	5.2	Not Detected
1,3,5-Trimethylbenzene	1.0	Not Detected	5.2	Not Detected
1,2,4-Trimethylbenzene	1.0	Not Detected	5.2	Not Detected
1,3-Dichlorobenzene	1.0	Not Detected	6.3	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected	6.3	Not Detected
alpha-Chlorotoluene	1.0	Not Detected	5.5	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected	6.3	Not Detected
1,2,4-Trichlorobenzene	4.2	Not Detected	31	Not Detected
Hexachlorobutadiene	4.2	Not Detected	45	Not Detected
Butane	4.2	Not Detected	10	Not Detected
Isopentane	4.2	Not Detected	12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: VMP-55-20-102721

Lab ID#: 2110676A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14110330**	**Date of Collection:**	**10/27/21 11:19:00 A**
Dil. Factor:	**72.7**	**Date of Analysis:**	**11/3/21 08:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	360	Not Detected	1800	Not Detected
Freon 114	360	Not Detected	2500	Not Detected
Chloromethane	1400	Not Detected	3000	Not Detected
Vinyl Chloride	360	Not Detected	930	Not Detected
1,3-Butadiene	360	Not Detected	800	Not Detected
Bromomethane	1400	Not Detected	5600	Not Detected
Chloroethane	1400	Not Detected	3800	Not Detected
Freon 11	360	Not Detected	2000	Not Detected
Ethanol	1400	Not Detected	2700	Not Detected
Freon 113	360	Not Detected	2800	Not Detected
1,1-Dichloroethene	360	Not Detected	1400	Not Detected
Acetone	1400	Not Detected	3400	Not Detected
2-Propanol	1400	Not Detected	3600	Not Detected
Carbon Disulfide	1400	Not Detected	4500	Not Detected
3-Chloropropene	1400	Not Detected	4600	Not Detected
Methylene Chloride	1400	Not Detected	5000	Not Detected
Methyl tert-butyl ether	360	Not Detected	1300	Not Detected
trans-1,2-Dichloroethene	360	Not Detected	1400	Not Detected
Hexane	360	8500	1300	30000
1,1-Dichloroethane	360	Not Detected	1500	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1400	Not Detected	4300	Not Detected
cis-1,2-Dichloroethene	360	Not Detected	1400	Not Detected
Tetrahydrofuran	360	Not Detected	1100	Not Detected
Chloroform	360	Not Detected	1800	Not Detected
1,1,1-Trichloroethane	360	Not Detected	2000	Not Detected
Cyclohexane	360	30000	1200	100000
Carbon Tetrachloride	360	Not Detected	2300	Not Detected
2,2,4-Trimethylpentane	360	81000	1700	380000
Benzene	360	Not Detected	1200	Not Detected
1,2-Dichloroethane	360	Not Detected	1500	Not Detected
Heptane	360	Not Detected	1500	Not Detected
Trichloroethene	360	Not Detected	2000	Not Detected
1,2-Dichloropropane	360	Not Detected	1700	Not Detected
1,4-Dioxane	1400	Not Detected	5200	Not Detected
Bromodichloromethane	360	Not Detected	2400	Not Detected
cis-1,3-Dichloropropene	360	Not Detected	1600	Not Detected
4-Methyl-2-pentanone	360	Not Detected	1500	Not Detected
Toluene	360	Not Detected	1400	Not Detected
trans-1,3-Dichloropropene	360	Not Detected	1600	Not Detected
1,1,2-Trichloroethane	360	Not Detected	2000	Not Detected
Tetrachloroethene	360	140 J	2500	960 J
2-Hexanone	1400	Not Detected	6000	Not Detected

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Client Sample ID: VMP-55-20-102721

Lab ID#: 2110676A-04A

EPA METHOD TO-15 GC/MS

File Name:	**14110330**	**Date of Collection:**	**10/27/21 11:19:00 A**
Dil. Factor:	**72.7**	**Date of Analysis:**	**11/3/21 08:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	360	Not Detected	3100	Not Detected
1,2-Dibromoethane (EDB)	360	Not Detected	2800	Not Detected
Chlorobenzene	360	Not Detected	1700	Not Detected
Ethyl Benzene	360	Not Detected	1600	Not Detected
m,p-Xylene	360	Not Detected	1600	Not Detected
o-Xylene	360	Not Detected	1600	Not Detected
Styrene	360	Not Detected	1500	Not Detected
Bromoform	360	Not Detected	3800	Not Detected
Cumene	360	Not Detected	1800	Not Detected
1,1,2,2-Tetrachloroethane	360	Not Detected	2500	Not Detected
Propylbenzene	360	Not Detected	1800	Not Detected
4-Ethyltoluene	360	Not Detected	1800	Not Detected
1,3,5-Trimethylbenzene	360	Not Detected	1800	Not Detected
1,2,4-Trimethylbenzene	360	Not Detected	1800	Not Detected
1,3-Dichlorobenzene	360	Not Detected	2200	Not Detected
1,4-Dichlorobenzene	360	Not Detected	2200	Not Detected
alpha-Chlorotoluene	360	Not Detected	1900	Not Detected
1,2-Dichlorobenzene	360	Not Detected	2200	Not Detected
1,2,4-Trichlorobenzene	1400	Not Detected	11000	Not Detected
Hexachlorobutadiene	1400	Not Detected	16000	Not Detected
Butane	1400	130000	3400	310000
Isopentane	1400	610000	4300	1800000

J = Estimated value.
Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.
Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	134 Q	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2110676A-05A

EPA METHOD TO-15 GC/MS

File Name:	**14110305f**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 10:15 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	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

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Client Sample ID: Lab Blank

Lab ID#: 2110676A-05A

EPA METHOD TO-15 GC/MS

File Name:	**14110305f**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 10:15 AM**	

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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2110676A-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110405a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 12:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	5.0	Not Detected	9.4	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	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2110676A-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110405a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 12:36 PM**	

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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: CCV
Lab ID#: 2110676A-06A
EPA METHOD TO-15 GC/MS

File Name:	**14110302**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 08:34 AM**

Compound	%Recovery
Freon 12	102
Freon 114	94
Chloromethane	80
Vinyl Chloride	89
1,3-Butadiene	83
Bromomethane	89
Chloroethane	88
Freon 11	104
Ethanol	92
Freon 113	101
1,1-Dichloroethene	101
Acetone	93
2-Propanol	91
Carbon Disulfide	92
3-Chloropropene	93
Methylene Chloride	95
Methyl tert-butyl ether	108
trans-1,2-Dichloroethene	96
Hexane	88
1,1-Dichloroethane	96
2-Butanone (Methyl Ethyl Ketone)	93
cis-1,2-Dichloroethene	93
Tetrahydrofuran	91
Chloroform	96
1,1,1-Trichloroethane	100
Cyclohexane	91
Carbon Tetrachloride	105
2,2,4-Trimethylpentane	90
Benzene	93
1,2-Dichloroethane	110
Heptane	98
Trichloroethene	94
1,2-Dichloropropane	92
1,4-Dioxane	103
Bromodichloromethane	99
cis-1,3-Dichloropropene	98
4-Methyl-2-pentanone	99
Toluene	93
trans-1,3-Dichloropropene	110
1,1,2-Trichloroethane	95
Tetrachloroethene	102
2-Hexanone	93

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Client Sample ID: CCV
Lab ID#: 2110676A-06A
EPA METHOD TO-15 GC/MS

File Name:	**14110302**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 08:34 AM**

Compound	%Recovery
Dibromochloromethane	103
1,2-Dibromoethane (EDB)	99
Chlorobenzene	98
Ethyl Benzene	97
m,p-Xylene	104
o-Xylene	96
Styrene	103
Bromoform	102
Cumene	105
1,1,2,2-Tetrachloroethane	94
Propylbenzene	104
4-Ethyltoluene	106
1,3,5-Trimethylbenzene	113
1,2,4-Trimethylbenzene	105
1,3-Dichlorobenzene	106
1,4-Dichlorobenzene	110
alpha-Chlorotoluene	112
1,2-Dichlorobenzene	109
1,2,4-Trichlorobenzene	118
Hexachlorobutadiene	126
Butane	95
Isopentane	88

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: CCV

Lab ID#: 2110676A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110402**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 09:49 AM**

Compound	%Recovery
Freon 12	95
Freon 114	95
Chloromethane	102
Vinyl Chloride	91
1,3-Butadiene	85
Bromomethane	99
Chloroethane	90
Freon 11	103
Ethanol	94
Freon 113	102
1,1-Dichloroethene	97
Acetone	96
2-Propanol	95
Carbon Disulfide	103
3-Chloropropene	92
Methylene Chloride	98
Methyl tert-butyl ether	99
trans-1,2-Dichloroethene	101
Hexane	94
1,1-Dichloroethane	96
2-Butanone (Methyl Ethyl Ketone)	101
cis-1,2-Dichloroethene	103
Tetrahydrofuran	92
Chloroform	98
1,1,1-Trichloroethane	98
Cyclohexane	100
Carbon Tetrachloride	101
2,2,4-Trimethylpentane	105
Benzene	100
1,2-Dichloroethane	97
Heptane	104
Trichloroethene	99
1,2-Dichloropropane	80
1,4-Dioxane	89
Bromodichloromethane	94
cis-1,3-Dichloropropene	91
4-Methyl-2-pentanone	92
Toluene	97
trans-1,3-Dichloropropene	109
1,1,2-Trichloroethane	110
Tetrachloroethene	115
2-Hexanone	112

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Client Sample ID: CCV

Lab ID#: 2110676A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 09:49 AM**	

Compound	%Recovery
Dibromochloromethane	114
1,2-Dibromoethane (EDB)	112
Chlorobenzene	106
Ethyl Benzene	111
m,p-Xylene	114
o-Xylene	113
Styrene	121
Bromoform	109
Cumene	110
1,1,2,2-Tetrachloroethane	104
Propylbenzene	111
4-Ethyltoluene	121
1,3,5-Trimethylbenzene	120
1,2,4-Trimethylbenzene	115
1,3-Dichlorobenzene	111
1,4-Dichlorobenzene	99
alpha-Chlorotoluene	105
1,2-Dichlorobenzene	103
1,2,4-Trichlorobenzene	74
Hexachlorobutadiene	82
Butane	96
Isopentane	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 2110676A-07A

EPA METHOD TO-15 GC/MS

File Name:	**14110303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 09:26 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	99	70-130
Chloromethane	80	70-130
Vinyl Chloride	90	70-130
1,3-Butadiene	87	70-130
Bromomethane	85	70-130
Chloroethane	88	70-130
Freon 11	110	70-130
Ethanol	82	70-130
Freon 113	103	70-130
1,1-Dichloroethene	104	70-130
Acetone	93	70-130
2-Propanol	97	70-130
Carbon Disulfide	94	70-130
3-Chloropropene	96	70-130
Methylene Chloride	96	70-130
Methyl tert-butyl ether	93	70-130
trans-1,2-Dichloroethene	97	70-130
Hexane	92	70-130
1,1-Dichloroethane	97	70-130
2-Butanone (Methyl Ethyl Ketone)	94	70-130
cis-1,2-Dichloroethene	96	70-130
Tetrahydrofuran	97	70-130
Chloroform	100	70-130
1,1,1-Trichloroethane	105	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	107	70-130
2,2,4-Trimethylpentane	92	70-130
Benzene	96	70-130
1,2-Dichloroethane	107	70-130
Heptane	99	70-130
Trichloroethene	96	70-130
1,2-Dichloropropane	93	70-130
1,4-Dioxane	105	70-130
Bromodichloromethane	99	70-130
cis-1,3-Dichloropropene	101	70-130
4-Methyl-2-pentanone	98	70-130
Toluene	93	70-130
trans-1,3-Dichloropropene	104	70-130
1,1,2-Trichloroethane	96	70-130
Tetrachloroethene	101	70-130
2-Hexanone	94	70-130

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Client Sample ID: LCS

Lab ID#: 2110676A-07A

EPA METHOD TO-15 GC/MS

File Name:	**14110303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 09:26 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	104	70-130
1,2-Dibromoethane (EDB)	102	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	108	70-130
o-Xylene	97	70-130
Styrene	105	70-130
Bromoform	105	70-130
Cumene	105	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	105	70-130
1,3,5-Trimethylbenzene	114	70-130
1,2,4-Trimethylbenzene	110	70-130
1,3-Dichlorobenzene	106	70-130
1,4-Dichlorobenzene	110	70-130
alpha-Chlorotoluene	113	70-130
1,2-Dichlorobenzene	109	70-130
1,2,4-Trichlorobenzene	135 Q	70-130
Hexachlorobutadiene	142 Q	70-130
Butane	96	60-140
Isopentane	93	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 2110676A-07AA

EPA METHOD TO-15 GC/MS

File Name:	**14110304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 09:50 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	98	70-130
Chloromethane	79	70-130
Vinyl Chloride	88	70-130
1,3-Butadiene	82	70-130
Bromomethane	88	70-130
Chloroethane	91	70-130
Freon 11	107	70-130
Ethanol	76	70-130
Freon 113	99	70-130
1,1-Dichloroethene	104	70-130
Acetone	92	70-130
2-Propanol	98	70-130
Carbon Disulfide	91	70-130
3-Chloropropene	93	70-130
Methylene Chloride	93	70-130
Methyl tert-butyl ether	109	70-130
trans-1,2-Dichloroethene	96	70-130
Hexane	94	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	94	70-130
cis-1,2-Dichloroethene	94	70-130
Tetrahydrofuran	94	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	103	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	105	70-130
2,2,4-Trimethylpentane	92	70-130
Benzene	98	70-130
1,2-Dichloroethane	111	70-130
Heptane	98	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	93	70-130
1,4-Dioxane	109	70-130
Bromodichloromethane	101	70-130
cis-1,3-Dichloropropene	102	70-130
4-Methyl-2-pentanone	108	70-130
Toluene	94	70-130
trans-1,3-Dichloropropene	113	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	102	70-130
2-Hexanone	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2110676A-07AA

EPA METHOD TO-15 GC/MS

File Name:	**14110304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/3/21 09:50 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	105	70-130
1,2-Dibromoethane (EDB)	102	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	108	70-130
o-Xylene	100	70-130
Styrene	108	70-130
Bromoform	104	70-130
Cumene	107	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Propylbenzene	107	70-130
4-Ethyltoluene	109	70-130
1,3,5-Trimethylbenzene	118	70-130
1,2,4-Trimethylbenzene	113	70-130
1,3-Dichlorobenzene	109	70-130
1,4-Dichlorobenzene	108	70-130
alpha-Chlorotoluene	123	70-130
1,2-Dichlorobenzene	111	70-130
1,2,4-Trichlorobenzene	136 Q	70-130
Hexachlorobutadiene	140 Q	70-130
Butane	93	60-140
Isopentane	90	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCS

Lab ID#: 2110676A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 10:20 AM**	

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Freon 114	101	70-130
Chloromethane	104	70-130
Vinyl Chloride	96	70-130
1,3-Butadiene	87	70-130
Bromomethane	104	70-130
Chloroethane	91	70-130
Freon 11	107	70-130
Ethanol	84	70-130
Freon 113	106	70-130
1,1-Dichloroethene	102	70-130
Acetone	99	70-130
2-Propanol	102	70-130
Carbon Disulfide	106	70-130
3-Chloropropene	98	70-130
Methylene Chloride	100	70-130
Methyl tert-butyl ether	104	70-130
trans-1,2-Dichloroethene	108	70-130
Hexane	99	70-130
1,1-Dichloroethane	99	70-130
2-Butanone (Methyl Ethyl Ketone)	102	70-130
cis-1,2-Dichloroethene	104	70-130
Tetrahydrofuran	98	70-130
Chloroform	102	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	104	70-130
Carbon Tetrachloride	104	70-130
2,2,4-Trimethylpentane	108	70-130
Benzene	102	70-130
1,2-Dichloroethane	95	70-130
Heptane	105	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	101	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	93	70-130
4-Methyl-2-pentanone	94	70-130
Toluene	98	70-130
trans-1,3-Dichloropropene	113	70-130
1,1,2-Trichloroethane	110	70-130
Tetrachloroethene	114	70-130
2-Hexanone	109	70-130

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Client Sample ID: LCS

Lab ID#: 2110676A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 10:20 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	113	70-130
1,2-Dibromoethane (EDB)	114	70-130
Chlorobenzene	107	70-130
Ethyl Benzene	114	70-130
m,p-Xylene	117	70-130
o-Xylene	112	70-130
Styrene	120	70-130
Bromoform	110	70-130
Cumene	110	70-130
1,1,2,2-Tetrachloroethane	105	70-130
Propylbenzene	114	70-130
4-Ethyltoluene	123	70-130
1,3,5-Trimethylbenzene	120	70-130
1,2,4-Trimethylbenzene	121	70-130
1,3-Dichlorobenzene	114	70-130
1,4-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	112	70-130
1,2-Dichlorobenzene	108	70-130
1,2,4-Trichlorobenzene	119	70-130
Hexachlorobutadiene	124	70-130
Butane	98	60-140
Isopentane	100	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2110676A-07BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 10:51 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	99	70-130
Chloromethane	102	70-130
Vinyl Chloride	94	70-130
1,3-Butadiene	87	70-130
Bromomethane	101	70-130
Chloroethane	94	70-130
Freon 11	106	70-130
Ethanol	84	70-130
Freon 113	104	70-130
1,1-Dichloroethene	100	70-130
Acetone	100	70-130
2-Propanol	101	70-130
Carbon Disulfide	102	70-130
3-Chloropropene	97	70-130
Methylene Chloride	100	70-130
Methyl tert-butyl ether	104	70-130
trans-1,2-Dichloroethene	106	70-130
Hexane	99	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	104	70-130
cis-1,2-Dichloroethene	106	70-130
Tetrahydrofuran	97	70-130
Chloroform	100	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	104	70-130
Carbon Tetrachloride	103	70-130
2,2,4-Trimethylpentane	106	70-130
Benzene	103	70-130
1,2-Dichloroethane	97	70-130
Heptane	108	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	95	70-130
1,4-Dioxane	102	70-130
Bromodichloromethane	107	70-130
cis-1,3-Dichloropropene	96	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	99	70-130
trans-1,3-Dichloropropene	112	70-130
1,1,2-Trichloroethane	109	70-130
Tetrachloroethene	113	70-130
2-Hexanone	109	70-130

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Client Sample ID: LCSD

Lab ID#: 2110676A-07BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j110404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/4/21 10:51 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	112	70-130
1,2-Dibromoethane (EDB)	113	70-130
Chlorobenzene	107	70-130
Ethyl Benzene	115	70-130
m,p-Xylene	115	70-130
o-Xylene	112	70-130
Styrene	118	70-130
Bromoform	110	70-130
Cumene	111	70-130
1,1,2,2-Tetrachloroethane	103	70-130
Propylbenzene	112	70-130
4-Ethyltoluene	122	70-130
1,3,5-Trimethylbenzene	118	70-130
1,2,4-Trimethylbenzene	121	70-130
1,3-Dichlorobenzene	114	70-130
1,4-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	112	70-130
1,2-Dichlorobenzene	114	70-130
1,2,4-Trichlorobenzene	124	70-130
Hexachlorobutadiene	130	70-130
Butane	94	60-140
Isopentane	98	60-140

Container Type: NA - Not Applicable

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

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11/10/2021
Ms. Elizabeth Kunkel
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60648474-4.2.4F
Workorder #: 2110676B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 10/28/2021 at Eurofins Air Toxics LLC.

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 LLC. 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 #: 2110676B

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. #**	132530
FAX:		**PROJECT #**	60648474-4.2.4F Roxana Quarterly Soil Vapor
DATE RECEIVED:	10/28/2021	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	11/10/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-15-5-102721	Modified ASTM D-1946	5.5 "Hg	10.1 psi
02A	VMP-15-21.5-102721	Modified ASTM D-1946	6.5 "Hg	9.9 psi
03A	VMP-15-25.5-102721	Modified ASTM D-1946	6.1 "Hg	10 psi
04A	VMP-55-20-102721	Modified ASTM D-1946	6.9 "Hg	9.9 psi
05A	Lab Blank	Modified ASTM D-1946	NA	NA
05B	Lab Blank	Modified ASTM D-1946	NA	NA
06A	CCV	Modified ASTM D-1946	NA	NA
07A	LCS	Modified ASTM D-1946	NA	NA
07AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 11/10/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2110676B

Four 1 Liter Summa Canister samples were received on October 28, 2021. 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 EATL 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 requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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

Client Sample ID: VMP-15-5-102721

Lab ID#: 2110676B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	16
Nitrogen	0.21	80
Carbon Dioxide	0.021	3.7
Helium	0.10	0.017 J

Client Sample ID: VMP-15-21.5-102721

Lab ID#: 2110676B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.36	4.1
Nitrogen	0.36	82
Carbon Dioxide	0.036	14
Helium	0.18	0.0088 J

Client Sample ID: VMP-15-25.5-102721

Lab ID#: 2110676B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	2.7
Nitrogen	0.21	81
Carbon Dioxide	0.021	16

Client Sample ID: VMP-55-20-102721

Lab ID#: 2110676B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.4
Nitrogen	0.22	67
Methane	0.00022	14
Carbon Dioxide	0.022	17
Ethane	0.0022	0.0050
Helium	0.11	0.030 J

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Client Sample ID: VMP-15-5-102721

Lab ID#: 2110676B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110842**	**Date of Collection: 10/27/21 9:58:00 AM**	
Dil. Factor:	**2.07**	**Date of Analysis: 11/8/21 10:39 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Oxygen	0.21	16
Nitrogen	0.21	80
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	Not Detected
Carbon Dioxide	0.021	3.7
Ethane	0.0021	Not Detected
Ethene	0.0021	Not Detected
Helium	0.10	0.017 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-102721

Lab ID#: 2110676B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110843**	**Date of Collection: 10/27/21 10:12:00 A**	
Dil. Factor:	**3.62**	**Date of Analysis: 11/9/21 06:49 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.36	4.1
Nitrogen	0.36	82
Carbon Monoxide	0.036	Not Detected
Methane	0.00036	Not Detected
Carbon Dioxide	0.036	14
Ethane	0.0036	Not Detected
Ethene	0.0036	Not Detected
Helium	0.18	0.0088 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-102721

Lab ID#: 2110676B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110844**	**Date of Collection:**	**10/27/21 10:28:00 A**
Dil. Factor:	**2.11**	**Date of Analysis:**	**11/9/21 07:11 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	2.7
Nitrogen	0.21	81
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	Not Detected
Carbon Dioxide	0.021	16
Ethane	0.0021	Not Detected
Ethene	0.0021	Not Detected
Helium	0.10	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-20-102721

Lab ID#: 2110676B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110845**	**Date of Collection:**	**10/27/21 11:19:00 A**
Dil. Factor:	**2.18**	**Date of Analysis:**	**11/9/21 07:35 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.4
Nitrogen	0.22	67
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	14
Carbon Dioxide	0.022	17
Ethane	0.0022	0.0050
Ethene	0.0022	Not Detected
Helium	0.11	0.030 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2110676B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110828**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/8/21 05:36 PM**	

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

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Client Sample ID: Lab Blank

Lab ID#: 2110676B-05B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110829c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/8/21 06:00 PM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 2110676B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110825**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/8/21 04:23 PM**

Compound	%Recovery
Oxygen	96
Nitrogen	92
Carbon Monoxide	90
Methane	98
Carbon Dioxide	104
Ethane	101
Ethene	101
Helium	100

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2110676B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110826**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/8/21 04:47 PM**	

Compound	%Recovery	Method Limits
Oxygen	96	85-115
Nitrogen	93	85-115
Carbon Monoxide	86	85-115
Methane	99	85-115
Carbon Dioxide	103	85-115
Ethane	101	85-115
Ethene	99	85-115
Helium	112	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2110676B-07AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10110852**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/9/21 12:05 PM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	93	85-115
Carbon Monoxide	87	85-115
Methane	97	85-115
Carbon Dioxide	104	85-115
Ethane	99	85-115
Ethene	97	85-115
Helium	112	85-115

Container Type: NA - Not Applicable