QUARTERLY REPORT:

SAMPLING & ANALYSIS OF VOLATILE ORGANIC COMPOUNDS IN AIR AT FIVE LOCATIONS

January 3, 2020 through March 26, 2020

Prepared for:

Bridgeton Landfill, LLC
Bridgeton, Missouri

May 15, 2020

Prepared by:

Engineering for a Better World
FEEZOR ENGINEERING, INC.

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LIST OF ACRONYMS

C&D – Construction and Demolition Waste
COC – Chain of Custody
^{o} F – degrees Fahrenheit
FEI – Feezor Engineering, Inc.
IRIS – Integrated Risk Information System
MDL – Method Detection Limit
MDNR – Missouri Department of Natural Resources
MEK – Methyl Ethyl Ketone
MPH – Miles Per Hour
MSW – Municipal Solid Waste
OU – Operable Unit
RfC – Reference Concentration-Inhalation
RL – Reporting Limit
ug/m^3 – micrograms per cubic meter
USEPA – United States Environmental Protection Agency
VOC – Volatile Organic Compound

1.0 INTRODUCTION

This Quarterly Report describes the results of air monitoring for concentrations of volatile organic compounds (VOCs) at five locations on the Bridgeton Landfill property in Bridgeton, Missouri (**Figure 1**). This report provides a summary of sampling and analytical activities for samples deployed during the 3-month period from January 3, 2020 through March 26, 2020. Sampling of air for VOCs is accomplished using passive absorption and laboratory carbon disulfide desorption of compounds collected on small cartridges of activated charcoal. Each cartridge utilizes a cylinder of stainless steel mesh to contain the charcoal and a diffusive body to house the cylinder.

Samples are collected (and new cartridges deployed) on an approximate 14-day frequency from five (5) locations (**Figure 2**). A duplicate sample, deployed at a different sampling location on a rotating basis, is collected during each sampling event and submitted for analyses. A trip blank sample accompanies each shipment of cartridges to the laboratory. During the period covered by this report, six (6) sample collection events were performed and a total of 42 cartridges were analyzed for the compounds listed in Section 1.3.

1.1 Site Description

The closed Bridgeton Landfill is located at 13570 St. Charles Rock Road in Bridgeton, Missouri, approximately one mile north of the intersection of Interstates 70 and 270. Municipal solid waste (MSW), construction and demolition wastes (C&D) and industrial wastes were disposed at various portions of the landfill property from the early 1950s until December 31, 2004. The facility includes two closed quarry-fill areas (North Quarry and South Quarry), a closed C&D landfill unit, two closed areas (Area 1 and Area 2) that comprise the West Lake Landfill, and an inactive sanitary landfill. The West Lake Landfill areas encompass Operable Unit 1 (OU-1) at the facility, while the remaining areas collectively comprise Operable Unit 2 (OU-2). The groundwater regime underlying OU-1 and OU-2 has been designated Operable Unit 3 (OU-3).

Land use surrounding Bridgeton Landfill is primarily commercial and industrial. Residential areas in the vicinity of the landfill include the Terrisan Reste mobile home park to the southeast and the Spanish Village residential subdivision located to the south near the intersection of St. Charles Rock Road and I-270.

1.2 Program Background

Bridgeton Landfill accepted both MSW and C&D waste for disposal during its operating period. VOC monitoring was initiated in May 2015 as part of a perimeter air monitoring program developed and implemented in accordance with USEPA's Record of Decision regarding cleanup of OU-1 (West Lake Landfill). On August 15, 2019, USEPA approved a requested suspension of VOC monitoring activities at the facility (USEPA, 2019). However, pursuant to a Final Consent Judgment entered into between the Missouri Department of Natural Resources (MDNR) and Bridgeton Landfill, LLC on June 29, 2018, sampling for VOC's on the Bridgeton Landfill property will continue, and will be performed in accordance with the USEPA-approved plan (MDNR, 2018). The USEPA-approved plan requires bi-weekly sample collection/deployment of passive VOC samplers from five (5) locations (**Figure 2**) and quarterly reporting to MDNR. This report represents the second submittal to the state agency since USEPA's approval to suspend West Lake Landfill VOC monitoring.

1.3 Constituents of Concern

The constituents of concern for the VOC Sampling and Analyses program at Bridgeton Landfill is comprised of the following analytes:

Ethanol	1,1,1-Trichloroethane	Trichloroethene	m,p-Xylene
Methyl tert-butyl Ether	Cyclohexane	4-Methyl-2-Pentanone	o-Xylene
Hexane	Carbon Tetrachloride	Toluene	Styrene
Ethyl Acetate	Benzene	Tetrachloroethene	Propylbenzene
2-Butanone (MEK)	1,2-Dichloroethane	Chlorobenzene	1,4-Dichlorobenzene
Chloroform	Heptane	Ethyl Benzene	Naphthalene

This list was revised by the laboratory in 2019 and reflects common VOCs for which sampling rates have been calculated for the passive sampling media (Radiello 130).

2.0 AIR MONITORING APPROACH AND SAMPLING METHOD

An integrated system of thirteen (13) air monitoring stations has been installed around the Bridgeton Landfill/West Lake Landfill property. Twelve of these stations are located around the perimeters of the OU-1 areas. The thirteenth station is located near the southeast corner of the South Quarry of Bridgeton Landfill. These locations were selected to ensure that the air monitoring network encompassed the entirety of OU-1 and included the main entry to the property and the access road through the center of the property. **Figure 2** depicts the locations of the air monitoring stations. As previously noted, five of the thirteen stations (#1, #5, #7, #8, and #12) are equipped with passive VOC samplers.

An on-site meteorological station measures and logs air temperature (^{o}F), barometric pressure (inches water), wind speed (mph) and wind direction (degrees), precipitation rate, and total daily precipitation (inches). The station is located adjacent to the landfill office building at 13570 St. Charles Rock Road.

The air sampling locations near the center of the property are arranged in a broad line generally oriented southeast to northwest, parallel to predominant wind directions. Other stations are located transverse to this orientation, parallel to the less dominant southwest and northeast wind directions. As shown in **Figure 3**, the predominant wind direction during the monitoring period of this report was from the northwest, and to a lesser extent from the southeast. Wind roses for each of the six (6) sampling periods that make up the monitoring period for this report are presented in **Figures 3a** and **3b**. Passive VOC samplers (and other air monitoring equipment) for the five stations so equipped are mounted under protective hoods to keep them out of direct sunlight and precipitation. Information regarding daily precipitation events that occurred during the monitoring period of this report is depicted on **Figure 4**.

2.1 Sample Collection, Shipment, and Analyses

Sampling of VOCs at the five stations so equipped is performed using the Radiello 130 chemical adsorbing cartridge diffusion samplers, left in place to be collected every fourteen (14) days (with a new cartridge deployed after collection of each "used" one). Each Radiello 130 cartridge consists of a stainless steel mesh cylinder packed with activated charcoal. The cylinder is housed in a white diffusive body that is threaded onto a triangular plate and mounted under a protective hood. Ambient air passes through the white diffusive

body and the activated charcoal cylinder inside it for approximately two weeks, at which point the diffusive body is unthreaded from the plate and the cartridge is collected into a stoppered glass tube. Unique identifier labels that include the date and time of sample deployment and collection are affixed to the glass tubes. After all the samples have been collected during an event, the labeled sample tubes are weighed individually, packaged together in a padded envelope and small sealed box, and shipped to the laboratory under chain-of-custody (COC) procedures. Each COC includes the sampler's name/signature, a list of the stations sampled, information from the unique identifier labels affixed to the glass tubes, and the air temperature at the time each sample was collected. On a rotating basis, a field duplicate sampler is mounted at one of the five stations; the duplicate is deployed and collected at the same date/time as that station's routine sample, and is included on the COC for that event. A trip blank cartridge, left in its glass tube and not deployed in the field, is also included on each COC and accompanies the samples to the laboratory. **Appendix 1** includes the COCs and shipping documents generated for the VOC sampling events performed during the monitoring period of this report.

Following receipt by the laboratory, VOCs in the air that passed through a given cartridge and were adsorbed onto the activated charcoal contained in it are recovered by carbon disulfide displacement. Gas chromatography/mass spectrometry are used to identify and quantify, if present in the sample extract above detection limits, any of the compounds listed in Section 1.3 of this report. **Table 1** lists the reporting limit (RL) applicable to each of the noted compounds detected during the monitoring period.

2.2 Data Management, Validation, and Quality Assessment

The laboratory performing VOC analyses (Eurofins Air Toxics, Inc.) supplies Level IV data packages with all analytical results to Feezor Engineering, Inc. (FEI). Level IV data packages are comprehensive reports that include analytical results, duplicate summaries, recovery information, performance checks, calibration data, and other information that allows for evaluations of data usability. The laboratory also supplies analytical results in an electronic spreadsheet to FEI.

The primary goal of data verification and validation is to ensure that decisions are supported by data of the type and quality needed and expected for the intended use. Data verification is the process of evaluating the completeness, correctness, and consistency of a laboratory package or final data to assure that laboratory conditions and operations are compliant with project plan documents. Data validation addresses the reliability of the data. VOC results are evaluated to determine the presence or absence of an analyte and the uncertainty of the measurement process for constituents of concern. Scientific and statistical evaluation of the data may be required to determine if the quality of the data can support its intended use. FEI generated data validation summary reports for the analytical results associated with the VOC sampling events performed during the monitoring period for this report (**Appendix 3**).

3.0 SUMMARY OF RESULTS

The monitoring period for this report included six (6) sample collection/deployment events that took place between January 16, 2020 and March 26, 2020 on an approximate two-week cycle. There were no off-normal/special VOC sampling events during the monitoring period. The following information summarizes field conditions during each of the six events:

Event Date	Avg Temp at Collection	Peak Wind Direction During Sampling Period
January 16, 2020	25.2 ºF	Northwest (**Fig 3a**)
January 30, 2020	35.6 ºF	Northwest (**Fig 3a**)
February 14, 2020	10.0 ºF	Northwest (**Fig 3a**)
February 27, 2020	39.2 ºF	North (**Fig 3b**)
March 12, 2020	53.4 ºF	Northwest (**Fig 3b**)
March 26, 2020	55.8 ºF	East (**Fig 3b**)

Changes to the air monitoring program following its approval by USEPA have occurred since the initiation of VOC sampling. Prior to August 2015, Eurofins Air Toxics, Inc. reported twenty-six (26) VOCs for Radiello 130 sample analysis. The laboratory issued a request to discontinue reporting 2-propanol (rubbing alcohol) from the Radiello 130 reporting list; USEPA approved the request via email on August 11, 2015. Also, in accordance with a USEPA suggestion of October 16, 2015, VOC sampling was moved from Station #11 to Station #12 (Auxier, 2019). Finally, on August 28, 2019 the laboratory informed FEI that acetone (a common lab contaminant) was removed from its Radiello 130 list of VOC analytes due to challenges with performance and recovery on its analytical instrumentation.

Table 1 provides a tabulation of the results obtained during analyses of the samples collected during the monitoring period for this report. In addition, the table includes a statistical summary of VOC concentrations detected above their reporting limits in analyses performed on samples deployed and collected since May 1, 2015, inclusive of results from the six (6) events described in this report. Values in **Table 1** are presented in $\mu g/m^3$, and the statistical summary reflects the range of "detected" values only. The analytical reports from Eurofins Air Toxics, Inc. are included in **Appendix 2**.

USEPA performed off-site sampling for VOCs using passive samplers from December 2014 to March 2015. The following table presents comparisons of the results (for compounds that were analyzed/detected by both programs) obtained from the five on-site VOC sampling stations during the monitoring period for this report to the results obtained from USEPA's off-site monitoring program. Concentrations are reported in ug/m^3. The on-site results are similar to those obtained by USEPA from the off-site monitoring locations. For all analytes but one (tetrachloroethene), the maximum concentrations of the VOCs detected on-site during the period January 3, 2020 through March 26, 2020 were below those detected during 2014-2015 USEPA sampling. The on-site tetrachloroethene concentration of 0.48 ug/m^3 detected during the monitoring period represents a maximum value; it does not represent a regulatory exceedance. The RfC for tetrachloroethene is 40 ug/m^3, a value provided by USEPA's Integrated Risk Information System (IRIS) that represents an estimated concentration likely to be without an appreciable risk of deleterious effects during a person's lifetime of continuous inhalation exposure.

VOC	USEPA Off-Site Conc. Range	USEPA MDL[1]	On-Site Conc. Range 1/3/20-3/26/20	On-Site RL Range 1/3/20-3/26/20
Benzene	0.41-0.70	0.05-1.0	0.37-0.65 ug/m^3	0.26-0.32 ug/m^3
Ethyl Benzene	0.13-0.37	0.05-1.0	0.083-0.19 ug/m^3	0.077-0.093 ug/m^3
m,p-Xylene	0.32-1.10	0.05-1.0	0.17-0.56 ug/m^3	0.075-0.090 ug/m^3
o-Xylene	0.12-0.39	0.05-1.0	0.087-0.21 ug/m^3	0.080-0.097 ug/m^3
Toluene	1.1-1.2	0.05-1.0	0.41-1.0 ug/m^3	0.071-0.085 ug/m^3
Tetrachloroethene	0.084-0.460	0.05-1.0	0.098-0.48 ug/m^3	0.090-0.11 ug/m^3

[1] Method Detection Limit of TO-15 for 7-day Radiello exposures (FEI, 2020)

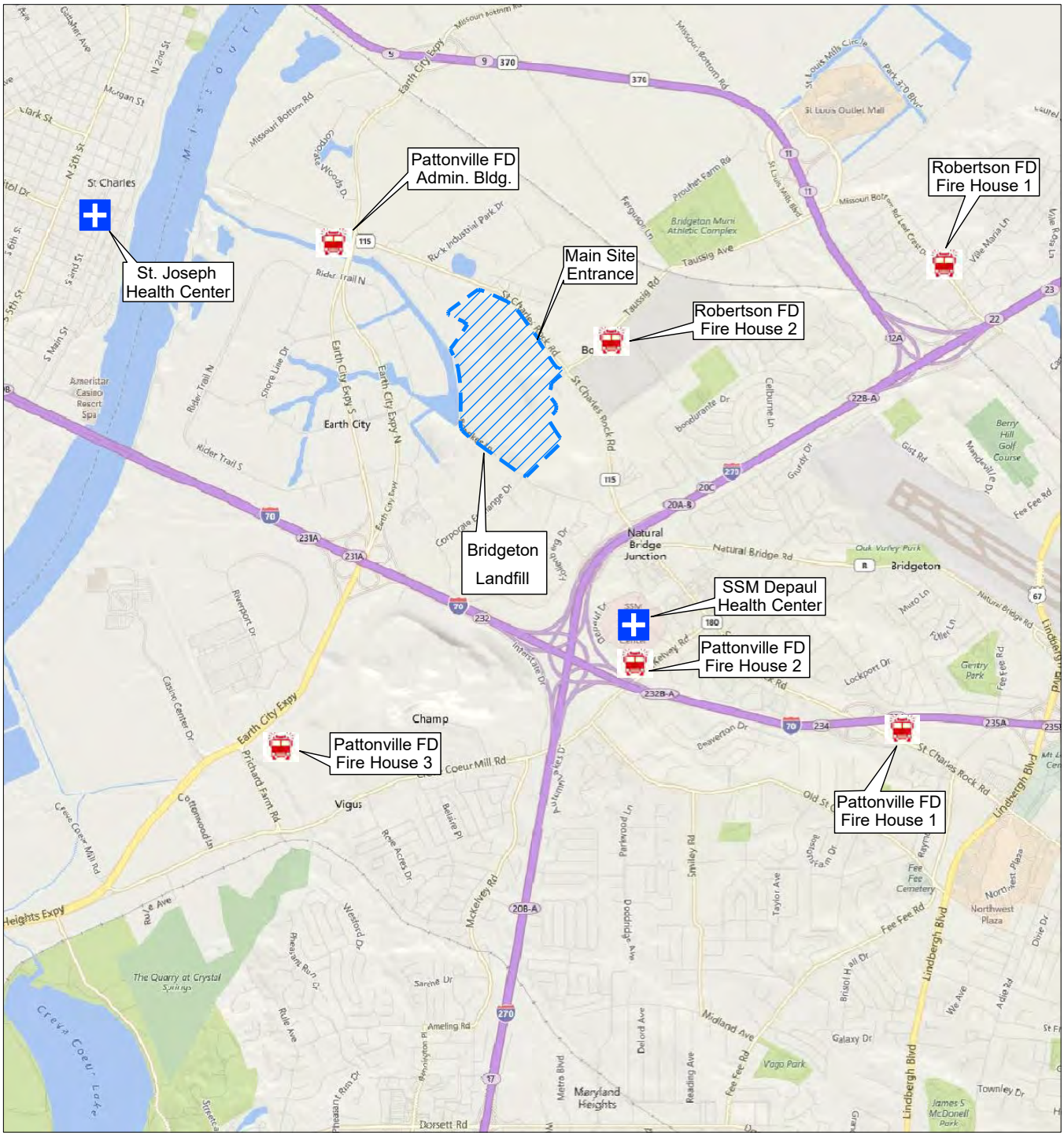
4.0 REFERENCES

FEI, 2020. Quarterly Report: Sampling & Analysis of Volatile Organic Compounds in Air at Five Locations – September 4, 2019 through January 3, 2020. Prepared for Bridgeton Landfill, LLC by Feezor Engineering, Inc. February 14, 2020.

MDNR, 2018. Final Consent Judgment, State of Missouri v. Republic Services, Inc., Allied Services, LLC, and Bridgeton Landfill, Inc., Case No. 13SL-CC01088-01. June 29, 2018.

USEPA, 2019. RE: April 12, 2019 Request to Suspend Air Quality Monitoring, West Lake Landfill Operable Unit 1, Bridgeton, Missouri. Letter to Mr. Paul Rosasco, EMSI. August 15, 2019.

FIGURES



N

0 4,000

Scale in Feet

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Figure 1

Bridgeton Landfill Site Location

Air Monitoring Station Equipped with VOC Sampler A8

Air Monitoring Station, No VOC Sampler A10

N

0 800

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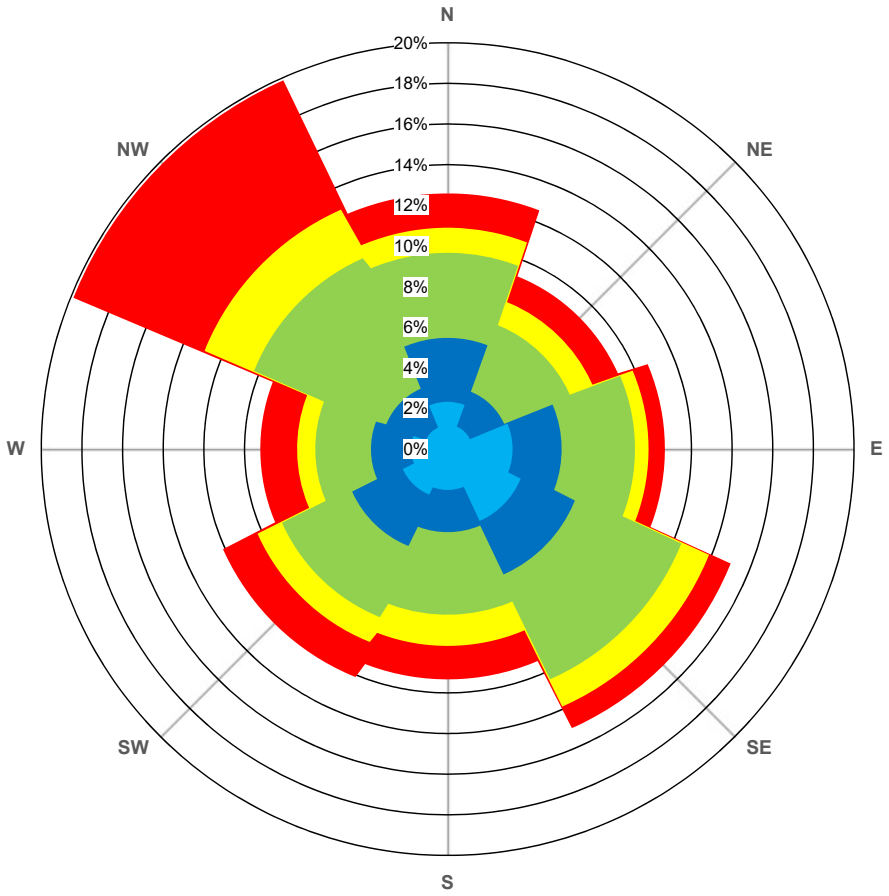
Figure 2

Air Sampling Station Locations

January 3, 2020 thru March 26, 2020

Bridgeton Landfill, Bridgeton, MO



Wind speed (mph)

17.32%	10.0 to 28.0
10.97%	8.0 to 10.0
34.57%	4.0 to 8.0
19.16%	2.5 to 4.0
6.95%	1.0 to 2.5

Percent calm:	11.03%
Calm defined as:	< 1.0 mph
Peak frequency:	19.87%
Peak direction:	NW

Occurrences by Wind Direction (WD):

North	1002	12.60%
Northeast	729	9.17%
East	850	10.69%
Southeast	1195	15.03%
South	901	11.33%
Southwest	962	12.10%
West	733	9.22%
Northwest	1580	19.87%
	7,952	100.0%

Occurrences by Wind Speed (WS):

<1 mph	877	11.03%
1 - 2.5 mph	553	6.95%
2.5 - 4 mph	1524	19.16%
4 - 8 mph	2749	34.57%
8 - 10 mph	872	10.97%
>10 mph	1377	17.32%
	7,952	100.0%

The Wind Rose shown is based on 7,952 wind speed/wind direction readings taken every 15 minutes over 83.0 consecutive days from 1/3/20 12:15 to 3/26/20 12:00

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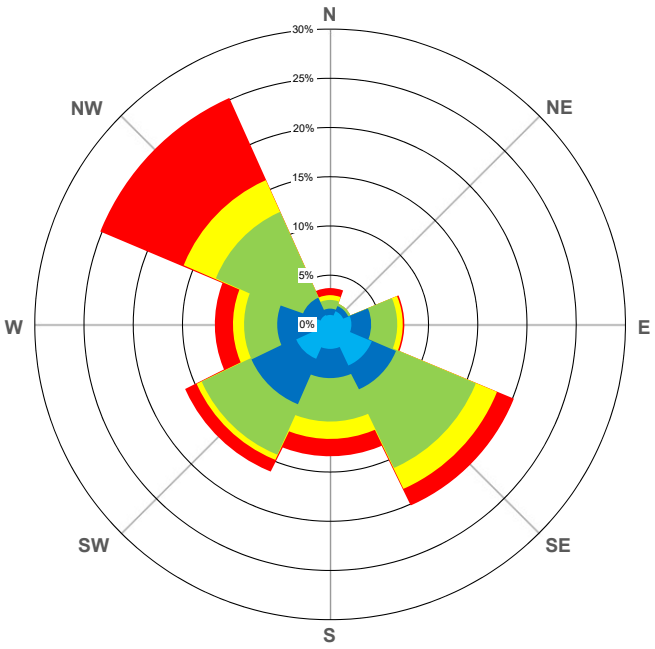
Figure 3

Bridgeton Landfill Wind Rose
January 3, 2020
through
March 26, 2020

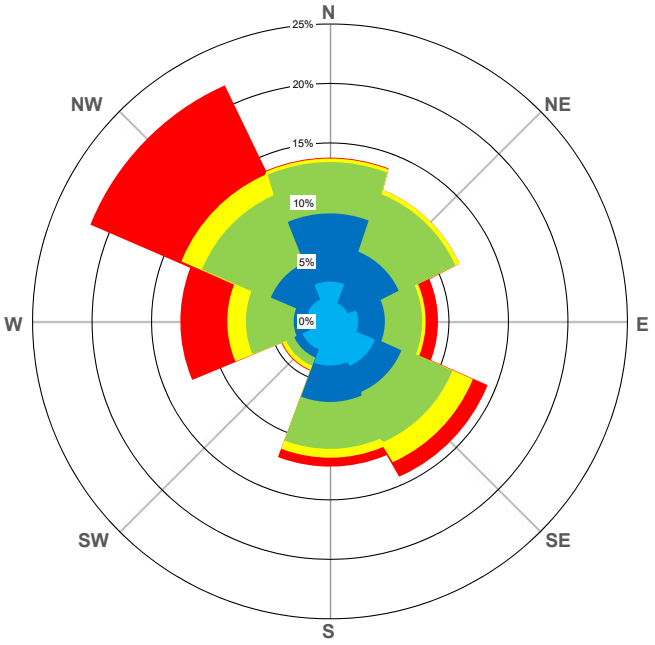


Wind speed (mph)

16.76%	10.00 to 28.00
10.34%	8.00 to 10.00
35.36%	4.00 to 8.00
19.09%	2.50 to 4.00
6.50%	1.00 to 2.50

Mean speed:	6.38
Peak frequency:	25.18%
Peak direction:	NW
Percent calm:	11.95%
Calm defined as:	< 1.00 mph

January 3, 2020 thru January 16, 2020

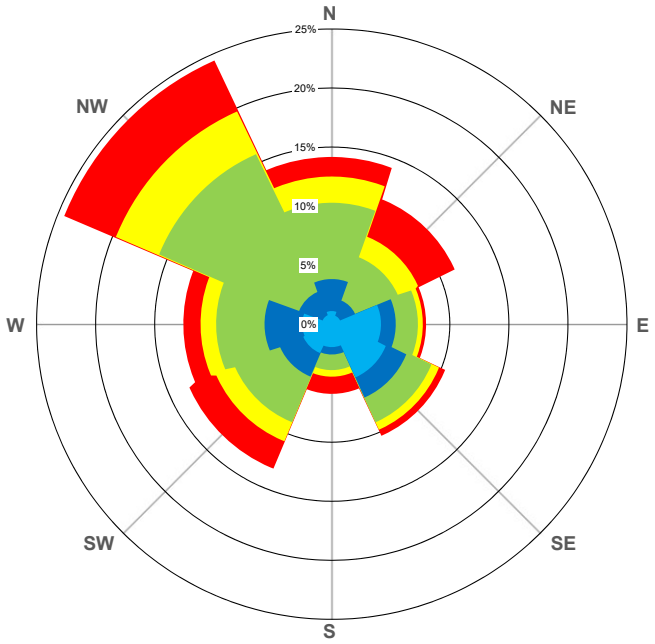


Wind speed (mph)

15.48%	10.00 to 24.00
7.37%	8.00 to 10.00
32.22%	4.00 to 8.00
23.44%	2.50 to 4.00
6.62%	1.00 to 2.50

Mean speed:	5.92
Peak frequency:	21.73%
Peak direction:	NW
Percent calm:	14.88%
Calm defined as:	< 1.00 mph

January 16, 2020 thru January 30, 2020



Wind speed (mph)

16.04%	10.00 to 24.00
12.78%	8.00 to 10.00
36.94%	4.00 to 8.00
15.35%	2.50 to 4.00
7.22%	1.00 to 2.50

Mean speed:	6.45
Peak frequency:	24.44%
Peak direction:	NW
Percent calm:	11.67%
Calm defined as:	< 1.00 mph

January 30, 2020 thru February 14, 2020

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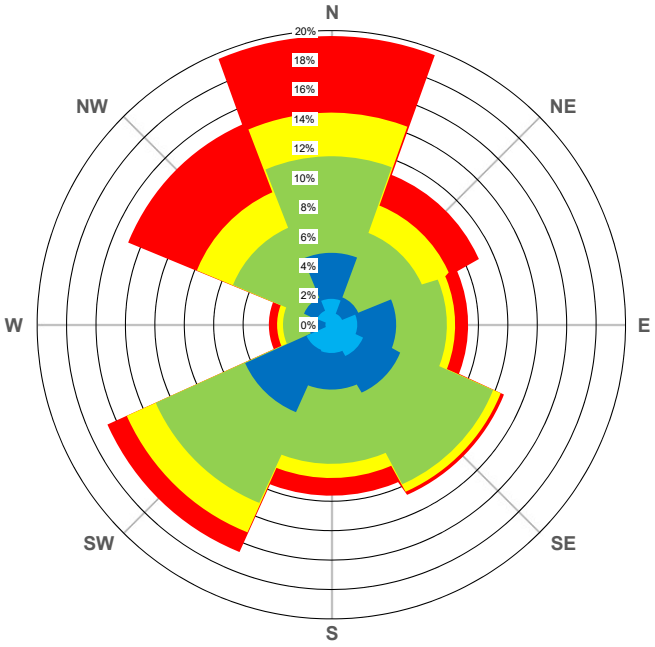
Figure 3a

Wind Roses for Sampling Periods:
January 3 - January 16, 2020
January 16 - January 30, 2020
January 30 - February 14, 2020

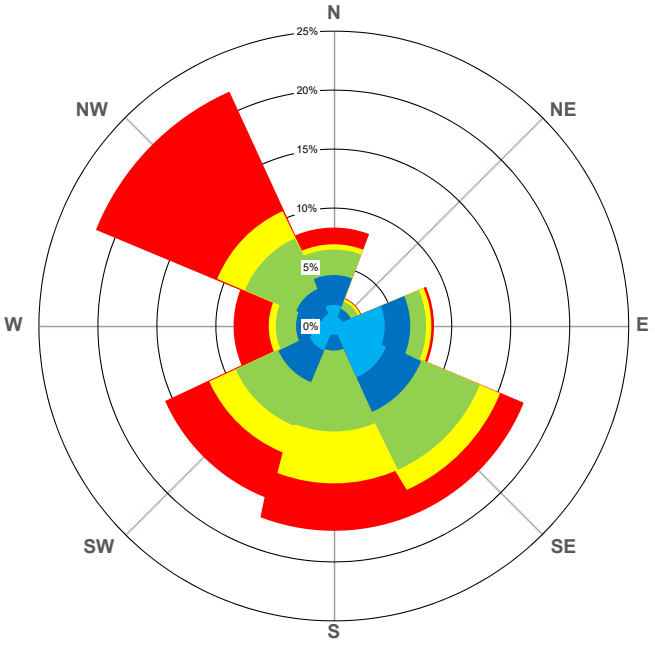


Wind speed (mph)

16.83%	10.00 to 21.00
12.26%	8.00 to 10.00
40.22%	4.00 to 8.00
18.83%	2.50 to 4.00
4.97%	1.00 to 2.50

Mean speed:	6.71
Peak frequency:	19.63%
Peak direction:	N
Percent calm:	6.89%
Calm defined as:	< 1.00 mph

February 14, 2020 thru February 27, 2020

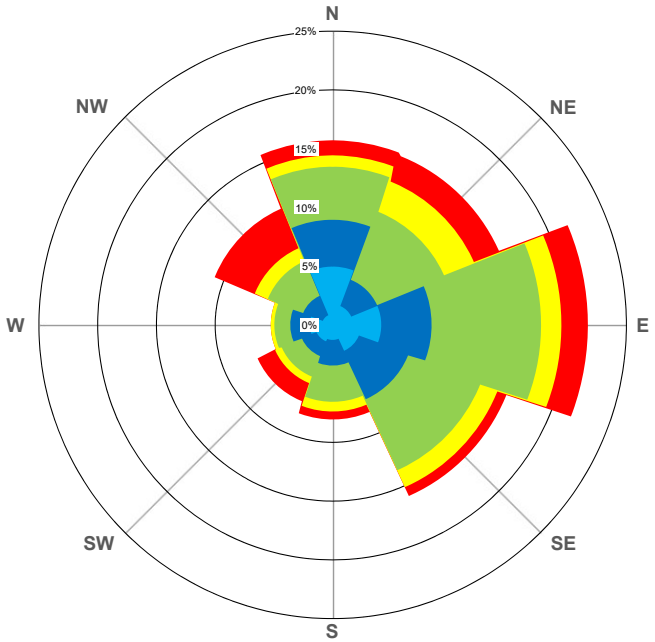


Wind speed (mph)

26.08%	10.00 to 27.00
12.97%	8.00 to 10.00
26.75%	4.00 to 8.00
16.39%	2.50 to 4.00
7.00%	1.00 to 2.50

Mean speed:	7.49
Peak frequency:	21.76%
Peak direction:	NW
Percent calm:	10.80%
Calm defined as:	< 1.00 mph

February 27, 2020 thru March 12, 2020



Wind speed (mph)

12.71%	10.00 to 22.00
10.00%	8.00 to 10.00
36.24%	4.00 to 8.00
22.18%	2.50 to 4.00
9.25%	1.00 to 2.50

Mean speed:	5.87
Peak frequency:	21.73%
Peak direction:	E
Percent calm:	9.62%
Calm defined as:	< 1.00 mph

March 12, 2020 thru March 26, 2020

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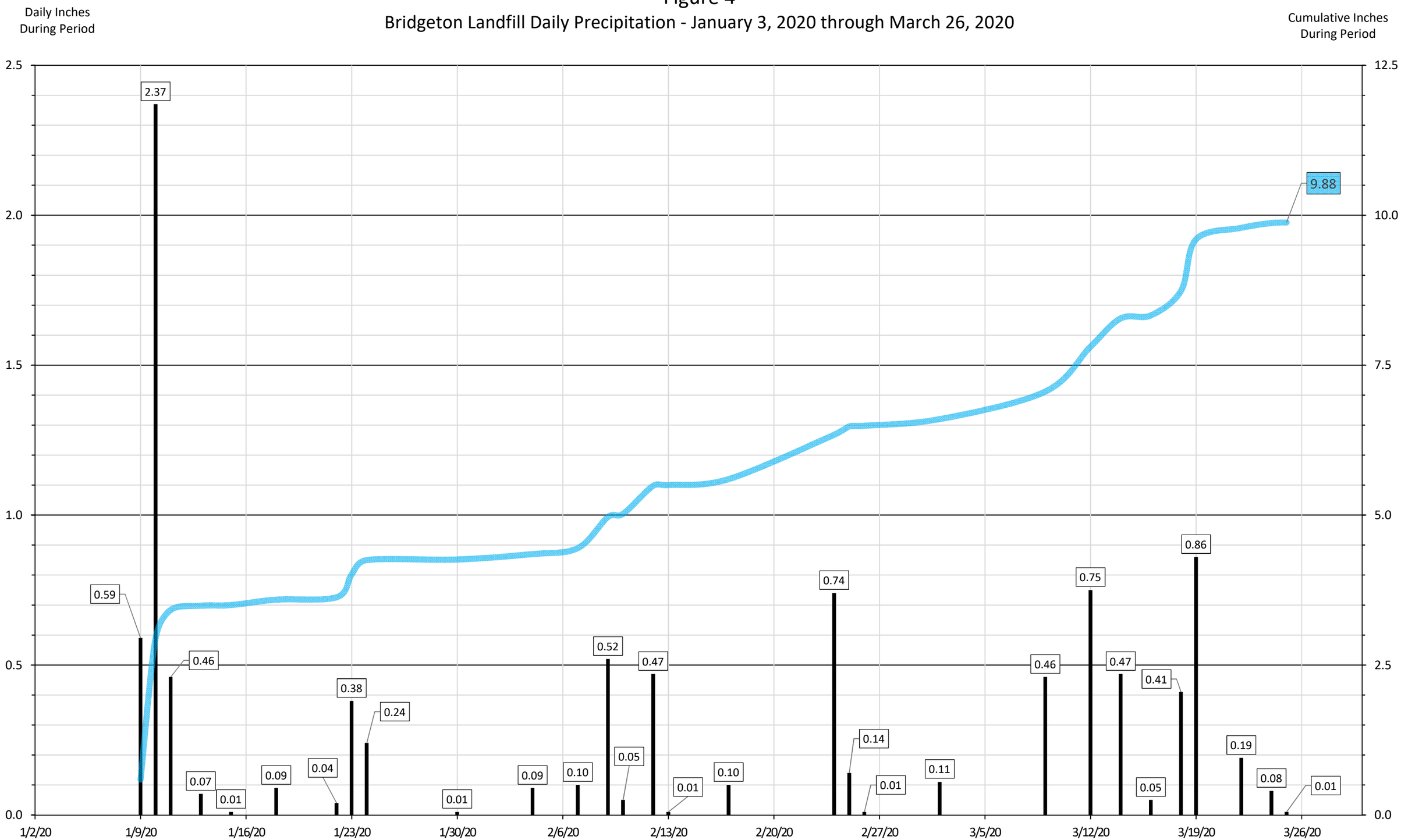
Figure 3b

Wind Roses for Sampling Periods:
February 14 - February 27, 2020
February 27 - March 12, 2020
March 12 - March 26, 2020

Figure 4

Bridgeton Landfill Daily Precipitation - January 3, 2020 through March 26, 2020



TABLE

Analytical Results for Monitoring Period January 3, 2020 through March 26, 2020

Station ID		A-1						A-5						A-7						A-8						A-12					
Sampling Period	Start	01/03 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	01/03 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	01/03 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	01/03 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	01/03 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020
	End	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	03/26 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	03/26 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	03/26 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	03/26 2020	01/16 2020	01/30 2020	02/14 2020	02/27 2020	03/12 2020	03/26 2020
2-Butanone (MEK)		0.26	0.26	0.37	0.28	0.20	0.25	0.34	0.27	0.42	0.32	0.21	0.25	0.31	0.29	0.40	0.36	0.23	0.27	0.29	0.29	0.34	0.29	0.20	0.25	0.40	0.36	0.39	0.29	0.25	0.30
Benzene		0.49	0.45	0.58	0.47	0.42	0.37	0.61	0.48	0.63	0.47	0.43	0.37	0.52	0.45	0.60	0.50	0.48	0.38	0.55	0.48	0.55	0.44	0.45	0.37	0.65	0.55	0.62	0.47	0.50	0.39
Carbon Tetrachloride		0.42	0.33	0.36	0.33	0.31	0.24	0.52	0.34	0.40	0.32	0.31	0.24	0.43	0.32	0.38	0.37	0.34	0.25	0.39	0.33	0.35	0.30	0.32	0.24	0.50	0.41	0.40	0.34	0.38	0.27
Cyclohexane		0.16	0.11	0.18	0.14	0.12	0.10	0.20	0.14	0.20	0.13	0.11		0.19	0.14	0.20	0.13	0.13		0.17	0.12	0.17		0.11		0.21	0.15	0.18		0.12	
Ethyl Benzene		0.13	0.13	0.19	0.097	0.09	0.087	0.15	0.09	0.14		0.09		0.14	0.083	0.15	0.092	0.11		0.13		0.13		0.092		0.16	0.099	0.14		0.10	
Heptane		0.36	0.20	0.46	0.42	0.33	0.31	0.38	0.23	0.36	0.20	0.24	0.17	0.33	0.19	0.35	0.21	0.33	0.18	0.36	0.24	0.32	0.20	0.34	0.20	0.55	0.27	0.42	0.22	0.38	0.25
Hexane		0.38	0.34	0.53	0.30	0.28	0.28	0.52	0.37	0.58	0.33	0.31	0.27	0.49	0.34	0.56	0.36	0.34	0.29	0.44	0.35	0.49	0.29	0.30	0.26	0.59	0.42	0.54	0.30	0.35	0.29
m,p-Xylene		0.43	0.41	0.56	0.27	0.28	0.29	0.38	0.22	0.37	0.21	0.25	0.17	0.39	0.20	0.39	0.24	0.30	0.21	0.35	0.20	0.34	0.17	0.25	0.18	0.40	0.23	0.38	0.18	0.26	0.19
o-Xylene		0.21	0.14	0.21	0.11	0.12	0.11	0.14		0.14		0.087		0.14		0.14		0.11		0.13		0.13		0.092		0.15	0.088	0.14		0.095	
Tetrachloroethene		0.12	0.11	0.48	0.22	0.098	0.18																								
Toluene		0.68	0.68	0.91	0.48	0.64	0.47	0.88	0.64	1.00	0.60	0.61	0.44	0.86	0.58	0.92	0.62	0.72	0.49	0.78	0.53	0.78	0.44	0.58	0.44	0.87	0.58	0.86	0.43	0.62	0.41

Empty cells = Not Detected above RL

Statistical Analyses of Results for Monitoring Period May 1, 2015 through March 26, 2020

Station ID	A-1					A-5					A-7					A-8					A-12				
	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.	No. of Detects	No. of Samples	Min. Conc.	Max. Conc.	Median Conc.
1,2-Dichloroethane *	6	128	0.060	0.096	0.072	5	128	0.066	0.079	0.072	6	121	0.064	0.097	0.073	6	128	0.062	0.110	0.067	7	115	0.066	0.096	0.078
2-Butanone (MEK)	128	128	0.070	0.450	0.161	128	128	0.080	0.460	0.190	121	121	0.100	0.560	0.198	128	128	0.070	0.490	0.184	114	115	0.090	0.770	0.195
4-Methyl-2-Pentanone *	0	128	na	na	na	0	128	na	na	na	1	121	0.410	0.410	0.410	0	128	na	na	na	1	115	0.230	0.230	0.230
Benzene	89	128	0.240	0.770	0.315	100	128	0.240	0.790	0.328	94	121	0.220	0.780	0.323	98	128	0.240	0.870	0.342	97	115	0.230	0.840	0.332
Carbon Tetrachloride	128	128	0.150	0.510	0.257	128	128	0.170	0.520	0.252	121	121	0.160	0.520	0.254	128	128	0.140	0.500	0.235	114	115	0.200	0.530	0.267
Chloroform *	38	128	0.050	0.180	0.080	43	128	0.050	0.140	0.080	32	121	0.060	0.110	0.080	31	128	0.050	0.140	0.080	38	115	0.050	0.140	0.080
Cyclohexane	53	128	0.070	0.260	0.114	75	128	0.090	0.280	0.102	104	121	0.070	0.250	0.102	54	128	0.090	0.240	0.092	59	115	0.079	0.260	0.092
Ethanol *	1	128	1.200	1.200	1.200	0	128	na	na	na	0	121	na	na	na	0	128	na	na	na	0	115	na	na	na
Ethyl Acetate	2	128	0.290	0.330	0.310	23	128	0.210	0.520	0.290	72	121	0.250	1.100	0.345	11	128	0.250	0.520	0.390	5	115	0.270	0.500	0.317
Ethyl Benzene	112	128	0.070	0.280	0.085	117	128	0.080	0.250	0.088	117	121	0.070	0.270	0.104	103	128	0.070	0.260	0.079	100	115	0.078	0.280	0.083
Heptane	128	128	0.130	0.840	0.221	128	128	0.110	0.610	0.161	121	121	0.130	0.480	0.192	128	128	0.100	0.570	0.149	113	115	0.130	0.590	0.160
Hexane	128	128	0.130	0.700	0.241	128	128	0.150	2.000	0.273	121	121	0.200	0.710	0.310	128	128	0.150	0.810	0.244	114	115	0.140	0.800	0.255
m,p-Xylene	128	128	0.130	0.920	0.236	128	128	0.160	0.620	0.227	121	121	0.150	0.900	0.300	128	128	0.140	0.590	0.198	114	115	0.140	0.660	0.198
o-Xylene	105	128	0.070	0.380	0.085	104	128	0.078	0.230	0.083	112	121	0.080	0.270	0.103	84	128	0.080	0.220	0.083	88	115	0.070	0.240	0.076
Propylbenzene	1	128	0.130	0.130	0.130	0	128	na	na	na	0	121	na	na	na	1	128	0.110	0.110	0.110	0	115	na	na	na
Tetrachloroethene	106	128	0.080	0.840	0.147	30	128	0.060	0.180	0.074	68	121	0.070	0.250	0.103	16	128	0.070	0.170	0.091	16	115	0.080	0.170	0.091
Toluene	128	128	0.310	1.600	0.487	127	128	0.410	2.000	0.535	121	121	0.390	1.800	0.695	128	128	0.340	1.700	0.446	114	115	0.310	1.300	0.451
Trichloroethene *	0	128	na	na	na	0	128	na	na	na	2	121	0.080	0.082	0.081	0	128	na	na	na	1	115	0.062	0.062	0.062

* No detections above RLs during monitoring period for this report

APPENDICES

Appendix 1

Chains-of-Custody and Sample Shipping Documents

PASSIVE SAMPLE COLLECTION

eurofins | Air Toxics

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Eurofins assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

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

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM J. ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.86	01A	1	T287N	1/3/20	1336	1/16/20	0953	24°F	see attached	☐	☒	☐	☐
6.77	02A	5	T288N	1/3/20	1308	1/16/20	1110	26°F	see attached	☐	☒	☐	☐
6.77	03A	7	T289N	1/3/20	1412	1/16/20	1103	26°F	see attached	☐	☒	☐	☐
6.79	04A	8	T290N	1/3/20	1419	1/16/20	1120	26°F	see attached	☐	☒	☐	☐
6.82	05A	12	T291N	1/3/20	1233	1/16/20	1040	24°F	see attached	☐	☒	☐	☐
6.58	06A	Dup	U754T	1/3/20	1336	1/16/20	0953	24°F	see attached	☐	☒	☐	☐
6.39	07A	TB	U755T	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	1/17/20 1000	FEDEX 7775 1047 9683	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		GAAC	1/20/20 0900
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No None	2001372

PASSIVE SAMPLE COLLECTION

eurofins | Air Toxics

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM J ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.68	01A	1	V756T	1/16/20	1006	1/30/20	1224	35°F	see attached	☐	☒	☐	☐
6.61	02A	5	V757T	1/16/20	1111	1/30/20	1321	36°F	see attached	☐	☒	☐	☐
6.86	03A	7	V758T	1/16/20	1106	1/30/20	1315	36°F	see attached	☐	☒	☐	☐
6.57	04A	8	V759T	1/16/20	1121	1/30/20	1328	36°F	see attached	☐	☒	☐	☐
6.66	05A	12	V760T	1/16/20	1044	1/30/20	1251	35°F	see attached	☐	☒	☐	☐
6.82	06A	Dup	V761T	1/16/20	1044	1/30/20	1251	35°F	see attached	☐	☒	☐	☐
6.55	07A	TB	I388G	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	1/30/20 1500	FEDEX 7776 4328 0826	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
			1/31/20 0950
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No (None)	2001730

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Project Manager: Bill Abernathy
Collected by: (Print and Sign) DANE HALE
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.76	01A	1	I389G	1/30/20	1229	2/14/20	10:08	10°F	see attached	☐	☒	☐	☐
6.72	02A	5	I390G	1/30/20	1322	2/14/20	10:22	10°F	see attached	☐	☒	☐	☐
6.73	03A	7	I391G	1/30/20	1316	2/14/20	10:15	10°F	see attached	☐	☒	☐	☐
6.61	04A	8	I392G	1/30/20	1329	2/14/20	10:30	10°F	see attached	☐	☒	☐	☐
6.84	05A	12	I393G	1/30/20	1256	2/14/20	9:50	10°F	see attached	☐	☒	☐	☐
6.76	06A	Dup	I394G	1/30/20	1329	2/14/20	10:32	10°F	see attached	☐	☒	☐	☐
6.43	07A	TB	I395G	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	2/17/20 0930	FEDEX 7777 6633 4742	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		[signature] TAN	02/18/20 0945
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FEDEX		4A	GOOD	Yes No None	2502428

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

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

Project Manager: Bill Abernathy
Collected by: (Print and Sign) DANE HALE
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.64	01A	1	I396G	2/14/20	1009	2/27/20	10:52	39°F	see attached	☐	☒	☐	☐
6.81	02A	5	I397G	2/14/20	1023	2/27/20	11:20	40°F	see attached	☐	☒	☐	☐
6.77	03A	7	I398G	2/14/20	1017	2/27/20	11:02	39°F	see attached	☐	☒	☐	☐
6.77	04A	8	I399G	2/14/20	1031	2/27/20	11:09	39°F	see attached	☐	☒	☐	☐
6.60	05A	12	I400G	2/14/20	0951	2/27/20	10:58	39°F	see attached	☐	☒	☐	☐
6.61	06A	Dup	I401G	2/14/20	1033	2/27/20	11:11	39°F	see attached	☐	☒	☐	☐
6.54	07A	TB	I979I	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature) Date/Time: 2/28/20 0845
Received by: (signature) Date/Time: FEDEX 7778 8862 4416
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time: 3/02/20 0945
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No None	2003016

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

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

Project Manager: Bill Abernathy
Collected by: (Print and Sign) WILLIAM ABERNATHY
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #:
Project #:
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.78	01A	1	I973I	2/27/20	1054	3/12/20	1123	50°F	see attached	☐	☒	☐	☐
6.84	02A	5	I974I	2/27/20	1121	3/12/20	1424	55°F	see attached	☐	☒	☐	☐
6.76	03A	7	I975I	2/27/20	1103	3/12/20	1415	55°F	see attached	☐	☒	☐	☐
6.82	04A	8	I976I	2/27/20	1110	3/12/20	1106	51°F	see attached	☐	☒	☐	☐
6.74	05A	12	I977I	2/27/20	1059	3/12/20	1356	56°F	see attached	☐	☒	☐	☐
6.81	01A	Dup	I978I	2/27/20	1110	3/12/20	1106	51°F	see attached	☐	☒	☐	☐
6.59	07A	TB		left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	3/12/20 1500	FEDEX 7779 9963 2300	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
			3/13/20 0905
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx		NA	Good	Yes No None	2003373

PASSIVE SAMPLE COLLECTION

eurofins | Air Toxics

CHAIN-OF-CUSTODY RECORD

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

Project Manager: Bill Abernathy
Collected by: (Print and Sign) Dane Hale
Company: Feezor Engineering, Inc. Email: babernathy@feezorengineering.com
Address: 3377 Hollenberg Drive Bridgeton, Missouri 63044
Phone: 314-502-1299

Project Info:
P.O. #
Project #
Project Name: Bridgeton Landfill VOCs

Turn Around Time: ☒ Normal ☐ Rush (specify)

Reporting Units: ☐ ppmv ☐ ppbv ☒ µg/m3 ☐ mg/m3

	Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr : min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr : min)	Air Temperature	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (not deployed)
6.81	01A	1	I403G	3/12/20	1127	3/26/20	10:57	55°F	see attached	☐	☒	☐	☐
6.85	02A	5	I404G	3/12/20	1425	3/26/20	11 20	56°F	see attached	☐	☒	☐	☐
6.78	03A	7	I405G	3/12/20	1421	3/26/20	11:15	56°F	see attached	☐	☒	☐	☐
6.82	04A	8	I406G	3/12/20	1107	3/26/20	1128	56°F	see attached	☐	☒	☐	☐
6.66	05A	12	I407G	3/12/20	1401	3/26/20	11:08	56°F	see attached	☐	☒	☐	☐
6.70	06A	Dup	I408G	3/12/20	1421	3/26/20	1134	56°F	see attached	☐	☒	☐	☐
6.48	07A	TB	I986I	left in packaging - not deployed					see attached	☐	☐	☐	☒
										☐	☐	☐	☐
										☐	☐	☐	☐
										☐	☐	☐	☐

Relinquished by: (signature) Date/Time: 3/31/20 1200
Relinquished by: (signature) Date/Time
Relinquished by: (signature) Date/Time

Received by: (signature) Date/Time: FEDEX 7701 2945 2110
Received by: (signature) Date/Time: 04/01/20 09:30
Received by: (signature) Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FEDEX		NA	GOOD	Yes No (None) 4/W 04/01/20	2004019

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 17JAN20
ACTWGT:
CAD: 105653986/INET4160

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630

(916) 985-1000 REF: 1-16-20 RADIELLOS
INV:
PO: DEPT:

567J2/DF82/05A2

FedEx Express

J192119081901ur

MON - 20 JAN 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7775 1047 9683**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 30JAN20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630

(916) 985-1000 REF: 1-30-20 RADIELLOS
INV:
PO: DEPT:

56BJ2/DF82/FE4A

FedEx Express

J201020011301ur

FRI - 31 JAN 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7776 4328 0826**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 17FEB20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630
(916) 985-1000 REF: 2-14-20 RADIELLOS
INV:
PO: DEPT:

56BJ2049E/FE4A

FedEx Express

J201020011301ur

TUE - 18 FEB 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7777 6633 4742**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 28FEB20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630
(916) 985-1000 REF: 2-27-20 RADIELLOS
INV:
PO: DEPT:

56BJ2049E/FE4A

FedEx Express

J201020011301ur

MON - 02 MAR 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7778 8862 4416**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 12MAR20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630
(916) 985-1000 REF: 3-12-20 RADIELLOS
INV:
PO: DEPT:

56BJ2/64E0/FE4A

FedEx Express

J201020011301uv

FRI - 13 MAR 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7779 9963 2300**

XH MHRA

95630
CA-US **SMF**

ORIGIN ID:ALNA (314) 502-1299
BILL ABERNATHY

3377 HOLLENBERG DR

BRIDGETON, MO 63044
UNITED STATES US

SHIP DATE: 30MAR20
ACTWGT:
CAD: 105653986/INET4220

BILL SENDER

TO **SAMPLE RECEIVING**
AIR TOXICS LTD
180 BLUE RAVINE ROAD
SUITE B
FOLSOM CA 95630
(916) 985-1000 REF: 3-26-20 RADIELLOS
INV:
PO: DEPT:

56BJ3/9C25/FE4A

FedEx Express

J201020011301uv

TUE - 31 MAR 3:00P
STANDARD OVERNIGHT

TRK# 0201 **7701 2945 2110**

XH MHRA

95630
CA-US **SMF**

Appendix 2

Analytical Reports from Eurofins Air Toxics, Inc.

January 3, 2020 to January 16, 2020

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1/31/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2001372

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 1/20/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2001372

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	01/20/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	01/31/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 01/31/20

Technical Director

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2001372

Seven Radiello 130 (Solvent) samples were received on January 20, 2020. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 18607 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate 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.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2001372-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.096	0.40	0.38
2-Butanone (Methyl Ethyl Ketone)	0.10	0.080	0.33	0.26
Cyclohexane	0.10	0.12	0.14	0.16
Carbon Tetrachloride	0.10	0.094	0.45	0.42
Benzene	0.40	0.32	0.62	0.49
Heptane	0.10	0.11	0.33	0.36
Toluene	0.10	0.085	0.79	0.68
Tetrachloroethene	0.10	0.11	0.11	0.12
Ethyl Benzene	0.10	0.093	0.14	0.13
m,p-Xylene	0.10	0.090	0.48	0.43
o-Xylene	0.10	0.097	0.21	0.21

Client Sample ID: 5

Lab ID#: 2001372-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.094	0.55	0.52
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.43	0.34
Cyclohexane	0.10	0.12	0.18	0.20
Carbon Tetrachloride	0.10	0.093	0.56	0.52
Benzene	0.40	0.31	0.78	0.61
Heptane	0.10	0.11	0.35	0.38
Toluene	0.10	0.084	1.0	0.88
Ethyl Benzene	0.10	0.092	0.16	0.15
m,p-Xylene	0.10	0.089	0.43	0.38
o-Xylene	0.10	0.096	0.15	0.14

Client Sample ID: 7

Lab ID#: 2001372-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.095	0.52	0.49
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.39	0.31

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 7

Lab ID#: 2001372-03A

Cyclohexane	0.10	0.12	0.17	0.19
Carbon Tetrachloride	0.10	0.093	0.46	0.43
Benzene	0.40	0.31	0.67	0.52
Heptane	0.10	0.11	0.31	0.33
Toluene	0.10	0.084	1.0	0.86
Ethyl Benzene	0.10	0.092	0.16	0.14
m,p-Xylene	0.10	0.089	0.43	0.39
o-Xylene	0.10	0.096	0.15	0.14

Client Sample ID: 8

Lab ID#: 2001372-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.095	0.47	0.44
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.37	0.29
Cyclohexane	0.10	0.12	0.14	0.17
Carbon Tetrachloride	0.10	0.093	0.42	0.39
Benzene	0.40	0.31	0.70	0.55
Heptane	0.10	0.11	0.34	0.36
Toluene	0.10	0.084	0.93	0.78
Ethyl Benzene	0.10	0.092	0.14	0.13
m,p-Xylene	0.10	0.089	0.39	0.35
o-Xylene	0.10	0.096	0.13	0.13

Client Sample ID: 12

Lab ID#: 2001372-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.095	0.62	0.59
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.50	0.40
Cyclohexane	0.10	0.12	0.18	0.21
Carbon Tetrachloride	0.10	0.094	0.54	0.50
Benzene	0.40	0.31	0.83	0.65
Heptane	0.10	0.11	0.50	0.55

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 12

Lab ID#: 2001372-05A

Toluene	0.10	0.085	1.0	0.87
Ethyl Benzene	0.10	0.092	0.17	0.16
m,p-Xylene	0.10	0.090	0.45	0.40
o-Xylene	0.10	0.096	0.15	0.15

Client Sample ID: Dup

Lab ID#: 2001372-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.096	0.42	0.40
2-Butanone (Methyl Ethyl Ketone)	0.10	0.080	0.32	0.25
Cyclohexane	0.10	0.12	0.13	0.15
Carbon Tetrachloride	0.10	0.094	0.38	0.36
Benzene	0.40	0.32	0.61	0.48
Heptane	0.10	0.11	0.35	0.38
Toluene	0.10	0.085	0.87	0.74
Tetrachloroethene	0.10	0.11	0.12	0.12
Ethyl Benzene	0.10	0.093	0.15	0.14
m,p-Xylene	0.10	0.090	0.51	0.46
o-Xylene	0.10	0.097	0.24	0.23

Client Sample ID: TB

Lab ID#: 2001372-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2001372-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012120sim**	**Date of Collection: 1/16/20 9:53:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 03:48 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.62	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.097	Not Detected	Not Detected
Hexane	0.10	0.096	0.40	0.38
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.080	0.33	0.26
Chloroform	0.10	0.084	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.14	0.16
Carbon Tetrachloride	0.10	0.094	0.45	0.42
Benzene	0.40	0.32	0.62	0.49
1,2-Dichloroethane	0.10	0.082	Not Detected	Not Detected
Heptane	0.10	0.11	0.33	0.36
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.085	0.79	0.68
Tetrachloroethene	0.10	0.11	0.11	0.12
Chlorobenzene	0.10	0.093	Not Detected	Not Detected
Ethyl Benzene	0.10	0.093	0.14	0.13
m,p-Xylene	0.10	0.090	0.48	0.43
o-Xylene	0.10	0.097	0.21	0.21
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 24.0F , duration time = 18497 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

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Client Sample ID: 5

Lab ID#: 2001372-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012121sim**	**Date of Collection: 1/16/20 11:10:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 04:12 PM**
		Date of Extraction: 1/21/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.094	0.55	0.52
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.43	0.34
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.18	0.20
Carbon Tetrachloride	0.10	0.093	0.56	0.52
Benzene	0.40	0.31	0.78	0.61
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.35	0.38
Trichloroethene	0.10	0.090	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	1.0	0.88
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.16	0.15
m,p-Xylene	0.10	0.089	0.43	0.38
o-Xylene	0.10	0.096	0.15	0.14
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18602 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

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Client Sample ID: 7

Lab ID#: 2001372-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012122sim**	**Date of Collection: 1/16/20 11:03:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 04:37 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.095	0.52	0.49
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.39	0.31
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.17	0.19
Carbon Tetrachloride	0.10	0.093	0.46	0.43
Benzene	0.40	0.31	0.67	0.52
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.31	0.33
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	1.0	0.86
Tetrachloroethene	0.10	0.11	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.16	0.14
m,p-Xylene	0.10	0.089	0.43	0.39
o-Xylene	0.10	0.096	0.15	0.14
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18531 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130

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Client Sample ID: 8

Lab ID#: 2001372-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012123sim**	**Date of Collection: 1/16/20 11:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 05:02 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.095	0.47	0.44
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.37	0.29
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.14	0.17
Carbon Tetrachloride	0.10	0.093	0.42	0.39
Benzene	0.40	0.31	0.70	0.55
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.34	0.36
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	0.93	0.78
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.14	0.13
m,p-Xylene	0.10	0.089	0.39	0.35
o-Xylene	0.10	0.096	0.13	0.13
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18541 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

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Client Sample ID: 12

Lab ID#: 2001372-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012124sim**	**Date of Collection: 1/16/20 10:40:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 05:27 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.095	0.62	0.59
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.50	0.40
Chloroform	0.10	0.084	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.18	0.21
Carbon Tetrachloride	0.10	0.094	0.54	0.50
Benzene	0.40	0.31	0.83	0.65
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.50	0.55
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.085	1.0	0.87
Tetrachloroethene	0.10	0.11	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.17	0.16
m,p-Xylene	0.10	0.090	0.45	0.40
o-Xylene	0.10	0.096	0.15	0.15
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 24.0F , duration time = 18607 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130

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Client Sample ID: Dup

Lab ID#: 2001372-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012125sim**	**Date of Collection: 1/16/20 9:53:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 05:52 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.62	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.097	Not Detected	Not Detected
Hexane	0.10	0.096	0.42	0.40
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.080	0.32	0.25
Chloroform	0.10	0.084	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.13	0.15
Carbon Tetrachloride	0.10	0.094	0.38	0.36
Benzene	0.40	0.32	0.61	0.48
1,2-Dichloroethane	0.10	0.082	Not Detected	Not Detected
Heptane	0.10	0.11	0.35	0.38
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.085	0.87	0.74
Tetrachloroethene	0.10	0.11	0.12	0.12
Chlorobenzene	0.10	0.093	Not Detected	Not Detected
Ethyl Benzene	0.10	0.093	0.15	0.14
m,p-Xylene	0.10	0.090	0.51	0.46
o-Xylene	0.10	0.097	0.24	0.23
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 24.0F , duration time = 18497 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130

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Client Sample ID: TB

Lab ID#: 2001372-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012126sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 06:16 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.094	Not Detected	Not Detected
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	Not Detected	Not Detected
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.093	Not Detected	Not Detected
Benzene	0.40	0.31	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	Not Detected	Not Detected
Trichloroethene	0.10	0.090	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	Not Detected	Not Detected
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	Not Detected	Not Detected
m,p-Xylene	0.10	0.089	Not Detected	Not Detected
o-Xylene	0.10	0.096	Not Detected	Not Detected
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18607 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2001372-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012105sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 09:26 AM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.094	Not Detected	Not Detected
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	Not Detected	Not Detected
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.093	Not Detected	Not Detected
Benzene	0.40	0.31	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	Not Detected	Not Detected
Trichloroethene	0.10	0.090	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	Not Detected	Not Detected
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	Not Detected	Not Detected
m,p-Xylene	0.10	0.089	Not Detected	Not Detected
o-Xylene	0.10	0.096	Not Detected	Not Detected
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18607 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130

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Client Sample ID: LCS

Lab ID#: 2001372-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012103sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 08:37 AM**	
		Date of Extraction: 1/21/20	

Compound	%Recovery	Method Limits
Ethanol	62	50-130
Methyl tert-butyl ether	87	70-130
Hexane	109	70-130
Ethyl Acetate	101	70-130
2-Butanone (Methyl Ethyl Ketone)	86	70-130
Chloroform	102	70-130
1,1,1-Trichloroethane	104	70-130
Cyclohexane	118	70-130
Carbon Tetrachloride	100	70-130
Benzene	95	70-130
1,2-Dichloroethane	88	70-130
Heptane	107	70-130
Trichloroethene	112	70-130
4-Methyl-2-pentanone	111	70-130
Toluene	100	70-130
Tetrachloroethene	100	70-130
Chlorobenzene	111	70-130
Ethyl Benzene	113	70-130
m,p-Xylene	106	70-130
o-Xylene	98	70-130
Styrene	81	20-100
Propylbenzene	104	70-130
1,4-Dichlorobenzene	89	50-110
Naphthalene	22	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130

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Client Sample ID: LCSD

Lab ID#: 2001372-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012104sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 09:01 AM**	
		Date of Extraction: 1/21/20	

Compound	%Recovery	Method Limits
Ethanol	52	50-130
Methyl tert-butyl ether	99	70-130
Hexane	96	70-130
Ethyl Acetate	95	70-130
2-Butanone (Methyl Ethyl Ketone)	85	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	109	70-130
Carbon Tetrachloride	109	70-130
Benzene	93	70-130
1,2-Dichloroethane	105	70-130
Heptane	101	70-130
Trichloroethene	105	70-130
4-Methyl-2-pentanone	105	70-130
Toluene	97	70-130
Tetrachloroethene	107	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	100	70-130
o-Xylene	95	70-130
Styrene	77	20-100
Propylbenzene	108	70-130
1,4-Dichlorobenzene	92	50-110
Naphthalene	21	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

January 16, 2020 to January 30, 2020

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2/13/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2001730

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 1/31/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2001730

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	01/31/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	02/13/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY: Heidi Hayes DATE: 02/13/20

Technical Director

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2001730

Seven Radiello 130 (Solvent) samples were received on January 31, 2020. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20298 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

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

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate 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.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2001730-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.41	0.34
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.36	0.26
Cyclohexane	0.10	0.10	0.10	0.11
Carbon Tetrachloride	0.10	0.083	0.40	0.33
Benzene	0.40	0.28	0.65	0.45
Heptane	0.10	0.096	0.21	0.20
Toluene	0.10	0.075	0.91	0.68
Tetrachloroethene	0.10	0.094	0.12	0.11
Ethyl Benzene	0.10	0.082	0.16	0.13
m,p-Xylene	0.10	0.079	0.51	0.41
o-Xylene	0.10	0.085	0.16	0.14

Client Sample ID: 5

Lab ID#: 2001730-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.44	0.37
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.39	0.27
Cyclohexane	0.10	0.10	0.13	0.14
Carbon Tetrachloride	0.10	0.083	0.40	0.34
Benzene	0.40	0.28	0.68	0.48
Heptane	0.10	0.096	0.24	0.23
Toluene	0.10	0.075	0.85	0.64
Ethyl Benzene	0.10	0.082	0.11	0.090
m,p-Xylene	0.10	0.079	0.28	0.22

Client Sample ID: 7

Lab ID#: 2001730-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.41	0.34
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.42	0.29
Cyclohexane	0.10	0.10	0.14	0.14

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 7

Lab ID#: 2001730-03A

Carbon Tetrachloride	0.10	0.083	0.38	0.32
Benzene	0.40	0.28	0.65	0.45
Heptane	0.10	0.096	0.20	0.19
Toluene	0.10	0.075	0.78	0.58
Ethyl Benzene	0.10	0.082	0.10	0.083
m,p-Xylene	0.10	0.079	0.25	0.20

Client Sample ID: 8

Lab ID#: 2001730-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.41	0.35
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.41	0.29
Cyclohexane	0.10	0.10	0.12	0.12
Carbon Tetrachloride	0.10	0.083	0.39	0.33
Benzene	0.40	0.28	0.69	0.48
Heptane	0.10	0.096	0.25	0.24
Toluene	0.10	0.075	0.71	0.53
m,p-Xylene	0.10	0.079	0.25	0.20

Client Sample ID: 12

Lab ID#: 2001730-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.50	0.42
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.52	0.36
Cyclohexane	0.10	0.10	0.15	0.15
Carbon Tetrachloride	0.10	0.083	0.49	0.41
Benzene	0.40	0.28	0.79	0.55
Heptane	0.10	0.096	0.28	0.27
Toluene	0.10	0.075	0.77	0.58
Ethyl Benzene	0.10	0.082	0.12	0.099
m,p-Xylene	0.10	0.079	0.30	0.23
o-Xylene	0.10	0.086	0.10	0.088

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Dup

Lab ID#: 2001730-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.48	0.40
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.47	0.33
Cyclohexane	0.10	0.10	0.13	0.13
Carbon Tetrachloride	0.10	0.083	0.48	0.40
Benzene	0.40	0.28	0.77	0.53
Heptane	0.10	0.096	0.28	0.26
Toluene	0.10	0.075	0.75	0.56
Ethyl Benzene	0.10	0.082	0.12	0.095
m,p-Xylene	0.10	0.079	0.29	0.23
o-Xylene	0.10	0.086	0.10	0.088

Client Sample ID: TB

Lab ID#: 2001730-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2001730-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021107sim**	**Date of Collection: 1/30/20 12:24:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 09:15 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.085	Not Detected	Not Detected
Hexane	0.10	0.084	0.41	0.34
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.36	0.26
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.10	0.11
Carbon Tetrachloride	0.10	0.083	0.40	0.33
Benzene	0.40	0.28	0.65	0.45
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.21	0.20
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.91	0.68
Tetrachloroethene	0.10	0.094	0.12	0.11
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.16	0.13
m,p-Xylene	0.10	0.079	0.51	0.41
o-Xylene	0.10	0.085	0.16	0.14
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.097	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 35.0F , duration time = 20298 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: 5

Lab ID#: 2001730-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021108sim**	**Date of Collection: 1/30/20 1:21:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 09:41 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.44	0.37
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.39	0.27
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.13	0.14
Carbon Tetrachloride	0.10	0.083	0.40	0.34
Benzene	0.40	0.28	0.68	0.48
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.24	0.23
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.85	0.64
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.11	0.090
m,p-Xylene	0.10	0.079	0.28	0.22
o-Xylene	0.10	0.086	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 36.0F , duration time = 20290 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: 7

Lab ID#: 2001730-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021109sim**	**Date of Collection: 1/30/20 1:15:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 10:07 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.41	0.34
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.42	0.29
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.14	0.14
Carbon Tetrachloride	0.10	0.083	0.38	0.32
Benzene	0.40	0.28	0.65	0.45
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.20	0.19
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.78	0.58
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.10	0.083
m,p-Xylene	0.10	0.079	0.25	0.20
o-Xylene	0.10	0.086	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 36.0F , duration time = 20289 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: 8

Lab ID#: 2001730-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021110sim**	**Date of Collection: 1/30/20 1:28:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 10:33 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.41	0.35
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.41	0.29
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.12	0.12
Carbon Tetrachloride	0.10	0.083	0.39	0.33
Benzene	0.40	0.28	0.69	0.48
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.25	0.24
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.71	0.53
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected
m,p-Xylene	0.10	0.079	0.25	0.20
o-Xylene	0.10	0.086	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 36.0F , duration time = 20287 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: 12

Lab ID#: 2001730-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021111sim**	**Date of Collection: 1/30/20 12:51:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 10:59 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.50	0.42
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.52	0.36
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.15	0.15
Carbon Tetrachloride	0.10	0.083	0.49	0.41
Benzene	0.40	0.28	0.79	0.55
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.28	0.27
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.77	0.58
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.12	0.099
m,p-Xylene	0.10	0.079	0.30	0.23
o-Xylene	0.10	0.086	0.10	0.088
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 35.0F , duration time = 20287 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: Dup

Lab ID#: 2001730-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021112sim**	**Date of Collection: 1/30/20 12:51:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 11:25 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.48	0.40
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.47	0.33
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.13	0.13
Carbon Tetrachloride	0.10	0.083	0.48	0.40
Benzene	0.40	0.28	0.77	0.53
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.28	0.26
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.75	0.56
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.12	0.095
m,p-Xylene	0.10	0.079	0.29	0.23
o-Xylene	0.10	0.086	0.10	0.088
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 35.0F , duration time = 20287 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: TB

Lab ID#: 2001730-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021113sim**	**Date of Collection: 1/30/20**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 11:51 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.085	Not Detected	Not Detected
Hexane	0.10	0.084	Not Detected	Not Detected
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	Not Detected	Not Detected
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.083	Not Detected	Not Detected
Benzene	0.40	0.28	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	Not Detected	Not Detected
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	Not Detected	Not Detected
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected
m,p-Xylene	0.10	0.079	Not Detected	Not Detected
o-Xylene	0.10	0.085	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.097	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 36.0F , duration time = 20298 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2001730-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021105sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 08:19 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.085	Not Detected	Not Detected
Hexane	0.10	0.084	Not Detected	Not Detected
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	Not Detected	Not Detected
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.083	Not Detected	Not Detected
Benzene	0.40	0.28	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	Not Detected	Not Detected
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	Not Detected	Not Detected
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected
m,p-Xylene	0.10	0.079	Not Detected	Not Detected
o-Xylene	0.10	0.085	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.097	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 36.0F , duration time = 20298 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: LCS

Lab ID#: 2001730-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021103sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 07:23 AM**	
		Date of Extraction: 2/11/20	

Compound	%Recovery	Method Limits
Ethanol	43 Q	50-130
Methyl tert-butyl ether	90	70-130
Hexane	93	70-130
Ethyl Acetate	89	70-130
2-Butanone (Methyl Ethyl Ketone)	80	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	92	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	91	70-130
Benzene	85	70-130
1,2-Dichloroethane	89	70-130
Heptane	96	70-130
Trichloroethene	92	70-130
4-Methyl-2-pentanone	94	70-130
Toluene	90	70-130
Tetrachloroethene	92	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	90	70-130
o-Xylene	86	70-130
Styrene	67	20-100
Propylbenzene	97	70-130
1,4-Dichlorobenzene	77	50-110
Naphthalene	12	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	85	70-130

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Client Sample ID: LCSD

Lab ID#: 2001730-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021104sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 07:49 AM**	
		Date of Extraction: 2/11/20	

Compound	%Recovery	Method Limits
Ethanol	40 Q	50-130
Methyl tert-butyl ether	88	70-130
Hexane	91	70-130
Ethyl Acetate	87	70-130
2-Butanone (Methyl Ethyl Ketone)	78	70-130
Chloroform	87	70-130
1,1,1-Trichloroethane	91	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	89	70-130
Benzene	84	70-130
1,2-Dichloroethane	87	70-130
Heptane	94	70-130
Trichloroethene	92	70-130
4-Methyl-2-pentanone	92	70-130
Toluene	88	70-130
Tetrachloroethene	90	70-130
Chlorobenzene	85	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	89	70-130
o-Xylene	85	70-130
Styrene	66	20-100
Propylbenzene	96	70-130
1,4-Dichlorobenzene	78	50-110
Naphthalene	12	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

January 30, 2020 to February 14, 2020

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3/2/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2002428

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 2/18/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2002428

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	02/18/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	03/02/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY: Heidi Hayes DATE: 03/02/20

Technical Director

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2002428

Seven Radiello 130 (Solvent) samples were received on February 18, 2020. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 21459 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

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

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate 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.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2002428-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.62	0.53
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.51	0.37
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.085	0.43	0.36
Benzene	0.40	0.28	0.82	0.58
Heptane	0.10	0.098	0.47	0.46
Toluene	0.10	0.077	1.2	0.91
Tetrachloroethene	0.10	0.096	0.49	0.48
Ethyl Benzene	0.10	0.084	0.22	0.19
m,p-Xylene	0.10	0.081	0.69	0.56
o-Xylene	0.10	0.087	0.24	0.21

Client Sample ID: 5

Lab ID#: 2002428-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.68	0.58
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.59	0.42
Cyclohexane	0.10	0.10	0.20	0.20
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.88	0.63
Heptane	0.10	0.098	0.36	0.36
Toluene	0.10	0.077	1.3	1.0
Ethyl Benzene	0.10	0.084	0.16	0.14
m,p-Xylene	0.10	0.081	0.46	0.37
o-Xylene	0.10	0.088	0.16	0.14

Client Sample ID: 7

Lab ID#: 2002428-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.65	0.56
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.56	0.40

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 7

Lab ID#: 2002428-03A

Cyclohexane	0.10	0.10	0.19	0.20
Carbon Tetrachloride	0.10	0.085	0.44	0.38
Benzene	0.40	0.28	0.84	0.60
Heptane	0.10	0.098	0.35	0.35
Toluene	0.10	0.077	1.2	0.92
Ethyl Benzene	0.10	0.084	0.18	0.15
m,p-Xylene	0.10	0.081	0.48	0.39
o-Xylene	0.10	0.088	0.16	0.14

Client Sample ID: 8

Lab ID#: 2002428-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.57	0.49
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.48	0.34
Cyclohexane	0.10	0.10	0.16	0.17
Carbon Tetrachloride	0.10	0.085	0.41	0.35
Benzene	0.40	0.28	0.78	0.55
Heptane	0.10	0.098	0.32	0.32
Toluene	0.10	0.077	1.0	0.78
Ethyl Benzene	0.10	0.084	0.15	0.13
m,p-Xylene	0.10	0.081	0.42	0.34
o-Xylene	0.10	0.088	0.15	0.13

Client Sample ID: 12

Lab ID#: 2002428-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.62	0.54
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.54	0.39
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.87	0.62
Heptane	0.10	0.098	0.42	0.42

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 12

Lab ID#: 2002428-05A

Toluene	0.10	0.077	1.1	0.86
Ethyl Benzene	0.10	0.084	0.17	0.14
m,p-Xylene	0.10	0.081	0.47	0.38
o-Xylene	0.10	0.088	0.16	0.14

Client Sample ID: Dup

Lab ID#: 2002428-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.55	0.47
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.46	0.33
Cyclohexane	0.10	0.10	0.15	0.16
Carbon Tetrachloride	0.10	0.085	0.42	0.36
Benzene	0.40	0.28	0.79	0.56
Heptane	0.10	0.098	0.33	0.33
Toluene	0.10	0.077	1.0	0.81
Ethyl Benzene	0.10	0.084	0.16	0.13
m,p-Xylene	0.10	0.081	0.44	0.36
o-Xylene	0.10	0.088	0.15	0.13

Client Sample ID: TB

Lab ID#: 2002428-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2002428-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022014sim**	**Date of Collection:**	**2/14/20 10:08:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**2/20/20 12:57 PM**
		Date of Extraction:	**2/20/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.087	Not Detected	Not Detected
Hexane	0.10	0.086	0.62	0.53
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.51	0.37
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.085	0.43	0.36
Benzene	0.40	0.28	0.82	0.58
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.47	0.46
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.2	0.91
Tetrachloroethene	0.10	0.096	0.49	0.48
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.22	0.19
m,p-Xylene	0.10	0.081	0.69	0.56
o-Xylene	0.10	0.087	0.24	0.21
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21459 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: 5

Lab ID#: 2002428-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022015sim**	**Date of Collection: 2/14/20 10:22:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 01:22 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.68	0.58
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.59	0.42
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.20	0.20
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.88	0.63
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.36	0.36
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.3	1.0
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.16	0.14
m,p-Xylene	0.10	0.081	0.46	0.37
o-Xylene	0.10	0.088	0.16	0.14
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21420 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 7

Lab ID#: 2002428-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022016sim**	**Date of Collection: 2/14/20 10:15:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 01:48 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.65	0.56
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.56	0.40
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.19	0.20
Carbon Tetrachloride	0.10	0.085	0.44	0.38
Benzene	0.40	0.28	0.84	0.60
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.35	0.35
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.2	0.92
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.18	0.15
m,p-Xylene	0.10	0.081	0.48	0.39
o-Xylene	0.10	0.088	0.16	0.14
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21419 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: 8

Lab ID#: 2002428-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022017sim**	**Date of Collection: 2/14/20 10:30:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 02:14 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.57	0.49
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.48	0.34
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.16	0.17
Carbon Tetrachloride	0.10	0.085	0.41	0.35
Benzene	0.40	0.28	0.78	0.55
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.32	0.32
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.0	0.78
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.15	0.13
m,p-Xylene	0.10	0.081	0.42	0.34
o-Xylene	0.10	0.088	0.15	0.13
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21421 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: 12

Lab ID#: 2002428-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022018sim**	**Date of Collection: 2/14/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 02:39 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.62	0.54
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.54	0.39
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.87	0.62
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.42	0.42
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.1	0.86
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.17	0.14
m,p-Xylene	0.10	0.081	0.47	0.38
o-Xylene	0.10	0.088	0.16	0.14
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21414 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: Dup

Lab ID#: 2002428-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022019sim**	**Date of Collection: 2/14/20 10:32:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 03:05 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.55	0.47
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.46	0.33
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.15	0.16
Carbon Tetrachloride	0.10	0.085	0.42	0.36
Benzene	0.40	0.28	0.79	0.56
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.33	0.33
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.0	0.81
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.16	0.13
m,p-Xylene	0.10	0.081	0.44	0.36
o-Xylene	0.10	0.088	0.15	0.13
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21423 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: TB

Lab ID#: 2002428-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022020sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 03:31 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.087	Not Detected	Not Detected
Hexane	0.10	0.086	Not Detected	Not Detected
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	Not Detected	Not Detected
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.085	Not Detected	Not Detected
Benzene	0.40	0.28	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	Not Detected	Not Detected
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	Not Detected	Not Detected
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	Not Detected	Not Detected
m,p-Xylene	0.10	0.081	Not Detected	Not Detected
o-Xylene	0.10	0.087	Not Detected	Not Detected
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21459 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2002428-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022005sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 09:01 AM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.087	Not Detected	Not Detected
Hexane	0.10	0.086	Not Detected	Not Detected
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	Not Detected	Not Detected
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.085	Not Detected	Not Detected
Benzene	0.40	0.28	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	Not Detected	Not Detected
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	Not Detected	Not Detected
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	Not Detected	Not Detected
m,p-Xylene	0.10	0.081	Not Detected	Not Detected
o-Xylene	0.10	0.087	Not Detected	Not Detected
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21459 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: LCS

Lab ID#: 2002428-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022003sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 08:10 AM**	
		Date of Extraction: 2/20/20	

Compound	%Recovery	Method Limits
Ethanol	41 Q	50-130
Methyl tert-butyl ether	90	70-130
Hexane	94	70-130
Ethyl Acetate	91	70-130
2-Butanone (Methyl Ethyl Ketone)	82	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	92	70-130
Cyclohexane	100	70-130
Carbon Tetrachloride	91	70-130
Benzene	86	70-130
1,2-Dichloroethane	89	70-130
Heptane	97	70-130
Trichloroethene	94	70-130
4-Methyl-2-pentanone	97	70-130
Toluene	89	70-130
Tetrachloroethene	93	70-130
Chlorobenzene	85	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	89	70-130
o-Xylene	84	70-130
Styrene	60	20-100
Propylbenzene	94	70-130
1,4-Dichlorobenzene	73	50-110
Naphthalene	6.1	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: LCSD

Lab ID#: 2002428-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022004sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 08:36 AM**	
		Date of Extraction: 2/20/20	

Compound	%Recovery	Method Limits
Ethanol	40 Q	50-130
Methyl tert-butyl ether	87	70-130
Hexane	92	70-130
Ethyl Acetate	88	70-130
2-Butanone (Methyl Ethyl Ketone)	81	70-130
Chloroform	86	70-130
1,1,1-Trichloroethane	90	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	89	70-130
Benzene	84	70-130
1,2-Dichloroethane	86	70-130
Heptane	95	70-130
Trichloroethene	91	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	88	70-130
Tetrachloroethene	88	70-130
Chlorobenzene	83	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	87	70-130
o-Xylene	82	70-130
Styrene	60	20-100
Propylbenzene	92	70-130
1,4-Dichlorobenzene	73	50-110
Naphthalene	5.9	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

February 14, 2020 to February 27, 2020

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3/12/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2003016

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 3/2/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2003016

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	03/02/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	03/12/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY: Heidi Hayes DATE: 03/12/20

Technical Director

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2003016

Seven Radiello 130 (Solvent) samples were received on March 02, 2020. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 18787 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

The Relative Percent Difference (RPD) of the LCS/LCSD exceeded acceptance limits for Naphthalene.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate 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.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2003016-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.090	0.34	0.30
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.38	0.28
Cyclohexane	0.10	0.11	0.13	0.14
Carbon Tetrachloride	0.10	0.089	0.37	0.33
Benzene	0.40	0.30	0.64	0.47
Heptane	0.10	0.10	0.41	0.42
Toluene	0.10	0.080	0.59	0.48
Tetrachloroethene	0.10	0.10	0.22	0.22
Ethyl Benzene	0.10	0.087	0.11	0.097
m,p-Xylene	0.10	0.085	0.32	0.27
o-Xylene	0.10	0.091	0.12	0.11

Client Sample ID: 5

Lab ID#: 2003016-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.090	0.37	0.33
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.42	0.32
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.089	0.37	0.32
Benzene	0.40	0.30	0.63	0.47
Heptane	0.10	0.10	0.20	0.20
Toluene	0.10	0.080	0.74	0.60
m,p-Xylene	0.10	0.085	0.24	0.21

Client Sample ID: 7

Lab ID#: 2003016-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.090	0.40	0.36
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.48	0.36
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.089	0.41	0.37

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 7

Lab ID#: 2003016-03A

Benzene	0.40	0.30	0.68	0.50
Heptane	0.10	0.10	0.21	0.21
Toluene	0.10	0.080	0.77	0.62
Ethyl Benzene	0.10	0.087	0.10	0.092
m,p-Xylene	0.10	0.085	0.28	0.24

Client Sample ID: 8

Lab ID#: 2003016-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.090	0.32	0.29
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.39	0.29
Carbon Tetrachloride	0.10	0.089	0.34	0.30
Benzene	0.40	0.30	0.59	0.44
Heptane	0.10	0.10	0.20	0.20
Toluene	0.10	0.080	0.55	0.44
m,p-Xylene	0.10	0.085	0.20	0.17

Client Sample ID: 12

Lab ID#: 2003016-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.090	0.34	0.30
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.38	0.29
Carbon Tetrachloride	0.10	0.089	0.38	0.34
Benzene	0.40	0.30	0.64	0.47
Heptane	0.10	0.10	0.22	0.22
Toluene	0.10	0.080	0.54	0.43
m,p-Xylene	0.10	0.085	0.21	0.18

Client Sample ID: Dup

Lab ID#: 2003016-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Dup

Lab ID#: 2003016-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.090	0.34	0.30
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.39	0.29
Carbon Tetrachloride	0.10	0.089	0.36	0.32
Benzene	0.40	0.30	0.61	0.46
Heptane	0.10	0.10	0.21	0.21
Toluene	0.10	0.080	0.59	0.47
m,p-Xylene	0.10	0.085	0.23	0.19

Client Sample ID: TB

Lab ID#: 2003016-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2003016-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030307sim**	**Date of Collection: 2/27/20 10:52:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 10:19 AM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.34	0.30
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.38	0.28
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.13	0.14
Carbon Tetrachloride	0.10	0.089	0.37	0.33
Benzene	0.40	0.30	0.64	0.47
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.41	0.42
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.59	0.48
Tetrachloroethene	0.10	0.10	0.22	0.22
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	0.11	0.097
m,p-Xylene	0.10	0.085	0.32	0.27
o-Xylene	0.10	0.091	0.12	0.11
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 39.0F , duration time = 18763 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 5

Lab ID#: 2003016-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030308sim**	**Date of Collection: 2/27/20 11:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 10:45 AM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.37	0.33
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.42	0.32
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.089	0.37	0.32
Benzene	0.40	0.30	0.63	0.47
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.20	0.20
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.74	0.60
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected
m,p-Xylene	0.10	0.085	0.24	0.21
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 40.0F , duration time = 18777 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 7

Lab ID#: 2003016-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030309sim**	**Date of Collection: 2/27/20 11:02:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 11:11 AM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.40	0.36
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.48	0.36
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.089	0.41	0.37
Benzene	0.40	0.30	0.68	0.50
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.21	0.21
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.77	0.62
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	0.10	0.092
m,p-Xylene	0.10	0.085	0.28	0.24
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 39.0F , duration time = 18765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 8

Lab ID#: 2003016-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030310sim**	**Date of Collection: 2/27/20 11:09:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 11:38 AM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.092	Not Detected	Not Detected
Hexane	0.10	0.090	0.32	0.29
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.39	0.29
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	0.34	0.30
Benzene	0.40	0.30	0.59	0.44
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.20	0.20
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.55	0.44
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected
m,p-Xylene	0.10	0.085	0.20	0.17
o-Xylene	0.10	0.092	Not Detected	Not Detected
Styrene	0.10	0.098	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 39.0F , duration time = 18758 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 12

Lab ID#: 2003016-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030311sim**	**Date of Collection: 2/27/20 10:58:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 12:03 PM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.34	0.30
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.38	0.29
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	0.38	0.34
Benzene	0.40	0.30	0.64	0.47
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.22	0.22
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.54	0.43
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected
m,p-Xylene	0.10	0.085	0.21	0.18
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 39.0F , duration time = 18787 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: Dup

Lab ID#: 2003016-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030312sim**	**Date of Collection: 2/27/20 11:11:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 12:29 PM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.092	Not Detected	Not Detected
Hexane	0.10	0.090	0.34	0.30
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.39	0.29
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	0.36	0.32
Benzene	0.40	0.30	0.61	0.46
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.21	0.21
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.59	0.47
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected
m,p-Xylene	0.10	0.085	0.23	0.19
o-Xylene	0.10	0.092	Not Detected	Not Detected
Styrene	0.10	0.098	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 39.0F , duration time = 18758 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: TB

Lab ID#: 2003016-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030313sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 12:55 PM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	Not Detected	Not Detected
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	Not Detected	Not Detected
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	Not Detected	Not Detected
Benzene	0.40	0.30	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	Not Detected	Not Detected
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	Not Detected	Not Detected
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected
m,p-Xylene	0.10	0.085	Not Detected	Not Detected
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 40.0F , duration time = 18787 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2003016-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030306sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 09:51 AM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	Not Detected	Not Detected
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	Not Detected	Not Detected
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	Not Detected	Not Detected
Benzene	0.40	0.30	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	Not Detected	Not Detected
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	Not Detected	Not Detected
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected
m,p-Xylene	0.10	0.085	Not Detected	Not Detected
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected
Naphthalene	0.10	0.24	Not Detected	Not Detected

Temperature = 40.0F , duration time = 18787 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: LCS

Lab ID#: 2003016-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030303sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 08:28 AM**	
		Date of Extraction: 3/3/20	

Compound	%Recovery	Method Limits
Ethanol	57	50-130
Methyl tert-butyl ether	100	70-130
Hexane	104	70-130
Ethyl Acetate	100	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
Chloroform	98	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	96	70-130
Benzene	92	70-130
1,2-Dichloroethane	96	70-130
Heptane	103	70-130
Trichloroethene	100	70-130
4-Methyl-2-pentanone	102	70-130
Toluene	96	70-130
Tetrachloroethene	99	70-130
Chlorobenzene	92	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	95	70-130
o-Xylene	90	70-130
Styrene	61	20-100
Propylbenzene	103	70-130
1,4-Dichlorobenzene	80	50-110
Naphthalene	7.9	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: LCSD

Lab ID#: 2003016-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030304sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 08:55 AM**	
		Date of Extraction: 3/3/20	

Compound	%Recovery	Method Limits
Ethanol	67	50-130
Methyl tert-butyl ether	104	70-130
Hexane	108	70-130
Ethyl Acetate	104	70-130
2-Butanone (Methyl Ethyl Ketone)	97	70-130
Chloroform	102	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	108	70-130
Carbon Tetrachloride	100	70-130
Benzene	96	70-130
1,2-Dichloroethane	99	70-130
Heptane	105	70-130
Trichloroethene	102	70-130
4-Methyl-2-pentanone	105	70-130
Toluene	99	70-130
Tetrachloroethene	99	70-130
Chlorobenzene	96	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	96	70-130
o-Xylene	93	70-130
Styrene	72	20-100
Propylbenzene	104	70-130
1,4-Dichlorobenzene	86	50-110
Naphthalene	13	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

February 27, 2020 to March 12, 2020

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3/26/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill
Project #:
Workorder #: 2003373

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 3/13/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2003373

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill
DATE RECEIVED:	03/13/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	03/26/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY: Heidi Hayes

Technical Director

DATE: 03/26/20

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2003373

Seven Radiello 130 (Solvent) samples were received on March 13, 2020. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20352 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

The Relative Percent Difference (RPD) of the LCS/LCSD exceeded acceptance limits for Naphthalene.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate 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.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2003373-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.35	0.28
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.30	0.20
Cyclohexane	0.10	0.099	0.12	0.12
Carbon Tetrachloride	0.10	0.080	0.39	0.31
Benzene	0.40	0.27	0.63	0.42
Heptane	0.10	0.092	0.36	0.33
Toluene	0.10	0.072	0.89	0.64
Tetrachloroethene	0.10	0.091	0.11	0.098
Ethyl Benzene	0.10	0.079	0.11	0.090
m,p-Xylene	0.10	0.076	0.36	0.28
o-Xylene	0.10	0.082	0.14	0.12

Client Sample ID: 5

Lab ID#: 2003373-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.39	0.31
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.31	0.21
Cyclohexane	0.10	0.097	0.11	0.11
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.66	0.43
Heptane	0.10	0.090	0.27	0.24
Toluene	0.10	0.071	0.86	0.61
Ethyl Benzene	0.10	0.077	0.12	0.090
m,p-Xylene	0.10	0.075	0.34	0.25
o-Xylene	0.10	0.080	0.11	0.087

Client Sample ID: 7

Lab ID#: 2003373-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.43	0.34
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.35	0.23

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 7

Lab ID#: 2003373-03A

Cyclohexane	0.10	0.097	0.14	0.13
Carbon Tetrachloride	0.10	0.078	0.44	0.34
Benzene	0.40	0.26	0.73	0.48
Heptane	0.10	0.090	0.36	0.33
Toluene	0.10	0.071	1.0	0.72
Ethyl Benzene	0.10	0.077	0.14	0.11
m,p-Xylene	0.10	0.075	0.40	0.30
o-Xylene	0.10	0.080	0.13	0.11

Client Sample ID: 8

Lab ID#: 2003373-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.38	0.30
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.30	0.20
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.40	0.32
Benzene	0.40	0.27	0.67	0.45
Heptane	0.10	0.092	0.37	0.34
Toluene	0.10	0.072	0.81	0.58
Ethyl Benzene	0.10	0.078	0.12	0.092
m,p-Xylene	0.10	0.076	0.33	0.25
o-Xylene	0.10	0.082	0.11	0.092

Client Sample ID: 12

Lab ID#: 2003373-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.44	0.35
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.37	0.25
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.77	0.50
Heptane	0.10	0.090	0.42	0.38

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 12

Lab ID#: 2003373-05A

Toluene	0.10	0.071	0.87	0.62
Ethyl Benzene	0.10	0.077	0.13	0.10
m,p-Xylene	0.10	0.075	0.35	0.26
o-Xylene	0.10	0.080	0.12	0.095

Client Sample ID: Dup

Lab ID#: 2003373-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.36	0.29
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.33	0.22
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.39	0.31
Benzene	0.40	0.27	0.67	0.45
Heptane	0.10	0.092	0.36	0.33
Toluene	0.10	0.072	0.82	0.59
Ethyl Benzene	0.10	0.078	0.11	0.089
m,p-Xylene	0.10	0.076	0.34	0.26
o-Xylene	0.10	0.082	0.11	0.092

Client Sample ID: TB

Lab ID#: 2003373-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2003373-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031710sim**	**Date of Collection: 3/12/20 11:23:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 12:54 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.35	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.30	0.20
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.12	0.12
Carbon Tetrachloride	0.10	0.080	0.39	0.31
Benzene	0.40	0.27	0.63	0.42
1,2-Dichloroethane	0.10	0.070	Not Detected	Not Detected
Heptane	0.10	0.092	0.36	0.33
Trichloroethene	0.10	0.078	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.89	0.64
Tetrachloroethene	0.10	0.091	0.11	0.098
Chlorobenzene	0.10	0.079	Not Detected	Not Detected
Ethyl Benzene	0.10	0.079	0.11	0.090
m,p-Xylene	0.10	0.076	0.36	0.28
o-Xylene	0.10	0.082	0.14	0.12
Styrene	0.10	0.088	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 50.0F , duration time = 20189 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 5

Lab ID#: 2003373-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031711sim**	**Date of Collection: 3/12/20 2:24:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 01:20 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.39	0.31
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.31	0.21
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.11	0.11
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.66	0.43
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.27	0.24
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.86	0.61
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.090
m,p-Xylene	0.10	0.075	0.34	0.25
o-Xylene	0.10	0.080	0.11	0.087
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.0F , duration time = 20343 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: 7

Lab ID#: 2003373-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031712sim**	**Date of Collection: 3/12/20 2:15:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 01:45 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.43	0.34
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.35	0.23
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.14	0.13
Carbon Tetrachloride	0.10	0.078	0.44	0.34
Benzene	0.40	0.26	0.73	0.48
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.36	0.33
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.0	0.72
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.14	0.11
m,p-Xylene	0.10	0.075	0.40	0.30
o-Xylene	0.10	0.080	0.13	0.11
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.0F , duration time = 20352 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 8

Lab ID#: 2003373-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031713sim**	**Date of Collection: 3/12/20 11:06:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 02:11 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.38	0.30
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.30	0.20
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.40	0.32
Benzene	0.40	0.27	0.67	0.45
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.37	0.34
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.81	0.58
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.12	0.092
m,p-Xylene	0.10	0.076	0.33	0.25
o-Xylene	0.10	0.082	0.11	0.092
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 51.0F , duration time = 20156 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 12

Lab ID#: 2003373-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031714sim**	**Date of Collection: 3/12/20 1:56:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 02:37 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.44	0.35
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.37	0.25
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.77	0.50
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.42	0.38
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.87	0.62
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.13	0.10
m,p-Xylene	0.10	0.075	0.35	0.26
o-Xylene	0.10	0.080	0.12	0.095
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20337 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: Dup

Lab ID#: 2003373-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031715sim**	**Date of Collection: 3/12/20 11:06:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 03:03 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.36	0.29
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.33	0.22
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.39	0.31
Benzene	0.40	0.27	0.67	0.45
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.36	0.33
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.82	0.59
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.089
m,p-Xylene	0.10	0.076	0.34	0.26
o-Xylene	0.10	0.082	0.11	0.092
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 51.0F , duration time = 20156 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: TB

Lab ID#: 2003373-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031716sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 03:28 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20352 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2003373-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031705sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 10:27 AM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20352 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: LCS

Lab ID#: 2003373-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031703sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 09:31 AM**	
		Date of Extraction: 3/17/20	

Compound	%Recovery	Method Limits
Ethanol	56	50-130
Methyl tert-butyl ether	96	70-130
Hexane	104	70-130
Ethyl Acetate	100	70-130
2-Butanone (Methyl Ethyl Ketone)	92	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	92	70-130
Benzene	92	70-130
1,2-Dichloroethane	90	70-130
Heptane	104	70-130
Trichloroethene	100	70-130
4-Methyl-2-pentanone	103	70-130
Toluene	96	70-130
Tetrachloroethene	96	70-130
Chlorobenzene	92	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	95	70-130
o-Xylene	91	70-130
Styrene	67	20-100
Propylbenzene	101	70-130
1,4-Dichlorobenzene	80	50-110
Naphthalene	11	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: LCSD

Lab ID#: 2003373-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031704sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 09:57 AM**	
		Date of Extraction: 3/17/20	

Compound	%Recovery	Method Limits
Ethanol	50	50-130
Methyl tert-butyl ether	92	70-130
Hexane	101	70-130
Ethyl Acetate	97	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
Chloroform	92	70-130
1,1,1-Trichloroethane	90	70-130
Cyclohexane	101	70-130
Carbon Tetrachloride	88	70-130
Benzene	90	70-130
1,2-Dichloroethane	87	70-130
Heptane	100	70-130
Trichloroethene	94	70-130
4-Methyl-2-pentanone	99	70-130
Toluene	93	70-130
Tetrachloroethene	90	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	90	70-130
o-Xylene	86	70-130
Styrene	63	20-100
Propylbenzene	95	70-130
1,4-Dichlorobenzene	75	50-110
Naphthalene	7.1	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

March 12, 2020 to March 26, 2020

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4/14/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2004019

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 4/1/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2004019

Work Order Summary

CLIENT:	Mr. Bill Abernathy Feezor Engineering, Inc. 3377 Hollenberg Drive Bridgeton, MO 63044	**BILL TO:**	Accounts Payable Feezor Engineering, Inc. 406 E. Walnut Chatham, IL 62629
PHONE:	314-502-1299	**P.O. #**	BT-204
FAX:		**PROJECT #**	Bridgeton Landfill VOCs
DATE RECEIVED:	04/01/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	04/14/2020		

FRACTION #	NAME	TEST
01A	1	Passive S.E. RAD130/SKC
02A	5	Passive S.E. RAD130/SKC
03A	7	Passive S.E. RAD130/SKC
04A	8	Passive S.E. RAD130/SKC
05A	12	Passive S.E. RAD130/SKC
06A	Dup	Passive S.E. RAD130/SKC
07A	TB	Passive S.E. RAD130/SKC
08A	Lab Blank	Passive S.E. RAD130/SKC
09A	LCS	Passive S.E. RAD130/SKC
09AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:  DATE: 04/14/20

Technical Director

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2004019

Seven Radiello 130 (Solvent) samples were received on April 01, 2020. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20181 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

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

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate 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.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 1

Lab ID#: 2004019-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.35	0.28
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25
Cyclohexane	0.10	0.098	0.10	0.10
Carbon Tetrachloride	0.10	0.079	0.31	0.24
Benzene	0.40	0.26	0.56	0.37
Heptane	0.10	0.091	0.34	0.31
Toluene	0.10	0.071	0.66	0.47
Tetrachloroethene	0.10	0.090	0.20	0.18
Ethyl Benzene	0.10	0.078	0.11	0.087
m,p-Xylene	0.10	0.075	0.38	0.29
o-Xylene	0.10	0.081	0.13	0.11

Client Sample ID: 5

Lab ID#: 2004019-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.34	0.27
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.27	0.55	0.37
Heptane	0.10	0.092	0.18	0.17
Toluene	0.10	0.072	0.62	0.44
m,p-Xylene	0.10	0.076	0.22	0.17

Client Sample ID: 7

Lab ID#: 2004019-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.36	0.29
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.41	0.27
Carbon Tetrachloride	0.10	0.079	0.32	0.25
Benzene	0.40	0.27	0.56	0.38
Heptane	0.10	0.092	0.20	0.18

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 7

Lab ID#: 2004019-03A

Toluene	0.10	0.072	0.68	0.49
m,p-Xylene	0.10	0.076	0.27	0.21

Client Sample ID: 8

Lab ID#: 2004019-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.33	0.26
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.26	0.57	0.37
Heptane	0.10	0.091	0.22	0.20
Toluene	0.10	0.071	0.62	0.44
m,p-Xylene	0.10	0.075	0.24	0.18

Client Sample ID: 12

Lab ID#: 2004019-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.36	0.29
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.45	0.30
Carbon Tetrachloride	0.10	0.079	0.34	0.27
Benzene	0.40	0.27	0.59	0.39
Heptane	0.10	0.092	0.27	0.25
Toluene	0.10	0.072	0.57	0.41
m,p-Xylene	0.10	0.076	0.25	0.19

Client Sample ID: Dup

Lab ID#: 2004019-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.081	0.36	0.29
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.43	0.29
Carbon Tetrachloride	0.10	0.079	0.31	0.24

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Dup

Lab ID#: 2004019-06A

Benzene	0.40	0.26	0.56	0.37
Heptane	0.10	0.092	0.19	0.18
Toluene	0.10	0.072	0.62	0.45
m,p-Xylene	0.10	0.076	0.23	0.18

Client Sample ID: TB

Lab ID#: 2004019-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2004019-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040318sim**	**Date of Collection: 3/26/20 10:57:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 06:25 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.35	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.10	0.10
Carbon Tetrachloride	0.10	0.079	0.31	0.24
Benzene	0.40	0.26	0.56	0.37
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.34	0.31
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.66	0.47
Tetrachloroethene	0.10	0.090	0.20	0.18
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.087
m,p-Xylene	0.10	0.075	0.38	0.29
o-Xylene	0.10	0.081	0.13	0.11
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.0F , duration time = 20130 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: 5

Lab ID#: 2004019-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040319sim**	**Date of Collection: 3/26/20 11:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 06:51 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.34	0.27
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.27	0.55	0.37
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.18	0.17
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.62	0.44
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.22	0.17
o-Xylene	0.10	0.082	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 19975 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 7

Lab ID#: 2004019-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040320sim**	**Date of Collection: 3/26/20 11:15:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 07:17 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.36	0.29
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.41	0.27
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.32	0.25
Benzene	0.40	0.27	0.56	0.38
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.20	0.18
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.68	0.49
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.27	0.21
o-Xylene	0.10	0.082	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 19974 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 8

Lab ID#: 2004019-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040321sim**	**Date of Collection: 3/26/20 11:28:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 07:42 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	0.33	0.26
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.26	0.57	0.37
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.22	0.20
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.62	0.44
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	0.24	0.18
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20181 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 12

Lab ID#: 2004019-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040322sim**	**Date of Collection: 3/26/20 11:08:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 08:08 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.36	0.29
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.45	0.30
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.34	0.27
Benzene	0.40	0.27	0.59	0.39
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.27	0.25
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.57	0.41
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.25	0.19
o-Xylene	0.10	0.082	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 19987 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: Dup

Lab ID#: 2004019-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040323sim**	**Date of Collection: 3/26/20 11:34:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 08:34 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.36	0.29
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.43	0.29
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	0.31	0.24
Benzene	0.40	0.26	0.56	0.37
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.19	0.18
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.62	0.45
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.076	0.23	0.18
o-Xylene	0.10	0.082	Not Detected	Not Detected
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 19993 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: TB

Lab ID#: 2004019-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040324sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 09:00 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20181 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2004019-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040310sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 02:30 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected
Hexane	0.10	0.080	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 56.0F , duration time = 20181 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: LCS

Lab ID#: 2004019-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040308sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 01:22 PM**	
		Date of Extraction: 4/3/20	

Compound	%Recovery	Method Limits
Ethanol	43 Q	50-130
Methyl tert-butyl ether	95	70-130
Hexane	109	70-130
Ethyl Acetate	103	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	96	70-130
Cyclohexane	112	70-130
Carbon Tetrachloride	94	70-130
Benzene	98	70-130
1,2-Dichloroethane	90	70-130
Heptane	114	70-130
Trichloroethene	106	70-130
4-Methyl-2-pentanone	109	70-130
Toluene	102	70-130
Tetrachloroethene	102	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	105	70-130
m,p-Xylene	100	70-130
o-Xylene	95	70-130
Styrene	59	20-100
Propylbenzene	104	70-130
1,4-Dichlorobenzene	79	50-110
Naphthalene	7.2	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2004019-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040309sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 01:48 PM**	
		Date of Extraction: 4/3/20	

Compound	%Recovery	Method Limits
Ethanol	48 Q	50-130
Methyl tert-butyl ether	94	70-130
Hexane	106	70-130
Ethyl Acetate	100	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
Chloroform	93	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	109	70-130
Carbon Tetrachloride	91	70-130
Benzene	94	70-130
1,2-Dichloroethane	88	70-130
Heptane	108	70-130
Trichloroethene	100	70-130
4-Methyl-2-pentanone	103	70-130
Toluene	97	70-130
Tetrachloroethene	95	70-130
Chlorobenzene	89	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	92	70-130
o-Xylene	88	70-130
Styrene	61	20-100
Propylbenzene	95	70-130
1,4-Dichlorobenzene	75	50-110
Naphthalene	7.1	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

Appendix 3

Level IV Data Validation Summary Reports

January 16, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill January 16th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

March 31st, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on January 16th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on January 16th, 2020 were shipped for delivery to the laboratory on January 20th, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2001372-01A
5		2001372-02A
7		2001372-03A
8		2001372-04A
12		2001372-05A
Dup	Field Duplicate @ 1	2001372-06A
TB	Trip Blank	2001372-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	1/16/2020	1/21/2020	1/21/2020	5	0
5	1/16/2020	1/21/2020	1/21/2020	5	0
7	1/16/2020	1/21/2020	1/21/2020	5	0
8	1/16/2020	1/21/2020	1/21/2020	5	0
12	1/16/2020	1/21/2020	1/21/2020	5	0
Dup	1/16/2020	1/21/2020	1/21/2020	5	0
TB	1/16/2020	1/21/2020	1/21/2020	5	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-18 on December 11th, 2019 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{RRFs}$).

RRFs and $\overline{RRFs}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
12/11/2019 MSD-18	Ethyl Acetate: RF20 = 0.048, RF50 = 0.049, RF100 = 0.048, and RF200 = 0.046; Lab Criteria = 0.05 Ethylbenzene: 0.385, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: 0.694, EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on December 11th, 2019. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**.

Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
12/11/2019 14:22 MSD-18	Ethylbenzene = 0.440, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on January 21st, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
1/21/2020 07:57 MSD-18	Ethylbenzene = 0.380, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%.

No qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal

standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (1 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project

or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill January 16th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill January 16th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (95 of 95 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill January 16th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 91.1% (153 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2001372-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012120sim**	**Date of Collection:**	**1/16/20 9:53:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/21/20 03:48 PM**
		Date of Extraction:	**1/21/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.62	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.097	Not Detected	Not Detected
Hexane	0.10	0.096	0.40	0.38
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.10	0.080	0.33	0.26
Chloroform	0.10	0.084	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.14	0.16
Carbon Tetrachloride	0.10	0.094	0.45	0.42
Benzene	0.40	0.32	0.62	0.49
1,2-Dichloroethane	0.10	0.082	Not Detected	Not Detected
Heptane	0.10	0.11	0.33	0.36
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.085	0.79	0.68
Tetrachloroethene	0.10	0.11	0.11	0.12
Chlorobenzene	0.10	0.093	Not Detected	Not Detected
Ethyl Benzene	0.10	0.093	0.14	0.13 J+
m,p-Xylene	0.10	0.090	0.48	0.43
o-Xylene	0.10	0.097	0.21	0.21
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 24.0F , duration time = 18497 minutes.

Container Type: Radiello 130 (Solvent)

3/31/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130

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Client Sample ID: 5

Lab ID#: 2001372-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012121sim**	**Date of Collection:**	**1/16/20 11:10:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/21/20 04:12 PM**
		Date of Extraction:	**1/21/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.094	0.55	0.52
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.43	0.34
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.18	0.20
Carbon Tetrachloride	0.10	0.093	0.56	0.52
Benzene	0.40	0.31	0.78	0.61
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.35	0.38
Trichloroethene	0.10	0.090	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	1.0	0.88
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.16	0.15 J+
m,p-Xylene	0.10	0.089	0.43	0.38
o-Xylene	0.10	0.096	0.15	0.14
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18602 minutes.

Container Type: Radiello 130 (Solvent)

3/31/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

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Client Sample ID: 7

Lab ID#: 2001372-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012122sim**	**Date of Collection:**	**1/16/20 11:03:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/21/20 04:37 PM**
		Date of Extraction:	**1/21/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.095	0.52	0.49
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.39	0.31
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.17	0.19
Carbon Tetrachloride	0.10	0.093	0.46	0.43
Benzene	0.40	0.31	0.67	0.52
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.31	0.33
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	1.0	0.86
Tetrachloroethene	0.10	0.11	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.16	0.14 J+
m,p-Xylene	0.10	0.089	0.43	0.39
o-Xylene	0.10	0.096	0.15	0.14
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18531 minutes.
Container Type: Radiello 130 (Solvent)

3/31/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130

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Client Sample ID: 8

Lab ID#: 2001372-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012123sim**	**Date of Collection:**	**1/16/20 11:20:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/21/20 05:02 PM**
		Date of Extraction:	**1/21/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.095	0.47	0.44
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.37	0.29
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.14	0.17
Carbon Tetrachloride	0.10	0.093	0.42	0.39
Benzene	0.40	0.31	0.70	0.55
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.34	0.36
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	0.93	0.78
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.14	0.13 J+
m,p-Xylene	0.10	0.089	0.39	0.35
o-Xylene	0.10	0.096	0.13	0.13
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18541 minutes.

Container Type: Radiello 130 (Solvent)

3/31/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

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Client Sample ID: 12

Lab ID#: 2001372-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012124sim**	**Date of Collection:**	**1/16/20 10:40:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/21/20 05:27 PM**
		Date of Extraction:	**1/21/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.095	0.62	0.59
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	0.50	0.40
Chloroform	0.10	0.084	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.18	0.21
Carbon Tetrachloride	0.10	0.094	0.54	0.50
Benzene	0.40	0.31	0.83	0.65
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	0.50	0.55
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.085	1.0	0.87
Tetrachloroethene	0.10	0.11	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	0.17	0.16 J+
m,p-Xylene	0.10	0.090	0.45	0.40
o-Xylene	0.10	0.096	0.15	0.15
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 24.0F , duration time = 18607 minutes.

Container Type: Radiello 130 (Solvent)

3/31/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130

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Client Sample ID: Dup

Lab ID#: 2001372-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012125sim**	**Date of Collection: 1/16/20 9:53:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 05:52 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.62	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.097	Not Detected	Not Detected
Hexane	0.10	0.096	0.42	0.40
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.10	0.080	0.32	0.25
Chloroform	0.10	0.084	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	0.13	0.15
Carbon Tetrachloride	0.10	0.094	0.38	0.36
Benzene	0.40	0.32	0.61	0.48
1,2-Dichloroethane	0.10	0.082	Not Detected	Not Detected
Heptane	0.10	0.11	0.35	0.38
Trichloroethene	0.10	0.091	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.085	0.87	0.74
Tetrachloroethene	0.10	0.11	0.12	0.12
Chlorobenzene	0.10	0.093	Not Detected	Not Detected
Ethyl Benzene	0.10	0.093	0.15	0.14 J+
m,p-Xylene	0.10	0.090	0.51	0.46
o-Xylene	0.10	0.097	0.24	0.23
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 24.0F , duration time = 18497 minutes.

Container Type: Radiello 130 (Solvent)

3/31/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130

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Client Sample ID: TB

Lab ID#: 2001372-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18012126sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/21/20 06:16 PM**	
		Date of Extraction: 1/21/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.61	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.096	Not Detected	Not Detected
Hexane	0.10	0.094	Not Detected	Not Detected
Ethyl Acetate	0.40	0.32	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.10	0.079	Not Detected	Not Detected
Chloroform	0.10	0.083	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.10	Not Detected	Not Detected
Cyclohexane	0.10	0.12	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.093	Not Detected	Not Detected
Benzene	0.40	0.31	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.081	Not Detected	Not Detected
Heptane	0.10	0.11	Not Detected	Not Detected
Trichloroethene	0.10	0.090	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.19	Not Detected	Not Detected
Toluene	0.10	0.084	Not Detected	Not Detected
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.092	Not Detected	Not Detected
Ethyl Benzene	0.10	0.092	Not Detected	Not Detected R
m,p-Xylene	0.10	0.089	Not Detected	Not Detected
o-Xylene	0.10	0.096	Not Detected	Not Detected
Styrene	0.10	0.10	Not Detected	Not Detected
Propylbenzene	0.10	0.11	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.25	Not Detected	Not Detected

Temperature = 26.0F , duration time = 18607 minutes.
Container Type: Radiello 130 (Solvent)

3/31/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130

January 30, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill January 30th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

April 22nd, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on January 30th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on January 30th, 2020 were shipped for delivery to the laboratory on January 31st, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2001730-01A
5		2001730-02A
7		2001730-03A
8		2001730-04A
12		2001730-05A
Dup	Field Duplicate @ 12	2001730-06A
TB	Trip Blank	2001730-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	1/30/2020	2/11/2020	2/11/2020	12	0
5	1/30/2020	2/11/2020	2/11/2020	12	0
7	1/30/2020	2/11/2020	2/11/2020	12	0
8	1/30/2020	2/11/2020	2/11/2020	12	0
12	1/30/2020	2/11/2020	2/11/2020	12	0
Dup	1/30/2020	2/11/2020	2/11/2020	12	0
TB	1/30/2020	2/11/2020	2/11/2020	12	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on February 8th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{RRFs}$).

RRFs and $\overline{RRFs}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
2/8/2020 MSD-C	Ethylbenzene: 0.398, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF100 = 0.682, RF200 = 0.662; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on February 8th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/8/2020 16:04 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on February 11th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/11/2020 06:51 MSD-C	Ethylbenzene = 0.415, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 2/11/2020 07:23 LCSD 2/11/2020 07:49	Ethanol	42.84%	40.42%	5.8%	50% - 130%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (12 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill January 30th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill January 30th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 97.9% (93 of 95 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill January 30th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 94.6% (159 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2001730-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021107sim**	**Date of Collection: 1/30/20 12:24:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 09:15 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.54	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.085	Not Detected	Not Detected	
Hexane	0.10	0.084	0.41	0.34	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.36	0.26	
Chloroform	0.10	0.074	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.10	0.11	
Carbon Tetrachloride	0.10	0.083	0.40	0.33	
Benzene	0.40	0.28	0.65	0.45	
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected	
Heptane	0.10	0.096	0.21	0.20	
Trichloroethene	0.10	0.080	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.075	0.91	0.68	
Tetrachloroethene	0.10	0.094	0.12	0.11	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.082	0.16	0.13	J+
m,p-Xylene	0.10	0.079	0.51	0.41	
o-Xylene	0.10	0.085	0.16	0.14	
Styrene	0.10	0.091	Not Detected	Not Detected	
Propylbenzene	0.10	0.097	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 35.0F , duration time = 20298 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

4/22/2020

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Client Sample ID: 5

Lab ID#: 2001730-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021108sim**	**Date of Collection: 1/30/20 1:21:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 09:41 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.54	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected	
Hexane	0.10	0.084	0.44	0.37	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.39	0.27	
Chloroform	0.10	0.074	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.13	0.14	
Carbon Tetrachloride	0.10	0.083	0.40	0.34	
Benzene	0.40	0.28	0.68	0.48	
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected	
Heptane	0.10	0.096	0.24	0.23	
Trichloroethene	0.10	0.080	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.075	0.85	0.64	
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.082	0.11	0.090	J+
m,p-Xylene	0.10	0.079	0.28	0.22	
o-Xylene	0.10	0.086	Not Detected	Not Detected	
Styrene	0.10	0.091	Not Detected	Not Detected	
Propylbenzene	0.10	0.098	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 36.0F , duration time = 20290 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: 7

Lab ID#: 2001730-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021109sim**	**Date of Collection: 1/30/20 1:15:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 10:07 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.54	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected	
Hexane	0.10	0.084	0.41	0.34	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.42	0.29	
Chloroform	0.10	0.074	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.14	0.14	
Carbon Tetrachloride	0.10	0.083	0.38	0.32	
Benzene	0.40	0.28	0.65	0.45	
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected	
Heptane	0.10	0.096	0.20	0.19	
Trichloroethene	0.10	0.080	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.075	0.78	0.58	
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.082	0.10	0.083	J+
m,p-Xylene	0.10	0.079	0.25	0.20	
o-Xylene	0.10	0.086	Not Detected	Not Detected	
Styrene	0.10	0.091	Not Detected	Not Detected	
Propylbenzene	0.10	0.098	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 36.0F , duration time = 20289 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

4/22/2020

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Client Sample ID: 8

Lab ID#: 2001730-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021110sim**	**Date of Collection: 1/30/20 1:28:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 10:33 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.41	0.35
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.41	0.29
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.12	0.12
Carbon Tetrachloride	0.10	0.083	0.39	0.33
Benzene	0.40	0.28	0.69	0.48
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.25	0.24
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.71	0.53
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected
m,p-Xylene	0.10	0.079	0.25	0.20
o-Xylene	0.10	0.086	Not Detected	Not Detected
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 36.0F , duration time = 20287 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

4/22/2020

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Client Sample ID: 12

Lab ID#: 2001730-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021111sim**	**Date of Collection: 1/30/20 12:51:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 10:59 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.54	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected	
Hexane	0.10	0.084	0.50	0.42	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.52	0.36	
Chloroform	0.10	0.074	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.15	0.15	
Carbon Tetrachloride	0.10	0.083	0.49	0.41	
Benzene	0.40	0.28	0.79	0.55	
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected	
Heptane	0.10	0.096	0.28	0.27	
Trichloroethene	0.10	0.080	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.075	0.77	0.58	
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.082	0.12	0.099	J+
m,p-Xylene	0.10	0.079	0.30	0.23	
o-Xylene	0.10	0.086	0.10	0.088	
Styrene	0.10	0.091	Not Detected	Not Detected	
Propylbenzene	0.10	0.098	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 35.0F , duration time = 20287 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

4/22/2020

eurofins | Air Toxics

Client Sample ID: Dup

Lab ID#: 2001730-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021112sim**	**Date of Collection: 1/30/20 12:51:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 11:25 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.084	0.48	0.40
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	0.47	0.33
Chloroform	0.10	0.074	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.13	0.13
Carbon Tetrachloride	0.10	0.083	0.48	0.40
Benzene	0.40	0.28	0.77	0.53
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.28	0.26
Trichloroethene	0.10	0.080	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.075	0.75	0.56
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.12	0.095 J+
m,p-Xylene	0.10	0.079	0.29	0.23
o-Xylene	0.10	0.086	0.10	0.088
Styrene	0.10	0.091	Not Detected	Not Detected
Propylbenzene	0.10	0.098	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 35.0F , duration time = 20287 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

4/22/2020

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Client Sample ID: TB

Lab ID#: 2001730-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c021113sim**	**Date of Collection: 1/30/20**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/20 11:51 AM**	
		Date of Extraction: 2/11/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.54	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.085	Not Detected	Not Detected	
Hexane	0.10	0.084	Not Detected	Not Detected	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.070	Not Detected	Not Detected	
Chloroform	0.10	0.074	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.083	Not Detected	Not Detected	
Benzene	0.40	0.28	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected	
Heptane	0.10	0.096	Not Detected	Not Detected	
Trichloroethene	0.10	0.080	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.075	Not Detected	Not Detected	
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.079	Not Detected	Not Detected	
o-Xylene	0.10	0.085	Not Detected	Not Detected	
Styrene	0.10	0.091	Not Detected	Not Detected	
Propylbenzene	0.10	0.097	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 36.0F , duration time = 20298 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

4/22/2020

February 14, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill February 14th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

April 29th, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on February 14th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on February 14th, 2020 were shipped for delivery to the laboratory on February 18th, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2002428-01A
5		2002428-02A
7		2002428-03A
8		2002428-04A
12		2002428-05A
Dup	Field Duplicate @ 8	2002428-06A
TB	Trip Blank	2002428-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	2/14/2020	2/20/2020	2/20/2020	6	0
5	2/14/2020	2/20/2020	2/20/2020	6	0
7	2/14/2020	2/20/2020	2/20/2020	6	0
8	2/14/2020	2/20/2020	2/20/2020	6	0
12	2/14/2020	2/20/2020	2/20/2020	6	0
Dup	2/14/2020	2/20/2020	2/20/2020	6	0
TB	2/14/2020	2/20/2020	2/20/2020	6	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on February 8th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{RRFs}$).

RRFs and $\overline{RRFs}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
2/8/2020 MSD-C	Ethylbenzene: 0.398, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF100 = 0.682, RF200 = 0.662; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on February 8th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/8/2020 16:04 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on February 20th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/20/2020 07:38 MSD-C	Ethylbenzene = 0.383, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 2/20/2020 08:10 LCSD 2/20/2020 08:36	Ethanol	41.2%	39.9%	3.2%	50% - 130%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (8 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill February 14th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill February 14th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 97.9% (93 of 95 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill February 14th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 94.6% (159 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2002428-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022014sim**	**Date of Collection:**	**2/14/20 10:08:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**2/20/20 12:57 PM**
		Date of Extraction:	**2/20/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.087	Not Detected	Not Detected
Hexane	0.10	0.086	0.62	0.53
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.51	0.37
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.085	0.43	0.36
Benzene	0.40	0.28	0.82	0.58
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.47	0.46
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.2	0.91
Tetrachloroethene	0.10	0.096	0.49	0.48
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.22	0.19 J+
m,p-Xylene	0.10	0.081	0.69	0.56
o-Xylene	0.10	0.087	0.24	0.21
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21459 minutes.
Container Type: Radiello 130 (Solvent)

4/29/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: 5

Lab ID#: 2002428-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022015sim**	**Date of Collection: 2/14/20 10:22:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 01:22 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.56	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected	
Hexane	0.10	0.086	0.68	0.58	
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.59	0.42	
Chloroform	0.10	0.076	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.20	0.20	
Carbon Tetrachloride	0.10	0.085	0.47	0.40	
Benzene	0.40	0.28	0.88	0.63	
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected	
Heptane	0.10	0.098	0.36	0.36	
Trichloroethene	0.10	0.082	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.077	1.3	1.0	
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected	
Chlorobenzene	0.10	0.084	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.084	0.16	0.14	J+
m,p-Xylene	0.10	0.081	0.46	0.37	
o-Xylene	0.10	0.088	0.16	0.14	
Styrene	0.10	0.093	Not Detected	Not Detected	
Propylbenzene	0.10	0.10	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.23	Not Detected	Not Detected	

4/29/2020

Temperature = 10.0F , duration time = 21420 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

eurofins | Air Toxics

Client Sample ID: 7

Lab ID#: 2002428-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022016sim**	**Date of Collection:**	**2/14/20 10:15:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**2/20/20 01:48 PM**
		Date of Extraction:	**2/20/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.56	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected	
Hexane	0.10	0.086	0.65	0.56	
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.56	0.40	
Chloroform	0.10	0.076	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.19	0.20	
Carbon Tetrachloride	0.10	0.085	0.44	0.38	
Benzene	0.40	0.28	0.84	0.60	
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected	
Heptane	0.10	0.098	0.35	0.35	
Trichloroethene	0.10	0.082	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.077	1.2	0.92	
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected	
Chlorobenzene	0.10	0.084	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.084	0.18	0.15	J+
m,p-Xylene	0.10	0.081	0.48	0.39	
o-Xylene	0.10	0.088	0.16	0.14	
Styrene	0.10	0.093	Not Detected	Not Detected	
Propylbenzene	0.10	0.10	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.23	Not Detected	Not Detected	

Temperature = 10.0F , duration time = 21419 minutes.

Container Type: Radiello 130 (Solvent)

4/29/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

eurofins | Air Toxics

Client Sample ID: 8

Lab ID#: 2002428-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022017sim**	**Date of Collection: 2/14/20 10:30:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 02:14 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.57	0.49
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.48	0.34
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.16	0.17
Carbon Tetrachloride	0.10	0.085	0.41	0.35
Benzene	0.40	0.28	0.78	0.55
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.32	0.32
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.0	0.78
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.15	0.13 J+
m,p-Xylene	0.10	0.081	0.42	0.34
o-Xylene	0.10	0.088	0.15	0.13
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21421 minutes.

Container Type: Radiello 130 (Solvent)

4/29/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

eurofins | Air Toxics

Client Sample ID: 12

Lab ID#: 2002428-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022018sim**	**Date of Collection: 2/14/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 02:39 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.62	0.54
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.54	0.39
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.87	0.62
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.42	0.42
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.1	0.86
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.17	0.14 J+
m,p-Xylene	0.10	0.081	0.47	0.38
o-Xylene	0.10	0.088	0.16	0.14
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21414 minutes.

Container Type: Radiello 130 (Solvent)

4/29/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

eurofins | Air Toxics

Client Sample ID: Dup

Lab ID#: 2002428-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022019sim**	**Date of Collection: 2/14/20 10:32:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 03:05 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.56	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.088	Not Detected	Not Detected
Hexane	0.10	0.086	0.55	0.47
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	0.46	0.33
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.15	0.16
Carbon Tetrachloride	0.10	0.085	0.42	0.36
Benzene	0.40	0.28	0.79	0.56
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.33	0.33
Trichloroethene	0.10	0.082	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	1.0	0.81
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.16	0.13 J+
m,p-Xylene	0.10	0.081	0.44	0.36
o-Xylene	0.10	0.088	0.15	0.13
Styrene	0.10	0.093	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected R
Naphthalene	0.10	0.23	Not Detected	Not Detected

Temperature = 10.0F , duration time = 21423 minutes.
Container Type: Radiello 130 (Solvent)

4/29/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

eurofins | Air Toxics

Client Sample ID: TB

Lab ID#: 2002428-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c022020sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/20/20 03:31 PM**	
		Date of Extraction: 2/20/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.56	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.087	Not Detected	Not Detected	
Hexane	0.10	0.086	Not Detected	Not Detected	
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.072	Not Detected	Not Detected	
Chloroform	0.10	0.076	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.085	Not Detected	Not Detected	
Benzene	0.40	0.28	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected	
Heptane	0.10	0.098	Not Detected	Not Detected	
Trichloroethene	0.10	0.082	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.077	Not Detected	Not Detected	
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected	
Chlorobenzene	0.10	0.084	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.084	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.081	Not Detected	Not Detected	
o-Xylene	0.10	0.087	Not Detected	Not Detected	
Styrene	0.10	0.093	Not Detected	Not Detected	
Propylbenzene	0.10	0.10	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	R
Naphthalene	0.10	0.23	Not Detected	Not Detected	

Temperature = 10.0F , duration time = 21459 minutes.

Container Type: Radiello 130 (Solvent)

4/29/2020

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

February 27, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill February 27th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

April 30th, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on February 27th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on February 27th, 2020 were shipped for delivery to the laboratory on March 2nd, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2003016-01A
5		2003016-02A
7		2003016-03A
8		2003016-04A
12		2003016-05A
Dup	Field Duplicate @ 8	2003016-06A
TB	Trip Blank	2003016-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	2/27/2020	3/3/2020	3/3/2020	5	0
5	2/27/2020	3/3/2020	3/3/2020	5	0
7	2/27/2020	3/3/2020	3/3/2020	5	0
8	2/27/2020	3/3/2020	3/3/2020	5	0
12	2/27/2020	3/3/2020	3/3/2020	5	0
Dup	2/27/2020	3/3/2020	3/3/2020	5	0
TB	2/27/2020	3/3/2020	3/3/2020	5	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on February 8th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{RRFs}$).

RRFs and $\overline{RRFs}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
2/8/2020 MSD-C	Ethylbenzene: 0.398, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF100 = 0.682, RF200 = 0.662; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on February 8th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/8/2020 16:04 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on March 3rd, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
3/3/2020 07:44 MSD-C	Ethylbenzene = 0.385, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 3/3/2020 08:28 LCSD 3/3/2020 08:55	Naphthalene	7.9%	13.3%	51.1%	5% - 80%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (8 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill February 27th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 97.9% (47 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill February 27th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (95 of 95 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill February 27th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 92.9% (156 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2003016-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030307sim**	**Date of Collection:**	**2/27/20 10:52:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/3/20 10:19 AM**
		Date of Extraction:	**3/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.34	0.30
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.38	0.28
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.13	0.14
Carbon Tetrachloride	0.10	0.089	0.37	0.33
Benzene	0.40	0.30	0.64	0.47
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.41	0.42
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.59	0.48
Tetrachloroethene	0.10	0.10	0.22	0.22
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	0.11	0.097 J+
m,p-Xylene	0.10	0.085	0.32	0.27
o-Xylene	0.10	0.091	0.12	0.11
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.24	Not Detected	Not Detected UJ

Temperature = 39.0F , duration time = 18763 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

4/30/2020

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Client Sample ID: 5

Lab ID#: 2003016-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030308sim**	**Date of Collection:**	**2/27/20 11:20:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/3/20 10:45 AM**
		Date of Extraction:	**3/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.37	0.33
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.42	0.32
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.089	0.37	0.32
Benzene	0.40	0.30	0.63	0.47
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.20	0.20
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.74	0.60
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected R
m,p-Xylene	0.10	0.085	0.24	0.21
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.24	Not Detected	Not Detected UJ

Temperature = 40.0F , duration time = 18777 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 7

Lab ID#: 2003016-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030309sim**	**Date of Collection:**	**2/27/20 11:02:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/3/20 11:11 AM**
		Date of Extraction:	**3/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.40	0.36
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.48	0.36
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.089	0.41	0.37
Benzene	0.40	0.30	0.68	0.50
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.21	0.21
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.77	0.62
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	0.10	0.092 J+
m,p-Xylene	0.10	0.085	0.28	0.24
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.24	Not Detected	Not Detected UJ

Temperature = 39.0F , duration time = 18765 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 8

Lab ID#: 2003016-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030310sim**	**Date of Collection:**	**2/27/20 11:09:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/3/20 11:38 AM**
		Date of Extraction:	**3/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.092	Not Detected	Not Detected
Hexane	0.10	0.090	0.32	0.29
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.39	0.29
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	0.34	0.30
Benzene	0.40	0.30	0.59	0.44
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.20	0.20
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.55	0.44
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected R
m,p-Xylene	0.10	0.085	0.20	0.17
o-Xylene	0.10	0.092	Not Detected	Not Detected
Styrene	0.10	0.098	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.24	Not Detected	Not Detected UJ

Temperature = 39.0F , duration time = 18758 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 12

Lab ID#: 2003016-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030311sim**	**Date of Collection:**	**2/27/20 10:58:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/3/20 12:03 PM**
		Date of Extraction:	**3/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	0.34	0.30
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.38	0.29
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	0.38	0.34
Benzene	0.40	0.30	0.64	0.47
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.22	0.22
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.54	0.43
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected R
m,p-Xylene	0.10	0.085	0.21	0.18
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.24	Not Detected	Not Detected UJ

Temperature = 39.0F , duration time = 18787 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: Dup
Lab ID#: 2003016-06A
VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030312sim**	**Date of Collection:**	**2/27/20 11:11:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/3/20 12:29 PM**
		Date of Extraction:	**3/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.092	Not Detected	Not Detected
Hexane	0.10	0.090	0.34	0.30
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	0.39	0.29
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	0.36	0.32
Benzene	0.40	0.30	0.61	0.46
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	0.21	0.21
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	0.59	0.47
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	~~Not Detected~~ R
m,p-Xylene	0.10	0.085	0.23	0.19
o-Xylene	0.10	0.092	Not Detected	Not Detected
Styrene	0.10	0.098	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.24	Not Detected	Not Detected UJ

Temperature = 39.0F , duration time = 18758 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: TB

Lab ID#: 2003016-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c030313sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/20 12:55 PM**	
		Date of Extraction: 3/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.58	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.091	Not Detected	Not Detected
Hexane	0.10	0.090	Not Detected	Not Detected
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.075	Not Detected	Not Detected
Chloroform	0.10	0.079	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.096	Not Detected	Not Detected
Cyclohexane	0.10	0.11	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.089	Not Detected	Not Detected
Benzene	0.40	0.30	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.077	Not Detected	Not Detected
Heptane	0.10	0.10	Not Detected	Not Detected
Trichloroethene	0.10	0.086	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.18	Not Detected	Not Detected
Toluene	0.10	0.080	Not Detected	Not Detected
Tetrachloroethene	0.10	0.10	Not Detected	Not Detected
Chlorobenzene	0.10	0.087	Not Detected	Not Detected
Ethyl Benzene	0.10	0.087	Not Detected	Not Detected R
m,p-Xylene	0.10	0.085	Not Detected	Not Detected
o-Xylene	0.10	0.091	Not Detected	Not Detected
Styrene	0.10	0.097	Not Detected	Not Detected
Propylbenzene	0.10	0.10	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.12	Not Detected	Not Detected R
Naphthalene	0.10	0.24	Not Detected	Not Detected UJ

Temperature = 40.0F , duration time = 18787 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

4/30/2020

March 12, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill March 12th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

April 30th, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on March 12th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on March 12th, 2020 were shipped for delivery to the laboratory on March 13th, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2003373-01A
5		2003373-02A
7		2003373-03A
8		2003373-04A
12		2003373-05A
Dup	Field Duplicate @ 8	2003373-06A
TB	Trip Blank	2003373-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	3/12/2020	3/17/2020	3/17/2020	5	0
5	3/12/2020	3/17/2020	3/17/2020	5	0
7	3/12/2020	3/17/2020	3/17/2020	5	0
8	3/12/2020	3/17/2020	3/17/2020	5	0
12	3/12/2020	3/17/2020	3/17/2020	5	0
Dup	3/12/2020	3/17/2020	3/17/2020	5	0
TB	3/12/2020	3/17/2020	3/17/2020	5	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on February 8th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{RRFs}$).

RRFs and $\overline{RRFs}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
2/8/2020 MSD-C	Ethylbenzene: 0.398, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF100 = 0.682, RF200 = 0.662; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on February 8th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/8/2020 16:04 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on March 17th, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
3/17/2020 09:00 MSD-C	Ethylbenzene = 0.385, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 3/17/2020 09:31 LCSD 3/17/2020 09:57	Naphthalene	11.1%	7.1%	43.6%	5% - 80%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (8 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill March 12th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 97.9% (47 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill March 12th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 100% (95 of 95 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill March 12th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 95.2% (160 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2003373-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031710sim**	**Date of Collection:**	**3/12/20 11:23:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/17/20 12:54 PM**
		Date of Extraction:	**3/17/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.35	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.30	0.20
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.12	0.12
Carbon Tetrachloride	0.10	0.080	0.39	0.31
Benzene	0.40	0.27	0.63	0.42
1,2-Dichloroethane	0.10	0.070	Not Detected	Not Detected
Heptane	0.10	0.092	0.36	0.33
Trichloroethene	0.10	0.078	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.89	0.64
Tetrachloroethene	0.10	0.091	0.11	0.098
Chlorobenzene	0.10	0.079	Not Detected	Not Detected
Ethyl Benzene	0.10	0.079	0.11	0.090 J+
m,p-Xylene	0.10	0.076	0.36	0.28
o-Xylene	0.10	0.082	0.14	0.12
Styrene	0.10	0.088	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 50.0F , duration time = 20189 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

4/30/2020

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Client Sample ID: 5

Lab ID#: 2003373-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031711sim**	**Date of Collection: 3/12/20 2:24:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 01:20 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.39	0.31
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.31	0.21
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.11	0.11
Carbon Tetrachloride	0.10	0.078	0.40	0.31
Benzene	0.40	0.26	0.66	0.43
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.27	0.24
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.86	0.61
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.12	0.090 J+
m,p-Xylene	0.10	0.075	0.34	0.25
o-Xylene	0.10	0.080	0.11	0.087
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 55.0F , duration time = 20343 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

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Client Sample ID: 7

Lab ID#: 2003373-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031712sim**	**Date of Collection: 3/12/20 2:15:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 01:45 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.43	0.34
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.35	0.23
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.14	0.13
Carbon Tetrachloride	0.10	0.078	0.44	0.34
Benzene	0.40	0.26	0.73	0.48
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.36	0.33
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.0	0.72
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.14	0.11 J+
m,p-Xylene	0.10	0.075	0.40	0.30
o-Xylene	0.10	0.080	0.13	0.11
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 55.0F , duration time = 20352 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 8

Lab ID#: 2003373-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031713sim**	**Date of Collection:**	**3/12/20 11:06:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/17/20 02:11 PM**
		Date of Extraction:	**3/17/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.38	0.30
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.30	0.20
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.40	0.32
Benzene	0.40	0.27	0.67	0.45
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.37	0.34
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.81	0.58
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.12	0.092 J+
m,p-Xylene	0.10	0.076	0.33	0.25
o-Xylene	0.10	0.082	0.11	0.092
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 51.0F , duration time = 20156 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 12

Lab ID#: 2003373-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031714sim**	**Date of Collection: 3/12/20 1:56:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 02:37 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.44	0.35
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	0.37	0.25
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.77	0.50
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.42	0.38
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	0.87	0.62
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.13	0.10 J+
m,p-Xylene	0.10	0.075	0.35	0.26
o-Xylene	0.10	0.080	0.12	0.095
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 56.0F , duration time = 20337 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: Dup

Lab ID#: 2003373-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031715sim**	**Date of Collection:**	**3/12/20 11:06:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/17/20 03:03 PM**
		Date of Extraction:	**3/17/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.081	0.36	0.29
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.068	0.33	0.22
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.099	0.11	0.11
Carbon Tetrachloride	0.10	0.080	0.39	0.31
Benzene	0.40	0.27	0.67	0.45
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.092	0.36	0.33
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	0.82	0.59
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.089 J+
m,p-Xylene	0.10	0.076	0.34	0.26
o-Xylene	0.10	0.082	0.11	0.092
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.094	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	~~Not Detected~~ R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 51.0F , duration time = 20156 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

4/30/2020

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Client Sample ID: TB

Lab ID#: 2003373-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c031716sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/20 03:28 PM**	
		Date of Extraction: 3/17/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	Not Detected	Not Detected
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.066	Not Detected	Not Detected
Chloroform	0.10	0.070	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.078	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	Not Detected	Not Detected
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	Not Detected	Not Detected R
m,p-Xylene	0.10	0.075	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.086	Not Detected	Not Detected
Propylbenzene	0.10	0.092	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected R
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 56.0F , duration time = 20352 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

4/30/2020

March 26, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill March 26th, 2020 VOC Air Monitoring Event

Prepared by Jonathan Wilkinson
Residuals Management Team Member
Feezor Engineering, Inc.

May 1st, 2020

1 INTRODUCTION

Five (5) outdoor air samples, one (1) field duplicate sample, and one (1) trip blank sample were collected at the Bridgeton Landfill on March 26th, 2020. The samples were sent to the Eurofins / Air Toxics Laboratory in Folsom, California and analyzed for Volatile Organic Compounds (VOCs) by EPA Compendium Method TO-17 (modified).

The analytical results were validated using laboratory acceptance criteria and the procedures and guidelines contained in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, revised January 2017 and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, dated October 1999.

Items checked included holding times, instrument performance check results, initial and continuing calibration procedures and results, method and field blank results, deuterated monitoring compound (DMC) recoveries, Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) recoveries, internal standard recoveries, field duplicate results, target compound identification, compound quantitation, and transcriptions from raw data.

All data necessary to complete the data review were provided by the laboratory. Based on the guidelines referenced above, results were qualified as:

- "U": The analyte was not detected at a value greater than the associated analyte quantitation limit;
- "J": An estimated analyte result, "J+" or "J-" used to indicate a high or low bias;
- "NJ": The analyte has been tentatively identified, or is presumed to be present at the associated numerical value;
- "UJ": The analyte was not detected. The reported analyte quantitation limit is approximate and may be inaccurate or imprecise; and
- "R": The result is unusable. The result was rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

2 SAMPLE SUMMARY

Sample results were reported in a Contract Laboratory Program (CLP)-like format data package. Review of the Chain of Custody (COC) form indicates that samples collected on March 26th, 2020 were shipped for delivery to the laboratory on April 1st, 2020 and were received by the laboratory in good condition via Federal Express (the courier used to deliver the samples to the laboratory). **Table 2.1** provides general information about the laboratory and data package, **Table 2.2** lists the samples validated and their respective laboratory identification numbers.

Table 2.1 General Information

Contract Laboratory:	Eurofins / Air Toxics, Inc. Folsom, California
Total # of Samples:	7
Sample Matrix:	Radiello™ 130 activated charcoal sorbent bed passive air sampler

Table 2.2 Sample Identification

Field Sample ID	QA Sample ID	Laboratory ID
1		2004019-01A
5		2004019-02A
7		2004019-03A
8		2004019-04A
12		2004019-05A
Dup	Field Duplicate @ 7	2004019-06A
TB	Trip Blank	2004019-07A

3 VOLATILE ORGANIC COMPOUNDS (EPA METHOD TO-17 MODIFIED)

Analysis of VOCs is accomplished by chemical extraction of target analytes using carbon disulfide followed by injection into a Gas Chromatograph / Mass Spectrometer (GC/MS) for identification and quantitation of analytes.

3.1 HOLDING TIMES

No holding times are specified by the method. Per the manufacturer, the shelf life of the Radiello™ 130 unit is six (6) months. Samples were analyzed according to the times shown in **Table 3.1**

Table 3.1 EPA Method TO-17 (Modified) Sample Holding Times

Field Sample ID	Date Collected	Date Extracted	Date Analyzed	# Days from Collection to Extraction	# Days from Extraction to Analysis
1	3/26/2020	4/3/2020	4/3/2020	8	0
5	3/26/2020	4/3/2020	4/3/2020	8	0
7	3/26/2020	4/3/2020	4/3/2020	8	0
8	3/26/2020	4/3/2020	4/3/2020	8	0
12	3/26/2020	4/3/2020	4/3/2020	8	0
Dup	3/26/2020	4/3/2020	4/3/2020	8	0
TB	3/26/2020	4/3/2020	4/3/2020	8	0

No qualifications were required based on holding times.

3.2 GC INSTRUMENT PERFORMANCE CHECKS

GC/MS instrument performance check results were reported for each 12-hour period when samples were analyzed. Ion abundance acceptance criteria for performance check compound Bromofluorobenzene (BFB) used by the laboratory were similar to ion abundance acceptance criteria provided in ion abundance acceptance criteria provided in Table 3 of the Functional Guidelines, as presented in **Table 3.2**. Using raw GC/MS instrument performance check results provided by the laboratory, ion abundance results were verified to be within each set of acceptance criteria provided in **Table 3.2**.

Table 3.2 BFB Ion Abundance Acceptance Criteria

Ion Mass	Laboratory-Provided Criteria	USEPA CLP Criteria
50	8% to 40% of Mass 95	15% to 40% of Mass 95
75	30% to 66% of Mass 95	30% to 80% of Mass 95
95	Base Peak, 100% Relative Abundance	Base Peak, 100% Relative Abundance
96	5% to 9% of Mass 95	5% to 9% of Mass 95
173	Less than 2% of Mass 174	Less than 2% of Mass 174
174	50% to 120% of Mass 95	50% to 120% of Mass 95
175	4% to 9% of Mass 174	5% to 9% of Mass 174
176	93% to 101% of Mass 174	95% to 101% of Mass 174
177	5% to 9% of Mass 176	5% to 9% of Mass 176

No qualifications were required based on GC/MS instrument performance check results.

3.3 INITIAL CALIBRATION PROCEDURES AND RESULTS

Initial calibration was performed for Instrument MSD-C on February 8th, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for seventeen (17) analytes, nine (9) standards for three (3) analytes, eight (8) standards for two (2) analytes, and seven (7) standards for one (1) analyte. Based upon a review of raw calibration results provided by the laboratory, no errors were detected with the calculation of Percent Relative Standard Deviations (%RSDs), relative response factors (RRFs), or mean relative response factors ($\overline{RRFs}$).

RRFs and $\overline{RRFs}$ for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.3**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.3**. Analytes listed in **Table 3.3** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results. %RSDs for individual analytes were verified to be less than or equal to analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines and were less than or equal to laboratory-provided criteria for other analytes without an EPA-specified maximum value.

Table 3.3 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
2/8/2020 MSD-C	Ethylbenzene: 0.398, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RF100 = 0.682, RF200 = 0.662; EPA Table 4 Min = 0.700	All

No other qualifications were required based on initial calibration procedures or results.

3.4 INITIAL CALIBRATION VERIFCIATION

An initial calibration verification (ICV) sample was analyzed after the initial calibration samples on February 8th, 2020. As required by the Functional Guidelines, the ICV sample solution was obtained from another source than the sources used for the initial calibration. Also as required by the Functional Guidelines, the concentration of the ICV was at or near the midpoint value of the calibration standards used for the initial calibration.

The ICV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.4**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.4**. Results for analytes listed in **Table 3.4** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
2/8/2020 16:04 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500	All

The ICV Percent Differences (%Ds) for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria for other analytes without an EPA-specified value.

No other qualifications were required based on initial calibration procedures or results.

3.5 CONTINUING CALIBRATION VERIFCIATION

A continuing calibration verification (CCV) sample was analyzed prior to analysis of samples on April 3rd, 2020. As required by the Functional Guidelines, the concentration of the CCV was at or near the midpoint value of the calibration standards used for the initial calibration.

The CCV RRFs for target analytes were verified to be greater than analyte-specific USEPA-recommended minimum values provided in Table 4 of the Functional Guidelines, except as listed in **Table 3.5**. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be greater than laboratory-provided criteria, except as listed in **Table 3.5**. Results for analytes listed in **Table 3.5** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
4/3/2020 12:53 MSD-C	Ethylbenzene = 0.385, EPA Table 4 Min = 0.500	All

The CCV %Ds for target analytes were verified to be less than analyte-specific USEPA-recommended maximum values provided in Table 4 of the Functional Guidelines. Other analytes for which no Functional Guidelines Table 4 values were available were verified to be less than laboratory-provided criteria.

No other qualifications were required based on continuing calibration procedures or results.

3.6 BLANKS

Samples were analyzed within one (1) twelve (12)-hour time period. A method blank was analyzed after the CCV sample and prior to the primary samples as required by the Functional Guidelines. Method blank results were reported as non-detect by the laboratory and were verified to be non-detect based on a review of raw results provided by the laboratory.

One (1) trip blank sample was submitted to the laboratory and analyzed with the primary samples. No analytes were detected in the trip blank sample.

No qualifications were required based on blank results.

3.7 DEUTERATED MONITORING COMPOUNDS (SURROGATES)

One (1) deuterated monitoring compound (DMC, or surrogate), Toluene-d8, was added to each sample and used for evaluation of analysis efficiency. The laboratory compared recoveries for Toluene-d8 to the same criteria listed in the Functional Guidelines (70% - 130%). Toluene-d8 recoveries for the primary samples, method blank, and Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) pair were verified to be within 70% - 130%.

No qualifications were required based on DMC results.

3.8 MATRIX SPIKE / MATRIX SPIKE DUPLICATE

No Matrix Spike / Matrix Spike Duplicate (MS/MSD) samples were analyzed.

No qualifications were required based on MS/MSD results.

3.9 LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE

One (1) Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) sample pair was analyzed with the primary samples. LCS/LCSD sample results were verified to be within laboratory-provided control limits and the Relative Percent Difference (RPD) between individual analyte results from the LCS and LCSD were verified be less than 20%, except the results listed in **Table 3.9**.

Table 3.9 LCS / LCSD Results Outside of Laboratory Control Limits

Date & time	Compound	% Recovery		RPD	Acceptance Criteria		Associated Samples
		LCS	LCSD		% Rec	RPD	
LCS 4/3/2020 13:22 LCSD 4/3/2020 13:48	Ethanol	43.2%	47.7%	9.8%	50% - 130%	0% - 20%	All

Analytes listed in **Table 3.9** were qualified as estimated ("J") for positive results and were qualified as estimated non-detect ("UJ") for non-detect results in the associated samples. No other qualifications were required based on LCS/LCSD results.

3.10 INTERNAL STANDARDS

Internal standard area counts and retention times for the samples and blanks were within the Functional Guidelines control limits of 50% to 200% and ±10.0 seconds, respectively, of the corresponding counts and times for the most recent continuing calibration verification sample or midpoint standard from the associated initial calibration. The laboratory-provided internal standard control limit calculations were verified, and the individual sample internal standard results were verified to be within the applicable control limits.

No qualifications were required based on internal standards.

3.11 FIELD DUPLICATES

One (1) field duplicate sample pair (7 / DUP) was collected. Relative Percent Differences (RPDs) between the original and field duplicate samples were calculated to be less than 20% for detected analytes reported above five (5) times the applicable reporting limit (RL) and results were within ±RL for analytes reported at positive values less than five (5) times the RL.

No qualifications were performed based on field duplicate results.

3.12 TARGET ANALYTE IDENTIFICATION

Based on a review of raw sample results provided by the laboratory, no errors were observed with identification of target analytes. Relative intensities of primary and secondary ions for detected analytes were verified to be within ±20% of the laboratory-provided standard relative ion intensities for each analyte. Relative Retention Times (RRTs) were within the EPA-recommended control limits of ±0.06 RRT units of the RRT for the same analyte in the associated opening CCV sample.

No qualifications were performed based on target analyte identification criteria.

3.13 ANALYTE QUANTITATION AND TRANSCRIPTIONS FROM RAW DATA

Compound quantitation was checked for the primary samples, the field duplicate sample, the trip blank sample, and the LCS/LCSD sample pair. No errors were detected in sample quantitation methods or transcriptions from the raw data to the summary forms.

4 PRECISION, ACCURACY, AND COMPLETENESS

Results of the data validation were reviewed to evaluate the precision, accuracy, and completeness of the analyses.

Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate / replicate analyses, usually on LCS samples, spiked samples, and/or field samples. For this project, precision was assessed by tabulating the results of the relative percent differences (RPDs) of the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and original sample / field duplicate sample analyses. RPDs that fall within the project or laboratory-specified QA control limits indicate acceptable precision. The precision number given indicates the percentage of RPDs that were within control limits.

Accuracy is the closeness of a measured result to an accepted reference value. Quality Control (QC) analyses used to measure accuracy include internal standard recoveries, LCS samples, spiked samples, and DMC recoveries. For this project, accuracy was assessed by tabulating the results of the percent recoveries for internal standards, LCS/LCSD samples, DMCs, and results for the laboratory method blank sample. The reported accuracy indicates the percentage of recoveries and blank results within the project or QA control limits.

Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated during data validation. Rejected results are considered to be invalid. The reported completeness is the number of valid results divided by the total number of results.

4.1 OVERALL PROJECT PRECISION

The overall project precision for the Bridgeton Landfill March 26th, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 100% (48 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill March 26th, 2020 VOC air monitoring event, based on the percentage of internal standard recoveries, LCS sample recoveries, and DMC recoveries within control limits, and laboratory method blank non-detects, was 97.9% (93 of 95 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill March 26th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 92.3% (155 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2004019-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040318sim**	**Date of Collection:**	**3/26/20 10:57:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/3/20 06:25 PM**
		Date of Extraction:	**4/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected	
Hexane	0.10	0.080	0.35	0.28	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25	
Chloroform	0.10	0.070	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected	
Cyclohexane	0.10	0.098	0.10	0.10	
Carbon Tetrachloride	0.10	0.079	0.31	0.24	
Benzene	0.40	0.26	0.56	0.37	
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected	
Heptane	0.10	0.091	0.34	0.31	
Trichloroethene	0.10	0.076	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.071	0.66	0.47	
Tetrachloroethene	0.10	0.090	0.20	0.18	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.078	0.11	0.087	J+
m,p-Xylene	0.10	0.075	0.38	0.29	
o-Xylene	0.10	0.081	0.13	0.11	
Styrene	0.10	0.087	Not Detected	Not Detected	
Propylbenzene	0.10	0.093	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 55.0F , duration time = 20130 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

5/1/2020

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Client Sample ID: 5

Lab ID#: 2004019-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040319sim**	**Date of Collection:**	**3/26/20 11:20:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/3/20 06:51 PM**
		Date of Extraction:	**4/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected	
Hexane	0.10	0.081	0.34	0.27	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25	
Chloroform	0.10	0.071	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected	
Cyclohexane	0.10	0.099	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.079	0.30	0.24	
Benzene	0.40	0.27	0.55	0.37	
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected	
Heptane	0.10	0.092	0.18	0.17	
Trichloroethene	0.10	0.077	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.072	0.62	0.44	
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.076	0.22	0.17	
o-Xylene	0.10	0.082	Not Detected	Not Detected	
Styrene	0.10	0.087	Not Detected	Not Detected	
Propylbenzene	0.10	0.093	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 56.0F , duration time = 19975 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: 7

Lab ID#: 2004019-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040320sim**	**Date of Collection:**	**3/26/20 11:15:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/3/20 07:17 PM**
		Date of Extraction:	**4/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected	
Hexane	0.10	0.081	0.36	0.29	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.41	0.27	
Chloroform	0.10	0.071	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected	
Cyclohexane	0.10	0.099	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.079	0.32	0.25	
Benzene	0.40	0.27	0.56	0.38	
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected	
Heptane	0.10	0.092	0.20	0.18	
Trichloroethene	0.10	0.077	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.072	0.68	0.49	
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.076	0.27	0.21	
o-Xylene	0.10	0.082	Not Detected	Not Detected	
Styrene	0.10	0.087	Not Detected	Not Detected	
Propylbenzene	0.10	0.093	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 56.0F , duration time = 19974 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 8

Lab ID#: 2004019-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040321sim**	**Date of Collection:**	**3/26/20 11:28:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/3/20 07:42 PM**
		Date of Extraction:	**4/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	U5
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected	
Hexane	0.10	0.080	0.33	0.26	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.37	0.25	
Chloroform	0.10	0.070	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected	
Cyclohexane	0.10	0.098	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.079	0.30	0.24	
Benzene	0.40	0.26	0.57	0.37	
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected	
Heptane	0.10	0.091	0.22	0.20	
Trichloroethene	0.10	0.076	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.071	0.62	0.44	
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.075	0.24	0.18	
o-Xylene	0.10	0.081	Not Detected	Not Detected	
Styrene	0.10	0.086	Not Detected	Not Detected	
Propylbenzene	0.10	0.092	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 56.0F , duration time = 20181 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

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Client Sample ID: 12

Lab ID#: 2004019-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040322sim**	**Date of Collection: 3/26/20 11:08:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 08:08 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	NJ
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected	
Hexane	0.10	0.081	0.36	0.29	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.45	0.30	
Chloroform	0.10	0.071	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected	
Cyclohexane	0.10	0.098	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.079	0.34	0.27	
Benzene	0.40	0.27	0.59	0.39	
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected	
Heptane	0.10	0.092	0.27	0.25	
Trichloroethene	0.10	0.077	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.072	0.57	0.41	
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.076	0.25	0.19	
o-Xylene	0.10	0.082	Not Detected	Not Detected	
Styrene	0.10	0.087	Not Detected	Not Detected	
Propylbenzene	0.10	0.093	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 56.0F , duration time = 19987 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: Dup

Lab ID#: 2004019-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040323sim**	**Date of Collection:**	**3/26/20 11:34:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/3/20 08:34 PM**
		Date of Extraction:	**4/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected	
Hexane	0.10	0.081	0.36	0.29	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	0.43	0.29	
Chloroform	0.10	0.071	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected	
Cyclohexane	0.10	0.098	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.079	0.31	0.24	
Benzene	0.40	0.26	0.56	0.37	
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected	
Heptane	0.10	0.092	0.19	0.18	
Trichloroethene	0.10	0.077	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.072	0.62	0.45	
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.076	0.23	0.18	
o-Xylene	0.10	0.082	Not Detected	Not Detected	
Styrene	0.10	0.087	Not Detected	Not Detected	
Propylbenzene	0.10	0.093	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 56.0F , duration time = 19993 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

5/1/2020

eurofins | Air Toxics

Client Sample ID: TB

Lab ID#: 2004019-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c040324sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/3/20 09:00 PM**	
		Date of Extraction: 4/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.52	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.081	Not Detected	Not Detected	
Hexane	0.10	0.080	Not Detected	Not Detected	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.10	0.067	Not Detected	Not Detected	
Chloroform	0.10	0.070	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected	
Cyclohexane	0.10	0.098	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.079	Not Detected	Not Detected	
Benzene	0.40	0.26	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected	
Heptane	0.10	0.091	Not Detected	Not Detected	
Trichloroethene	0.10	0.076	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.071	Not Detected	Not Detected	
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected	
Chlorobenzene	0.10	0.078	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.078	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.075	Not Detected	Not Detected	
o-Xylene	0.10	0.081	Not Detected	Not Detected	
Styrene	0.10	0.086	Not Detected	Not Detected	
Propylbenzene	0.10	0.092	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected	R
Naphthalene	0.10	0.21	Not Detected	Not Detected	

Temperature = 56.0F , duration time = 20181 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

5/1/2020