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

Quarterly Monitoring Period
September 24, 2020 through December 31, 2020

Prepared for:

Bridgeton Landfill, LLC
Bridgeton, Missouri

February 15, 2021

Prepared by:

Engineering for a Better World
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TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

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 Report describes the results of quarterly air monitoring for concentrations of volatile organic compounds (VOCs) at five locations on the Bridgeton Landfill property in Bridgeton, Missouri (**Figure 1**) during the period from September 24, 2020 through December 31, 2020. Sampling of air for VOCs at Bridgeton Landfill is accomplished using passive absorption and laboratory carbon disulfide desorption of compounds collected on small cartridges of activated charcoal deployed at and collected from each location. 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 quarterly period covered by this report, seven (7) sample collection events were performed and a total of 49 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 the United States Environmental Protection Agency's (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 VOCs on the Bridgeton Landfill property has continued to date 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 fifth quarterly 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 Eurofins Air Toxics, Inc. 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 peak wind direction during the quarterly monitoring period was from the southeast. Wind roses for each of the seven (7) sampling periods that make up the quarterly monitoring period for this report are presented in **Figures 3a**, **3b**, and **3c**. 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 and cumulative precipitation measured on-site during the quarterly 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 associated with the VOC sampling events performed during the quarterly 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.

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 quarterly monitoring period for this report (**Appendix 3**).

3.0 SUMMARY OF QUARTERLY RESULTS

The quarterly monitoring period for this report included seven (7) sample collection/deployment events that took place between October 8, 2020 and December 31, 2020 on an approximately two-week cycle. There were no additional/special VOC sampling events during the quarterly monitoring period. The following information summarizes field conditions during each of the seven events:

Event Date	Avg Temp at Collection	Peak Wind Direction During Sampling Period
October 8, 2020	59.6 ºF	Southwest (**Fig 3a**)
October 22, 2020	85.0 ºF	Southeast (**Fig 3a**)
November 5, 2020	64.4 ºF	Northwest (**Fig 3b**)
November 19, 2020	61.0 ºF	Southeast (**Fig 3b**)
December 3, 2020	43.4 ºF	West (**Fig 3b**)
December 17, 2020	26.0 ºF	West (**Fig 3c**)
December 31, 2020	28.8 ºF	Northwest (**Fig 3c**)

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 recommendation of October 16, 2015, VOC sampling was moved from Station #11 to Station #12. 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 from analyses of the samples collected during the quarterly 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 collected since May 1, 2015, inclusive of results from the seven (7) events noted above. Values in **Table 1** are presented in µg/m^3, and the statistical summary reflects the range of "detected" values only. The analytical reports from Eurofins Air Toxics, Inc. for the seven most recent quarterly sampling events 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 quarterly 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 concentrations detected during the quarterly monitoring period were noticeably less than those obtained from the off-site locations in 2014-2015. For all analytes but one (toluene), the maximum validated concentrations of the VOCs detected on-site during the period September 24, 2020 through December 31, 2020 were below those detected during the 2014-2015 USEPA sampling. The maximum on-site toluene concentrations of 1.6 ug/m^3, detected during the two-week period between December 3 – December 17, 2020 at Stations A1 and A7, represent maximum values detected during the quarter and not regulatory exceedances. The RfC for toluene is 5,000 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 9/24/20-12/31/20	On-Site RL Range 9/24/20-12/31/20
Benzene	0.41-0.70	0.05-1.0	0.28-0.68 ug/m^3	0.24-0.29 ug/m^3
Ethyl Benzene	0.13-0.37	0.05-1.0	0.086-0.25 ug/m^3	0.070-0.085 ug/m^3
m,p-Xylene	0.32-1.10	0.05-1.0	0.16-0.85 ug/m^3	0.068-0.083 ug/m^3
o-Xylene	0.12-0.39	0.05-1.0	0.087-0.26 ug/m^3	0.074-0.089 ug/m^3
Toluene	1.1-1.2	0.05-1.0	0.41-1.6 ug/m^3	0.065-0.079 ug/m^3
Tetrachloroethene	0.084-0.460	0.05-1.0	0.090-0.12 ug/m^3	0.081-0.098 ug/m^3

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

Thirty-five (35) bi-weekly VOC sampling/analysis events have been performed in accordance with the 2018 Final Consent Judgment since September 4, 2019, in addition to the more than 100 sampling events performed since the program's inception in May 2015. **Tables 2a** through **2m** provide selected time series charts of the detected concentrations (in $\mu g/m^3$) obtained during analyses of samples collected since the VOC monitoring program began. Only VOCs that were routinely detected in laboratory analyses of the on-site Radiello™ samplers have been included in **Tables 2a** through **2m**. Tracking of VOC detections in bi-weekly analyses performed since May 2015 indicates that seasonal effects may impact the absorption efficiency of the Radiello™ samplers, i.e. precipitation/humidity, ambient temperature, wind speed and direction, etc. Time series charts have not been developed for VOCs that exhibited detectable concentrations only sporadically during the program (i.e. 1,2-Dichloroethane).

After review of VOC analytical results of samples collected during the period between September 4, 2019 and September 24, 2020, Bridgeton Landfill, LLC submitted a formal request to MDNR to terminate the VOC air monitoring program in conjunction with submittal of a summary report dated November 15, 2020. Bridgeton Landfill, LLC based the program termination request on: 1) evaluations of VOC analytical results from samples collected during the preceding 13 months; 2) USEPA's August 15, 2019 approval to delete VOC monitoring from the suite of plans associated with the West Lake/Bridgeton Landfill complex; and 3) statements made during a July 17, 2020 conference call, attended by representatives of Bridgeton Landfill and MDNR, in which the state agency expressed receptiveness to the program's cessation. Until a decision is made by MDNR regarding the request, VOC monitoring and reporting will continue.

4.0 REFERENCES

FEI, 2020. Quarterly Report/Annual Summary: Sampling & Analysis of Volatile Organic Compounds in Air at Five Locations – Period Ending September 24, 2020. Prepared for Bridgeton Landfill, LLC by Feezor Engineering, Inc. November 15, 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

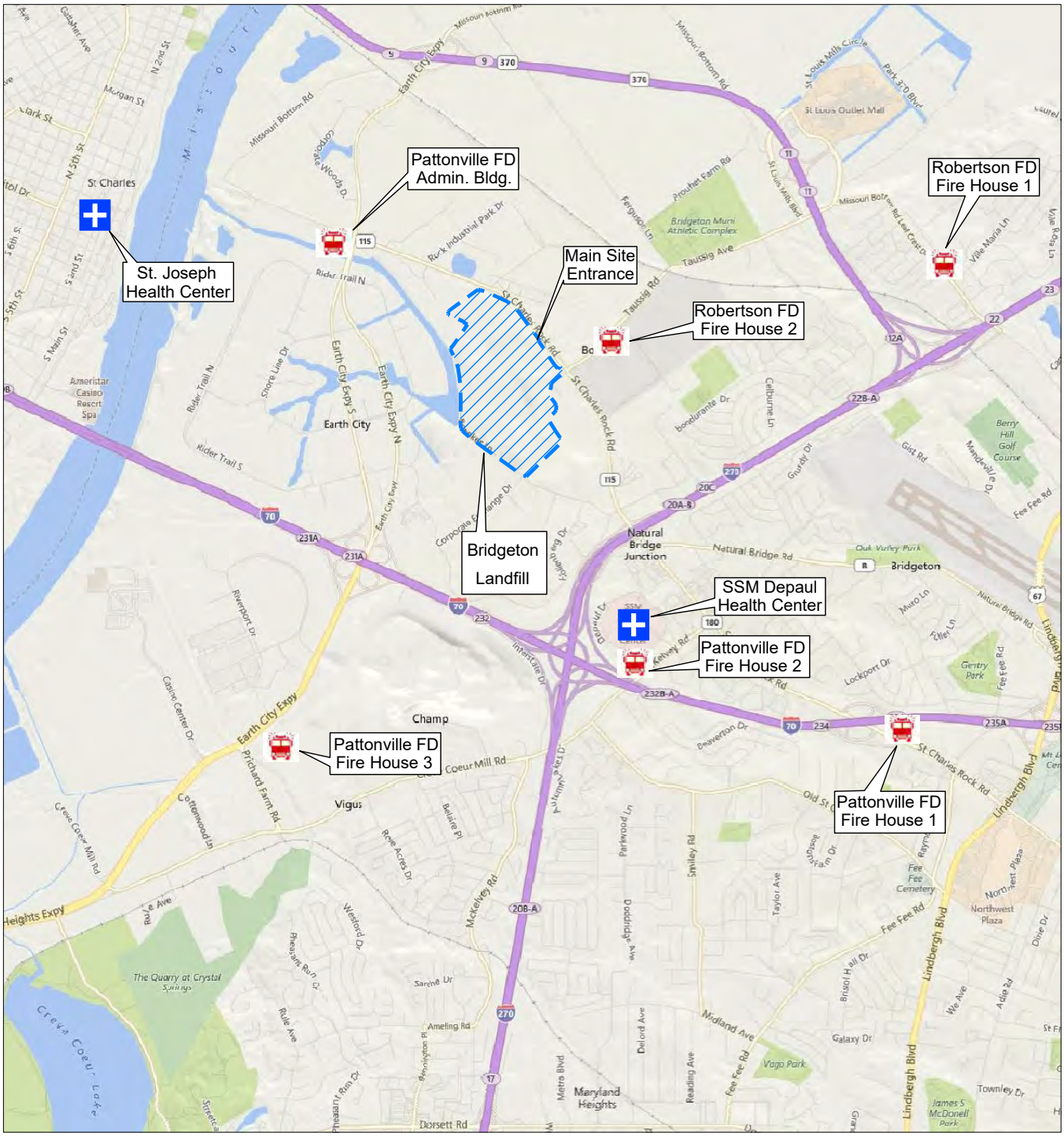

Image: © 2010 NAVTEQ © Microsoft Corporation

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

Scale in Feet

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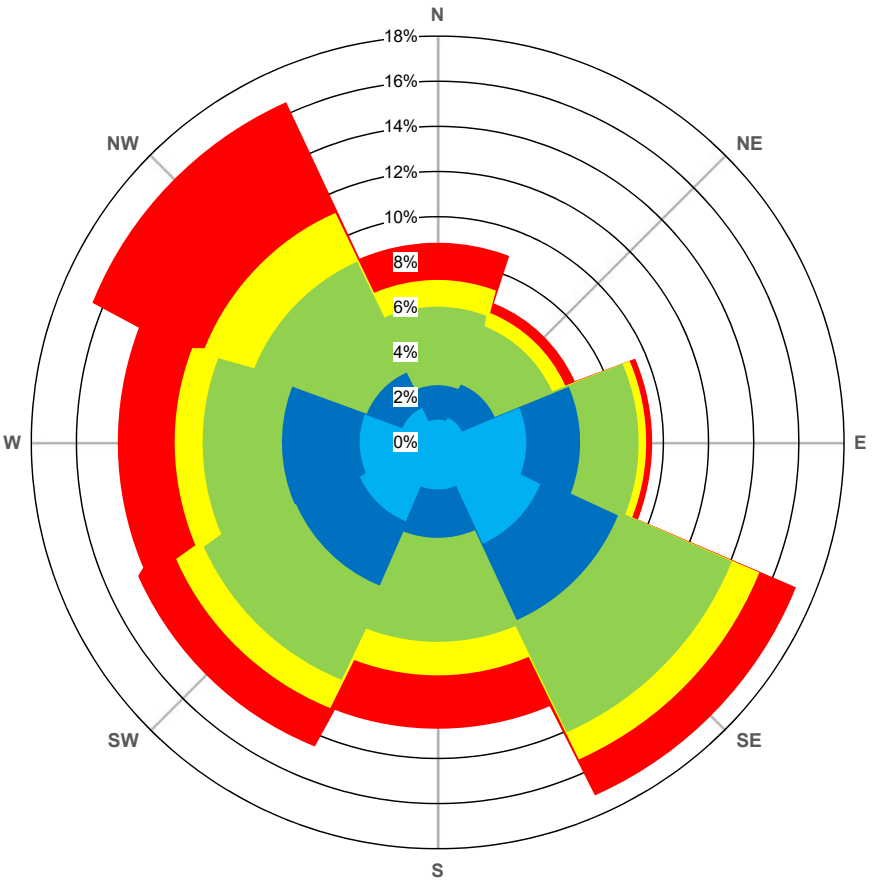
Figure 2

Air Sampling Station Locations

9/24/2020 thru 12/31/2020

Bridgeton Landfill, Bridgeton, MO



Wind speed (mph)

16.23%	10.0 to 30.0
9.91%	8.0 to 10.0
32.30%	4.0 to 8.0
19.56%	2.5 to 4.0
8.21%	1.0 to 2.5

Percent calm:	13.78%
Calm defined as:	< 1.0 mph
Peak frequency:	17.12%
Peak direction:	SE

Occurrences by Wind Direction (WD):

North	767	8.83%
Northeast	577	6.64%
East	825	9.50%
Southeast	1487	17.12%
South	1102	12.69%
Southwest	1262	14.53%
West	1231	14.18%
Northwest	1433	16.50%
	8,684	100.0%

Occurrences by Wind Speed (WS):

<1 mph	1197	13.78%
1 - 2.5 mph	713	8.21%
2.5 - 4 mph	1699	19.56%
4 - 8 mph	2805	32.30%
8 - 10 mph	861	9.91%
>10 mph	1409	16.23%
	8,684	100.0%

The Wind Rose shown is based on 8,684 wind speed/ wind direction readings taken every 15 minutes over 98.4 consecutive days from 9/24/20 6:00 to 12/31/20 16:00

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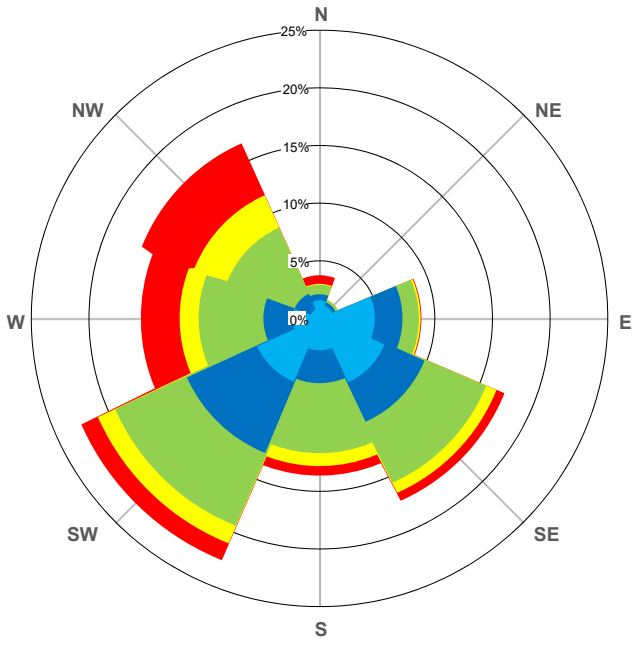
Figure 3

Quarterly Bridgeton Landfill Wind Rose
September 24, 2020
through
December 31, 2020

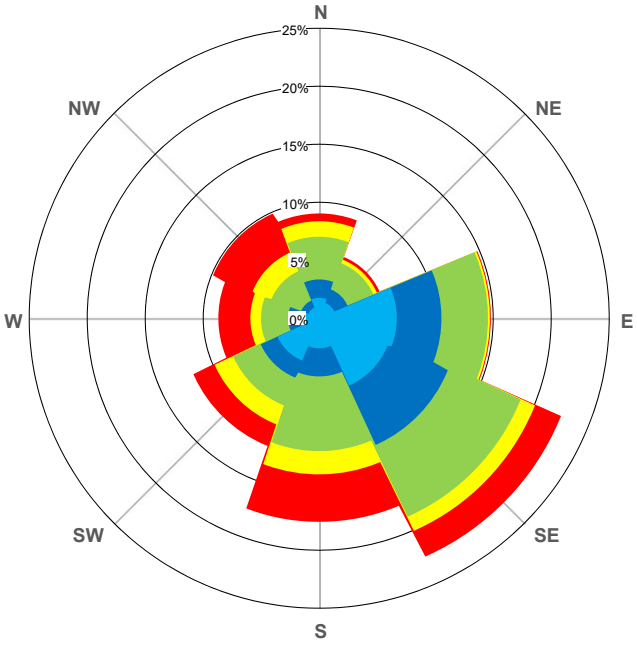


Wind speed (mph)

12.29%	10.00 to 21.00
8.70%	8.00 to 10.00
33.06%	4.00 to 8.00
20.54%	2.50 to 4.00
8.25%	1.00 to 2.50

Mean speed:	5.50
Peak frequency:	22.64%
Peak direction:	SW
Percent calm:	17.17%
Calm defined as:	< 1.00 mph

9/24/2020 thru 10/8/2020



Wind speed (mph)

15.97%	10.00 to 24.00
9.62%	8.00 to 10.00
31.02%	4.00 to 8.00
17.98%	2.50 to 4.00
8.86%	1.00 to 2.50

Mean speed:	6.02
Peak frequency:	22.49%
Peak direction:	SE
Percent calm:	16.56%
Calm defined as:	< 1.00 mph

10/8/2020 thru 10/22/2020

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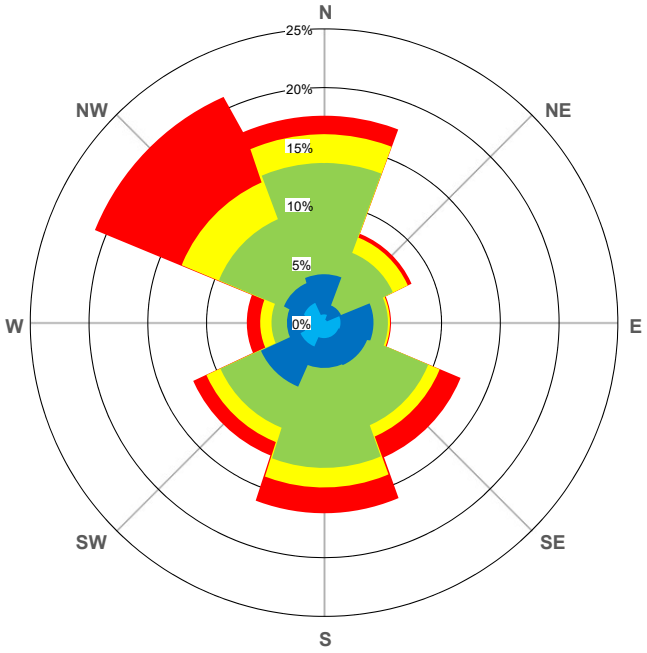
Figure 3a

Wind Roses for Sampling Periods
09/24/20 - 10/08/20
10/08/20 - 10/22/20

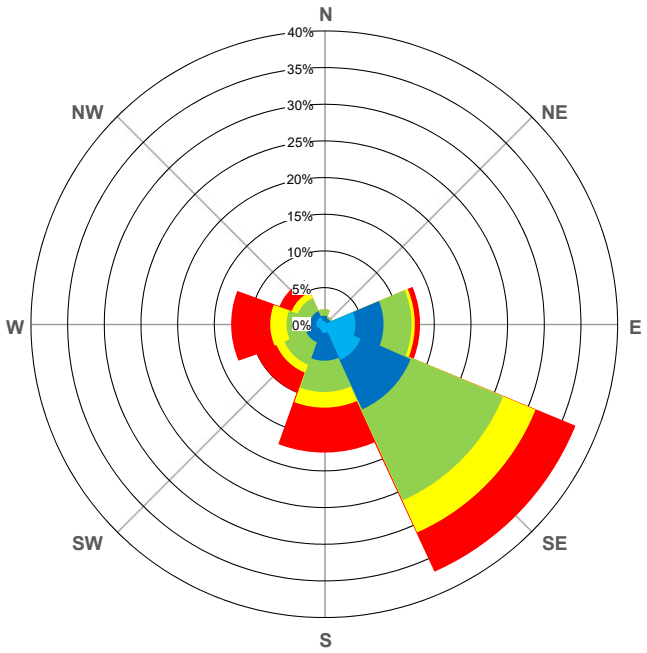


Wind speed (mph)

16.48%	10.00 to 24.00
12.45%	8.00 to 10.00
40.67%	4.00 to 8.00
19.63%	2.50 to 4.00
5.08%	1.00 to 2.50

Mean speed:	6.79
Peak frequency:	21.03%
Peak direction:	NW
Percent calm:	5.70%
Calm defined as:	< 1.00 mph

10/22/2020 thru 11/5/2020

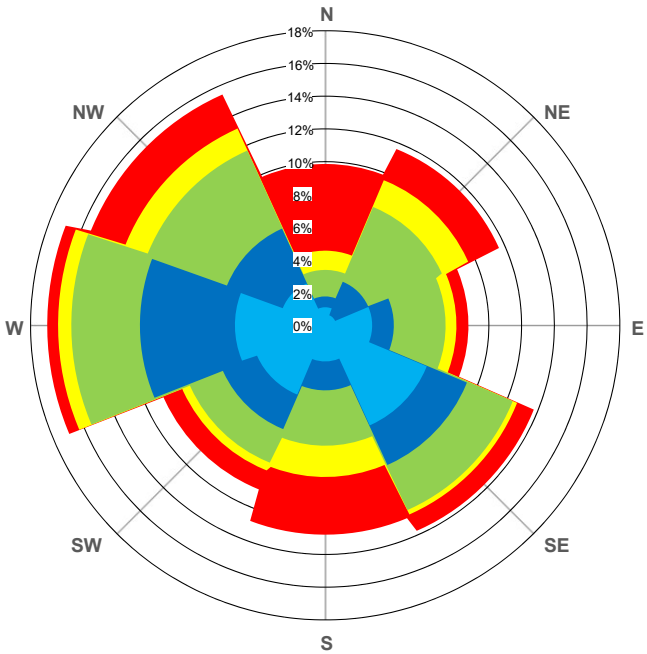


Wind speed (mph)

22.74%	10.00 to 30.00
11.63%	8.00 to 10.00
31.26%	4.00 to 8.00
19.89%	2.50 to 4.00
7.28%	1.00 to 2.50

Mean speed:	7.20
Peak frequency:	36.94%
Peak direction:	SE
Percent calm:	7.19%
Calm defined as:	< 1.00 mph

11/5/2020 thru 11/19/2020



Wind speed (mph)

16.91%	10.00 to 25.00
8.60%	8.00 to 10.00
27.72%	4.00 to 8.00
20.37%	2.50 to 4.00
9.49%	1.00 to 2.50

Mean speed:	5.97
Peak frequency:	16.99%
Peak direction:	W
Percent calm:	16.91%
Calm defined as:	< 1.00 mph

11/19/2020 thru 12/3/2020

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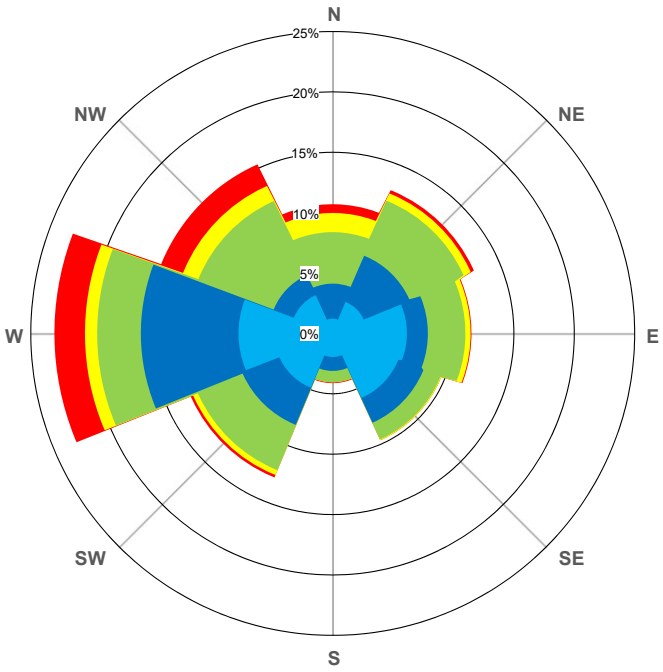
Figure 3b

Wind Roses for Sampling Periods
10/22/20 - 11/05/20
11/05/20 - 11/19/20
11/19/20 - 12/03/20

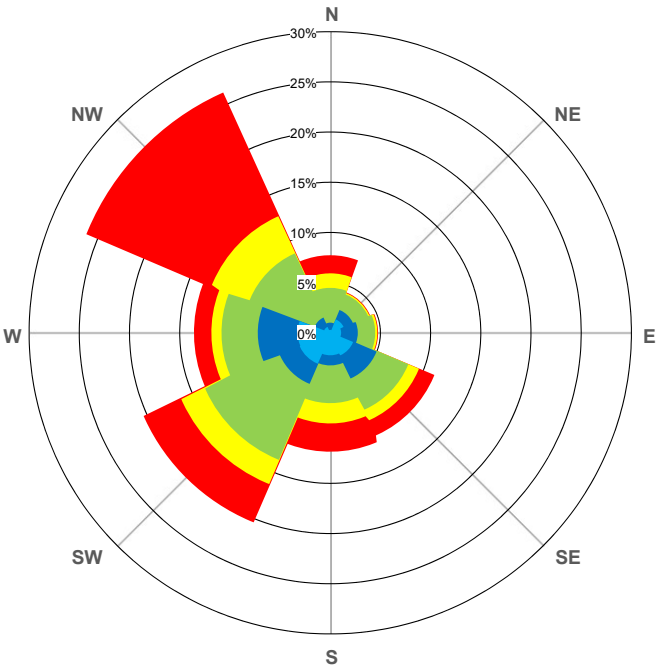


Wind speed (mph)

5.85%	10.00 to 21.00
5.56%	8.00 to 10.00
29.12%	4.00 to 8.00
25.36%	2.50 to 4.00
11.34%	1.00 to 2.50

Mean speed:	4.36
Peak frequency:	23.05%
Peak direction:	W
Percent calm:	22.76%
Calm defined as:	< 1.00 mph

12/3/2020 thru 12/17/2020



Wind speed (mph)

25.78%	10.00 to 30.00
12.64%	8.00 to 10.00
32.78%	4.00 to 8.00
14.08%	2.50 to 4.00
7.00%	1.00 to 2.50

Mean speed:	7.73
Peak frequency:	26.21%
Peak direction:	NW
Percent calm:	7.73%
Calm defined as:	< 1.00 mph

12/17/2020 thru 12/31/2020

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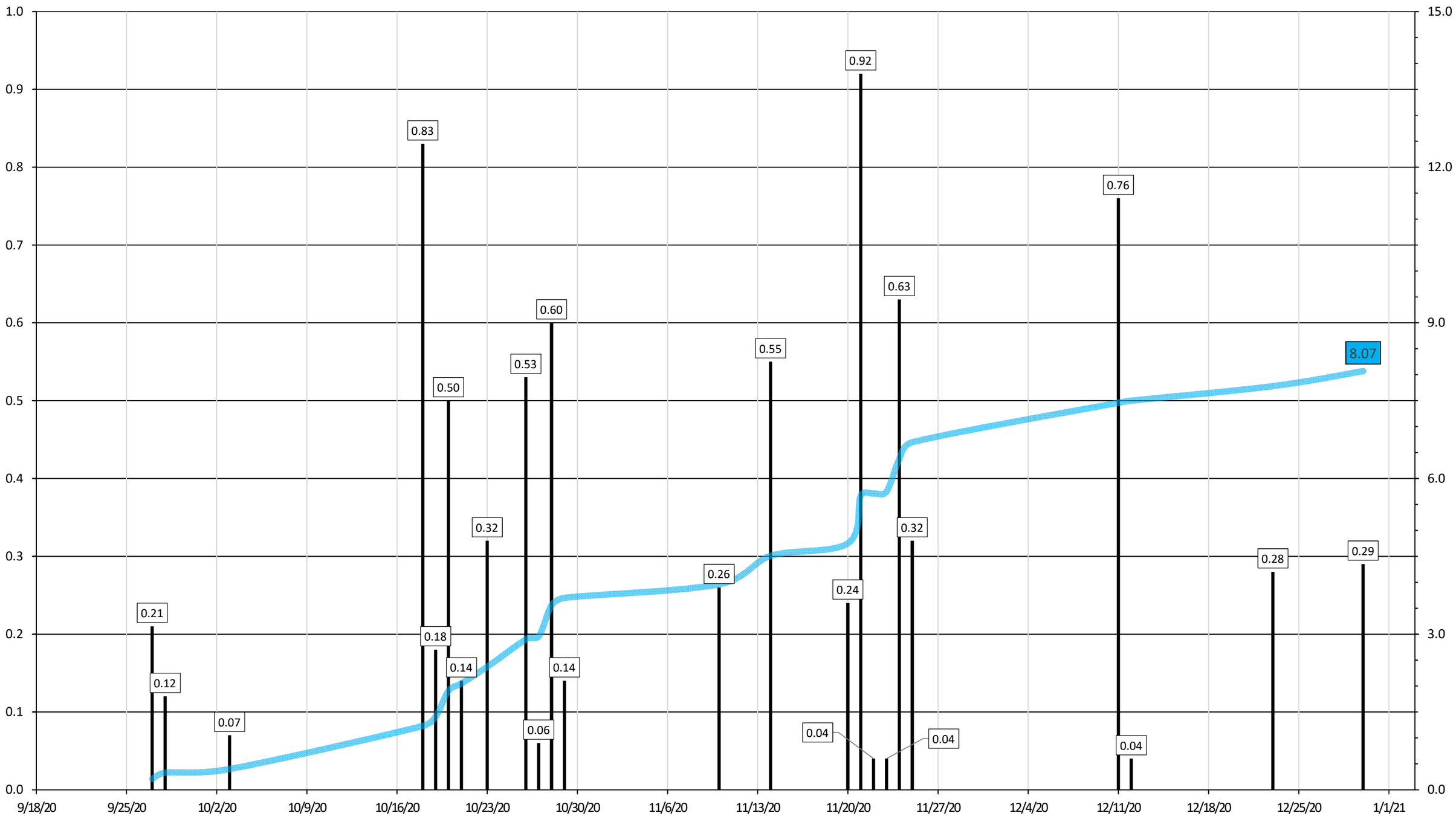
Figure 3c

Wind Roses for Sampling Periods
12/03/20 - 12/17/20
12/17/20 - 12/31/20

Figure 4
Bridgeton Landfill Daily Precipitation - 9/24/20 through 12/31/20



TABLES

Table 1

Analytical Results for Monitoring Period 09/24/2020 through 12/31/2020

Station ID	A-1							A-5							A-7							A-8							A-12						
Sampling Period Start	09/24 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	09/24 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	09/24 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	09/24 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	09/24 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020
Sampling Period End	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	12/31 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	12/31 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	12/31 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	12/31 2020	10/08 2020	10/22 2020	11/05 2020	11/19 2020	12/03 2020	12/17 2020	12/31 2020
1,2-Dichloroethane					0.076																				0.075								0.071		
2-Butanone (MEK)		0.13			0.32	0.42	0.28	0.22		0.16	0.17	0.36	0.38	0.30	0.33	0.15	0.15	0.21	0.43	0.53	0.41	0.17	0.29	0.31	0.18	0.37	0.51	0.35	0.31	0.20	0.15		0.42	0.46	0.46
Benzene	0.34	0.44	0.40	0.38	0.62	0.62	0.46	0.33	0.36	0.31	0.40	0.54	0.52	0.42	0.39	0.29		0.43	0.54	0.63	0.47		0.29	0.28	0.45	0.57	0.68	0.49	0.39	0.51	0.32	0.41	0.62	0.61	0.56
Carbon Tetrachloride	0.46	0.43	0.49	0.37	0.49	0.40	0.40	0.37	0.30	0.36	0.34	0.38	0.30	0.34	0.44	0.23	0.22	0.37	0.38	0.35	0.38	0.24	0.26	0.31	0.43	0.42	0.42	0.41	0.44	0.44	0.40	0.38	0.45	0.34	0.47
Chloroform	0.070	0.069	0.080		0.094										0.072				0.078						0.079	0.092	0.086	0.074	0.080				0.085		0.079
Cyclohexane	0.10	0.16	0.11	0.15	0.21	0.25	0.13	0.16	0.13	0.11	0.12	0.17	0.21	0.14	0.24	0.13		0.13	0.21	0.27	0.15		0.11		0.15	0.18	0.28	0.15	0.17	0.14		0.12	0.18	0.20	0.18
Ethanol			0.700		0.720												0.530	0.720						0.690		0.870									
Ethyl Acetate		0.25						0.36	0.26						1.00	0.52													0.50						
Ethyl Benzene	0.130	0.140	0.092	0.110	0.180	0.220	0.096	0.150	0.120		0.110	0.150	0.170		0.250	0.120		0.140	0.160	0.230	0.110	0.086	0.086		0.120	0.150	0.220	0.090	0.160	0.160		0.110	0.160	0.190	0.100
Heptane	0.26	0.32	0.22	0.29	0.47	0.56	0.24	0.35	0.32	0.19	0.31	0.36	0.40	0.26	0.48	0.24	0.14	0.29	0.38	0.51	0.26	0.23	0.26	0.17	0.43	0.37	0.55	0.35	0.39	0.50	0.14	0.27	0.44	0.48	0.37
Hexane	0.37	0.42	0.30	0.32	0.52	0.61	0.34	0.45	0.34	0.27	0.32	0.43	0.53	0.33	0.64	0.30	0.21	0.40	0.48	0.69	0.37	0.27	0.28	0.22	0.38	0.45	0.67	0.36	0.49	0.49	0.26	0.32	0.48	0.53	0.44
m,p-Xylene	0.40	0.42	0.26	0.32	0.52	0.61	0.22	0.49	0.35	0.22	0.30	0.41	0.45	0.20	0.85	0.38	0.18	0.39	0.47	0.63	0.28	0.27	0.25	0.16	0.35	0.44	0.60	0.24	0.46	0.48	0.17	0.30	0.43	0.51	0.26
o-Xylene	0.130	0.140	0.089	0.110	0.180	0.220		0.150	0.120		0.110	0.150	0.160		0.260	0.130		0.130	0.160	0.220	0.100		0.087		0.120	0.150	0.220		0.150	0.160		0.100	0.150	0.180	0.092
Tetrachloroethene		0.097			0.094	0.120						0.094			0.120				0.110	0.120						0.100	0.110			0.090			0.100	0.100	
Toluene	1.10	1.00	0.79	0.93	1.50	1.60	0.67	0.90	0.74	0.55	0.68	0.98	1.20	0.46	1.40	0.94	0.47	0.77	1.10	1.60	0.60	0.52	0.55	0.44	0.77	1.00	1.50	0.53	0.94	0.96	0.41	0.61	1.00	1.20	0.58
Trichloroethene					0.083	0.091							0.088							0.120							0.100							0.086	

all results reported as ug/m^3

Empty cells = Not Detected above Reporting Limit during event

Statistical Analyses of Results for Monitoring Period 05/01/2015 through 12/31/2020

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	7	148	0.060	0.096	0.075	5	148	0.066	0.079	0.072	6	148	0.064	0.097	0.078	7	148	0.062	0.110	0.079	8	135	0.066	0.096	0.077
2-Butanone (MEK)	139	148	0.071	0.450	0.227	146	148	0.077	0.460	0.247	140	148	0.096	0.560	0.280	147	148	0.070	0.510	0.245	132	135	0.090	0.770	0.273
4-Methyl-2-Pentanone *	0	148	na	na	na	0	148	na	na	na	1	148	0.410	0.410	0.410	0	148	na	na	na	0	135	na	na	na
Benzene	103	148	0.240	0.770	0.405	114	148	0.240	0.790	0.405	107	148	0.220	0.780	0.417	111	148	0.240	0.870	0.411	114	135	0.230	0.840	0.435
Carbon Tetrachloride	148	148	0.150	0.510	0.329	148	148	0.170	0.520	0.322	141	148	0.160	0.470	0.326	148	148	0.140	0.500	0.313	134	135	0.200	0.600	0.353
Chloroform	46	148	0.048	0.180	0.080	43	148	0.049	0.140	0.083	33	148	0.058	0.130	0.081	36	148	0.051	0.140	0.082	44	135	0.051	0.140	0.081
Cyclohexane	67	148	0.069	0.260	0.137	89	148	0.087	0.280	0.132	120	148	0.074	0.270	0.139	63	148	0.086	0.280	0.132	74	135	0.079	0.260	0.136
Ethanol	3	148	0.700	1.200	0.873	0	148	na	na	na	5	148	0.530	0.750	0.650	2	148	0.069	0.087	0.780	0	135	na	na	na
Ethyl Acetate	4	148	0.240	0.330	0.278	26	148	0.210	0.520	0.314	77	148	0.250	1.100	0.473	11	148	0.250	0.520	0.376	6	135	0.270	0.500	0.397
Ethyl Benzene	129	148	0.073	0.280	0.121	131	148	0.075	0.250	0.115	135	148	0.067	0.270	0.141	119	148	0.069	0.260	0.110	116	135	0.077	0.280	0.117
Heptane	148	148	0.130	0.840	0.309	148	148	0.110	0.610	0.224	141	148	0.130	0.510	0.259	148	148	0.100	0.570	0.215	133	135	0.130	0.590	0.256
Hexane	148	148	0.130	0.700	0.327	147	148	0.150	0.840	0.356	141	148	0.200	0.710	0.394	148	148	0.150	0.810	0.329	134	135	0.140	0.800	0.350
m,p-Xylene	148	148	0.130	0.920	0.331	147	148	0.160	0.620	0.302	140	148	0.150	0.900	0.392	148	148	0.140	0.600	0.276	134	135	0.140	0.660	0.290
o-Xylene	121	148	0.073	0.380	0.126	117	148	0.076	0.230	0.115	129	148	0.081	0.270	0.138	97	148	0.078	0.220	0.112	104	135	0.073	0.240	0.112
Propylbenzene *	1	148	0.130	0.130	0.130	0	148	na	na	na	0	148	na	na	na	1	148	0.110	0.110	0.110	0	135	na	na	na
Tetrachloroethene	113	148	0.084	0.840	0.199	32	148	0.064	0.180	0.103	72	148	0.066	0.250	0.116	18	148	0.074	0.170	0.113	19	135	0.084	0.170	0.105
Toluene	148	148	0.310	1.700	0.684	147	148	0.390	2.000	0.696	141	148	0.390	1.800	0.860	148	148	0.340	1.700	0.605	134	135	0.310	1.300	0.626
Trichloroethene	2	148	0.083	0.091	0.087	1	148	0.088	0.088	0.088	3	148	0.080	0.120	0.094	1	148	0.100	0.100	0.100	2	135	0.062	0.086	0.074

* No detections above Reporting Limits during quarterly monitoring period for this report

all results reported as ug/m^3

Table 2a
2-Butanone (MEK) Detections

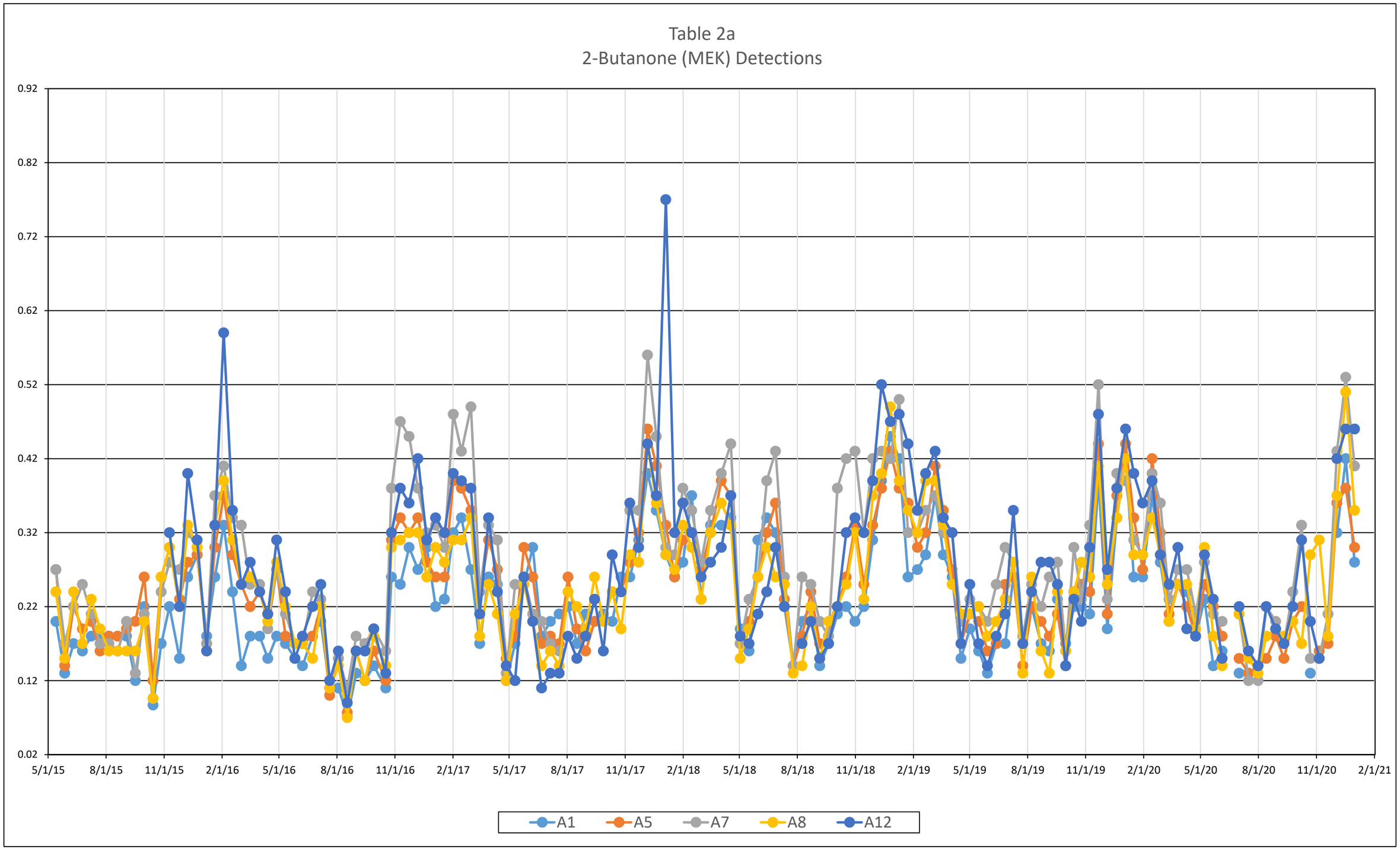


Table 2b
Benzene Detections

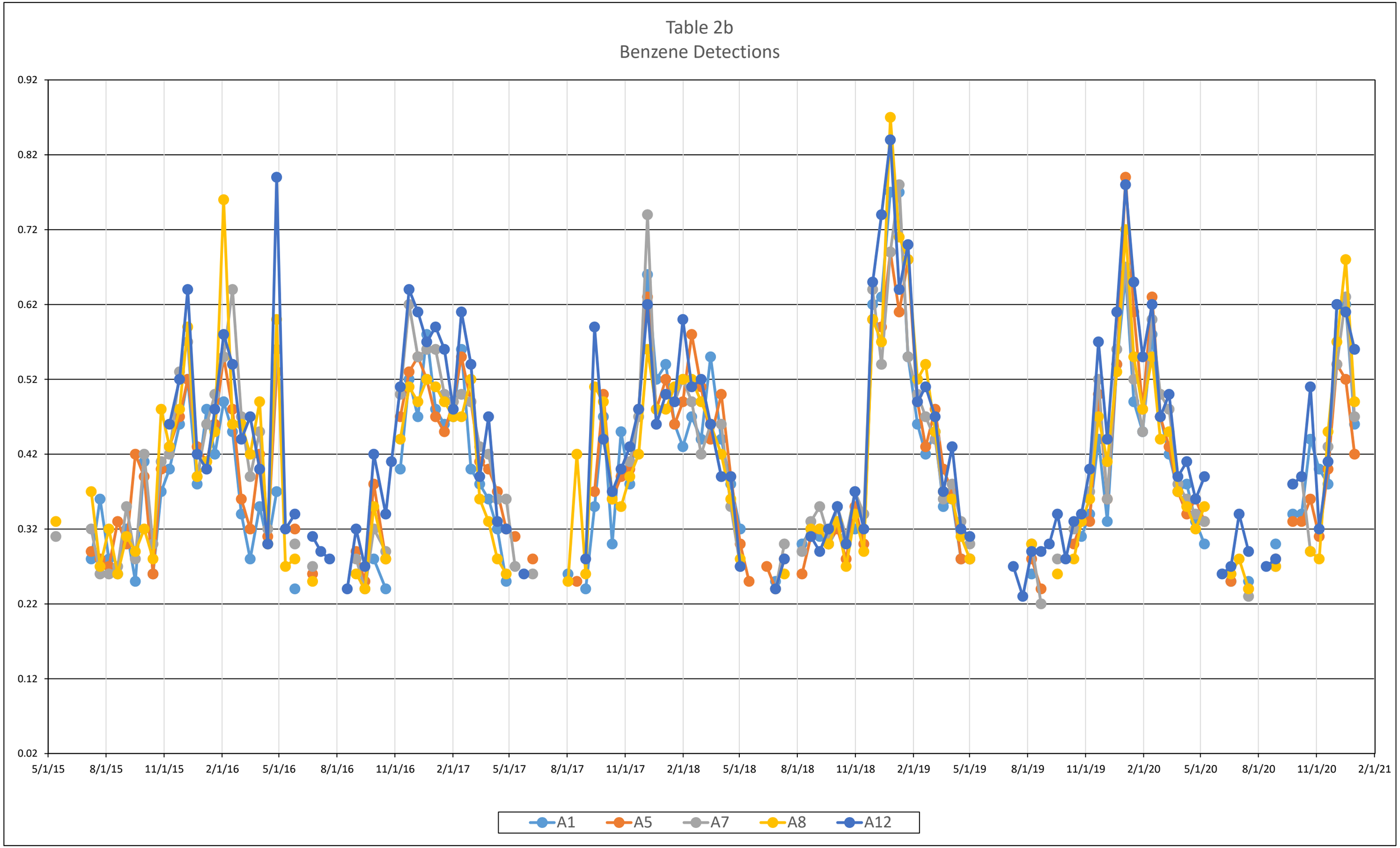


Table 2c
Carbon Tetrachloride Detections

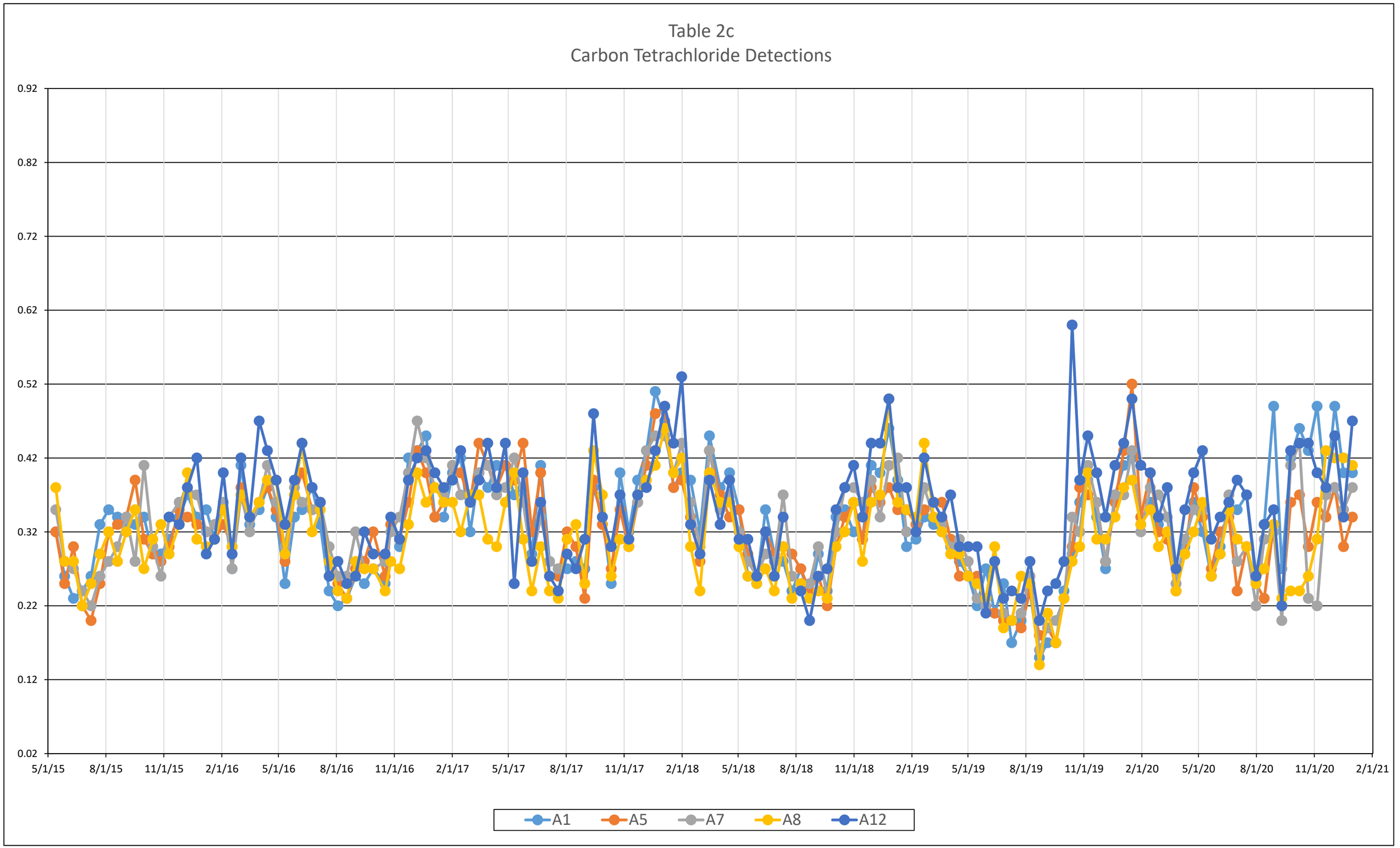


Table 2d
Chloroform Detections

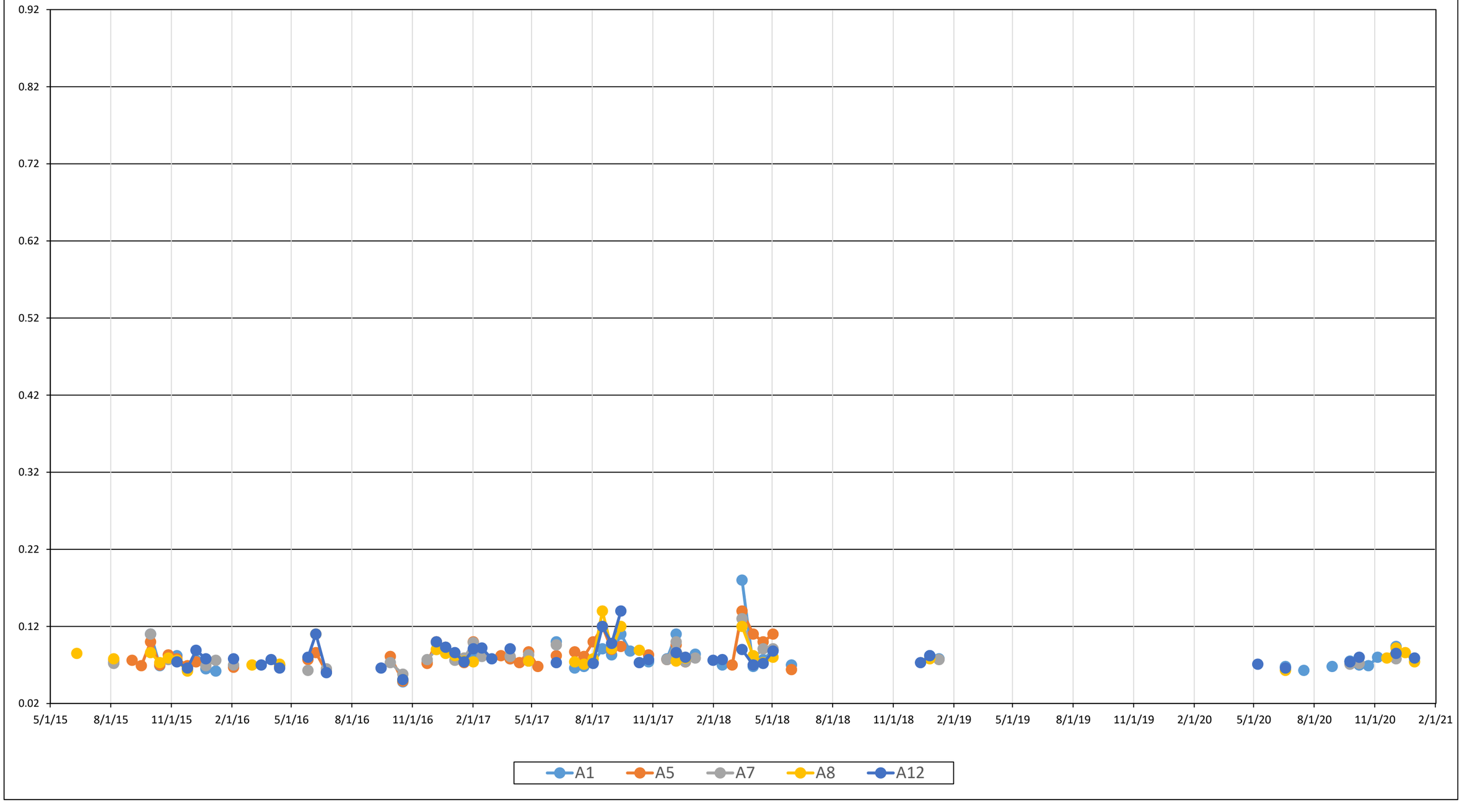


Table 2e
Cyclohexane Detections

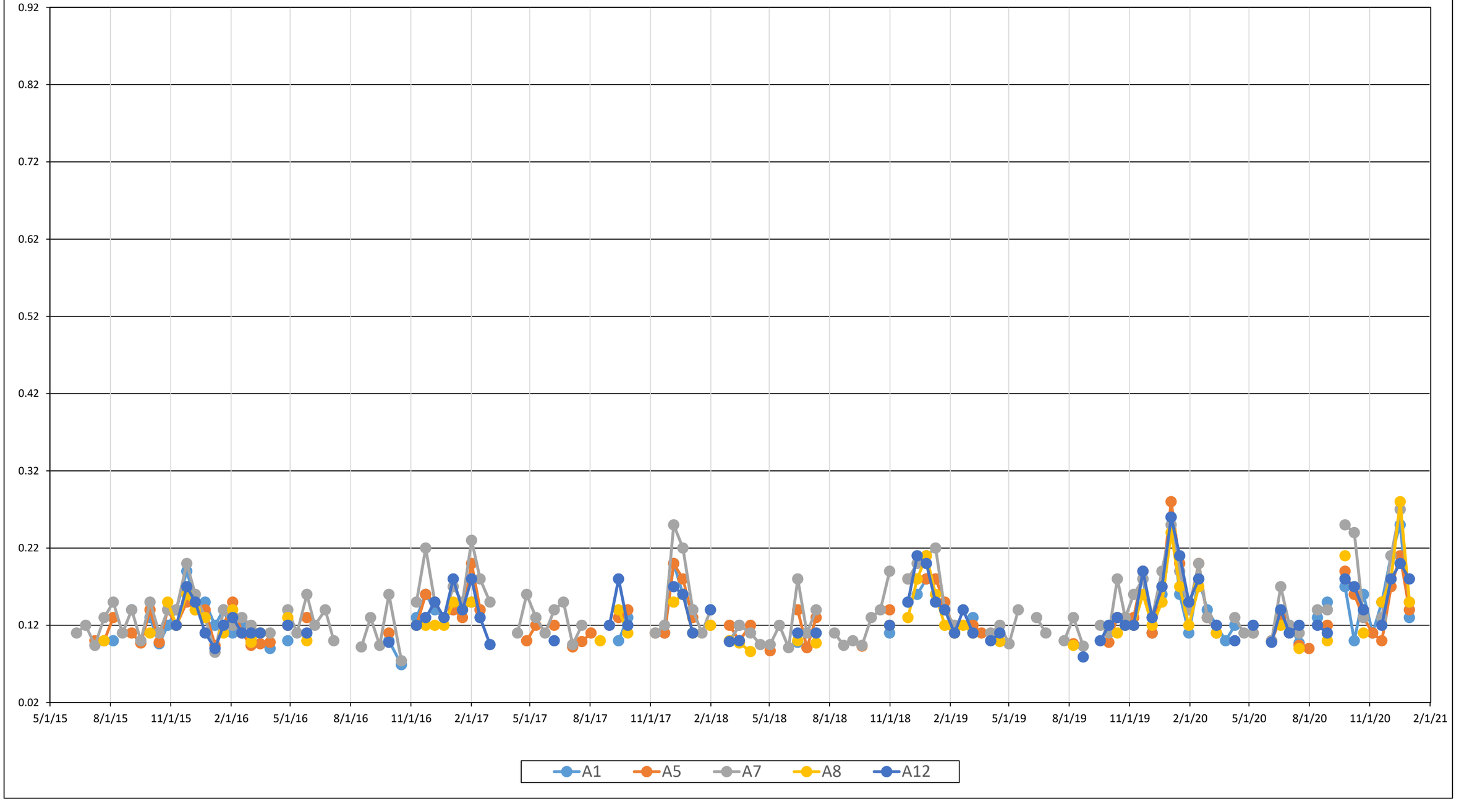


Table 2f
Ethyl Acetate Detections

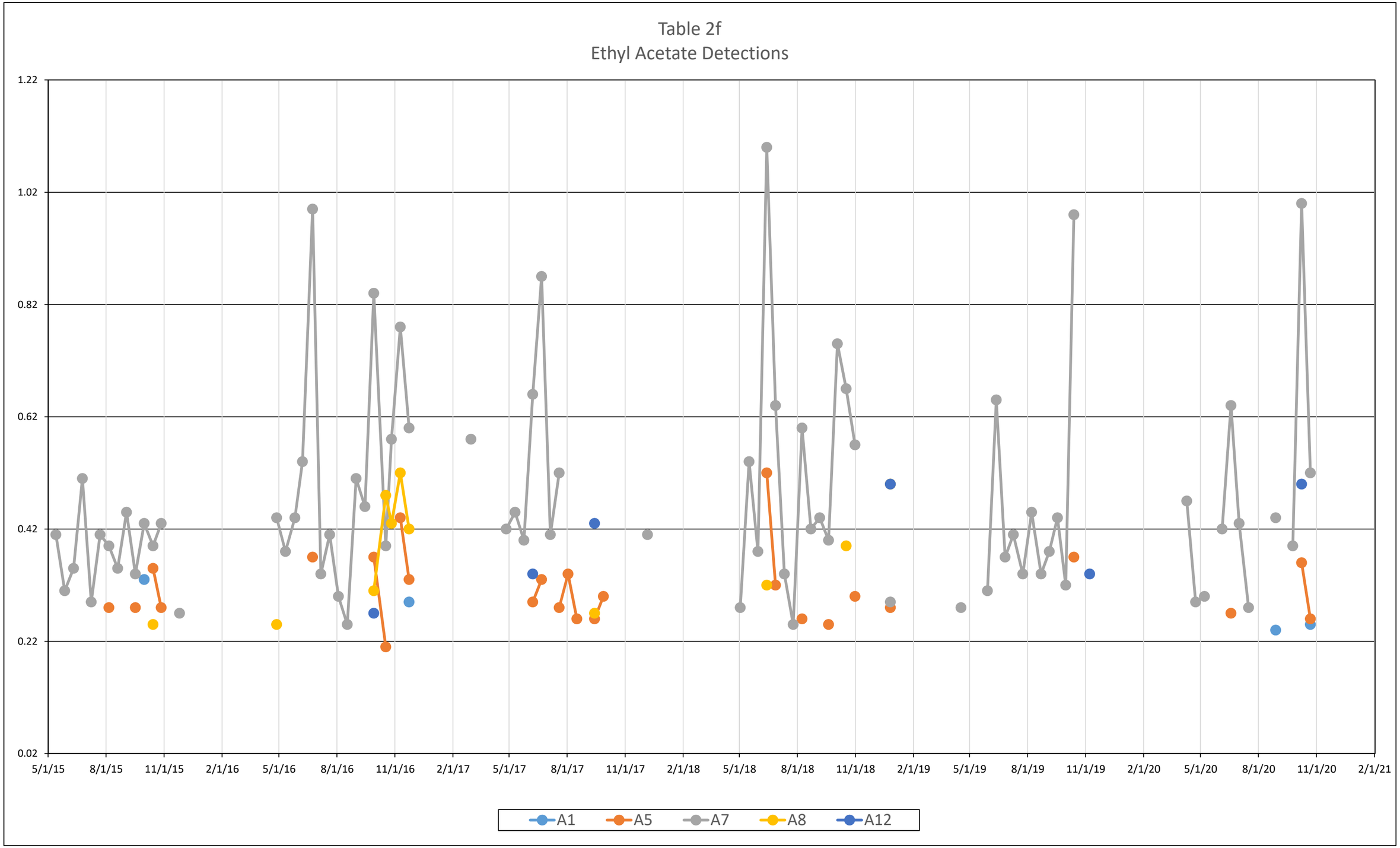


Table 2g
Ethylbenzene Detections

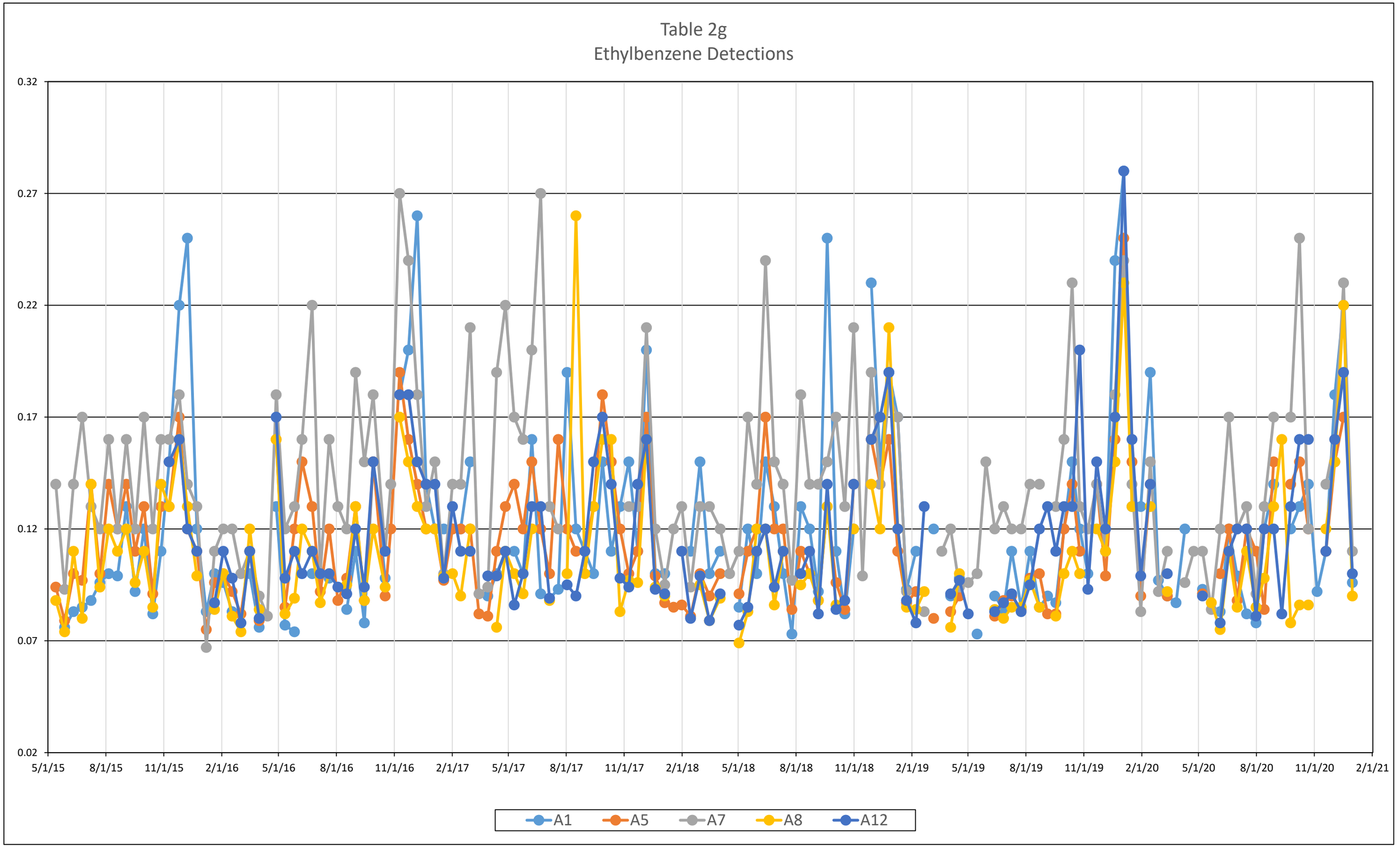


Table 2h
Heptane Detections

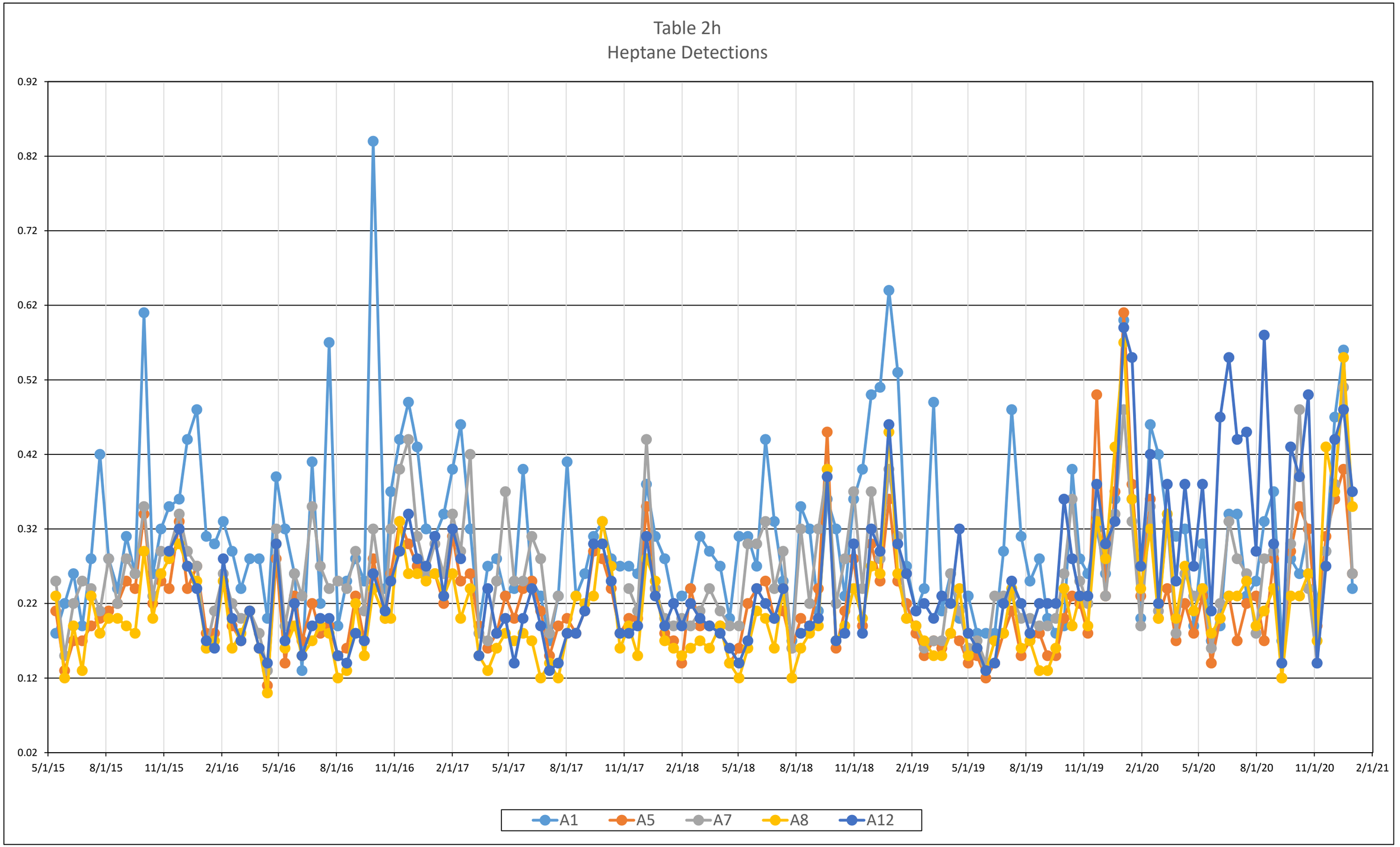


Table 2i
Hexane Detections

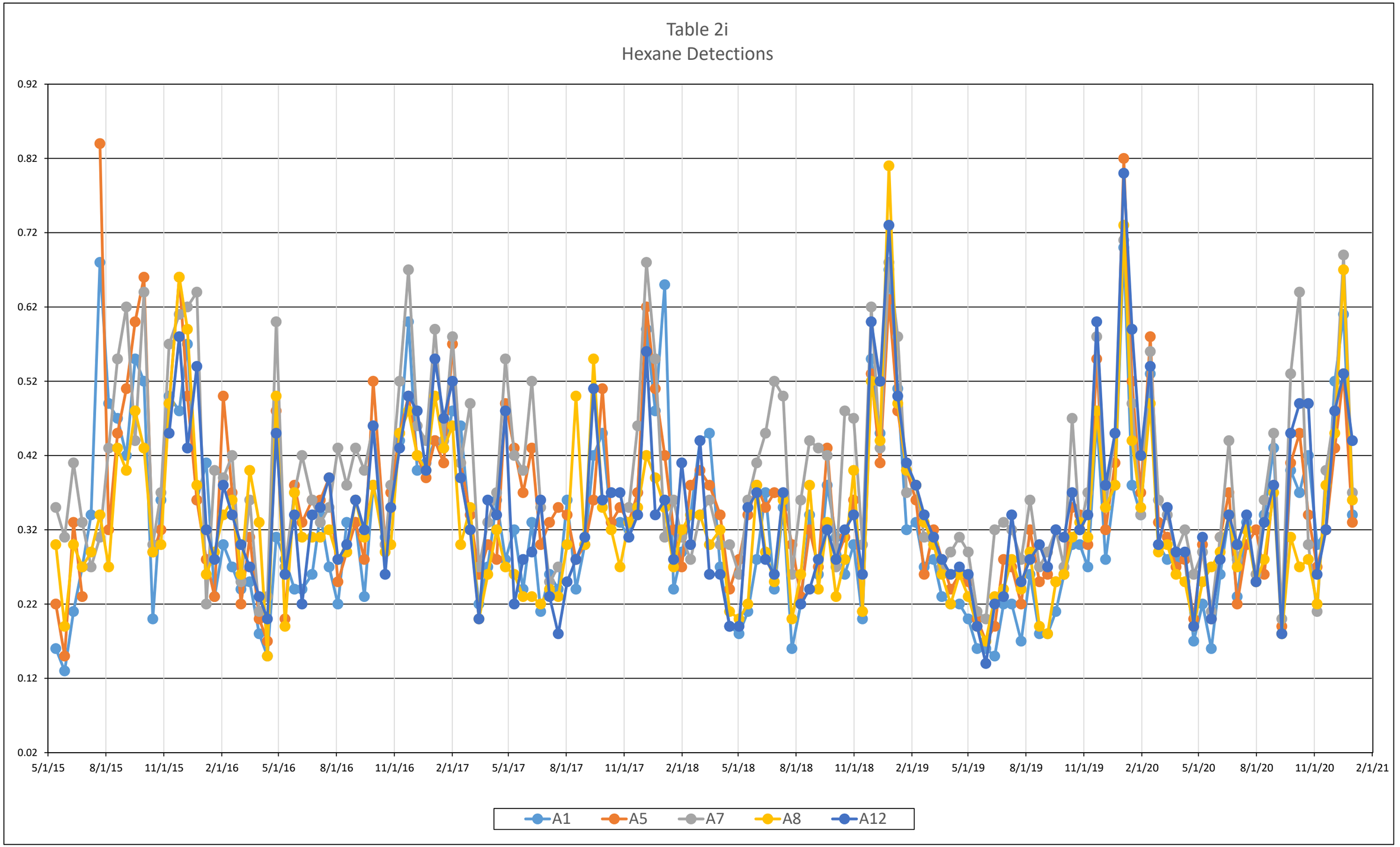


Table 2j
m,p-Xylene Detections

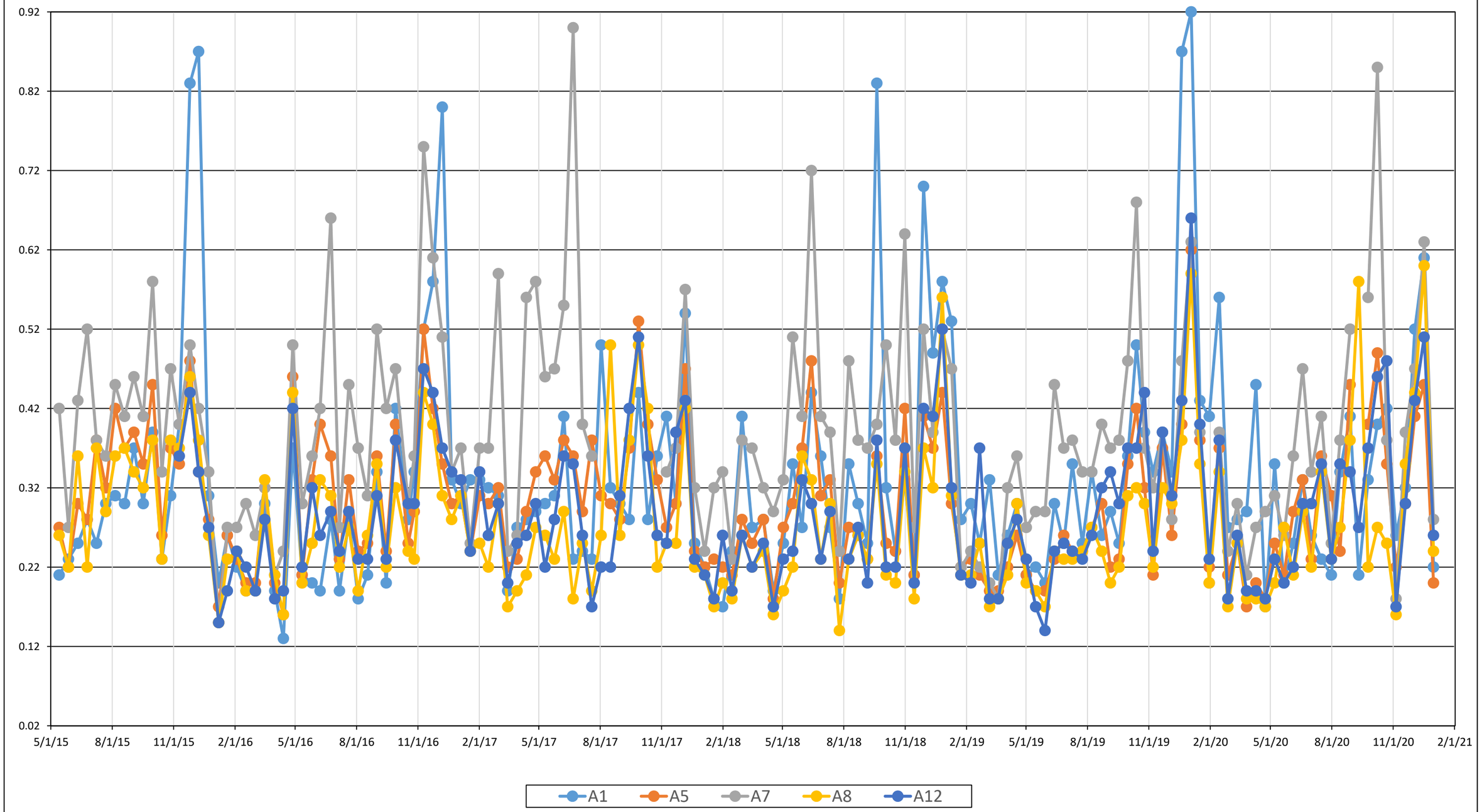


Table 2k
o-Xylene Detections

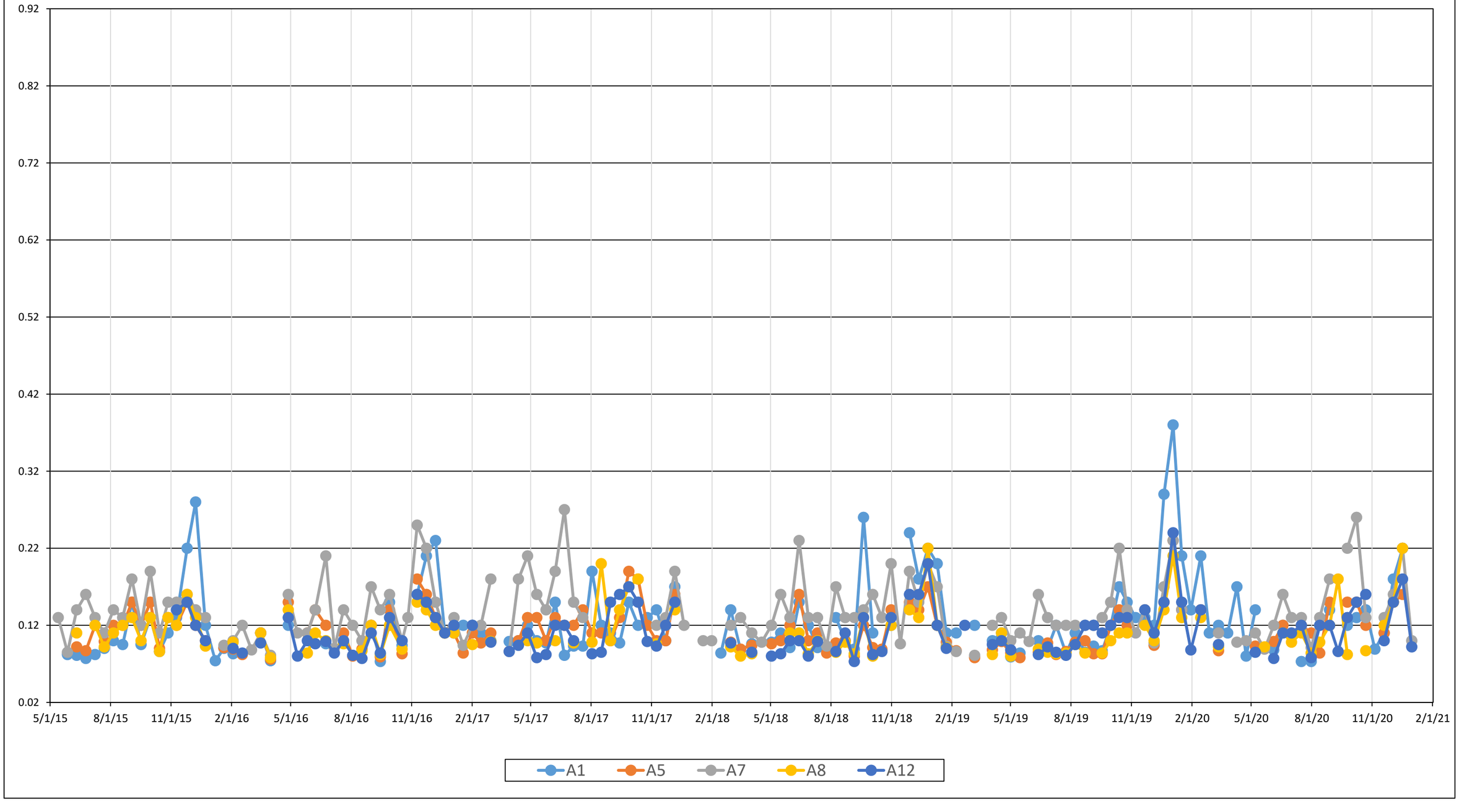


Table 2l
Tetrachloroethene Detections

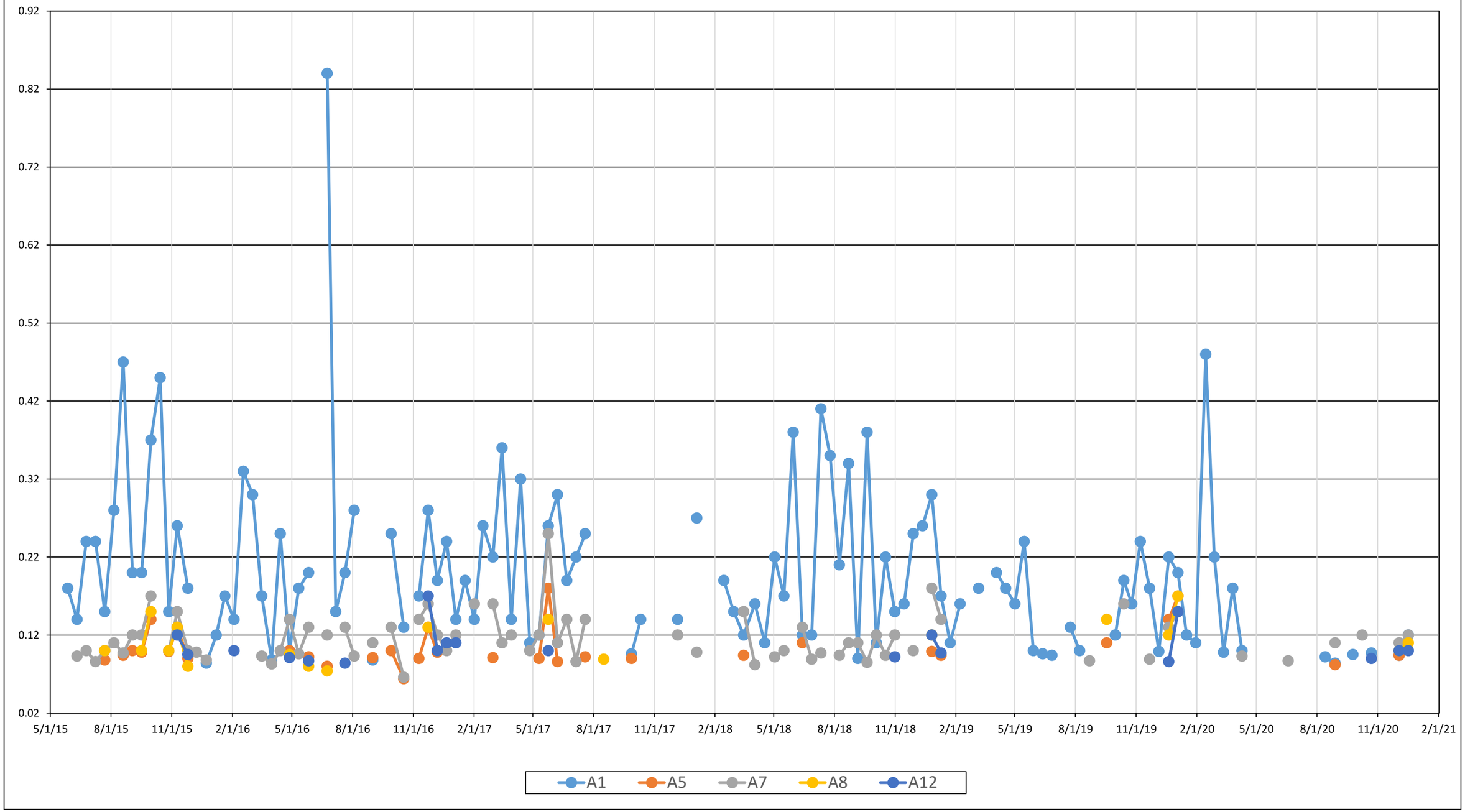
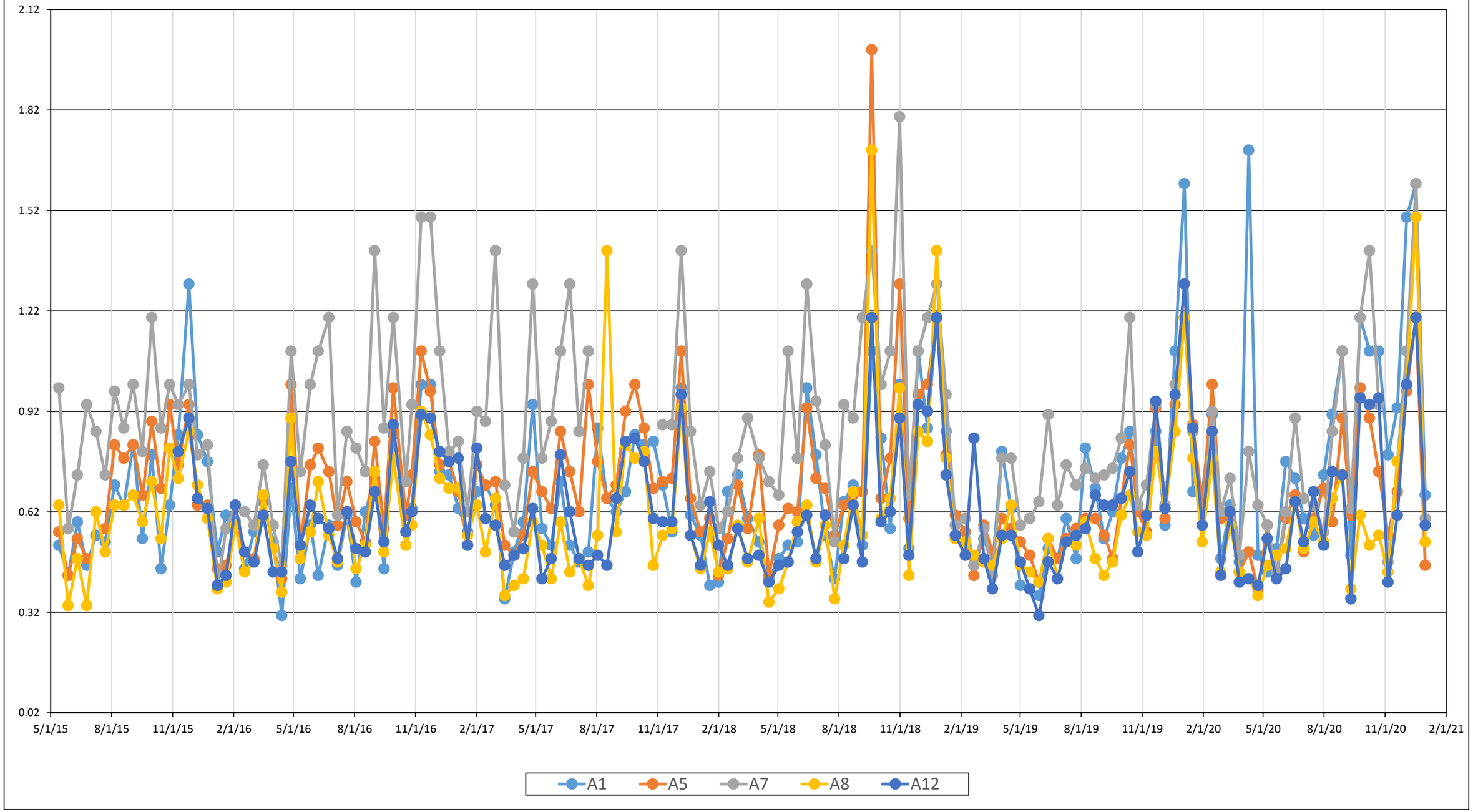


Table 2m
Toluene Detections



APPENDICES

Appendix 1

Quarterly Chains-of-Custody

PASSIVE SAMPLE COLLECTION

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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) 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)
01A	1	Y1247	09/24/20	14:55	10/08/20	09:00	60	see attached	☐	☒	☐	☐
02A	5	Y1257	09/24/20	11:25	10/08/20	08:24	60	see attached	☐	☒	☐	☐
03A	7	Y1277	09/24/20	11:15	10/08/20	08:05	60	see attached	☐	☒	☐	☐
04A	8	Y1287	09/24/20	11:40	10/08/20	07.55	59	see attached	☐	☒	☐	☐
05A	12	Y1307	09/24/20	10:54	10/08/20	07.34	59	see attached	☐	☒	☐	☐
06A	Dup	Y1317	09/24/20	1055	10/08/20	07:36	59	see attached	☐	☒	☐	☐
07A	TB	Y1337	left in packaging - not deployed					see attached	☐	☐	☐	☒
									☐	☐	☐	☐
									☐	☐	☐	☐
									☐	☐	☐	☐

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Dane Hale, 10/09/20, 10:30	FAC 10/9/20 1008
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
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)	2010224

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) Dave 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)
01A	1	Y289Z	10/06/20	09:01	10/22/20	1340	85	see attached	☐	☒	☐	☐
02A	5	Y290Z	10/08/20	08:25	10/22/20	1305	85	see attached	☐	☒	☐	☐
03A	7	Y291Z	10/06/20	08:06	10/22/20	12:56	85	see attached	☐	☒	☐	☐
04A	8	Y292Z	10/06/20	07:56	10/22/20	1310	85	see attached	☐	☒	☐	☐
05A	12	Y293Z	10/08/20	07:35	10/22/20	1317	85	see attached	☐	☒	☐	☐
06A	Dup	Y294Z	10/08/20	07:37	10/22/20	1317	85	see attached	☐	☒	☐	☐
07A	TB	B903S	left in packaging - not deployed					see attached	☐	☐	☐	☒
									☐	☐	☐	☐
									☐	☐	☐	☐
									☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Dave Hale	10/23/20 14:15	FedEx	10/26/2020 0959
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
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		N/A	Good	Yes No (None)	2010592

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) Dave 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)
01A	1	B8975	10/22/20	13:45	11/05/20	11:22	66°	see attached	☐	☒	☐	☐
02A	5	B8985	10/22/20	13:06	11/05/20	10:40	64°	see attached	☐	☒	☐	☐
03A	7	B8995	10/22/20	13:00	11/05/20	11:00	64°	see attached	☐	☒	☐	☐
04A	8	B9005	10/22/20	13:12	11/05/20	0950	64°	see attached	☐	☒	☐	☐
05A	12	B9015	10/22/20	13:20	11/05/20	10:10	64°	see attached	☐	☒	☐	☐
06A	Dup	B9025	10/22/20	13:20	11/05/20	10:10	64°	see attached	☐	☒	☐	☐
07A	TB	Y3012	left in packaging - not deployed					see attached	☐	☐	☐	☒
									☐	☐	☐	☐
									☐	☐	☐	☐
									☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	11/6/20 10:44	[signature]	11-9-2020 0947
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
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		Yes No None	2011196

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) Dave 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)
01A	1	Y295Z	11/05/20	11:30	11/19/20	0940	61°	see attached	☐	☒	☐	☐
02A	5	Y296Z	11/05/20	10:45	11/19/20	0850	61°	see attached	☐	☒	☐	☐
03A	7	Y297Z	11/05/20	11:05	11/19/20	0840	61°	see attached	☐	☒	☐	☐
04A	8	Y298Z	11/05/20	09:55	11/19/20	0900	61°	see attached	☐	☒	☐	☐
05A	12	Y299Z	11/05/20	10:15	11/19/20	0910	61°	see attached	☐	☒	☐	☐
06A	Dup	Y300Z	11/05/20	10:15	11/19/20	0911	61°	see attached	☐	☒	☐	☐
07A	TB	Y302Z	left in packaging - not deployed					see attached	☐	☐	☐	☒
									☐	☐	☐	☐
									☐	☐	☐	☐
									☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	11/22/20 1535		11-24-2020 1046
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact? Yes / No / None	Work Order #
	Fed Ex		NA	Good	None	2011599

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

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180 BLUE RAVINE ROAD, SUITE B
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(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)
01A	1	W580C	11/19/20	9:45	12/03/20	1100	45°	see attached	☐	☒	☐	☐
02A	5	W581C	11/19/20	8:55	12/03/20	1020	43°	see attached	☐	☒	☐	☐
03A	7	W582C	11/19/20	8:45	12/03/20	1004	43°	see attached	☐	☒	☐	☐
04A	8	W583C	11/19/20	9:05	12/03/20	0930	43°	see attached	☐	☒	☐	☐
05A	12	W584C	11/19/20	9:15	12/03/20	0950	43°	see attached	☐	☒	☐	☐
06A	Dup	W585C	11/19/20	9:16	12/03/20	0950	43°	see attached	☐	☒	☐	☐
07A	TB	W586C	left in packaging - not deployed					see attached	☐	☐	☐	☒
									☐	☐	☐	☐
									☐	☐	☐	☐
									☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	12/03/20 1330	[signature] FATL	12/04/20 1101
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
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	2012125

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

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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 (non deployed)
01A	1	W587C	12/03/20	11:05	12/17/20	10:00	30°	see attached	☐	☒	☐	☐
02A	5	W588C	12/03/20	10:25	12/17/20	0840	25°	see attached	☐	☒	☐	☐
03A	7	W589C	12/03/20	10:15	12/17/20	0820	25°	see attached	☐	☒	☐	☐
04A	8	W590C	12/03/20	09:35	12/17/20	0920	25°	see attached	☐	☒	☐	☐
05A	12	W591C	12/03/20	09:55	12/17/20	0900	25°	see attached	☐	☒	☐	☐
06A	Dup	W592C	12/03/20	09:55	12/17/20	0901	25°	see attached	☐	☒	☐	☐
07A	TB	W593C	left in packaging - not deployed					see attached	☐	☐	☐	☒
									☐	☐	☐	☐
									☐	☐	☐	☐
									☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Dane Hale	12/18/20 800	[signature]	12/19/20 1045
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
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		NS	Good	Yes No None	201250

PASSIVE SAMPLE COLLECTION

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CHAIN-OF-CUSTODY RECORD

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

Project Manager: Bill Abernathy

Collected by: (Print and Sign) Dana 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)
01A	1	W622C	12/17/20	10 04	12/31/20	08:36	24°	see attached	☐	☒	☐	☐
02A	5	W623C	12/17/20	08 45	12/31/20	09:58	28°	see attached	☐	☒	☐	☐
03A	7	W624C	12/17/20	0830	12/31/20	09:15	26°	see attached	☐	☒	☐	☐
04A	8	W625C	12/17/20	0924	12/31/20	13:09	34°	see attached	☐	☒	☐	☐
05A	12	W626C	12/17/20	0905	12/31/20	11:42	32°	see attached	☐	☒	☐	☐
06A	Dup	W627C	12/17/20	0906	12/31/20	11:45	32°	see attached	☐	☒	☐	☐
07A	TB	W628C	left in packaging - not deployed					see attached	☐	☐	☐	☒
									☐	☐	☐	☐
									☐	☐	☐	☐
									☐	☐	☐	☐

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Dana Hale	12/31/20 1530	FedEx	12-4-21 1020
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
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)	2101006

Appendix 2

Quarterly Analytical Reports from Eurofins Air Toxics, Inc.

September 24, 2020 to October 8, 2020

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10/21/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2010224

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 10/9/2020 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 2010224

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:	10/09/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	10/21/2020		

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: 10/21/20

Technical Director

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

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2010224

Seven Radiello 130 (Solvent) samples were received on October 09, 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

The Chain of Custody was missing method information. EATL proceeded with the analysis as per the original contract.

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 19979 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#: 2010224-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.46	0.37
Chloroform	0.10	0.070	0.10	0.070
Cyclohexane	0.10	0.098	0.13	0.12
Carbon Tetrachloride	0.10	0.079	0.58	0.46
Benzene	0.40	0.26	0.52	0.34
Heptane	0.10	0.091	0.29	0.26
Toluene	0.10	0.071	1.5	1.1
Ethyl Benzene	0.10	0.078	0.16	0.13
m,p-Xylene	0.10	0.076	0.54	0.40
o-Xylene	0.10	0.081	0.16	0.13

Client Sample ID: 5

Lab ID#: 2010224-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.57	0.45
Ethyl Acetate	0.40	0.27	0.54	0.36
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.22
Cyclohexane	0.10	0.097	0.16	0.16
Carbon Tetrachloride	0.10	0.078	0.48	0.37
Benzene	0.40	0.26	0.51	0.33
Heptane	0.10	0.090	0.39	0.35
Toluene	0.10	0.071	1.3	0.90
Ethyl Benzene	0.10	0.077	0.20	0.15
m,p-Xylene	0.10	0.075	0.66	0.49
o-Xylene	0.10	0.081	0.19	0.15

Client Sample ID: 7

Lab ID#: 2010224-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.80	0.64
Ethyl Acetate	0.40	0.27	1.5	1.0

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

Client Sample ID: 7

Lab ID#: 2010224-03A

2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.50	0.33
Chloroform	0.10	0.070	0.10	0.072
Cyclohexane	0.10	0.097	0.25	0.24
Carbon Tetrachloride	0.10	0.078	0.56	0.44
Benzene	0.40	0.26	0.59	0.39
Heptane	0.10	0.090	0.53	0.48
Toluene	0.10	0.071	2.0	1.4
Tetrachloroethene	0.10	0.089	0.14	0.12
Ethyl Benzene	0.10	0.077	0.33	0.25
m,p-Xylene	0.10	0.075	1.1	0.85
o-Xylene	0.10	0.081	0.32	0.26

Client Sample ID: 8

Lab ID#: 2010224-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.33	0.27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.17
Carbon Tetrachloride	0.10	0.079	0.31	0.24
Heptane	0.10	0.091	0.25	0.23
Toluene	0.10	0.071	0.72	0.52
Ethyl Benzene	0.10	0.078	0.11	0.086
m,p-Xylene	0.10	0.075	0.35	0.27

Client Sample ID: 12

Lab ID#: 2010224-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.62	0.49
Ethyl Acetate	0.40	0.27	0.74	0.50
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.47	0.31
Chloroform	0.10	0.070	0.11	0.080
Cyclohexane	0.10	0.098	0.17	0.17
Carbon Tetrachloride	0.10	0.079	0.56	0.44

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

Client Sample ID: 12

Lab ID#: 2010224-05A

Benzene	0.40	0.26	0.60	0.39
Heptane	0.10	0.091	0.43	0.39
Toluene	0.10	0.071	1.3	0.94
Ethyl Benzene	0.10	0.078	0.20	0.16
m,p-Xylene	0.10	0.075	0.61	0.46
o-Xylene	0.10	0.081	0.18	0.15

Client Sample ID: Dup

Lab ID#: 2010224-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	0.58	0.47
Ethyl Acetate	0.40	0.27	0.59	0.40
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.38	0.25
Chloroform	0.10	0.070	0.11	0.076
Cyclohexane	0.10	0.098	0.16	0.16
Carbon Tetrachloride	0.10	0.079	0.54	0.42
Benzene	0.40	0.26	0.57	0.38
Heptane	0.10	0.091	0.39	0.36
Toluene	0.10	0.071	1.2	0.86
Ethyl Benzene	0.10	0.078	0.18	0.14
m,p-Xylene	0.10	0.075	0.56	0.42
o-Xylene	0.10	0.081	0.16	0.13

Client Sample ID: TB

Lab ID#: 2010224-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2010224-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101413sim**	**Date of Collection: 10/8/20 9:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 01:46 PM**	
		Date of Extraction: 10/14/20	

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	0.46	0.37
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.070	0.10	0.070
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.13	0.12
Carbon Tetrachloride	0.10	0.079	0.58	0.46
Benzene	0.40	0.26	0.52	0.34
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.29	0.26
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.5	1.1
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.16	0.13
m,p-Xylene	0.10	0.076	0.54	0.40
o-Xylene	0.10	0.081	0.16	0.13
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 = 60.0F , duration time = 19805 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#: 2010224-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101414sim**	**Date of Collection: 10/8/20 8:24:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 02:13 PM**	
		Date of Extraction: 10/14/20	

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	0.081	Not Detected	Not Detected
Hexane	0.10	0.079	0.57	0.45
Ethyl Acetate	0.40	0.27	0.54	0.36
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.22
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	0.16	0.16
Carbon Tetrachloride	0.10	0.078	0.48	0.37
Benzene	0.40	0.26	0.51	0.33
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.39	0.35
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	1.3	0.90
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.20	0.15
m,p-Xylene	0.10	0.075	0.66	0.49
o-Xylene	0.10	0.081	0.19	0.15
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 = 60.0F , duration time = 19979 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 7

Lab ID#: 2010224-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101415sim**	**Date of Collection: 10/8/20 8:05:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 02:40 PM**	
		Date of Extraction: 10/14/20	

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	0.081	Not Detected	Not Detected
Hexane	0.10	0.079	0.80	0.64
Ethyl Acetate	0.40	0.27	1.5	1.0
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.50	0.33
Chloroform	0.10	0.070	0.10	0.072
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.25	0.24
Carbon Tetrachloride	0.10	0.078	0.56	0.44
Benzene	0.40	0.26	0.59	0.39
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.53	0.48
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	2.0	1.4
Tetrachloroethene	0.10	0.089	0.14	0.12
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.33	0.25
m,p-Xylene	0.10	0.075	1.1	0.85
o-Xylene	0.10	0.081	0.32	0.26
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 = 60.0F , duration time = 19970 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 8

Lab ID#: 2010224-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101416sim**	**Date of Collection: 10/8/20 7:55:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 03:07 PM**	
		Date of Extraction: 10/14/20	

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	0.27
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.17
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	0.31	0.24
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	0.25	0.23
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	0.72	0.52
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.086
m,p-Xylene	0.10	0.075	0.35	0.27
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	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 = 59.0F , duration time = 19935 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#: 2010224-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101417sim**	**Date of Collection: 10/8/20 7:34:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 03:34 PM**	
		Date of Extraction: 10/14/20	

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	0.62	0.49
Ethyl Acetate	0.40	0.27	0.74	0.50
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.47	0.31
Chloroform	0.10	0.070	0.11	0.080
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.17	0.17
Carbon Tetrachloride	0.10	0.079	0.56	0.44
Benzene	0.40	0.26	0.60	0.39
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.43	0.39
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	1.3	0.94
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.20	0.16
m,p-Xylene	0.10	0.075	0.61	0.46
o-Xylene	0.10	0.081	0.18	0.15
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 = 59.0F , duration time = 19960 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#: 2010224-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101418sim**	**Date of Collection: 10/8/20 7:36:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 04:00 PM**	
		Date of Extraction: 10/14/20	

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	0.58	0.47
Ethyl Acetate	0.40	0.27	0.59	0.40
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.38	0.25
Chloroform	0.10	0.070	0.11	0.076
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.16	0.16
Carbon Tetrachloride	0.10	0.079	0.54	0.42
Benzene	0.40	0.26	0.57	0.38
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.39	0.36
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	1.2	0.86
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.18	0.14
m,p-Xylene	0.10	0.075	0.56	0.42
o-Xylene	0.10	0.081	0.16	0.13
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 = 59.0F , duration time = 19961 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#: 2010224-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101419sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 04:27 PM**	
		Date of Extraction: 10/14/20	

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	0.081	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)	0.20	0.13	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	0.089	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	0.081	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 = 60.0F , duration time = 19979 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#: 2010224-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101405sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 10:13 AM**	
		Date of Extraction: 10/14/20	

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	0.081	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)	0.20	0.13	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	0.089	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	0.081	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 = 60.0F , duration time = 19979 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#: 2010224-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101403sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 09:20 AM**	
		Date of Extraction: 10/14/20	

Compound	%Recovery	Method Limits
Ethanol	61	50-130
Methyl tert-butyl ether	119	70-130
Hexane	109	70-130
Ethyl Acetate	110	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Chloroform	110	70-130
1,1,1-Trichloroethane	110	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	107	70-130
Benzene	92	70-130
1,2-Dichloroethane	111	70-130
Heptane	105	70-130
Trichloroethene	93	70-130
4-Methyl-2-pentanone	95	70-130
Toluene	89	70-130
Tetrachloroethene	86	70-130
Chlorobenzene	82	70-130
Ethyl Benzene	87	70-130
m,p-Xylene	84	70-130
o-Xylene	77	70-130
Styrene	50	20-100
Propylbenzene	93	70-130
1,4-Dichlorobenzene	60	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#: 2010224-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101404sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 09:46 AM**	
		Date of Extraction: 10/14/20	

Compound	%Recovery	Method Limits
Ethanol	55	50-130
Methyl tert-butyl ether	106	70-130
Hexane	100	70-130
Ethyl Acetate	101	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	99	70-130
Benzene	87	70-130
1,2-Dichloroethane	103	70-130
Heptane	100	70-130
Trichloroethene	88	70-130
4-Methyl-2-pentanone	91	70-130
Toluene	87	70-130
Tetrachloroethene	83	70-130
Chlorobenzene	81	70-130
Ethyl Benzene	87	70-130
m,p-Xylene	84	70-130
o-Xylene	78	70-130
Styrene	51	20-100
Propylbenzene	93	70-130
1,4-Dichlorobenzene	65	50-110
Naphthalene	11	5-80

Container Type: NA - Not Applicable

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

October 8, 2020 to October 22, 2020

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11/6/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2010592

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 10/26/2020 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 2010592

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:	10/26/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	11/06/2020		

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: 11/06/20

Technical Director

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

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2010592

Seven Radiello 130 (Solvent) samples were received on October 26, 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 20502 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#: 2010592-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.073	0.58	0.42
Ethyl Acetate	0.40	0.24	0.40	0.25
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.21	0.13
Chloroform	0.10	0.064	0.11	0.069
Cyclohexane	0.10	0.089	0.18	0.16
Carbon Tetrachloride	0.10	0.072	0.61	0.43
Benzene	0.40	0.24	0.73	0.44
Heptane	0.10	0.083	0.38	0.32
Toluene	0.10	0.065	1.6	1.0
Tetrachloroethene	0.10	0.081	0.12	0.097
Ethyl Benzene	0.10	0.070	0.19	0.14
m,p-Xylene	0.10	0.068	0.61	0.42
o-Xylene	0.10	0.074	0.19	0.14

Client Sample ID: 5

Lab ID#: 2010592-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.073	0.46	0.34
Ethyl Acetate	0.40	0.24	0.42	0.26
Cyclohexane	0.10	0.089	0.15	0.13
Carbon Tetrachloride	0.10	0.072	0.42	0.30
Benzene	0.40	0.24	0.60	0.36
Heptane	0.10	0.083	0.38	0.32
Toluene	0.10	0.065	1.1	0.74
Ethyl Benzene	0.10	0.070	0.16	0.12
m,p-Xylene	0.10	0.068	0.52	0.35
o-Xylene	0.10	0.074	0.16	0.12

Client Sample ID: 7

Lab ID#: 2010592-03A

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: 7

Lab ID#: 2010592-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.073	0.41	0.30
Ethyl Acetate	0.40	0.24	0.85	0.52
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.24	0.15
Cyclohexane	0.10	0.089	0.15	0.13
Carbon Tetrachloride	0.10	0.072	0.32	0.23
Benzene	0.40	0.24	0.48	0.29
Heptane	0.10	0.083	0.29	0.24
Toluene	0.10	0.065	1.4	0.94
Ethyl Benzene	0.10	0.070	0.17	0.12
m,p-Xylene	0.10	0.068	0.55	0.38
o-Xylene	0.10	0.074	0.18	0.13

Client Sample ID: 8

Lab ID#: 2010592-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.072	0.39	0.28
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.47	0.29
Cyclohexane	0.10	0.089	0.13	0.11
Carbon Tetrachloride	0.10	0.071	0.37	0.26
Benzene	0.40	0.24	0.49	0.29
Heptane	0.10	0.082	0.32	0.26
Toluene	0.10	0.065	0.86	0.55
Ethyl Benzene	0.10	0.070	0.12	0.086
m,p-Xylene	0.10	0.068	0.37	0.25
o-Xylene	0.10	0.074	0.12	0.087

Client Sample ID: 12

Lab ID#: 2010592-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.072	0.68	0.49
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.34	0.20

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

Client Sample ID: 12

Lab ID#: 2010592-05A

Cyclohexane	0.10	0.088	0.16	0.14
Carbon Tetrachloride	0.10	0.071	0.62	0.44
Benzene	0.40	0.24	0.86	0.51
Heptane	0.10	0.082	0.61	0.50
Toluene	0.10	0.065	1.5	0.96
Tetrachloroethene	0.10	0.081	0.11	0.090
Ethyl Benzene	0.10	0.070	0.23	0.16
m,p-Xylene	0.10	0.068	0.71	0.48
o-Xylene	0.10	0.074	0.22	0.16

Client Sample ID: Dup

Lab ID#: 2010592-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.072	0.52	0.38
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.22	0.13
Cyclohexane	0.10	0.088	0.14	0.12
Carbon Tetrachloride	0.10	0.071	0.49	0.35
Benzene	0.40	0.24	0.66	0.40
Heptane	0.10	0.082	0.45	0.37
Toluene	0.10	0.065	1.1	0.73
Ethyl Benzene	0.10	0.070	0.17	0.12
m,p-Xylene	0.10	0.068	0.51	0.35
o-Xylene	0.10	0.074	0.16	0.12

Client Sample ID: TB

Lab ID#: 2010592-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2010592-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102806sim**	**Date of Collection: 10/22/20 1:40:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 11:17 AM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	0.58	0.42
Ethyl Acetate	0.40	0.24	0.40	0.25
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.21	0.13
Chloroform	0.10	0.064	0.11	0.069
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	0.18	0.16
Carbon Tetrachloride	0.10	0.072	0.61	0.43
Benzene	0.40	0.24	0.73	0.44
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	0.38	0.32
Trichloroethene	0.10	0.070	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	1.6	1.0
Tetrachloroethene	0.10	0.081	0.12	0.097
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.19	0.14
m,p-Xylene	0.10	0.068	0.61	0.42
o-Xylene	0.10	0.074	0.19	0.14
Styrene	0.10	0.079	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20439 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: 5

Lab ID#: 2010592-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102807sim**	**Date of Collection: 10/22/20 1:05:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 11:43 AM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	0.46	0.34
Ethyl Acetate	0.40	0.24	0.42	0.26
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	0.15	0.13
Carbon Tetrachloride	0.10	0.072	0.42	0.30
Benzene	0.40	0.24	0.60	0.36
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	0.38	0.32
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	1.1	0.74
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.16	0.12
m,p-Xylene	0.10	0.068	0.52	0.35
o-Xylene	0.10	0.074	0.16	0.12
Styrene	0.10	0.079	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20440 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: 7

Lab ID#: 2010592-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102808sim**	**Date of Collection: 10/22/20 12:56:00 P**
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 12:10 PM**
		Date of Extraction: 10/28/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	0.41	0.30
Ethyl Acetate	0.40	0.24	0.85	0.52
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.24	0.15
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	0.15	0.13
Carbon Tetrachloride	0.10	0.072	0.32	0.23
Benzene	0.40	0.24	0.48	0.29
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	0.29	0.24
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	1.4	0.94
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.17	0.12
m,p-Xylene	0.10	0.068	0.55	0.38
o-Xylene	0.10	0.074	0.18	0.13
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20450 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: 8

Lab ID#: 2010592-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102809sim**	**Date of Collection: 10/22/20 1:10:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 12:37 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.072	0.39	0.28
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.47	0.29
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	0.13	0.11
Carbon Tetrachloride	0.10	0.071	0.37	0.26
Benzene	0.40	0.24	0.49	0.29
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.32	0.26
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	0.86	0.55
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.12	0.086
m,p-Xylene	0.10	0.068	0.37	0.25
o-Xylene	0.10	0.074	0.12	0.087
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20474 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 12

Lab ID#: 2010592-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102810sim**	**Date of Collection: 10/22/20 1:17:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 01:03 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.072	0.68	0.49
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.34	0.20
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.16	0.14
Carbon Tetrachloride	0.10	0.071	0.62	0.44
Benzene	0.40	0.24	0.86	0.51
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.61	0.50
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	1.5	0.96
Tetrachloroethene	0.10	0.081	0.11	0.090
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.23	0.16
m,p-Xylene	0.10	0.068	0.71	0.48
o-Xylene	0.10	0.074	0.22	0.16
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20502 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Dup

Lab ID#: 2010592-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102811sim**	**Date of Collection: 10/22/20 1:17:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 01:30 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.072	0.52	0.38
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.22	0.13
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.14	0.12
Carbon Tetrachloride	0.10	0.071	0.49	0.35
Benzene	0.40	0.24	0.66	0.40
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.45	0.37
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	1.1	0.73
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.17	0.12
m,p-Xylene	0.10	0.068	0.51	0.35
o-Xylene	0.10	0.074	0.16	0.12
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20500 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: TB

Lab ID#: 2010592-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102812sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 01:56 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.072	Not Detected	Not Detected
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.088	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.071	Not Detected	Not Detected
Benzene	0.40	0.24	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	Not Detected	Not Detected
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	Not Detected	Not Detected
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	Not Detected	Not Detected
m,p-Xylene	0.10	0.068	Not Detected	Not Detected
o-Xylene	0.10	0.074	Not Detected	Not Detected
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20502 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Lab Blank

Lab ID#: 2010592-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102805sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 10:44 AM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.072	Not Detected	Not Detected
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.088	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.071	Not Detected	Not Detected
Benzene	0.40	0.24	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	Not Detected	Not Detected
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	Not Detected	Not Detected
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	Not Detected	Not Detected
m,p-Xylene	0.10	0.068	Not Detected	Not Detected
o-Xylene	0.10	0.074	Not Detected	Not Detected
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20502 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: LCS

Lab ID#: 2010592-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102803sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 09:51 AM**	
		Date of Extraction: 10/28/20	

Compound	%Recovery	Method Limits
Ethanol	46 Q	50-130
Methyl tert-butyl ether	113	70-130
Hexane	111	70-130
Ethyl Acetate	115	70-130
2-Butanone (Methyl Ethyl Ketone)	100	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	107	70-130
Cyclohexane	107	70-130
Carbon Tetrachloride	106	70-130
Benzene	100	70-130
1,2-Dichloroethane	100	70-130
Heptane	116	70-130
Trichloroethene	103	70-130
4-Methyl-2-pentanone	106	70-130
Toluene	100	70-130
Tetrachloroethene	100	70-130
Chlorobenzene	96	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	97	70-130
o-Xylene	91	70-130
Styrene	59	20-100
Propylbenzene	104	70-130
1,4-Dichlorobenzene	76	50-110
Naphthalene	12	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: LCSD

Lab ID#: 2010592-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102804sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 10:17 AM**	
		Date of Extraction: 10/28/20	

Compound	%Recovery	Method Limits
Ethanol	52	50-130
Methyl tert-butyl ether	119	70-130
Hexane	114	70-130
Ethyl Acetate	120	70-130
2-Butanone (Methyl Ethyl Ketone)	103	70-130
Chloroform	108	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	106	70-130
Benzene	100	70-130
1,2-Dichloroethane	101	70-130
Heptane	115	70-130
Trichloroethene	102	70-130
4-Methyl-2-pentanone	105	70-130
Toluene	100	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	96	70-130
o-Xylene	90	70-130
Styrene	59	20-100
Propylbenzene	103	70-130
1,4-Dichlorobenzene	76	50-110
Naphthalene	12	5-80

Container Type: NA - Not Applicable

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

October 22, 2020 to November 5, 2020

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11/20/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2011196

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 11/9/2020 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 2011196

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:	11/09/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	11/20/2020		

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: 11/20/20

Technical Director

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

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2011196

Seven Radiello 130 (Solvent) samples were received on November 09, 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

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 20040 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#: 2011196-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	1.4	0.70
Hexane	0.10	0.078	0.38	0.30
Chloroform	0.10	0.069	0.12	0.080
Cyclohexane	0.10	0.095	0.12	0.11
Carbon Tetrachloride	0.10	0.077	0.64	0.49
Benzene	0.40	0.26	0.62	0.40
Heptane	0.10	0.089	0.24	0.22
Toluene	0.10	0.070	1.1	0.79
Ethyl Benzene	0.10	0.076	0.12	0.092
m,p-Xylene	0.10	0.074	0.36	0.26
o-Xylene	0.10	0.079	0.11	0.089

Client Sample ID: 5

Lab ID#: 2011196-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.078	0.34	0.27
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.16
Cyclohexane	0.10	0.096	0.11	0.11
Carbon Tetrachloride	0.10	0.077	0.46	0.36
Benzene	0.40	0.26	0.48	0.31
Heptane	0.10	0.089	0.22	0.19
Toluene	0.10	0.070	0.78	0.55
m,p-Xylene	0.10	0.074	0.29	0.22

Client Sample ID: 7

Lab ID#: 2011196-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.0	0.53
Hexane	0.10	0.078	0.27	0.21
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15
Carbon Tetrachloride	0.10	0.077	0.29	0.22

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

Client Sample ID: 7

Lab ID#: 2011196-03A

Heptane	0.10	0.089	0.15	0.14
Toluene	0.10	0.070	0.68	0.47
m,p-Xylene	0.10	0.074	0.25	0.18

Client Sample ID: 8

Lab ID#: 2011196-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.69
Hexane	0.10	0.079	0.28	0.22
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.48	0.31
Carbon Tetrachloride	0.10	0.077	0.40	0.31
Benzene	0.40	0.26	0.43	0.28
Heptane	0.10	0.090	0.19	0.17
Toluene	0.10	0.070	0.62	0.44
m,p-Xylene	0.10	0.074	0.22	0.16

Client Sample ID: 12

Lab ID#: 2011196-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.34	0.26
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15
Carbon Tetrachloride	0.10	0.077	0.51	0.40
Benzene	0.40	0.26	0.49	0.32
Heptane	0.10	0.089	0.16	0.14
Toluene	0.10	0.070	0.58	0.41
m,p-Xylene	0.10	0.074	0.23	0.17

Client Sample ID: Dup

Lab ID#: 2011196-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.35	0.28

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

Client Sample ID: Dup

Lab ID#: 2011196-06A

Carbon Tetrachloride	0.10	0.077	0.52	0.40
Benzene	0.40	0.26	0.52	0.34
Heptane	0.10	0.089	0.18	0.16
Toluene	0.10	0.070	0.63	0.44
m,p-Xylene	0.10	0.074	0.27	0.20

Client Sample ID: TB

Lab ID#: 2011196-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2011196-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111218sim**	**Date of Collection: 11/5/20 11:22:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 03:23 PM**
		Date of Extraction: 11/12/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	1.4	0.70
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.078	0.38	0.30
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	0.12	0.080
1,1,1-Trichloroethane	0.10	0.083	Not Detected	Not Detected
Cyclohexane	0.10	0.095	0.12	0.11
Carbon Tetrachloride	0.10	0.077	0.64	0.49
Benzene	0.40	0.26	0.62	0.40
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.24	0.22
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	1.1	0.79
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	0.12	0.092
m,p-Xylene	0.10	0.074	0.36	0.26
o-Xylene	0.10	0.079	0.11	0.089
Styrene	0.10	0.084	Not Detected	Not Detected
Propylbenzene	0.10	0.090	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 = 66.0F , duration time = 20017 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#: 2011196-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111219sim**	**Date of Collection: 11/5/20 10:40:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 03:49 PM**
		Date of Extraction: 11/12/20

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	0.078	0.34	0.27
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.16
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	0.11	0.11
Carbon Tetrachloride	0.10	0.077	0.46	0.36
Benzene	0.40	0.26	0.48	0.31
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.22	0.19
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.78	0.55
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.29	0.22
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 64.0F , duration time = 20014 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#: 2011196-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111220sim**	**Date of Collection: 11/5/20 11:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 04:15 PM**	
		Date of Extraction: 11/12/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.0	0.53
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.078	0.27	0.21
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.083	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.29	0.22
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.15	0.14
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.68	0.47
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.25	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 64.0F , duration time = 20040 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#: 2011196-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111221sim**	**Date of Collection: 11/5/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 04:40 PM**	
		Date of Extraction: 11/12/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.69
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.28	0.22
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.48	0.31
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.40	0.31
Benzene	0.40	0.26	0.43	0.28
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.090	0.19	0.17
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.62	0.44
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.22	0.16
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 64.0F , duration time = 19958 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#: 2011196-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111222sim**	**Date of Collection: 11/5/20 10:10:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 05:06 PM**	
		Date of Extraction: 11/12/20	

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	0.34	0.26
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.51	0.40
Benzene	0.40	0.26	0.49	0.32
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.16	0.14
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.58	0.41
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.23	0.17
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 64.0F , duration time = 19970 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Dup

Lab ID#: 2011196-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111223sim**	**Date of Collection: 11/5/20 10:10:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 05:32 PM**	
		Date of Extraction: 11/12/20	

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	0.35	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.52	0.40
Benzene	0.40	0.26	0.52	0.34
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.18	0.16
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.63	0.44
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	0.27	0.20
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 64.0F , duration time = 19970 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: TB

Lab ID#: 2011196-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111217sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 02:57 PM**	
		Date of Extraction: 11/12/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.078	Not Detected	Not Detected
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.068	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.083	Not Detected	Not Detected
Cyclohexane	0.10	0.095	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	Not Detected	Not Detected
Trichloroethene	0.10	0.074	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.073	Not Detected	Not Detected
o-Xylene	0.10	0.079	Not Detected	Not Detected
Styrene	0.10	0.084	Not Detected	Not Detected
Propylbenzene	0.10	0.090	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 66.0F , duration time = 20040 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#: 2011196-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111216sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 02:18 PM**	
		Date of Extraction: 11/12/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.078	Not Detected	Not Detected
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.068	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.083	Not Detected	Not Detected
Cyclohexane	0.10	0.095	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	Not Detected	Not Detected
Trichloroethene	0.10	0.074	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.073	Not Detected	Not Detected
o-Xylene	0.10	0.079	Not Detected	Not Detected
Styrene	0.10	0.084	Not Detected	Not Detected
Propylbenzene	0.10	0.090	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 66.0F , duration time = 20040 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#: 2011196-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111213sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 01:01 PM**	
		Date of Extraction: 11/12/20	

Compound	%Recovery	Method Limits
Ethanol	75	50-130
Methyl tert-butyl ether	106	70-130
Hexane	99	70-130
Ethyl Acetate	99	70-130
2-Butanone (Methyl Ethyl Ketone)	95	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	99	70-130
Cyclohexane	102	70-130
Carbon Tetrachloride	100	70-130
Benzene	90	70-130
1,2-Dichloroethane	98	70-130
Heptane	96	70-130
Trichloroethene	98	70-130
4-Methyl-2-pentanone	102	70-130
Toluene	88	70-130
Tetrachloroethene	92	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	88	70-130
m,p-Xylene	85	70-130
o-Xylene	82	70-130
Styrene	64	20-100
Propylbenzene	101	70-130
1,4-Dichlorobenzene	76	50-110
Naphthalene	17	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130

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Client Sample ID: LCSD

Lab ID#: 2011196-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111214sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 01:26 PM**	
		Date of Extraction: 11/12/20	

Compound	%Recovery	Method Limits
Ethanol	65	50-130
Methyl tert-butyl ether	105	70-130
Hexane	99	70-130
Ethyl Acetate	98	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	103	70-130
Carbon Tetrachloride	98	70-130
Benzene	88	70-130
1,2-Dichloroethane	96	70-130
Heptane	95	70-130
Trichloroethene	95	70-130
4-Methyl-2-pentanone	97	70-130
Toluene	85	70-130
Tetrachloroethene	88	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	86	70-130
m,p-Xylene	82	70-130
o-Xylene	78	70-130
Styrene	57	20-100
Propylbenzene	98	70-130
1,4-Dichlorobenzene	69	50-110
Naphthalene	11	5-80

Container Type: NA - Not Applicable

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

November 5, 2020 to November 19, 2020

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12/9/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2011599

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 11/24/2020 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 2011599

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:	11/24/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	12/09/2020		

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: 12/09/20

Technical Director

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

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2011599

Seven Radiello 130 (Solvent) samples were received on November 24, 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 20105 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#: 2011599-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.41	0.32
Cyclohexane	0.10	0.097	0.15	0.15
Carbon Tetrachloride	0.10	0.078	0.47	0.37
Benzene	0.40	0.26	0.58	0.38
Heptane	0.10	0.090	0.32	0.29
Toluene	0.10	0.070	1.3	0.93
Ethyl Benzene	0.10	0.077	0.15	0.11
m,p-Xylene	0.10	0.075	0.43	0.32
o-Xylene	0.10	0.080	0.13	0.11

Client Sample ID: 5

Lab ID#: 2011599-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.41	0.32
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.17
Cyclohexane	0.10	0.097	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.44	0.34
Benzene	0.40	0.26	0.60	0.40
Heptane	0.10	0.090	0.35	0.31
Toluene	0.10	0.070	0.96	0.68
Ethyl Benzene	0.10	0.077	0.14	0.11
m,p-Xylene	0.10	0.075	0.41	0.30
o-Xylene	0.10	0.080	0.14	0.11

Client Sample ID: 7

Lab ID#: 2011599-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.72
Hexane	0.10	0.079	0.50	0.40
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.21
Cyclohexane	0.10	0.097	0.14	0.13

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

Client Sample ID: 7

Lab ID#: 2011599-03A

Carbon Tetrachloride	0.10	0.078	0.48	0.37
Benzene	0.40	0.26	0.66	0.43
Heptane	0.10	0.090	0.32	0.29
Toluene	0.10	0.071	1.1	0.77
Ethyl Benzene	0.10	0.077	0.18	0.14
m,p-Xylene	0.10	0.075	0.53	0.39
o-Xylene	0.10	0.080	0.17	0.13

Client Sample ID: 8

Lab ID#: 2011599-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.48	0.38
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.28	0.18
Chloroform	0.10	0.069	0.11	0.079
Cyclohexane	0.10	0.096	0.15	0.15
Carbon Tetrachloride	0.10	0.078	0.55	0.43
Benzene	0.40	0.26	0.70	0.45
1,2-Dichloroethane	0.10	0.068	0.11	0.075
Heptane	0.10	0.090	0.48	0.43
Toluene	0.10	0.070	1.1	0.77
Ethyl Benzene	0.10	0.076	0.16	0.12
m,p-Xylene	0.10	0.074	0.47	0.35
o-Xylene	0.10	0.080	0.15	0.12

Client Sample ID: 12

Lab ID#: 2011599-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.40	0.32
Cyclohexane	0.10	0.096	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.63	0.41
Heptane	0.10	0.090	0.30	0.27

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

Client Sample ID: 12

Lab ID#: 2011599-05A

Toluene	0.10	0.070	0.86	0.61
Ethyl Benzene	0.10	0.077	0.14	0.11
m,p-Xylene	0.10	0.074	0.40	0.30
o-Xylene	0.10	0.080	0.13	0.10

Client Sample ID: Dup

Lab ID#: 2011599-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.079	0.47	0.37
Cyclohexane	0.10	0.096	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.50	0.39
Benzene	0.40	0.26	0.67	0.44
1,2-Dichloroethane	0.10	0.068	0.10	0.069
Heptane	0.10	0.090	0.32	0.28
Toluene	0.10	0.070	0.89	0.63
Ethyl Benzene	0.10	0.077	0.14	0.11
m,p-Xylene	0.10	0.074	0.40	0.30
o-Xylene	0.10	0.080	0.14	0.11

Client Sample ID: TB

Lab ID#: 2011599-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2011599-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120320sim**	**Date of Collection: 11/19/20 9:40:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 03:27 PM**
		Date of Extraction: 12/3/20

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	0.41	0.32
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	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	0.15	0.15
Carbon Tetrachloride	0.10	0.078	0.47	0.37
Benzene	0.40	0.26	0.58	0.38
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.32	0.29
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	1.3	0.93
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.15	0.11
m,p-Xylene	0.10	0.075	0.43	0.32
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 = 61.0F , duration time = 20050 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#: 2011599-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120321sim**	**Date of Collection: 11/19/20 8:50:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 03:52 PM**
		Date of Extraction: 12/3/20

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	0.41	0.32
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.17
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	0.44	0.34
Benzene	0.40	0.26	0.60	0.40
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.35	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	0.070	0.96	0.68
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	0.41	0.30
o-Xylene	0.10	0.080	0.14	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 = 61.0F , duration time = 20045 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#: 2011599-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120322sim**	**Date of Collection: 11/19/20 8:40:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 04:17 PM**	
		Date of Extraction: 12/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.72
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.50	0.40
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	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	0.14	0.13
Carbon Tetrachloride	0.10	0.078	0.48	0.37
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	0.32	0.29
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	1.1	0.77
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.18	0.14
m,p-Xylene	0.10	0.075	0.53	0.39
o-Xylene	0.10	0.080	0.17	0.13
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 = 61.0F , duration time = 20015 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#: 2011599-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120323sim**	**Date of Collection: 11/19/20 9:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 04:42 PM**	
		Date of Extraction: 12/3/20	

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	0.48	0.38
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.28	0.18
Chloroform	0.10	0.069	0.11	0.079
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	0.15	0.15
Carbon Tetrachloride	0.10	0.078	0.55	0.43
Benzene	0.40	0.26	0.70	0.45
1,2-Dichloroethane	0.10	0.068	0.11	0.075
Heptane	0.10	0.090	0.48	0.43
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	1.1	0.77
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	0.16	0.12
m,p-Xylene	0.10	0.074	0.47	0.35
o-Xylene	0.10	0.080	0.15	0.12
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20105 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#: 2011599-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120324sim**	**Date of Collection: 11/19/20 9:10:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 05:07 PM**	
		Date of Extraction: 12/3/20	

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	0.40	0.32
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.63	0.41
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.30	0.27
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.86	0.61
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	0.074	0.40	0.30
o-Xylene	0.10	0.080	0.13	0.10
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20095 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#: 2011599-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120325sim**	**Date of Collection: 11/19/20 9:11:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 05:33 PM**	
		Date of Extraction: 12/3/20	

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	0.47	0.37
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.50	0.39
Benzene	0.40	0.26	0.67	0.44
1,2-Dichloroethane	0.10	0.068	0.10	0.069
Heptane	0.10	0.090	0.32	0.28
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.89	0.63
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	0.074	0.40	0.30
o-Xylene	0.10	0.080	0.14	0.11
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20096 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: TB

Lab ID#: 2011599-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120326sim**	**Date of Collection: 11/19/20**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 05:58 PM**	
		Date of Extraction: 12/3/20	

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)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	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	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20105 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#: 2011599-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120306sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 09:27 AM**	
		Date of Extraction: 12/3/20	

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)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	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	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20105 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#: 2011599-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120305sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 09:02 AM**	
		Date of Extraction: 12/3/20	

Compound	%Recovery	Method Limits
Ethanol	39 Q	50-130
Methyl tert-butyl ether	88	70-130
Hexane	88	70-130
Ethyl Acetate	83	70-130
2-Butanone (Methyl Ethyl Ketone)	78	70-130
Chloroform	84	70-130
1,1,1-Trichloroethane	86	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	86	70-130
Benzene	81	70-130
1,2-Dichloroethane	86	70-130
Heptane	91	70-130
Trichloroethene	85	70-130
4-Methyl-2-pentanone	90	70-130
Toluene	80	70-130
Tetrachloroethene	80	70-130
Chlorobenzene	86	70-130
Ethyl Benzene	81	70-130
m,p-Xylene	78	70-130
o-Xylene	74	70-130
Styrene	52	20-100
Propylbenzene	95	70-130
1,4-Dichlorobenzene	64	50-110
Naphthalene	11	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130

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Client Sample ID: LCSD

Lab ID#: 2011599-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120304sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 08:37 AM**	
		Date of Extraction: 12/3/20	

Compound	%Recovery	Method Limits
Ethanol	42 Q	50-130
Methyl tert-butyl ether	88	70-130
Hexane	89	70-130
Ethyl Acetate	82	70-130
2-Butanone (Methyl Ethyl Ketone)	79	70-130
Chloroform	85	70-130
1,1,1-Trichloroethane	86	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	86	70-130
Benzene	81	70-130
1,2-Dichloroethane	87	70-130
Heptane	91	70-130
Trichloroethene	86	70-130
4-Methyl-2-pentanone	90	70-130
Toluene	81	70-130
Tetrachloroethene	79	70-130
Chlorobenzene	86	70-130
Ethyl Benzene	81	70-130
m,p-Xylene	78	70-130
o-Xylene	74	70-130
Styrene	53	20-100
Propylbenzene	96	70-130
1,4-Dichlorobenzene	64	50-110
Naphthalene	11	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

November 19, 2020 to December 3, 2020

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12/16/2020
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2012125

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 12/4/2020 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 2012125

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:	12/04/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	12/16/2020		

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: 12/16/20

Technical Director

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

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2012125

Seven Radiello 130 (Solvent) samples were received on December 04, 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 20245 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#: 2012125-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	1.4	0.72
Hexane	0.10	0.082	0.63	0.52
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.46	0.32
Chloroform	0.10	0.072	0.13	0.094
Cyclohexane	0.10	0.10	0.21	0.21
Carbon Tetrachloride	0.10	0.081	0.60	0.49
Benzene	0.40	0.27	0.91	0.62
1,2-Dichloroethane	0.10	0.070	0.11	0.076
Heptane	0.10	0.094	0.50	0.47
Trichloroethene	0.10	0.079	0.11	0.083
Toluene	0.10	0.073	2.0	1.5
Tetrachloroethene	0.10	0.092	0.10	0.094
Ethyl Benzene	0.10	0.080	0.23	0.18
m,p-Xylene	0.10	0.078	0.67	0.52
o-Xylene	0.10	0.083	0.22	0.18

Client Sample ID: 5

Lab ID#: 2012125-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.083	0.52	0.43
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.51	0.36
Cyclohexane	0.10	0.10	0.17	0.17
Carbon Tetrachloride	0.10	0.081	0.47	0.38
Benzene	0.40	0.27	0.79	0.54
Heptane	0.10	0.094	0.38	0.36
Toluene	0.10	0.074	1.3	0.98
Tetrachloroethene	0.10	0.092	0.10	0.094
Ethyl Benzene	0.10	0.080	0.18	0.15
m,p-Xylene	0.10	0.078	0.53	0.41
o-Xylene	0.10	0.084	0.17	0.15

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

Client Sample ID: 7

Lab ID#: 2012125-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.083	0.58	0.48
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.62	0.43
Chloroform	0.10	0.073	0.11	0.078
Cyclohexane	0.10	0.10	0.21	0.21
Carbon Tetrachloride	0.10	0.081	0.47	0.38
Benzene	0.40	0.27	0.80	0.54
Heptane	0.10	0.094	0.40	0.38
Toluene	0.10	0.074	1.5	1.1
Tetrachloroethene	0.10	0.092	0.11	0.11
Ethyl Benzene	0.10	0.080	0.20	0.16
m,p-Xylene	0.10	0.078	0.60	0.47
o-Xylene	0.10	0.084	0.20	0.16

Client Sample ID: 8

Lab ID#: 2012125-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	1.6	0.87
Hexane	0.10	0.083	0.55	0.45
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.53	0.37
Chloroform	0.10	0.073	0.12	0.092
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.082	0.52	0.42
Benzene	0.40	0.27	0.83	0.57
Heptane	0.10	0.094	0.39	0.37
Toluene	0.10	0.074	1.4	1.0
Tetrachloroethene	0.10	0.093	0.11	0.10
Ethyl Benzene	0.10	0.080	0.19	0.15
m,p-Xylene	0.10	0.078	0.56	0.44
o-Xylene	0.10	0.084	0.18	0.15

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

Client Sample ID: 12

Lab ID#: 2012125-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.083	0.57	0.48
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.60	0.42
Chloroform	0.10	0.073	0.12	0.085
Cyclohexane	0.10	0.10	0.18	0.18
Carbon Tetrachloride	0.10	0.082	0.56	0.45
Benzene	0.40	0.27	0.90	0.62
1,2-Dichloroethane	0.10	0.071	0.10	0.071
Heptane	0.10	0.094	0.47	0.44
Toluene	0.10	0.074	1.4	1.0
Tetrachloroethene	0.10	0.093	0.11	0.10
Ethyl Benzene	0.10	0.080	0.20	0.16
m,p-Xylene	0.10	0.078	0.55	0.43
o-Xylene	0.10	0.084	0.18	0.15

Client Sample ID: Dup

Lab ID#: 2012125-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.083	0.53	0.44
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.53	0.37
Chloroform	0.10	0.073	0.11	0.079
Cyclohexane	0.10	0.10	0.16	0.16
Carbon Tetrachloride	0.10	0.082	0.50	0.41
Benzene	0.40	0.27	0.81	0.55
Heptane	0.10	0.094	0.42	0.40
Toluene	0.10	0.074	1.2	0.89
Ethyl Benzene	0.10	0.080	0.17	0.13
m,p-Xylene	0.10	0.078	0.47	0.36
o-Xylene	0.10	0.084	0.16	0.13

Client Sample ID: TB

Lab ID#: 2012125-07A

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

Client Sample ID: TB

Lab ID#: 2012125-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2012125-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120806sim**	**Date of Collection: 12/3/20 11:00:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 11:34 AM**
		Date of Extraction: 12/8/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	1.4	0.72
Methyl tert-butyl ether	0.10	0.083	Not Detected	Not Detected
Hexane	0.10	0.082	0.63	0.52
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.46	0.32
Chloroform	0.10	0.072	0.13	0.094
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.21	0.21
Carbon Tetrachloride	0.10	0.081	0.60	0.49
Benzene	0.40	0.27	0.91	0.62
1,2-Dichloroethane	0.10	0.070	0.11	0.076
Heptane	0.10	0.094	0.50	0.47
Trichloroethene	0.10	0.079	0.11	0.083
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.073	2.0	1.5
Tetrachloroethene	0.10	0.092	0.10	0.094
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.23	0.18
m,p-Xylene	0.10	0.078	0.67	0.52
o-Xylene	0.10	0.083	0.22	0.18
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.095	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 = 45.0F , duration time = 20235 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#: 2012125-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120807sim**	**Date of Collection: 12/3/20 10:20:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 11:59 AM**
		Date of Extraction: 12/8/20

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.52	0.43
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.51	0.36
Chloroform	0.10	0.073	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.17
Carbon Tetrachloride	0.10	0.081	0.47	0.38
Benzene	0.40	0.27	0.79	0.54
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.38	0.36
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	1.3	0.98
Tetrachloroethene	0.10	0.092	0.10	0.094
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.18	0.15
m,p-Xylene	0.10	0.078	0.53	0.41
o-Xylene	0.10	0.084	0.17	0.15
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.096	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 = 43.0F , duration time = 20245 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 7

Lab ID#: 2012125-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120808sim**	**Date of Collection: 12/3/20 10:09:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 12:25 PM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.58	0.48
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.62	0.43
Chloroform	0.10	0.073	0.11	0.078
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.21	0.21
Carbon Tetrachloride	0.10	0.081	0.47	0.38
Benzene	0.40	0.27	0.80	0.54
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.40	0.38
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	1.5	1.1
Tetrachloroethene	0.10	0.092	0.11	0.11
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.20	0.16
m,p-Xylene	0.10	0.078	0.60	0.47
o-Xylene	0.10	0.084	0.20	0.16
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.096	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 = 43.0F , duration time = 20244 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 8

Lab ID#: 2012125-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120809sim**	**Date of Collection: 12/3/20 9:30:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 12:51 PM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	1.6	0.87
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.55	0.45
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.53	0.37
Chloroform	0.10	0.073	0.12	0.092
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.082	0.52	0.42
Benzene	0.40	0.27	0.83	0.57
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.39	0.37
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	1.4	1.0
Tetrachloroethene	0.10	0.093	0.11	0.10
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.19	0.15
m,p-Xylene	0.10	0.078	0.56	0.44
o-Xylene	0.10	0.084	0.18	0.15
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	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 = 43.0F , duration time = 20185 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 12

Lab ID#: 2012125-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120810sim**	**Date of Collection: 12/3/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 01:17 PM**	
		Date of Extraction: 12/8/20	

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	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.57	0.48
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.60	0.42
Chloroform	0.10	0.073	0.12	0.085
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.18	0.18
Carbon Tetrachloride	0.10	0.082	0.56	0.45
Benzene	0.40	0.27	0.90	0.62
1,2-Dichloroethane	0.10	0.071	0.10	0.071
Heptane	0.10	0.094	0.47	0.44
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	1.4	1.0
Tetrachloroethene	0.10	0.093	0.11	0.10
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.20	0.16
m,p-Xylene	0.10	0.078	0.55	0.43
o-Xylene	0.10	0.084	0.18	0.15
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	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 = 43.0F , duration time = 20195 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Dup

Lab ID#: 2012125-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120811sim**	**Date of Collection: 12/3/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 01:43 PM**	
		Date of Extraction: 12/8/20	

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	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.53	0.44
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.53	0.37
Chloroform	0.10	0.073	0.11	0.079
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.16	0.16
Carbon Tetrachloride	0.10	0.082	0.50	0.41
Benzene	0.40	0.27	0.81	0.55
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.42	0.40
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	1.2	0.89
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.17	0.13
m,p-Xylene	0.10	0.078	0.47	0.36
o-Xylene	0.10	0.084	0.16	0.13
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	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 = 43.0F , duration time = 20194 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: TB

Lab ID#: 2012125-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120812sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 02:09 PM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.083	Not Detected	Not Detected
Hexane	0.10	0.082	Not Detected	Not Detected
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	Not Detected	Not Detected
Chloroform	0.10	0.072	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.087	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.081	Not Detected	Not Detected
Benzene	0.40	0.27	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.070	Not Detected	Not Detected
Heptane	0.10	0.094	Not Detected	Not Detected
Trichloroethene	0.10	0.078	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.073	Not Detected	Not Detected
Tetrachloroethene	0.10	0.092	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	Not Detected	Not Detected
m,p-Xylene	0.10	0.077	Not Detected	Not Detected
o-Xylene	0.10	0.083	Not Detected	Not Detected
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.095	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 = 45.0F , duration time = 20245 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Lab Blank

Lab ID#: 2012125-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120805sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 10:55 AM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.083	Not Detected	Not Detected
Hexane	0.10	0.082	Not Detected	Not Detected
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	Not Detected	Not Detected
Chloroform	0.10	0.072	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.087	Not Detected	Not Detected
Cyclohexane	0.10	0.10	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.081	Not Detected	Not Detected
Benzene	0.40	0.27	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.070	Not Detected	Not Detected
Heptane	0.10	0.094	Not Detected	Not Detected
Trichloroethene	0.10	0.078	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.073	Not Detected	Not Detected
Tetrachloroethene	0.10	0.092	Not Detected	Not Detected
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	Not Detected	Not Detected
m,p-Xylene	0.10	0.077	Not Detected	Not Detected
o-Xylene	0.10	0.083	Not Detected	Not Detected
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.095	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 = 45.0F , duration time = 20245 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#: 2012125-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120803sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 10:01 AM**	
		Date of Extraction: 12/8/20	

Compound	%Recovery	Method Limits
Ethanol	59	50-130
Methyl tert-butyl ether	82	70-130
Hexane	89	70-130
Ethyl Acetate	82	70-130
2-Butanone (Methyl Ethyl Ketone)	77	70-130
Chloroform	84	70-130
1,1,1-Trichloroethane	88	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	87	70-130
Benzene	85	70-130
1,2-Dichloroethane	88	70-130
Heptane	97	70-130
Trichloroethene	90	70-130
4-Methyl-2-pentanone	109	70-130
Toluene	90	70-130
Tetrachloroethene	88	70-130
Chlorobenzene	111	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	90	70-130
o-Xylene	86	70-130
Styrene	74	20-100
Propylbenzene	130	70-130
1,4-Dichlorobenzene	78	50-110
Naphthalene	15	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#: 2012125-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120804sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 10:27 AM**	
		Date of Extraction: 12/8/20	

Compound	%Recovery	Method Limits
Ethanol	48 Q	50-130
Methyl tert-butyl ether	83	70-130
Hexane	88	70-130
Ethyl Acetate	81	70-130
2-Butanone (Methyl Ethyl Ketone)	75	70-130
Chloroform	83	70-130
1,1,1-Trichloroethane	87	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	87	70-130
Benzene	85	70-130
1,2-Dichloroethane	87	70-130
Heptane	98	70-130
Trichloroethene	90	70-130
4-Methyl-2-pentanone	110	70-130
Toluene	90	70-130
Tetrachloroethene	87	70-130
Chlorobenzene	111	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	90	70-130
o-Xylene	86	70-130
Styrene	72	20-100
Propylbenzene	128	70-130
1,4-Dichlorobenzene	76	50-110
Naphthalene	13	5-80

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

December 3, 2020 to December 17, 2020

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1/5/2021
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2012504

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 12/19/2020 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 2012504

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:	12/19/2020	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	01/05/2021		

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: 01/05/21

Technical Director

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

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2012504

Seven Radiello 130 (Solvent) samples were received on December 19, 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 20145 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#: 2012504-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.70	0.61
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.59	0.42
Cyclohexane	0.10	0.10	0.23	0.25
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.86	0.62
Heptane	0.10	0.098	0.57	0.56
Trichloroethene	0.10	0.083	0.11	0.091
Toluene	0.10	0.077	2.1	1.6
Tetrachloroethene	0.10	0.097	0.13	0.12
Ethyl Benzene	0.10	0.084	0.26	0.22
m,p-Xylene	0.10	0.082	0.75	0.61
o-Xylene	0.10	0.088	0.25	0.22

Client Sample ID: 5

Lab ID#: 2012504-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.088	0.60	0.53
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.52	0.38
Cyclohexane	0.10	0.11	0.19	0.21
Carbon Tetrachloride	0.10	0.087	0.34	0.30
Benzene	0.40	0.29	0.72	0.52
Heptane	0.10	0.10	0.40	0.40
Trichloroethene	0.10	0.084	0.10	0.088
Toluene	0.10	0.078	1.6	1.2
Ethyl Benzene	0.10	0.085	0.19	0.17
m,p-Xylene	0.10	0.083	0.54	0.45
o-Xylene	0.10	0.089	0.18	0.16

Client Sample ID: 7

Lab ID#: 2012504-03A

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: 7

Lab ID#: 2012504-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.088	0.78	0.69
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.73	0.53
Cyclohexane	0.10	0.11	0.25	0.27
Carbon Tetrachloride	0.10	0.087	0.41	0.35
Benzene	0.40	0.29	0.87	0.63
Heptane	0.10	0.10	0.51	0.51
Trichloroethene	0.10	0.084	0.14	0.12
Toluene	0.10	0.079	2.0	1.6
Tetrachloroethene	0.10	0.098	0.12	0.12
Ethyl Benzene	0.10	0.086	0.27	0.23
m,p-Xylene	0.10	0.083	0.76	0.63
o-Xylene	0.10	0.089	0.25	0.22

Client Sample ID: 8

Lab ID#: 2012504-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.088	0.77	0.67
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.70	0.51
Chloroform	0.10	0.077	0.11	0.086
Cyclohexane	0.10	0.11	0.26	0.28
Carbon Tetrachloride	0.10	0.086	0.48	0.42
Benzene	0.40	0.29	0.94	0.68
Heptane	0.10	0.10	0.55	0.55
Trichloroethene	0.10	0.084	0.12	0.10
Toluene	0.10	0.078	1.9	1.5
Tetrachloroethene	0.10	0.098	0.12	0.11
Ethyl Benzene	0.10	0.085	0.26	0.22
m,p-Xylene	0.10	0.083	0.72	0.60
o-Xylene	0.10	0.089	0.24	0.22

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

Client Sample ID: 12

Lab ID#: 2012504-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.088	0.61	0.53
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.62	0.46
Cyclohexane	0.10	0.11	0.19	0.20
Carbon Tetrachloride	0.10	0.086	0.40	0.34
Benzene	0.40	0.29	0.84	0.61
Heptane	0.10	0.10	0.48	0.48
Trichloroethene	0.10	0.084	0.10	0.086
Toluene	0.10	0.078	1.5	1.2
Tetrachloroethene	0.10	0.098	0.10	0.10
Ethyl Benzene	0.10	0.085	0.22	0.19
m,p-Xylene	0.10	0.083	0.62	0.51
o-Xylene	0.10	0.089	0.20	0.18

Client Sample ID: Dup

Lab ID#: 2012504-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.088	0.68	0.60
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.63	0.46
Cyclohexane	0.10	0.11	0.20	0.21
Carbon Tetrachloride	0.10	0.086	0.42	0.37
Benzene	0.40	0.29	0.88	0.64
Heptane	0.10	0.10	0.49	0.49
Toluene	0.10	0.078	1.5	1.2
Tetrachloroethene	0.10	0.098	0.10	0.10
Ethyl Benzene	0.10	0.085	0.21	0.18
m,p-Xylene	0.10	0.083	0.59	0.49
o-Xylene	0.10	0.089	0.20	0.18

Client Sample ID: TB

Lab ID#: 2012504-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2012504-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122311sim**	**Date of Collection: 12/17/20 10:00:00 A**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 12:18 PM**	
		Date of Extraction: 12/23/20	

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	0.70	0.61
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	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	0.23	0.25
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.86	0.62
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.57	0.56
Trichloroethene	0.10	0.083	0.11	0.091
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	2.1	1.6
Tetrachloroethene	0.10	0.097	0.13	0.12
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.26	0.22
m,p-Xylene	0.10	0.082	0.75	0.61
o-Xylene	0.10	0.088	0.25	0.22
Styrene	0.10	0.094	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 = 30.0F , duration time = 20095 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: 5

Lab ID#: 2012504-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122312sim**	**Date of Collection: 12/17/20 8:40:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 12:43 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.60	0.53
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.52	0.38
Chloroform	0.10	0.078	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.19	0.21
Carbon Tetrachloride	0.10	0.087	0.34	0.30
Benzene	0.40	0.29	0.72	0.52
1,2-Dichloroethane	0.10	0.076	Not Detected	Not Detected
Heptane	0.10	0.10	0.40	0.40
Trichloroethene	0.10	0.084	0.10	0.088
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.6	1.2
Tetrachloroethene	0.10	0.098	Not Detected	Not Detected
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.19	0.17
m,p-Xylene	0.10	0.083	0.54	0.45
o-Xylene	0.10	0.089	0.18	0.16
Styrene	0.10	0.095	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 = 25.0F , duration time = 20055 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#: 2012504-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122313sim**	**Date of Collection: 12/17/20 8:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 01:09 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.78	0.69
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.73	0.53
Chloroform	0.10	0.078	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.25	0.27
Carbon Tetrachloride	0.10	0.087	0.41	0.35
Benzene	0.40	0.29	0.87	0.63
1,2-Dichloroethane	0.10	0.076	Not Detected	Not Detected
Heptane	0.10	0.10	0.51	0.51
Trichloroethene	0.10	0.084	0.14	0.12
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.079	2.0	1.6
Tetrachloroethene	0.10	0.098	0.12	0.12
Chlorobenzene	0.10	0.086	Not Detected	Not Detected
Ethyl Benzene	0.10	0.086	0.27	0.23
m,p-Xylene	0.10	0.083	0.76	0.63
o-Xylene	0.10	0.089	0.25	0.22
Styrene	0.10	0.095	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 = 25.0F , duration time = 20045 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 8

Lab ID#: 2012504-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122314sim**	**Date of Collection: 12/17/20 9:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 01:34 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.77	0.67
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.70	0.51
Chloroform	0.10	0.077	0.11	0.086
1,1,1-Trichloroethane	0.10	0.093	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.26	0.28
Carbon Tetrachloride	0.10	0.086	0.48	0.42
Benzene	0.40	0.29	0.94	0.68
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.55	0.55
Trichloroethene	0.10	0.084	0.12	0.10
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.9	1.5
Tetrachloroethene	0.10	0.098	0.12	0.11
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.26	0.22
m,p-Xylene	0.10	0.083	0.72	0.60
o-Xylene	0.10	0.089	0.24	0.22
Styrene	0.10	0.095	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 = 25.0F , duration time = 20145 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#: 2012504-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122315sim**	**Date of Collection: 12/17/20 9:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 01:59 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.61	0.53
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.62	0.46
Chloroform	0.10	0.077	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.19	0.20
Carbon Tetrachloride	0.10	0.086	0.40	0.34
Benzene	0.40	0.29	0.84	0.61
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.48	0.48
Trichloroethene	0.10	0.084	0.10	0.086
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.5	1.2
Tetrachloroethene	0.10	0.098	0.10	0.10
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.22	0.19
m,p-Xylene	0.10	0.083	0.62	0.51
o-Xylene	0.10	0.089	0.20	0.18
Styrene	0.10	0.095	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 = 25.0F , duration time = 20105 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Dup

Lab ID#: 2012504-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122316sim**	**Date of Collection: 12/17/20 9:01:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 02:25 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.68	0.60
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.63	0.46
Chloroform	0.10	0.077	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.20	0.21
Carbon Tetrachloride	0.10	0.086	0.42	0.37
Benzene	0.40	0.29	0.88	0.64
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.49	0.49
Trichloroethene	0.10	0.084	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.5	1.2
Tetrachloroethene	0.10	0.098	0.10	0.10
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.21	0.18
m,p-Xylene	0.10	0.083	0.59	0.49
o-Xylene	0.10	0.089	0.20	0.18
Styrene	0.10	0.095	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 = 25.0F , duration time = 20106 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#: 2012504-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122310sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 11:53 AM**	
		Date of Extraction: 12/23/20	

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	Not Detected	Not Detected
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	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	0.088	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 = 30.0F , duration time = 20145 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#: 2012504-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122309sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 11:27 AM**	
		Date of Extraction: 12/23/20	

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	Not Detected	Not Detected
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	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	0.088	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 = 30.0F , duration time = 20145 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#: 2012504-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122307sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 10:36 AM**	
		Date of Extraction: 12/23/20	

Compound	%Recovery	Method Limits
Ethanol	64	50-130
Methyl tert-butyl ether	71	70-130
Hexane	79	70-130
Ethyl Acetate	73	70-130
2-Butanone (Methyl Ethyl Ketone)	70	70-130
Chloroform	74	70-130
1,1,1-Trichloroethane	82	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	82	70-130
Benzene	83	70-130
1,2-Dichloroethane	83	70-130
Heptane	94	70-130
Trichloroethene	85	70-130
4-Methyl-2-pentanone	85	70-130
Toluene	88	70-130
Tetrachloroethene	84	70-130
Chlorobenzene	84	70-130
Ethyl Benzene	91	70-130
m,p-Xylene	87	70-130
o-Xylene	84	70-130
Styrene	58	20-100
Propylbenzene	95	70-130
1,4-Dichlorobenzene	75	50-110
Naphthalene	20	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#: 2012504-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122308sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 11:02 AM**	
		Date of Extraction: 12/23/20	

Compound	%Recovery	Method Limits
Ethanol	66	50-130
Methyl tert-butyl ether	74	70-130
Hexane	80	70-130
Ethyl Acetate	74	70-130
2-Butanone (Methyl Ethyl Ketone)	72	70-130
Chloroform	75	70-130
1,1,1-Trichloroethane	82	70-130
Cyclohexane	88	70-130
Carbon Tetrachloride	81	70-130
Benzene	84	70-130
1,2-Dichloroethane	84	70-130
Heptane	94	70-130
Trichloroethene	85	70-130
4-Methyl-2-pentanone	85	70-130
Toluene	86	70-130
Tetrachloroethene	83	70-130
Chlorobenzene	82	70-130
Ethyl Benzene	89	70-130
m,p-Xylene	85	70-130
o-Xylene	82	70-130
Styrene	56	20-100
Propylbenzene	93	70-130
1,4-Dichlorobenzene	72	50-110
Naphthalene	19	5-80

Container Type: NA - Not Applicable

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

December 17, 2020 to December 31, 2020

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1/14/2021
Mr. Bill Abernathy
Feezor Engineering
3377 Hollenberg Drive

Bridgeton MO 63044

Project Name: Bridgeton Landfill VOCs
Project #:
Workorder #: 2101006

Dear Mr. Bill Abernathy

The following report includes the data for the above referenced project for sample(s) received on 1/4/2021 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: 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 #: 2101006

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:	01/04/2021	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	01/14/2021		

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: 01/14/21

Technical Director

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

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

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Feezor Engineering
Workorder# 2101006

Seven Radiello 130 (Solvent) samples were received on January 04, 2021. 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 20380 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#: 2101006-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.088	0.39	0.34
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.39	0.28
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.087	0.46	0.40
Benzene	0.40	0.29	0.63	0.46
Heptane	0.10	0.10	0.24	0.24
Toluene	0.10	0.078	0.85	0.67
Ethyl Benzene	0.10	0.085	0.11	0.096
m,p-Xylene	0.10	0.083	0.27	0.22

Client Sample ID: 5

Lab ID#: 2101006-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.086	0.38	0.33
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.41	0.30
Cyclohexane	0.10	0.10	0.13	0.14
Carbon Tetrachloride	0.10	0.085	0.40	0.34
Benzene	0.40	0.28	0.60	0.42
Heptane	0.10	0.098	0.27	0.26
Toluene	0.10	0.077	0.59	0.46
m,p-Xylene	0.10	0.081	0.24	0.20

Client Sample ID: 7

Lab ID#: 2101006-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.087	0.43	0.37
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.56	0.41
Cyclohexane	0.10	0.11	0.14	0.15
Carbon Tetrachloride	0.10	0.086	0.45	0.38
Benzene	0.40	0.29	0.65	0.47
Heptane	0.10	0.099	0.26	0.26

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

Client Sample ID: 7

Lab ID#: 2101006-03A

Toluene	0.10	0.078	0.77	0.60
Ethyl Benzene	0.10	0.084	0.13	0.11
m,p-Xylene	0.10	0.082	0.34	0.28
o-Xylene	0.10	0.088	0.11	0.10

Client Sample ID: 8

Lab ID#: 2101006-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.084	0.43	0.36
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.50	0.35
Chloroform	0.10	0.074	0.10	0.074
Cyclohexane	0.10	0.10	0.14	0.15
Carbon Tetrachloride	0.10	0.083	0.49	0.41
Benzene	0.40	0.28	0.70	0.49
Heptane	0.10	0.096	0.36	0.35
Toluene	0.10	0.075	0.71	0.53
Ethyl Benzene	0.10	0.082	0.11	0.090
m,p-Xylene	0.10	0.080	0.30	0.24

Client Sample ID: 12

Lab ID#: 2101006-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.085	0.52	0.44
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.65	0.46
Chloroform	0.10	0.075	0.10	0.079
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.084	0.56	0.47
Benzene	0.40	0.28	0.80	0.56
Heptane	0.10	0.097	0.38	0.37
Toluene	0.10	0.076	0.77	0.58
Ethyl Benzene	0.10	0.082	0.13	0.10
m,p-Xylene	0.10	0.080	0.33	0.26

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

Client Sample ID: 12

Lab ID#: 2101006-05A

o-Xylene	0.10	0.086	0.11	0.092

Client Sample ID: Dup

Lab ID#: 2101006-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.085	0.38	0.32
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.37	0.26
Cyclohexane	0.10	0.10	0.13	0.14
Carbon Tetrachloride	0.10	0.084	0.41	0.35
Benzene	0.40	0.28	0.61	0.42
Heptane	0.10	0.097	0.31	0.30
Toluene	0.10	0.076	0.63	0.48
Ethyl Benzene	0.10	0.082	0.11	0.088
m,p-Xylene	0.10	0.080	0.27	0.22

Client Sample ID: TB

Lab ID#: 2101006-07A

No Detections Were Found.

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Client Sample ID: 1

Lab ID#: 2101006-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010718sim**	**Date of Collection: 12/31/20 8:36:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 02:23 PM**	
		Date of Extraction: 1/7/21	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.39	0.34
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.39	0.28
Chloroform	0.10	0.077	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.087	0.46	0.40
Benzene	0.40	0.29	0.63	0.46
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.24	0.24
Trichloroethene	0.10	0.084	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	0.85	0.67
Tetrachloroethene	0.10	0.098	Not Detected	Not Detected
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.11	0.096
m,p-Xylene	0.10	0.083	0.27	0.22
o-Xylene	0.10	0.089	Not Detected	Not Detected
Styrene	0.10	0.095	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 = 24.0F , duration time = 20072 minutes.

Container Type: Radiello 130 (Solvent)

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

eurofins | Air Toxics

Client Sample ID: 5

Lab ID#: 2101006-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010719sim**	**Date of Collection: 12/31/20 9:58:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 02:49 PM**	
		Date of Extraction: 1/7/21	

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	0.38	0.33
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.41	0.30
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	0.13	0.14
Carbon Tetrachloride	0.10	0.085	0.40	0.34
Benzene	0.40	0.28	0.60	0.42
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.27	0.26
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	0.59	0.46
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	0.24	0.20
o-Xylene	0.10	0.088	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 = 28.0F , duration time = 20233 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 7

Lab ID#: 2101006-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010720sim**	**Date of Collection: 12/31/20 9:15:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 03:14 PM**	
		Date of Extraction: 1/7/21	

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	0.087	0.43	0.37
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.56	0.41
Chloroform	0.10	0.076	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.14	0.15
Carbon Tetrachloride	0.10	0.086	0.45	0.38
Benzene	0.40	0.29	0.65	0.47
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.099	0.26	0.26
Trichloroethene	0.10	0.083	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	0.77	0.60
Tetrachloroethene	0.10	0.097	Not Detected	Not Detected
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.13	0.11
m,p-Xylene	0.10	0.082	0.34	0.28
o-Xylene	0.10	0.088	0.11	0.10
Styrene	0.10	0.094	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 = 26.0F , duration time = 20205 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 8

Lab ID#: 2101006-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010721sim**	**Date of Collection: 12/31/20 1:04:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 03:40 PM**	
		Date of Extraction: 1/7/21	

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	0.43	0.36
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.50	0.35
Chloroform	0.10	0.074	0.10	0.074
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.14	0.15
Carbon Tetrachloride	0.10	0.083	0.49	0.41
Benzene	0.40	0.28	0.70	0.49
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected
Heptane	0.10	0.096	0.36	0.35
Trichloroethene	0.10	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	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	0.11	0.090
m,p-Xylene	0.10	0.080	0.30	0.24
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 = 34.0F , duration time = 20380 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#: 2101006-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010722sim**	**Date of Collection:**	**12/31/20 11:42:00 A**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/7/21 04:06 PM**
		Date of Extraction:	**1/7/21**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.55	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.085	0.52	0.44
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.65	0.46
Chloroform	0.10	0.075	0.10	0.079
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.084	0.56	0.47
Benzene	0.40	0.28	0.80	0.56
1,2-Dichloroethane	0.10	0.073	Not Detected	Not Detected
Heptane	0.10	0.097	0.38	0.37
Trichloroethene	0.10	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.076	0.77	0.58
Tetrachloroethene	0.10	0.095	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.13	0.10
m,p-Xylene	0.10	0.080	0.33	0.26
o-Xylene	0.10	0.086	0.11	0.092
Styrene	0.10	0.092	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 = 32.0F , duration time = 20317 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: Dup

Lab ID#: 2101006-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010723sim**	**Date of Collection: 12/31/20 11:45:00 A**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 04:32 PM**	
		Date of Extraction: 1/7/21	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.55	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected
Hexane	0.10	0.085	0.38	0.32
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.37	0.26
Chloroform	0.10	0.075	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	0.084	0.41	0.35
Benzene	0.40	0.28	0.61	0.42
1,2-Dichloroethane	0.10	0.073	Not Detected	Not Detected
Heptane	0.10	0.097	0.31	0.30
Trichloroethene	0.10	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.076	0.63	0.48
Tetrachloroethene	0.10	0.095	Not Detected	Not Detected
Chlorobenzene	0.10	0.082	Not Detected	Not Detected
Ethyl Benzene	0.10	0.082	0.11	0.088
m,p-Xylene	0.10	0.080	0.27	0.22
o-Xylene	0.10	0.086	Not Detected	Not Detected
Styrene	0.10	0.092	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 = 32.0F , duration time = 20319 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: TB

Lab ID#: 2101006-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010717sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 01:57 PM**	
		Date of Extraction: 1/7/21	

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	Not Detected	Not Detected
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	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	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	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	0.080	Not Detected	Not Detected
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 = 34.0F , duration time = 20380 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#: 2101006-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010706sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 09:09 AM**	
		Date of Extraction: 1/7/21	

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	Not Detected	Not Detected
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	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	0.081	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	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	0.080	Not Detected	Not Detected
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 = 34.0F , duration time = 20380 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

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Client Sample ID: LCS

Lab ID#: 2101006-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010703sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 07:51 AM**	
		Date of Extraction: 1/7/21	

Compound	%Recovery	Method Limits
Ethanol	57	50-130
Methyl tert-butyl ether	84	70-130
Hexane	85	70-130
Ethyl Acetate	85	70-130
2-Butanone (Methyl Ethyl Ketone)	79	70-130
Chloroform	81	70-130
1,1,1-Trichloroethane	92	70-130
Cyclohexane	98	70-130
Carbon Tetrachloride	94	70-130
Benzene	91	70-130
1,2-Dichloroethane	86	70-130
Heptane	104	70-130
Trichloroethene	100	70-130
4-Methyl-2-pentanone	100	70-130
Toluene	99	70-130
Tetrachloroethene	106	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	105	70-130
m,p-Xylene	103	70-130
o-Xylene	99	70-130
Styrene	70	20-100
Propylbenzene	110	70-130
1,4-Dichlorobenzene	93	50-110
Naphthalene	20	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	87	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2101006-09AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010704sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 08:17 AM**	
		Date of Extraction: 1/7/21	

Compound	%Recovery	Method Limits
Ethanol	71	50-130
Methyl tert-butyl ether	94	70-130
Hexane	91	70-130
Ethyl Acetate	94	70-130
2-Butanone (Methyl Ethyl Ketone)	88	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	96	70-130
Cyclohexane	100	70-130
Carbon Tetrachloride	96	70-130
Benzene	93	70-130
1,2-Dichloroethane	90	70-130
Heptane	104	70-130
Trichloroethene	101	70-130
4-Methyl-2-pentanone	98	70-130
Toluene	98	70-130
Tetrachloroethene	99	70-130
Chlorobenzene	93	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	99	70-130
o-Xylene	96	70-130
Styrene	70	20-100
Propylbenzene	106	70-130
1,4-Dichlorobenzene	92	50-110
Naphthalene	24	5-80

Container Type: NA - Not Applicable

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

Appendix 3

Quarterly Level IV Data Validation Summary Reports

October 8, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill October 8th, 2020 VOC Air Monitoring Event

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

December 16th, 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 October 8th, 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 October 8th, 2020 were shipped for delivery to the laboratory on October 9th, 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		2910224-01A
5		2910224-02A
7		2910224-03A
8		2910224-04A
12		2910224-05A
Dup	Field Duplicate @ 12	2910224-06A
TB	Trip Blank	2910224-07A

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	10/8/2020	10/14/2020	10/14/2020	6	0
5	10/8/2020	10/14/2020	10/14/2020	6	0
7	10/8/2020	10/14/2020	10/14/2020	6	0
8	10/8/2020	10/14/2020	10/14/2020	6	0
12	10/8/2020	10/14/2020	10/14/2020	6	0
Dup	10/8/2020	10/14/2020	10/14/2020	6	0
TB	10/8/2020	10/14/2020	10/14/2020	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 August 24th, 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 ($\overline{RRFs}$).

Relative response factors and mean relative response factors 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 3.3.1**. 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 3.3.1**. Analytes listed in **Table 3.3.1** 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 3.3.1 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
8/24/2020 MSD-C	Ethylbenzene: 0.418, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: 0.670, 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 August 24th, 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
8/24/2020 12:59 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.654, EPA Table 4 Min = 0.700	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 October 14th, 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 3.5.1**. 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 3.5.1**. Results for analytes listed in **Table 3.5.1** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.5.1 CCV Relative Response Factors Outside of Control Limits

CCV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
10/14/2020 08:35 MSD-C	Ethylbenzene = 0.393, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.595, EPA Table 4 Min = 0.700	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 (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 October 8th, 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 October 8th, 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% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill October 8th, 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#: 2010224-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101413sim**	**Date of Collection: 10/8/20 9:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 01:46 PM**	
		Date of Extraction: 10/14/20	

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	0.46	0.37
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.070	0.10	0.070
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.13	0.12
Carbon Tetrachloride	0.10	0.079	0.58	0.46
Benzene	0.40	0.26	0.52	0.34
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.29	0.26
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.071	1.5	1.1
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.16	0.13 J+
m,p-Xylene	0.10	0.076	0.54	0.40
o-Xylene	0.10	0.081	0.16	0.13
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 = 60.0F , duration time = 19805 minutes.

Container Type: Radiello 130 (Solvent)

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

12/16/2020

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Client Sample ID: 5

Lab ID#: 2010224-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101414sim**	**Date of Collection: 10/8/20 8:24:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 02:13 PM**	
		Date of Extraction: 10/14/20	

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	0.081	Not Detected	Not Detected
Hexane	0.10	0.079	0.57	0.45
Ethyl Acetate	0.40	0.27	0.54	0.36
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	0.22
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	0.16	0.16
Carbon Tetrachloride	0.10	0.078	0.48	0.37
Benzene	0.40	0.26	0.51	0.33
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.39	0.35
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	1.3	0.90
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.20	0.15 J+
m,p-Xylene	0.10	0.075	0.66	0.49
o-Xylene	0.10	0.081	0.19	0.15
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 = 60.0F , duration time = 19979 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 7

Lab ID#: 2010224-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101415sim**	**Date of Collection: 10/8/20 8:05:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 02:40 PM**	
		Date of Extraction: 10/14/20	

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	0.081	Not Detected	Not Detected
Hexane	0.10	0.079	0.80	0.64
Ethyl Acetate	0.40	0.27	1.5	1.0
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.50	0.33
Chloroform	0.10	0.070	0.10	0.072
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.097	0.25	0.24
Carbon Tetrachloride	0.10	0.078	0.56	0.44
Benzene	0.40	0.26	0.59	0.39
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.53	0.48
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	2.0	1.4
Tetrachloroethene	0.10	0.089	0.14	0.12
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.33	0.25 JH
m,p-Xylene	0.10	0.075	1.1	0.85
o-Xylene	0.10	0.081	0.32	0.26
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 = 60.0F , duration time = 19970 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 8

Lab ID#: 2010224-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101416sim**	**Date of Collection:**	**10/8/20 7:55:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**10/14/20 03:07 PM**
		Date of Extraction:	**10/14/20**

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	0.27
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.17
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	0.31	0.24
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	0.25	0.23
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	0.72	0.52
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.11	0.086 JH
m,p-Xylene	0.10	0.075	0.35	0.27
o-Xylene	0.10	0.081	Not Detected	Not Detected
Styrene	0.10	0.086	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 = 59.0F , duration time = 19935 minutes.

Container Type: Radiello 130 (Solvent)

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

12/16/2020

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Client Sample ID: 12

Lab ID#: 2010224-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101417sim**	**Date of Collection: 10/8/20 7:34:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 03:34 PM**	
		Date of Extraction: 10/14/20	

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	0.62	0.49
Ethyl Acetate	0.40	0.27	0.74	0.50
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.47	0.31
Chloroform	0.10	0.070	0.11	0.080
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.17	0.17
Carbon Tetrachloride	0.10	0.079	0.56	0.44
Benzene	0.40	0.26	0.60	0.39
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.43	0.39
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	1.3	0.94
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.20	0.16 J+
m,p-Xylene	0.10	0.075	0.61	0.46
o-Xylene	0.10	0.081	0.18	0.15
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 = 59.0F , duration time = 19960 minutes.

Container Type: Radiello 130 (Solvent)

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

12/14/2020

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Client Sample ID: Dup

Lab ID#: 2010224-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101418sim**	**Date of Collection: 10/8/20 7:36:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 04:00 PM**	
		Date of Extraction: 10/14/20	

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	0.58	0.47
Ethyl Acetate	0.40	0.27	0.59	0.40
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.38	0.25
Chloroform	0.10	0.070	0.11	0.076
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.16	0.16
Carbon Tetrachloride	0.10	0.079	0.54	0.42
Benzene	0.40	0.26	0.57	0.38
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.091	0.39	0.36
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	1.2	0.86
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.18	0.14 J+
m,p-Xylene	0.10	0.075	0.56	0.42
o-Xylene	0.10	0.081	0.16	0.13
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 = 59.0F , duration time = 19961 minutes.

Container Type: Radiello 130 (Solvent)

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

12/16/2020

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Client Sample ID: TB

Lab ID#: 2010224-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c101419sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/14/20 04:27 PM**	
		Date of Extraction: 10/14/20	

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	0.081	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)	0.20	0.13	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	0.089	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	0.081	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 = 60.0F , duration time = 19979 minutes.

Container Type: Radiello 130 (Solvent)

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

12/16/2020

October 22, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill October 22nd, 2020 VOC Air Monitoring Event

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

December 16th, 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 October 22nd, 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 October 22nd, 2020 were shipped for delivery to the laboratory on October 26th, 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		2010592-01A
5		2010592-02A
7		2010592-03A
8		2010592-04A
12		2010592-05A
Dup	Field Duplicate @ 12	2010592-06A
TB	Trip Blank	2010592-07A

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	10/22/2020	10/28/2020	10/28/2020	6	0
5	10/22/2020	10/28/2020	10/28/2020	6	0
7	10/22/2020	10/28/2020	10/28/2020	6	0
8	10/22/2020	10/28/2020	10/28/2020	6	0
12	10/22/2020	10/28/2020	10/28/2020	6	0
Dup	10/22/2020	10/28/2020	10/28/2020	6	0
TB	10/22/2020	10/28/2020	10/28/2020	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 August 24th, 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 ($\overline{\text{RRFs}}$).

Relative response factors and mean relative response factors 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, $\overline{\text{RRF}}$, and EPA Minimum	Associated Samples
8/24/2020 MSD-C	Ethylbenzene: 0.418, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: 0.670, 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 August 24th, 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
8/24/2020 12:59 MSD-C	Ethylbenzene = 0.402, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.654, EPA Table 4 Min = 0.700	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 October 14th, 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
10/28/2020 09:20 MSD-C	Ethylbenzene = 0.386, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.606, EPA Table 4 Min = 0.700	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 10/28/2020 09:51 LCSD 10/28/2020 10:17	Ethanol	46.6%	52.5%	12.0%	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, except for the results presented in **Table 3.11**.

Table 3.11 Field Duplicate Results Outside of Control Limits

Field Duplicate Pair	Analyte, PQL, and results For the primary and duplicate samples	Both values > 5x PQL?	If Yes, RPD?	If No, Both Values within ±PQL criteria?	Associated Samples
12 / DUP	Hexane (PQL: 0.072 µg/m^3) (0.49 µg/m^3, 0.38 µg/m^3)	Yes	25.3%	N/A	All
	2-Butanone (PQL: 0.060 µg/m^3) (0.20 µg/m^3, 0.13 µg/m^3)	No	N/A	No	
	Carbon Tetrachloride (PQL: 0.071 µg/m^3) (0.44 µg/m^3, 0.35 µg/m^3)	Yes	22.8%	N/A	
	Heptane (PQL: 0.082 µg/m^3) (0.50 µg/m^3, 0.37 µg/m^3)	Yes	29.9%	N/A	
	Toluene (PQL: 0.064 µg/m^3) (0.96 µg/m^3, 0.73 µg/m^3)	Yes	27.2%	N/A	
	m,p-Xylene (PQL: 0.068 µg/m^3) (0.48 µg/m^3, 0.35 µg/m^3)	Yes	31.3%	N/A	

Analytes listed in **Table 3.11** 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 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 October 22nd, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 87.5% (42 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill October 22nd, 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 98.9% (91 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill October 22nd, 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#: 2010592-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102806sim**	**Date of Collection: 10/22/20 1:40:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 11:17 AM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.47	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected	
Hexane	0.10	0.073	0.58	0.42	J
Ethyl Acetate	0.40	0.24	0.40	0.25	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.21	0.13	J
Chloroform	0.10	0.064	0.11	0.069	
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected	
Cyclohexane	0.10	0.089	0.18	0.16	
Carbon Tetrachloride	0.10	0.072	0.61	0.43	J
Benzene	0.40	0.24	0.73	0.44	
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected	
Heptane	0.10	0.083	0.38	0.32	J
Trichloroethene	0.10	0.070	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.065	1.6	1.0	J
Tetrachloroethene	0.10	0.081	0.12	0.097	
Chlorobenzene	0.10	0.070	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.070	0.19	0.14	JH
m,p-Xylene	0.10	0.068	0.61	0.42	J
o-Xylene	0.10	0.074	0.19	0.14	
Styrene	0.10	0.079	Not Detected	Not Detected	
Propylbenzene	0.10	0.084	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	

Temperature = 85.0F , duration time = 20439 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

12/16/2020

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Client Sample ID: 5

Lab ID#: 2010592-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102807sim**	**Date of Collection: 10/22/20 1:05:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 11:43 AM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.073	0.46	0.34 J
Ethyl Acetate	0.40	0.24	0.42	0.26
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected UJ
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.089	0.15	0.13
Carbon Tetrachloride	0.10	0.072	0.42	0.30 J
Benzene	0.40	0.24	0.60	0.36
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.083	0.38	0.32 J
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	1.1	0.74 J
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.16	0.12 J+
m,p-Xylene	0.10	0.068	0.52	0.35 J
o-Xylene	0.10	0.074	0.16	0.12
Styrene	0.10	0.079	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected R
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20440 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

12/16/2020

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Client Sample ID: 7

Lab ID#: 2010592-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102808sim**	**Date of Collection: 10/22/20 12:56:00 P**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 12:10 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.47	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected	
Hexane	0.10	0.073	0.41	0.30	J
Ethyl Acetate	0.40	0.24	0.85	0.52	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.24	0.15	J
Chloroform	0.10	0.064	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected	
Cyclohexane	0.10	0.089	0.15	0.13	
Carbon Tetrachloride	0.10	0.072	0.32	0.23	J
Benzene	0.40	0.24	0.48	0.29	
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected	
Heptane	0.10	0.083	0.29	0.24	J
Trichloroethene	0.10	0.069	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.065	1.4	0.94	J
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected	
Chlorobenzene	0.10	0.070	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.070	0.17	0.12	J+
m,p-Xylene	0.10	0.068	0.55	0.38	J
o-Xylene	0.10	0.074	0.18	0.13	
Styrene	0.10	0.078	Not Detected	Not Detected	
Propylbenzene	0.10	0.084	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	

Temperature = 85.0F , duration time = 20450 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

12/16/2020

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Client Sample ID: 8

Lab ID#: 2010592-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102809sim**	**Date of Collection: 10/22/20 1:10:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 12:37 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.47	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected	
Hexane	0.10	0.072	0.39	0.28	J
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.47	0.29	J
Chloroform	0.10	0.064	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected	
Cyclohexane	0.10	0.089	0.13	0.11	
Carbon Tetrachloride	0.10	0.071	0.37	0.26	J
Benzene	0.40	0.24	0.49	0.29	
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected	
Heptane	0.10	0.082	0.32	0.26	J
Trichloroethene	0.10	0.069	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.065	0.86	0.55	J
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected	
Chlorobenzene	0.10	0.070	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.070	0.12	0.086	J+
m,p-Xylene	0.10	0.068	0.37	0.25	J
o-Xylene	0.10	0.074	0.12	0.087	
Styrene	0.10	0.078	Not Detected	Not Detected	
Propylbenzene	0.10	0.084	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	

Temperature = 85.0F , duration time = 20474 minutes.

Container Type: Radiello 130 (Solvent)

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

12/16/2020

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Client Sample ID: 12

Lab ID#: 2010592-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102810sim**	**Date of Collection: 10/22/20 1:17:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 01:03 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.47	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected	
Hexane	0.10	0.072	0.68	0.49	J
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.34	0.20	J
Chloroform	0.10	0.064	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected	
Cyclohexane	0.10	0.088	0.16	0.14	
Carbon Tetrachloride	0.10	0.071	0.62	0.44	J
Benzene	0.40	0.24	0.86	0.51	
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected	
Heptane	0.10	0.082	0.61	0.50	J
Trichloroethene	0.10	0.069	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.065	1.5	0.96	J
Tetrachloroethene	0.10	0.081	0.11	0.090	
Chlorobenzene	0.10	0.070	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.070	0.23	0.16	J+
m,p-Xylene	0.10	0.068	0.71	0.48	J
o-Xylene	0.10	0.074	0.22	0.16	
Styrene	0.10	0.078	Not Detected	Not Detected	
Propylbenzene	0.10	0.084	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	

Temperature = 85.0F , duration time = 20502 minutes.

Container Type: Radiello 130 (Solvent)

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

12/10/2020

eurofins | Air Toxics

Client Sample ID: Dup

Lab ID#: 2010592-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102811sim**	**Date of Collection: 10/22/20 1:17:00 PM**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 01:30 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.47	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected
Hexane	0.10	0.072	0.52	0.38 J
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	0.22	0.13 J
Chloroform	0.10	0.064	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected
Cyclohexane	0.10	0.088	0.14	0.12
Carbon Tetrachloride	0.10	0.071	0.49	0.35 J
Benzene	0.40	0.24	0.66	0.40
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected
Heptane	0.10	0.082	0.45	0.37 J
Trichloroethene	0.10	0.069	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected
Toluene	0.10	0.065	1.1	0.73 J
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected
Chlorobenzene	0.10	0.070	Not Detected	Not Detected
Ethyl Benzene	0.10	0.070	0.17	0.12 J+
m,p-Xylene	0.10	0.068	0.51	0.35 J
o-Xylene	0.10	0.074	0.16	0.12
Styrene	0.10	0.078	Not Detected	Not Detected
Propylbenzene	0.10	0.084	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected R
Naphthalene	0.10	0.19	Not Detected	Not Detected

Temperature = 85.0F , duration time = 20500 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

12/16/2020

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Client Sample ID: TB

Lab ID#: 2010592-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c102812sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/28/20 01:56 PM**	
		Date of Extraction: 10/28/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.47	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.074	Not Detected	Not Detected	
Hexane	0.10	0.072	Not Detected	Not Detected	UJ
Ethyl Acetate	0.40	0.24	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.12	Not Detected	Not Detected	UJ
Chloroform	0.10	0.064	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.077	Not Detected	Not Detected	
Cyclohexane	0.10	0.088	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.071	Not Detected	Not Detected	UJ
Benzene	0.40	0.24	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.062	Not Detected	Not Detected	
Heptane	0.10	0.082	Not Detected	Not Detected	UJ
Trichloroethene	0.10	0.069	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.14	Not Detected	Not Detected	
Toluene	0.10	0.065	Not Detected	Not Detected	UJ
Tetrachloroethene	0.10	0.081	Not Detected	Not Detected	
Chlorobenzene	0.10	0.070	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.070	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.068	Not Detected	Not Detected	UJ
o-Xylene	0.10	0.074	Not Detected	Not Detected	
Styrene	0.10	0.078	Not Detected	Not Detected	
Propylbenzene	0.10	0.084	Not Detected	Not Detected	
1,4-Dichlorobenzene	0.10	0.094	Not Detected	Not Detected	R
Naphthalene	0.10	0.19	Not Detected	Not Detected	

Temperature = 85.0F , duration time = 20502 minutes.

Container Type: Radiello 130 (Solvent)

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

12/16/2020

November 5, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill November 5th, 2020 VOC Air Monitoring Event

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

December 18th, 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 November 5th, 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 November 5th, 2020 were shipped for delivery to the laboratory on November 9th, 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		2011196-01A
5		2011196-02A
7		2011196-03A
8		2011196-04A
12		2011196-05A
Dup	Field Duplicate @ 12	2011196-06A
TB	Trip Blank	2011196-07A

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	11/5/2020	11/12/2020	11/12/2020	7	0
5	11/5/2020	11/12/2020	11/12/2020	7	0
7	11/5/2020	11/12/2020	11/12/2020	7	0
8	11/5/2020	11/12/2020	11/12/2020	7	0
12	11/5/2020	11/12/2020	11/12/2020	7	0
Dup	11/5/2020	11/12/2020	11/12/2020	7	0
TB	11/5/2020	11/12/2020	11/12/2020	7	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 September 21st, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for eighteen (18) analytes, nine (9) standards for two (2) 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 ($\overline{RRFs}$).

Relative response factors and mean relative response factors 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 3.3.1**. 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 3.3.1**. Analytes listed in **Table 3.3.1** 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, except for the results listed in **Table 3.3.2**. Analytes listed in **Table 3.3.2** were qualified as estimated ("J") for positive results and no qualification was required for non-detect results.

Table 3.3.1 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Ethylbenzene: 0.449, EPA Table 4 Min = 0.500	All

Table 3.3.2 Initial Calibration %RSDs Outside of Control Limits

Initial Cal. Date and Instrument	Compound, %RSD, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Benzene: %RSD = 20.05%, EPA Max %RSD = 20.0%	All

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

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 September 21st, 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
9/21/2020 14:32 MSD-18	Ethylbenzene = 0.417, 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 November 12th, 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
11/12/2020 11:52 MSD-18	Ethylbenzene = 0.408, 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 11/12/2020 13:01 LCSD 11/12/2020 13:26	Naphthalene	17.5%	10.9%	46.2%	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 (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 November 5th, 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 November 5th, 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% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill November 5th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 96.4% (162 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2011196-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111218sim**	**Date of Collection:**	**11/5/20 11:22:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**11/12/20 03:23 PM**
		Date of Extraction:	**11/12/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	1.4	0.70
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.078	0.38	0.30
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	0.12	0.080
1,1,1-Trichloroethane	0.10	0.083	Not Detected	Not Detected
Cyclohexane	0.10	0.095	0.12	0.11
Carbon Tetrachloride	0.10	0.077	0.64	0.49
Benzene	0.40	0.26	0.62	0.40 J
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.24	0.22
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	1.1	0.79
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	0.12	0.092 J+
m,p-Xylene	0.10	0.074	0.36	0.26
o-Xylene	0.10	0.079	0.11	0.089
Styrene	0.10	0.084	Not Detected	Not Detected
Propylbenzene	0.10	0.090	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 66.0F , duration time = 20017 minutes.

Container Type: Radiello 130 (Solvent)

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

12/12/2020

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Client Sample ID: 5

Lab ID#: 2011196-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111219sim**	**Date of Collection: 11/5/20 10:40:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 03:49 PM**	
		Date of Extraction: 11/12/20	

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	0.078	0.34	0.27
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.16
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	0.11	0.11
Carbon Tetrachloride	0.10	0.077	0.46	0.36
Benzene	0.40	0.26	0.48	0.31 J
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.22	0.19
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.78	0.55
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	~~Not Detected~~ R
m,p-Xylene	0.10	0.074	0.29	0.22
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 64.0F , duration time = 20014 minutes.

Container Type: Radiello 130 (Solvent)

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

12/13/2020

eurofins | Air Toxics

Client Sample ID: 7

Lab ID#: 2011196-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111220sim**	**Date of Collection: 11/5/20 11:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 04:15 PM**	
		Date of Extraction: 11/12/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.0	0.53
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.078	0.27	0.21
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.083	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.29	0.22
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.15	0.14
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.68	0.47
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	0.25	0.18
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 64.0F , duration time = 20040 minutes.

Container Type: Radiello 130 (Solvent)

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

12/12/2020

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Client Sample ID: 8

Lab ID#: 2011196-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111221sim**	**Date of Collection: 11/5/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 04:40 PM**	
		Date of Extraction: 11/12/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.69
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.28	0.22
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.48	0.31
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.40	0.31
Benzene	0.40	0.26	0.43	0.28 J
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.090	0.19	0.17
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.62	0.44
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	0.22	0.16
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 64.0F , duration time = 19958 minutes.

Container Type: Radiello 130 (Solvent)

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

12/16/2020

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Client Sample ID: 12

Lab ID#: 2011196-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111222sim**	**Date of Collection:**	**11/5/20 10:10:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**11/12/20 05:06 PM**
		Date of Extraction:	**11/12/20**

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	0.34	0.26
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.23	0.15
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.51	0.40
Benzene	0.40	0.26	0.49	0.32 J
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.16	0.14
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.58	0.41
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	0.23	0.17
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 64.0F , duration time = 19970 minutes.

Container Type: Radiello 130 (Solvent)

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

12/13/2020

eurofins | Air Toxics

Client Sample ID: Dup
Lab ID#: 2011196-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111223sim**	**Date of Collection:**	**11/5/20 10:10:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**11/12/20 05:32 PM**
		Date of Extraction:	**11/12/20**

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	0.35	0.28
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	0.52	0.40
Benzene	0.40	0.26	0.52	0.34 J
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	0.18	0.16
Trichloroethene	0.10	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	0.63	0.44
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	0.27	0.20
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected UJ

Temperature = 64.0F , duration time = 19970 minutes.
Container Type: Radiello 130 (Solvent)

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

12/13/2020

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Client Sample ID: TB

Lab ID#: 2011196-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18111217sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/12/20 02:57 PM**	
		Date of Extraction: 11/12/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.078	Not Detected	Not Detected
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.068	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.083	Not Detected	Not Detected
Cyclohexane	0.10	0.095	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.077	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.067	Not Detected	Not Detected
Heptane	0.10	0.089	Not Detected	Not Detected
Trichloroethene	0.10	0.074	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.073	Not Detected	Not Detected
o-Xylene	0.10	0.079	Not Detected	Not Detected
Styrene	0.10	0.084	Not Detected	Not Detected
Propylbenzene	0.10	0.090	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected UJ

Temperature = 66.0F , duration time = 20040 minutes.

Container Type: Radiello 130 (Solvent)

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

12/18/2020

November 19, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill November 19th, 2020 VOC Air Monitoring Event

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

January 18th, 2021

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 November 19th, 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 November 19th, 2020 were shipped for delivery to the laboratory on November 24th, 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		2011599-01A
5		2011599-02A
7		2011599-03A
8		2011599-04A
12		2011599-05A
Dup	Field Duplicate @ 12	2011599-06A
TB	Trip Blank	2011599-07A

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	11/19/2020	12/3/2020	12/3/2020	14	0
5	11/19/2020	12/3/2020	12/3/2020	14	0
7	11/19/2020	12/3/2020	12/3/2020	14	0
8	11/19/2020	12/3/2020	12/3/2020	14	0
12	11/19/2020	12/3/2020	12/3/2020	14	0
Dup	11/19/2020	12/3/2020	12/3/2020	14	0
TB	11/19/2020	12/3/2020	12/3/2020	14	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 September 21st, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for eighteen (18) analytes, nine (9) standards for two (2) 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 ($\overline{RRFs}$).

Relative response factors and mean relative response factors 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 3.3.1**. 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 3.3.1**. Analytes listed in **Table 3.3.1** 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, except for the results listed in **Table 3.3.2**. Analytes listed in **Table 3.3.2** were qualified as estimated ("J") for positive results and no qualification was required for non-detect results.

Table 3.3.1 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Ethylbenzene: 0.449, EPA Table 4 Min = 0.500	All

Table 3.3.2 Initial Calibration %RSDs Outside of Control Limits

Initial Cal. Date and Instrument	Compound, %RSD, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Benzene: %RSD = 20.05%, EPA Max %RSD = 20.0%	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 September 21st, 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
9/21/2020 14:32 MSD-18	Ethylbenzene = 0.417, 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 December 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
12/3/2020 07:44 MSD-18	Ethylbenzene = 0.424, 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 12/3/2020 09:02 LCSD 12/3/2020 08:37	Ethanol	39.4%	41.9%	6.2%	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 (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 November 19th, 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 November 19th, 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 97.8% (90 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill November 19th, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 99.4% (167 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2011599-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120320sim**	**Date of Collection:**	**11/19/20 9:40:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**12/3/20 03:27 PM**
		Date of Extraction:	**12/3/20**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.41	0.32
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	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	0.15	0.15
Carbon Tetrachloride	0.10	0.078	0.47	0.37
Benzene	0.40	0.26	0.58	0.38 J
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.32	0.29
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	1.3	0.93
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.15	0.11 J+
m,p-Xylene	0.10	0.075	0.43	0.32
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 = 61.0F , duration time = 20050 minutes.

Container Type: Radiello 130 (Solvent)

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

1/18/2021

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Client Sample ID: 5

Lab ID#: 2011599-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120321sim**	**Date of Collection: 11/19/20 8:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 03:52 PM**	
		Date of Extraction: 12/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.51	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected	
Hexane	0.10	0.079	0.41	0.32	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.25	0.17	
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	0.44	0.34	
Benzene	0.40	0.26	0.60	0.40	J
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected	
Heptane	0.10	0.090	0.35	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	0.070	0.96	0.68	
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	0.41	0.30	
o-Xylene	0.10	0.080	0.14	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 = 61.0F , duration time = 20045 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#: 2011599-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120322sim**	**Date of Collection: 11/19/20 8:40:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 04:17 PM**	
		Date of Extraction: 12/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	1.4	0.72 J
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.50	0.40
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.32	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	0.14	0.13
Carbon Tetrachloride	0.10	0.078	0.48	0.37
Benzene	0.40	0.26	0.66	0.43 J
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.32	0.29
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	1.1	0.77
Tetrachloroethene	0.10	0.089	Not Detected	Not Detected
Chlorobenzene	0.10	0.077	Not Detected	Not Detected
Ethyl Benzene	0.10	0.077	0.18	0.14 J+
m,p-Xylene	0.10	0.075	0.53	0.39
o-Xylene	0.10	0.080	0.17	0.13
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 = 61.0F , duration time = 20015 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#: 2011599-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120323sim**	**Date of Collection: 11/19/20 9:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 04:42 PM**	
		Date of Extraction: 12/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.51	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected	
Hexane	0.10	0.079	0.48	0.38	
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.28	0.18	
Chloroform	0.10	0.069	0.11	0.079	
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected	
Cyclohexane	0.10	0.096	0.15	0.15	
Carbon Tetrachloride	0.10	0.078	0.55	0.43	
Benzene	0.40	0.26	0.70	0.45	J
1,2-Dichloroethane	0.10	0.068	0.11	0.075	
Heptane	0.10	0.090	0.48	0.43	
Trichloroethene	0.10	0.075	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.070	1.1	0.77	
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected	
Chlorobenzene	0.10	0.076	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.076	0.16	0.12	
m,p-Xylene	0.10	0.074	0.47	0.35	J+
o-Xylene	0.10	0.080	0.15	0.12	
Styrene	0.10	0.085	Not Detected	Not Detected	
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20105 minutes.

Container Type: Radiello 130 (Solvent)

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

1/13/2021

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Client Sample ID: 12

Lab ID#: 2011599-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120324sim**	**Date of Collection: 11/19/20 9:10:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 05:07 PM**	
		Date of Extraction: 12/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.40	0.32
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.49	0.38
Benzene	0.40	0.26	0.63	0.41 J
1,2-Dichloroethane	0.10	0.068	Not Detected	Not Detected
Heptane	0.10	0.090	0.30	0.27
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.86	0.61
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	0.074	0.40	0.30
o-Xylene	0.10	0.080	0.13	0.10
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20095 minutes.

Container Type: Radiello 130 (Solvent)

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

1/13/2021

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Client Sample ID: Dup

Lab ID#: 2011599-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120325sim**	**Date of Collection: 11/19/20 9:11:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 05:33 PM**	
		Date of Extraction: 12/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.080	Not Detected	Not Detected
Hexane	0.10	0.079	0.47	0.37
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	0.12	0.12
Carbon Tetrachloride	0.10	0.078	0.50	0.39
Benzene	0.40	0.26	0.67	0.44 J
1,2-Dichloroethane	0.10	0.068	0.10	0.069
Heptane	0.10	0.090	0.32	0.28
Trichloroethene	0.10	0.076	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	0.89	0.63
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	0.074	0.40	0.30
o-Xylene	0.10	0.080	0.14	0.11
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20096 minutes.
Container Type: Radiello 130 (Solvent)

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

1/18/2021

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Client Sample ID: TB

Lab ID#: 2011599-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120326sim**	**Date of Collection: 11/19/20**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/3/20 05:58 PM**	
		Date of Extraction: 12/3/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.51	Not Detected	Not Detected UJ
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)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.069	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.084	Not Detected	Not Detected
Cyclohexane	0.10	0.096	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	0.075	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.070	Not Detected	Not Detected
Tetrachloroethene	0.10	0.088	Not Detected	Not Detected
Chlorobenzene	0.10	0.076	Not Detected	Not Detected
Ethyl Benzene	0.10	0.076	Not Detected	Not Detected R
m,p-Xylene	0.10	0.074	Not Detected	Not Detected
o-Xylene	0.10	0.080	Not Detected	Not Detected
Styrene	0.10	0.085	Not Detected	Not Detected
Propylbenzene	0.10	0.091	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 = 61.0F , duration time = 20105 minutes.
Container Type: Radiello 130 (Solvent)

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

1/18/2021

December 3, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill December 3rd, 2020 VOC Air Monitoring Event

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

February 3rd, 2021

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 December 3rd, 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 December 3rd, 2020 were shipped for delivery to the laboratory on December 4th, 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		2012125-01A
5		2012125-02A
7		2012125-03A
8		2012125-04A
12		2012125-05A
Dup	Field Duplicate @ 12	2012125-06A
TB	Trip Blank	2012125-07A

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	12/3/2020	12/8/2020	12/8/2020	5	0
5	12/3/2020	12/8/2020	12/8/2020	5	0
7	12/3/2020	12/8/2020	12/8/2020	5	0
8	12/3/2020	12/8/2020	12/8/2020	5	0
12	12/3/2020	12/8/2020	12/8/2020	5	0
Dup	12/3/2020	12/8/2020	12/8/2020	5	0
TB	12/3/2020	12/8/2020	12/8/2020	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 September 21st, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for eighteen (18) analytes, nine (9) standards for two (2) 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 ($\overline{RRFs}$).

Relative response factors and mean relative response factors 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 3.3.1**. 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 3.3.1**. Analytes listed in **Table 3.3.1** 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, except for the results listed in **Table 3.3.2**. Analytes listed in **Table 3.3.2** were qualified as estimated ("J") for positive results and no qualification was required for non-detect results.

Table 3.3.1 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Ethylbenzene: 0.449, EPA Table 4 Min = 0.500	All

Table 3.3.2 Initial Calibration %RSDs Outside of Control Limits

Initial Cal. Date and Instrument	Compound, %RSD, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Benzene: %RSD = 20.05%, EPA Max %RSD = 20.0%	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 September 21st, 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
9/21/2020 14:32 MSD-18	Ethylbenzene = 0.417, 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 December 8th, 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
12/8/2020 09:36 MSD-18	Ethylbenzene = 0.442, 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 12/8/2020 10:01	Ethanol	58.9%	48.6%	19.2%	50% - 130%	0% - 20%	All
LCSD 12/8/2020 10:27	Propylbenzene	130.5%	128.4%	1.7%	70% - 130%	0% - 20%	

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 December 3rd, 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 December 3rd, 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 97.8% (90 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill December 3rd, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 99.4% (167 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2012125-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120806sim**	**Date of Collection: 12/3/20 11:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 11:34 AM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.53	1.4	0.72 J
Methyl tert-butyl ether	0.10	0.083	Not Detected	Not Detected
Hexane	0.10	0.082	0.63	0.52
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.46	0.32
Chloroform	0.10	0.072	0.13	0.094
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.21	0.21
Carbon Tetrachloride	0.10	0.081	0.60	0.49
Benzene	0.40	0.27	0.91	0.62 J
1,2-Dichloroethane	0.10	0.070	0.11	0.076
Heptane	0.10	0.094	0.50	0.47
Trichloroethene	0.10	0.079	0.11	0.083
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.073	2.0	1.5
Tetrachloroethene	0.10	0.092	0.10	0.094
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.23	0.18 J+
m,p-Xylene	0.10	0.078	0.67	0.52
o-Xylene	0.10	0.083	0.22	0.18
Styrene	0.10	0.089	Not Detected	Not Detected
Propylbenzene	0.10	0.095	Not Detected	Not Detected UJ
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 45.0F , duration time = 20235 minutes.

Container Type: Radiello 130 (Solvent)

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

2/3/2021

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Client Sample ID: 5

Lab ID#: 2012125-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120807sim**	**Date of Collection: 12/3/20 10:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 11:59 AM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.53	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected	
Hexane	0.10	0.083	0.52	0.43	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.51	0.36	
Chloroform	0.10	0.073	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.17	0.17	
Carbon Tetrachloride	0.10	0.081	0.47	0.38	
Benzene	0.40	0.27	0.79	0.54	J
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected	
Heptane	0.10	0.094	0.38	0.36	
Trichloroethene	0.10	0.079	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.074	1.3	0.98	
Tetrachloroethene	0.10	0.092	0.10	0.094	
Chlorobenzene	0.10	0.080	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.080	0.18	0.15	J+
m,p-Xylene	0.10	0.078	0.53	0.41	
o-Xylene	0.10	0.084	0.17	0.15	
Styrene	0.10	0.089	Not Detected	Not Detected	
Propylbenzene	0.10	0.096	Not Detected	Not Detected	UJ
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 43.0F , duration time = 20245 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 7

Lab ID#: 2012125-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120808sim**	**Date of Collection: 12/3/20 10:09:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 12:25 PM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.53	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected	
Hexane	0.10	0.083	0.58	0.48	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.62	0.43	
Chloroform	0.10	0.073	0.11	0.078	
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.21	0.21	
Carbon Tetrachloride	0.10	0.081	0.47	0.38	
Benzene	0.40	0.27	0.80	0.54	J
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected	
Heptane	0.10	0.094	0.40	0.38	
Trichloroethene	0.10	0.079	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.074	1.5	1.1	
Tetrachloroethene	0.10	0.092	0.11	0.11	
Chlorobenzene	0.10	0.080	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.080	0.20	0.16	J+
m,p-Xylene	0.10	0.078	0.60	0.47	
o-Xylene	0.10	0.084	0.20	0.16	
Styrene	0.10	0.089	Not Detected	Not Detected	
Propylbenzene	0.10	0.096	Not Detected	Not Detected	UJ
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 43.0F , duration time = 20244 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: 8

Lab ID#: 2012125-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120809sim**	**Date of Collection: 12/3/20 9:30:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 12:51 PM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.54	1.6	0.87 J
Methyl tert-butyl ether	0.10	0.084	Not Detected	Not Detected
Hexane	0.10	0.083	0.55	0.45
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.53	0.37
Chloroform	0.10	0.073	0.12	0.092
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected
Cyclohexane	0.10	0.10	0.17	0.18
Carbon Tetrachloride	0.10	0.082	0.52	0.42
Benzene	0.40	0.27	0.83	0.57 J
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected
Heptane	0.10	0.094	0.39	0.37
Trichloroethene	0.10	0.079	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.074	1.4	1.0
Tetrachloroethene	0.10	0.093	0.11	0.10
Chlorobenzene	0.10	0.080	Not Detected	Not Detected
Ethyl Benzene	0.10	0.080	0.19	0.15 J+
m,p-Xylene	0.10	0.078	0.56	0.44
o-Xylene	0.10	0.084	0.18	0.15
Styrene	0.10	0.090	Not Detected	Not Detected
Propylbenzene	0.10	0.096	Not Detected	Not Detected UJ
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected
Naphthalene	0.10	0.22	Not Detected	Not Detected

Temperature = 43.0F , duration time = 20185 minutes.

Container Type: Radiello 130 (Solvent)

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

2/3/2021

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Client Sample ID: 12

Lab ID#: 2012125-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120810sim**	**Date of Collection: 12/3/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 01:17 PM**	
		Date of Extraction: 12/8/20	

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	0.084	Not Detected	Not Detected	
Hexane	0.10	0.083	0.57	0.48	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.60	0.42	
Chloroform	0.10	0.073	0.12	0.085	
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.18	0.18	
Carbon Tetrachloride	0.10	0.082	0.56	0.45	
Benzene	0.40	0.27	0.90	0.62	J
1,2-Dichloroethane	0.10	0.071	0.10	0.071	
Heptane	0.10	0.094	0.47	0.44	
Trichloroethene	0.10	0.079	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.074	1.4	1.0	
Tetrachloroethene	0.10	0.093	0.11	0.10	
Chlorobenzene	0.10	0.080	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.080	0.20	0.16	J+
m,p-Xylene	0.10	0.078	0.55	0.43	
o-Xylene	0.10	0.084	0.18	0.15	
Styrene	0.10	0.090	Not Detected	Not Detected	
Propylbenzene	0.10	0.096	Not Detected	Not Detected	UJ
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 43.0F , duration time = 20195 minutes.

Container Type: Radiello 130 (Solvent)

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

2/3/2021

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Client Sample ID: Dup

Lab ID#: 2012125-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120811sim**	**Date of Collection: 12/3/20 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 01:43 PM**	
		Date of Extraction: 12/8/20	

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	0.084	Not Detected	Not Detected	
Hexane	0.10	0.083	0.53	0.44	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.53	0.37	
Chloroform	0.10	0.073	0.11	0.079	
1,1,1-Trichloroethane	0.10	0.088	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.16	0.16	
Carbon Tetrachloride	0.10	0.082	0.50	0.41	
Benzene	0.40	0.27	0.81	0.55	J
1,2-Dichloroethane	0.10	0.071	Not Detected	Not Detected	
Heptane	0.10	0.094	0.42	0.40	
Trichloroethene	0.10	0.079	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.074	1.2	0.89	
Tetrachloroethene	0.10	0.093	Not Detected	Not Detected	
Chlorobenzene	0.10	0.080	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.080	0.17	0.13	J+
m,p-Xylene	0.10	0.078	0.47	0.36	
o-Xylene	0.10	0.084	0.16	0.13	
Styrene	0.10	0.090	Not Detected	Not Detected	
Propylbenzene	0.10	0.096	Not Detected	Not Detected	UJ
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 43.0F , duration time = 20194 minutes.

Container Type: Radiello 130 (Solvent)

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

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Client Sample ID: TB

Lab ID#: 2012125-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120812sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/20 02:09 PM**	
		Date of Extraction: 12/8/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.53	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.083	Not Detected	Not Detected	
Hexane	0.10	0.082	Not Detected	Not Detected	
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	Not Detected	Not Detected	
Chloroform	0.10	0.072	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.087	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	Not Detected	Not Detected	
Carbon Tetrachloride	0.10	0.081	Not Detected	Not Detected	
Benzene	0.40	0.27	Not Detected	Not Detected	
1,2-Dichloroethane	0.10	0.070	Not Detected	Not Detected	
Heptane	0.10	0.094	Not Detected	Not Detected	
Trichloroethene	0.10	0.078	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected	
Toluene	0.10	0.073	Not Detected	Not Detected	
Tetrachloroethene	0.10	0.092	Not Detected	Not Detected	
Chlorobenzene	0.10	0.080	Not Detected	Not Detected	
Ethyl Benzene	0.10	0.080	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.077	Not Detected	Not Detected	
o-Xylene	0.10	0.083	Not Detected	Not Detected	
Styrene	0.10	0.089	Not Detected	Not Detected	
Propylbenzene	0.10	0.095	Not Detected	Not Detected	UJ
1,4-Dichlorobenzene	0.10	0.11	Not Detected	Not Detected	
Naphthalene	0.10	0.22	Not Detected	Not Detected	

Temperature = 45.0F , duration time = 20245 minutes.

Container Type: Radiello 130 (Solvent)

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

2/3/2021

December 17, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill December 17th, 2020 VOC Air Monitoring Event

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

February 3rd, 2021

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 December 17th, 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 December 17th, 2020 were shipped for delivery to the laboratory on December 19th, 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		2012504-01A
5		2012504-02A
7		2012504-03A
8		2012504-04A
12		2012504-05A
Dup	Field Duplicate @ 12	2012504-06A
TB	Trip Blank	2012504-07A

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	12/17/2020	12/23/2020	12/23/2020	6	0
5	12/17/2020	12/23/2020	12/23/2020	6	0
7	12/17/2020	12/23/2020	12/23/2020	6	0
8	12/17/2020	12/23/2020	12/23/2020	6	0
12	12/17/2020	12/23/2020	12/23/2020	6	0
Dup	12/17/2020	12/23/2020	12/23/2020	6	0
TB	12/17/2020	12/23/2020	12/23/2020	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-18 on September 21st, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for eighteen (18) analytes, nine (9) standards for two (2) 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 ($\overline{RRFs}$).

Relative response factors and mean relative response factors 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 3.3.1**. 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 3.3.1**. Analytes listed in **Table 3.3.1** 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, except for the results listed in **Table 3.3.2**. Analytes listed in **Table 3.3.2** were qualified as estimated ("J") for positive results and no qualification was required for non-detect results.

Table 3.3.1 Initial Calibration Relative Response Factors Outside of Control Limits

Initial Cal. Date and Instrument	Compound, $\overline{RRF}$, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Ethylbenzene: 0.449, EPA Table 4 Min = 0.500	All

Table 3.3.2 Initial Calibration %RSDs Outside of Control Limits

Initial Cal. Date and Instrument	Compound, %RSD, and EPA Minimum	Associated Samples
9/21/2020 MSD-18	Benzene: %RSD = 20.05%, EPA Max %RSD = 20.0%	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 September 21st, 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
9/21/2020 14:32 MSD-18	Ethylbenzene = 0.417, 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 December 23rd, 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
12/23/2020 08:26 MSD-18	Ethyl Acetate = 0.049. EPA Table 4 Min = 0.050 Ethylbenzene = 0.412, 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 (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 December 17th, 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 December 17th, 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% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill December 17th, 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#: 2012504-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122311sim**	**Date of Collection: 12/17/20 10:00:00 A**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 12:18 PM**	
		Date of Extraction: 12/23/20	

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	0.70	0.61
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	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	0.23	0.25
Carbon Tetrachloride	0.10	0.085	0.47	0.40
Benzene	0.40	0.28	0.86	0.62 J
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected
Heptane	0.10	0.098	0.57	0.56
Trichloroethene	0.10	0.083	0.11	0.091
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.077	2.1	1.6
Tetrachloroethene	0.10	0.097	0.13	0.12
Chlorobenzene	0.10	0.084	Not Detected	Not Detected
Ethyl Benzene	0.10	0.084	0.26	0.22 J+
m,p-Xylene	0.10	0.082	0.75	0.61
o-Xylene	0.10	0.088	0.25	0.22
Styrene	0.10	0.094	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 = 30.0F , duration time = 20095 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	86	70-130

2/3/2021

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Client Sample ID: 5

Lab ID#: 2012504-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122312sim**	**Date of Collection: 12/17/20 8:40:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 12:43 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.60	0.53
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.52	0.38
Chloroform	0.10	0.078	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.19	0.21
Carbon Tetrachloride	0.10	0.087	0.34	0.30
Benzene	0.40	0.29	0.72	0.52 J
1,2-Dichloroethane	0.10	0.076	Not Detected	Not Detected
Heptane	0.10	0.10	0.40	0.40
Trichloroethene	0.10	0.084	0.10	0.088
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.6	1.2
Tetrachloroethene	0.10	0.098	Not Detected	Not Detected
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.19	0.17 J+
m,p-Xylene	0.10	0.083	0.54	0.45
o-Xylene	0.10	0.089	0.18	0.16
Styrene	0.10	0.095	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 = 25.0F , duration time = 20055 minutes.

Container Type: Radiello 130 (Solvent)

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

2/3/2021

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Client Sample ID: 7

Lab ID#: 2012504-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122313sim**	**Date of Collection: 12/17/20 8:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 01:09 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.78	0.69
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.73	0.53
Chloroform	0.10	0.078	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.25	0.27
Carbon Tetrachloride	0.10	0.087	0.41	0.35
Benzene	0.40	0.29	0.87	0.63 J
1,2-Dichloroethane	0.10	0.076	Not Detected	Not Detected
Heptane	0.10	0.10	0.51	0.51
Trichloroethene	0.10	0.084	0.14	0.12
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.079	2.0	1.6
Tetrachloroethene	0.10	0.098	0.12	0.12
Chlorobenzene	0.10	0.086	Not Detected	Not Detected
Ethyl Benzene	0.10	0.086	0.27	0.23 J+
m,p-Xylene	0.10	0.083	0.76	0.63
o-Xylene	0.10	0.089	0.25	0.22
Styrene	0.10	0.095	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 = 25.0F , duration time = 20045 minutes.

Container Type: Radiello 130 (Solvent)

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

2/3/2021

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Client Sample ID: 8

Lab ID#: 2012504-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122314sim**	**Date of Collection: 12/17/20 9:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 01:34 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.77	0.67
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.70	0.51
Chloroform	0.10	0.077	0.11	0.086
1,1,1-Trichloroethane	0.10	0.093	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.26	0.28
Carbon Tetrachloride	0.10	0.086	0.48	0.42
Benzene	0.40	0.29	0.94	0.68 J
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.55	0.55
Trichloroethene	0.10	0.084	0.12	0.10
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.9	1.5
Tetrachloroethene	0.10	0.098	0.12	0.11
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.26	0.22 J+
m,p-Xylene	0.10	0.083	0.72	0.60
o-Xylene	0.10	0.089	0.24	0.22
Styrene	0.10	0.095	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 = 25.0F , duration time = 20145 minutes.
Container Type: Radiello 130 (Solvent)

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

2/3/2021

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Client Sample ID: 12

Lab ID#: 2012504-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122315sim**	**Date of Collection: 12/17/20 9:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 01:59 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.61	0.53
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.62	0.46
Chloroform	0.10	0.077	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.19	0.20
Carbon Tetrachloride	0.10	0.086	0.40	0.34
Benzene	0.40	0.29	0.84	0.61 J
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.48	0.48
Trichloroethene	0.10	0.084	0.10	0.086
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.5	1.2
Tetrachloroethene	0.10	0.098	0.10	0.10
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.22	0.19 J+
m,p-Xylene	0.10	0.083	0.62	0.51
o-Xylene	0.10	0.089	0.20	0.18
Styrene	0.10	0.095	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 = 25.0F , duration time = 20105 minutes.

Container Type: Radiello 130 (Solvent)

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

2/3/2021

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Client Sample ID: Dup

Lab ID#: 2012504-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122316sim**	**Date of Collection: 12/17/20 9:01:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 02:25 PM**	
		Date of Extraction: 12/23/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.68	0.60
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.63	0.46
Chloroform	0.10	0.077	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.20	0.21
Carbon Tetrachloride	0.10	0.086	0.42	0.37
Benzene	0.40	0.29	0.88	0.64 J
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.49	0.49
Trichloroethene	0.10	0.084	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	1.5	1.2
Tetrachloroethene	0.10	0.098	0.10	0.10
Chlorobenzene	0.10	0.085	Not Detected	Not Detected
Ethyl Benzene	0.10	0.085	0.21	0.18 J+
m,p-Xylene	0.10	0.083	0.59	0.49
o-Xylene	0.10	0.089	0.20	0.18
Styrene	0.10	0.095	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 = 25.0F , duration time = 20106 minutes.

Container Type: Radiello 130 (Solvent)

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

2/5/2021

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Client Sample ID: TB

Lab ID#: 2012504-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18122310sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/23/20 11:53 AM**	
		Date of Extraction: 12/23/20	

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	Not Detected	Not Detected
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	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	0.088	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 = 30.0F , duration time = 20145 minutes.
Container Type: Radiello 130 (Solvent)

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

2/3/2021

December 31, 2020 Sampling Event

Data Validation Summary Report for the Bridgeton Landfill December 31st, 2020 VOC Air Monitoring Event

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

February 4th, 2021

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 December 31st, 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 December 31st, 2020 were shipped for delivery to the laboratory on January 4th, 2021 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		2101006-01A
5		2101006-02A
7		2101006-03A
8		2101006-04A
12		2101006-05A
Dup	Field Duplicate @ 12	2101006-06A
TB	Trip Blank	2101006-07A

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	12/31/2020	1/7/2021	1/7/2021	6	0
5	12/31/2020	1/7/2021	1/7/2021	6	0
7	12/31/2020	1/7/2021	1/7/2021	6	0
8	12/31/2020	1/7/2021	1/7/2021	6	0
12	12/31/2020	1/7/2021	1/7/2021	6	0
Dup	12/31/2020	1/7/2021	1/7/2021	6	0
TB	12/31/2020	1/7/2021	1/7/2021	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 December 22nd, 2020 using eleven (11) standards for one (1) analyte, ten (10) standards for eighteen (18) analytes, nine (9) standards for two (2) 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 ($\overline{RRFs}$).

Relative response factors and mean relative response factors 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
12/22/2020 MSD-C	Ethyl Acetate, RRF200 = 0.045, EPA Table 4 Min = 0.050 Ethylbenzene: 0.409, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene: RRF0.1 = 0.680, RRF0.2 = 0.649, RRF20 = 0.649, RRF50 = 0.685, RRF100 = 0.688, RRF200 = 0.642, 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 22nd, 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 3.4.1** were qualified as estimated high ("J+") for positive results and as unusable ("R") for non-detect results.

Table 3.4.1 ICV Relative Response Factors Outside of Control Limits

ICV Date / Time and Instrument	Compound, RRF, and EPA Minimum	Associated Samples
12/22/2020 12:35 MSD-C	Ethylbenzene = 0.387, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.675, EPA Table 4 Min – 0.700	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, except as listed in **Table 3.4.2**. Analytes listed in **Table 3.4.2** were qualified as estimated ("J") for positive results and estimated non-detect ("UJ") for non-detect results.

Table 3.4.2 ICV %Ds Outside of Control Limits

ICV Date / Time and Instrument	Compound, %D, and EPA Minimum	Associated Samples
12/22/2020 12:35 MSD-C	Chlorobenzene: %D = 20.88%, EPA Max %D = 20.0%	All

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 7th, 2021. 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
1/7/2021 07:18 MSD-C	Ethylbenzene = 0.391, EPA Table 4 Min = 0.500 1,4-Dichlorobenzene = 0.698, EPA Table 4 Min = 0.700	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 1/7/2021 07:51 LCSD 1/7/2021 08:17	Ethanol	57.1%	71.5%	22.3%	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, except for the results presented in **Table 3.11**.

Table 3.11 Field Duplicate Results Outside of Control Limits

Field Duplicate Pair	Analyte, PQL, and results For the primary and duplicate samples	Both values > 5x PQL?	If Yes, RPD?	If No, Both Values within ±PQL criteria?	Associated Samples
12 / DUP	Hexane (PQL: 0.085 µg/m^3) (0.44 µg/m^3, 0.32 µg/m^3)	Yes	31.6%	N/A	All
	2-Butanone (PQL: 0.071 µg/m^3) (0.46 µg/m^3, 0.26 µg/m^3)	Yes	55.6%	N/A	
	Carbon Tetrachloride (PQL: 0.084 µg/m^3) (0.47 µg/m^3, 0.35 µg/m^3)	Yes	29.3%	N/A	
	Toluene (PQL: 0.076 µg/m^3) (0.59 µg/m^3, 0.48 µg/m^3)	Yes	20.6%	N/A	

Analytes listed in **Table 3.11** 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 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 December 31st, 2020 VOC air monitoring event, based on the percentage of RPD results within control limits, was 89.6% (43 of 48 results in control).

4.2 OVERALL PROJECT ACCURACY

The overall project accuracy for the Bridgeton Landfill December 31st, 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% (92 of 92 results in control).

4.3 OVERALL PROJECT COMPLETENESS

The overall project completeness for the Bridgeton Landfill December 31st, 2020 VOC air monitoring event, defined as the percentage of data not rejected, was 90.5% (152 of 168 results not rejected).

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Client Sample ID: 1

Lab ID#: 2101006-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010718sim**	**Date of Collection:**	**12/31/20 8:36:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/7/21 02:23 PM**
		Date of Extraction:	**1/7/21**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.57	Not Detected	Not Detected UJ
Methyl tert-butyl ether	0.10	0.089	Not Detected	Not Detected
Hexane	0.10	0.088	0.39	0.34 J
Ethyl Acetate	0.40	0.30	Not Detected	Not Detected R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.15	0.39	0.28 J
Chloroform	0.10	0.077	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.094	Not Detected	Not Detected
Cyclohexane	0.10	0.11	0.12	0.13
Carbon Tetrachloride	0.10	0.087	0.46	0.40 J
Benzene	0.40	0.29	0.63	0.46
1,2-Dichloroethane	0.10	0.075	Not Detected	Not Detected
Heptane	0.10	0.10	0.24	0.24
Trichloroethene	0.10	0.084	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected
Toluene	0.10	0.078	0.85	0.67 J
Tetrachloroethene	0.10	0.098	Not Detected	Not Detected
Chlorobenzene	0.10	0.085	Not Detected	Not Detected UJ
Ethyl Benzene	0.10	0.085	0.11	0.096 J+
m,p-Xylene	0.10	0.083	0.27	0.22
o-Xylene	0.10	0.089	Not Detected	Not Detected
Styrene	0.10	0.095	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 = 24.0F , duration time = 20072 minutes.

Container Type: Radiello 130 (Solvent)

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

2/4/2021

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Client Sample ID: 5

Lab ID#: 2101006-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010719sim**	**Date of Collection:**	**12/31/20 9:58:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/7/21 02:49 PM**
		Date of Extraction:	**1/7/21**

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	0.38	0.33	J
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.41	0.30	J
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	0.13	0.14	
Carbon Tetrachloride	0.10	0.085	0.40	0.34	J
Benzene	0.40	0.28	0.60	0.42	
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected	
Heptane	0.10	0.098	0.27	0.26	
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	0.59	0.46	J
Tetrachloroethene	0.10	0.096	Not Detected	Not Detected	
Chlorobenzene	0.10	0.084	Not Detected	Not Detected	UJ
Ethyl Benzene	0.10	0.084	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.081	0.24	0.20	
o-Xylene	0.10	0.088	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 = 28.0F , duration time = 20233 minutes.
Container Type: Radiello 130 (Solvent)

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

2/4/2021

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Client Sample ID: 7

Lab ID#: 2101006-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010720sim**	**Date of Collection:**	**12/31/20 9:15:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/7/21 03:14 PM**
		Date of Extraction:	**1/7/21**

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	0.087	0.43	0.37	J
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.56	0.41	J
Chloroform	0.10	0.076	Not Detected	Not Detected	
1,1,1-Trichloroethane	0.10	0.092	Not Detected	Not Detected	
Cyclohexane	0.10	0.11	0.14	0.15	
Carbon Tetrachloride	0.10	0.086	0.45	0.38	J
Benzene	0.40	0.29	0.65	0.47	
1,2-Dichloroethane	0.10	0.074	Not Detected	Not Detected	
Heptane	0.10	0.099	0.26	0.26	
Trichloroethene	0.10	0.083	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.078	0.77	0.60	J
Tetrachloroethene	0.10	0.097	Not Detected	Not Detected	
Chlorobenzene	0.10	0.084	Not Detected	Not Detected	UJ
Ethyl Benzene	0.10	0.084	0.13	0.11	J+
m,p-Xylene	0.10	0.082	0.34	0.28	
o-Xylene	0.10	0.088	0.11	0.10	
Styrene	0.10	0.094	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 = 26.0F , duration time = 20205 minutes.

Container Type: Radiello 130 (Solvent)

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

2/4/2021

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Client Sample ID: 8

Lab ID#: 2101006-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010721sim**	**Date of Collection:**	**12/31/20 1:04:00 PM**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/7/21 03:40 PM**
		Date of Extraction:	**1/7/21**

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	0.43	0.36	J
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.50	0.35	J
Chloroform	0.10	0.074	0.10	0.074	
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.14	0.15	
Carbon Tetrachloride	0.10	0.083	0.49	0.41	J
Benzene	0.40	0.28	0.70	0.49	
1,2-Dichloroethane	0.10	0.072	Not Detected	Not Detected	
Heptane	0.10	0.096	0.36	0.35	
Trichloroethene	0.10	0.081	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.075	0.71	0.53	J
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	UJ
Ethyl Benzene	0.10	0.082	0.11	0.090	J+
m,p-Xylene	0.10	0.080	0.30	0.24	
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 = 34.0F , duration time = 20380 minutes.
Container Type: Radiello 130 (Solvent)

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

2/4/2021

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Client Sample ID: 12

Lab ID#: 2101006-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010722sim**	**Date of Collection:**	**12/31/20 11:42:00 A**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/7/21 04:06 PM**
		Date of Extraction:	**1/7/21**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.55	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected	
Hexane	0.10	0.085	0.52	0.44	J
Ethyl Acetate	0.40	0.29	Not Detected	~~Not Detected~~	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.65	0.46	J
Chloroform	0.10	0.075	0.10	0.079	
1,1,1-Trichloroethane	0.10	0.090	Not Detected	Not Detected	
Cyclohexane	0.10	0.10	0.17	0.18	
Carbon Tetrachloride	0.10	0.084	0.56	0.47	J
Benzene	0.40	0.28	0.80	0.56	
1,2-Dichloroethane	0.10	0.073	Not Detected	Not Detected	
Heptane	0.10	0.097	0.38	0.37	
Trichloroethene	0.10	0.081	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.076	0.77	0.58	J
Tetrachloroethene	0.10	0.095	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	UJ
Ethyl Benzene	0.10	0.082	0.13	0.10	J+
m,p-Xylene	0.10	0.080	0.33	0.26	
o-Xylene	0.10	0.086	0.11	0.092	
Styrene	0.10	0.092	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 = 32.0F , duration time = 20317 minutes.

Container Type: Radiello 130 (Solvent)

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

2/4/2021

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Client Sample ID: Dup
Lab ID#: 2101006-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010723sim**	**Date of Collection:**	**12/31/20 11:45:00 A**
Dil. Factor:	**1.00**	**Date of Analysis:**	**1/7/21 04:32 PM**
		Date of Extraction:	**1/7/21**

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)	
Ethanol	1.0	0.55	Not Detected	Not Detected	UJ
Methyl tert-butyl ether	0.10	0.086	Not Detected	Not Detected	
Hexane	0.10	0.085	0.38	0.32	J
Ethyl Acetate	0.40	0.29	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	0.37	0.26	J
Chloroform	0.10	0.075	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	0.084	0.41	0.35	J
Benzene	0.40	0.28	0.61	0.42	
1,2-Dichloroethane	0.10	0.073	Not Detected	Not Detected	
Heptane	0.10	0.097	0.31	0.30	
Trichloroethene	0.10	0.081	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.076	0.63	0.48	J
Tetrachloroethene	0.10	0.095	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	UJ
Ethyl Benzene	0.10	0.082	0.11	0.088	J+
m,p-Xylene	0.10	0.080	0.27	0.22	
o-Xylene	0.10	0.086	Not Detected	Not Detected	
Styrene	0.10	0.092	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 = 32.0F , duration time = 20319 minutes.
Container Type: Radiello 130 (Solvent)

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

2/4/2021

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Client Sample ID: TB

Lab ID#: 2101006-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c010717sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/7/21 01:57 PM**	
		Date of Extraction: 1/7/21	

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	Not Detected	Not Detected	UJ
Ethyl Acetate	0.40	0.28	Not Detected	Not Detected	R
2-Butanone (Methyl Ethyl Ketone)	0.20	0.14	Not Detected	Not Detected	UJ
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	UJ
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	0.081	Not Detected	Not Detected	
4-Methyl-2-pentanone	0.20	0.17	Not Detected	Not Detected	
Toluene	0.10	0.075	Not Detected	Not Detected	UJ
Tetrachloroethene	0.10	0.094	Not Detected	Not Detected	
Chlorobenzene	0.10	0.082	Not Detected	Not Detected	UJ
Ethyl Benzene	0.10	0.082	Not Detected	Not Detected	R
m,p-Xylene	0.10	0.080	Not Detected	Not Detected	
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 = 34.0F , duration time = 20380 minutes.
Container Type: Radiello 130 (Solvent)

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

2/4/2021