December 2023
Monthly Compliance Report

Solid Waste Permit No. 588
Bristol Integrated Solid Waste Management Facility
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SCS ENGINEERS

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INTRODUCTION

On behalf of the City of Bristol, Virginia (City), SCS Engineers has prepared this report to the Virginia Department of Environmental Quality (VDEQ) in accordance with item 8.iii in Appendix A of the Consent Decree between the City and VDEQ. This report provides updates regarding the progress towards completion of the items outlined in Appendix A of the Consent Decree between the City and VDEQ. The following sections outline progress during the month of December 2023 related to Solid Waste Permit (SWP) No. 588.

1.0 GAS COLLECTION

The following sections describe the steps the City, in collaboration with its consultants and contractors, has taken to improve the operation, monitoring, and performance of the facility's landfill gas collection and control system (GCCS).

1.1 SURFACE AND LEACHATE COLLECTION EMISSIONS

1.1.1 Surface Emissions

1.1.1.1 Quarterly SEM

SCS performed the Fourth Quarter surface emissions monitoring event on December 14, 2023. The surface emission monitoring route included the entire waste footprint of the Permit No. 588 landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at all surface cover penetrations within the waste footprint outside of the active filling area.

No exceedances were detected during this quarterly monitoring event on the serpentine route, but two exceedances were detected at the surface cover pipe penetrations. This monitoring event also represented the weekly monitoring event for that week. A quarterly SEM report documenting corrective actions and remonitoring results will be submitted to the VDEQ as part of the Semi-Annual Report. In addition, monitoring results were presented to the VDEQ in a letter dated December 20, 2023.

1.1.1.2 Weekly SEM

In addition to the standard regulatory quarterly surface emissions monitoring, SCS performed additional surface emissions monitoring on December 1, 2023; December 7, 2023; December 14, 2023; and December 21, 2023. These weekly surface emissions monitoring (SEM) events were performed in accordance item 1.i in Appendix A of the Consent Decree between the City and VDEQ.

The monitoring in December generally conforms to the requirements of 40 CFR 63.1960(c) and (d), and 40 CFR 60.36f(c) and (d), and 40 CFR 60, Appendix A, Method 21. The landfill gas (LFG) collection system is required to operate such that the methane concentration is less than 500 ppm above background at the landfill surface.

The surface emission monitoring route included the entire waste footprint of the Permit No. 588 landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at all surface cover penetrations within the waste footprint.

Table 1. Summary of December Surface Emissions Monitoring

Description	**December 1, 2023**	**December 7, 2023**	**December 14, 2023**	**December 21, 2023**
Number of Points Sampled	123	172	171	172
Number of Points in Serpentine Route	100	100	100	100
Number of Points at Surface Cover Penetrations	23	72	71	72
Number of Exceedances	0	6	2	5
Number of Serpentine Exceedances	0	0	0	1
Number of Pipe Penetration Exceedances	0	6	2	4

There was one serpentine exceedance detected in December 2023. In addition, new exceedances were detected at pipe penetrations of seven vertical extraction wells (EW-51, EW-67, EW-74, EW- 95, EW-97, EW-98, and EW-99). Exceedances at these locations can be attributed to a variety of factors. Many of these wells are equipped with a dewatering pump, that when operating effectively, will lower the water in the well and allow greater gas collection from the area. Many of these exceedances correspond to periods of pump down time. In addition, insufficient cover soil was identified at a few of the exceedance locations. Furthermore, reduced available and applied vacuum were identified at some of these wells.

By the final weekly monitoring event of the month, many of these issues had been resolved. However, 5 ongoing exceedances still remained (EW-67, EW-87, EW-95, EW-98, and Tag 74). Corrective actions taken at these locations include placement of additional soil, addition of a well-bore skirt, installation of a foam or bentonite seal, continued and improved dewatering activities, and well tuning to increase gas extraction. Corrective actions to address the 5 ongoing exceedances are planned for the month of January 2024.

1.1.2 Leachate Collection Emissions

SCS Field Services (SCS-FS) visited the Bristol Landfill on December 15, 2023, and performed monitoring of the leachate, witness zone, and gradient control clean-outs at the northern and southern ends of the landfill. The results of that monitoring are included in Table 2. Table 2 also lists the cleanout pipe description based on site records and a review of correspondence.

LC07 was not monitored during December 2023.

Table 2. Leachate Cleanout Pipe Monitoring Results

Description	ID#	Record Date	CH4 (% by Vol)	CO2 (% by Vol)	O2 (% by Vol)	Balance Gas (% by Vol)	Initial Temp (°F)	Adj Temp (°F)	Initial Static Pressure (in H2O)	Adj Static Pressure (in H2O)	System Pressure (in H2O)
Southern Cleanouts Gradient West	LC01	12/15/2023 10:34:56 AM	24.5	23.5	10.9	41.1	47.1	47.3	-8.12	-8.25	-8.20
Southern Cleanouts Gradient East	LC02	12/15/2023 10:36:50 AM	41.8	44.4	2.1	11.7	48.4	48.5	-7.74	-7.74	-10.24
Southern Cleanouts Leachate Center	LC03	12/15/2023 10:41:12 AM	48.4	30.8	4.3	16.5	49.2	49.2	-9.80	-9.80	-10.13
Southern Cleanouts Witness East	LC04	12/15/2023 10:44:12 AM	3.3	3.2	19.9	73.6	50.0	50.1	-10.10	-10.10	-10.14
Southern Cleanouts Leachate West	LC05	12/15/2023 10:46:01 AM	50.9	46.0	0.3	2.9	50.8	50.9	-7.40	-7.40	-10.14
Southern Cleanouts Gradient Center West	LC06	12/15/2023 10:48:05 AM	38.7	27.4	6.8	27.1	51.6	51.7	-10.10	-10.10	-10.06
Southern Cleanouts Leachate East	LC08	12/15/2023 10:50:19 AM	49.1	47.0	0.1	3.8	52.4	52.4	-7.29	-7.17	-10.18
Southern Cleanouts Gradient Center East	LC09	12/15/2023 10:52:35 AM	29.1	35.9	7.9	27.1	52.1	52.4	-9.43	-9.42	-10.15
Southern Cleanouts Leachate West	LC10	12/15/2023 10:54:19 AM	21.3	46.5	7.0	25.2	50.6	50.7	-10.10	-10.10	-9.91
Northern Cleanouts Leachate East	NC01	12/15/2023 12:53:36 PM	2.5	2.1	20.1	75.3	53.8	53.8	-6.06	-6.06	0.00
Northern Cleanouts Leachate Center	NC02	12/15/2023 12:54:41 PM	3.2	2.9	19.6	74.3	53.4	53.4	-5.88	-5.97	0.00
Northern Cleanouts Leachate West	NC03	12/15/2023 12:57:41 PM	3.6	3.4	19.5	73.6	52.8	52.8	-6.06	-6.06	0.00
Northern Cleanouts Witness East	NC04	12/15/2023 12:37:26 PM	0.0	0.0	21.3	78.7	52.5	52.5	-5.45	-5.43	0.00
Northern Cleanouts Witness Center	NC05	12/15/2023 12:40:38 PM	0.0	0.0	21.4	78.6	53.0	53.0	-5.43	-5.54	0.00
Northern Cleanouts Witness West	NC06	12/15/2023 12:42:18 PM	0.0	0.0	21.4	78.6	53.5	53.5	-2.36	-2.35	0.00
Northern Cleanouts Gradient East	NC07	12/15/2023 12:45:02 PM	0.0	0.0	21.4	78.6	52.3	52.2	-6.06	-6.06	0.00
Northern Cleanouts Gradient Center East	NC08	12/15/2023 12:48:23 PM	0.0	0.0	21.4	78.6	53.0	53.1	-6.06	-6.06	0.00
Northern Cleanouts Gradient Center West	NC09	12/15/2023 12:50:29 PM	0.0	0.0	21.3	78.7	53.4	53.5	-6.12	-6.06	0.00
Northern Cleanouts Gradient West	NC10	12/15/2023 12:52:04 PM	4.8	0.8	19.6	74.9	54.0	53.9	-6.06	-6.06	0.00

1.2 EXISTING GAS EXTRACTION SYSTEM PERFORMANCE

SCS and SCS-FS have been coordinating with the City to improve the performance of the existing gas system. Specific actions taken to maintain and improve the system are detailed in the following sections of this report.

Additional actions taken by SCS-FS include the following:

- Replacing air regulators at individual wells

- Troubleshooting air compressor
- Adjusting blower set-points
- Investigation of high oxygen levels
- Replacing a Kanaflex on wellheads
- Modifications to lateral piping
- Placement of enhanced posi-shell on Quarry sidewalls
- Replacement of sample ports

1.3 REMOTE MONITORING SYSTEM

In the Fall of 2022, SCS Remote Monitoring & Control (SCS-RMC) installed 25 industrial internet of things (IIoT) temperature sensors in the landfill gas wellheads. The purpose of the sensors is to record and transmit well-head gas temperatures via a cellular connection to a database managed by SCS-RMC.

The City is providing average temperatures recorded by the sensors to VDEQ on a daily basis via email. Average daily temperatures recorded by the remote monitoring system during the month of December are included in Appendix C. In addition, SCS previously prepared semi-monthly status updates to satisfy the conditions of compliance provision #2 of the Environmental Protection Agency (EPA) Region III letter, Approval of Higher Operating Temperature Values for Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Management Facility, dated August 23, 2021. On August 2, 2023, VDEQ requested that such updates be included in the monthly compliance reports going forward. Accordingly, this section is a summary of temperature monitoring activities during the monthly monitoring period of December 2023.

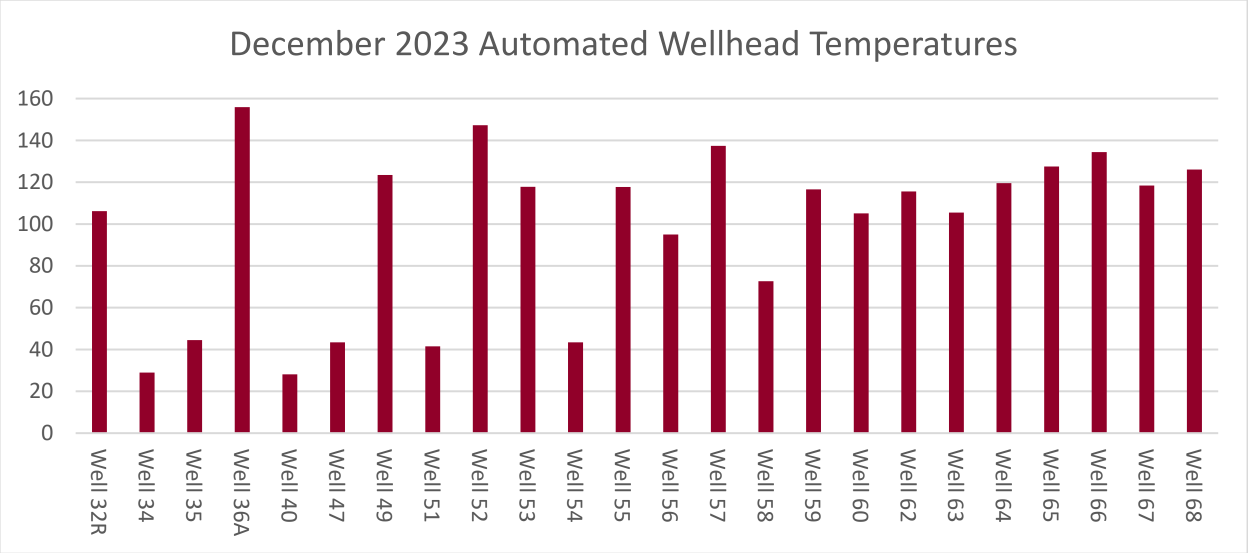
1.3.1 Automated Wellhead Temperature Measurements

SCS reviewed the automated hourly temperature measurements from December 2023, and identified the following trends:

- **Temperature probes removed at decommissioned wells:** Temperature probes at EW-34 and EW-40 were removed in December due to the decommissioning of the wells. SCS and the City will collaborate on the possible deployment of these sensors elsewhere in the wellfield.
- **Temperatures over 145°F:** Temperatures over the NESHAP AAAA compliance threshold of 145°F were recorded consistently at EW-36A, EW-52, EW-53, and EW-57 in December. The highest average temperatures were measured at EW-36A (see Figure 1). SCS believes that the increase in temperatures at these wellheads suggests that, with the increase of pneumatic pump operations and increased liquids removal, the waste mass is more effectively dewatered. Removal of liquids allows gas from deeper within the waste mass to be extracted. In some cases, gas collected from lower elevations is hotter than gas from higher elevations and this temperature difference is reflected in the temperatures measured by the sensors.

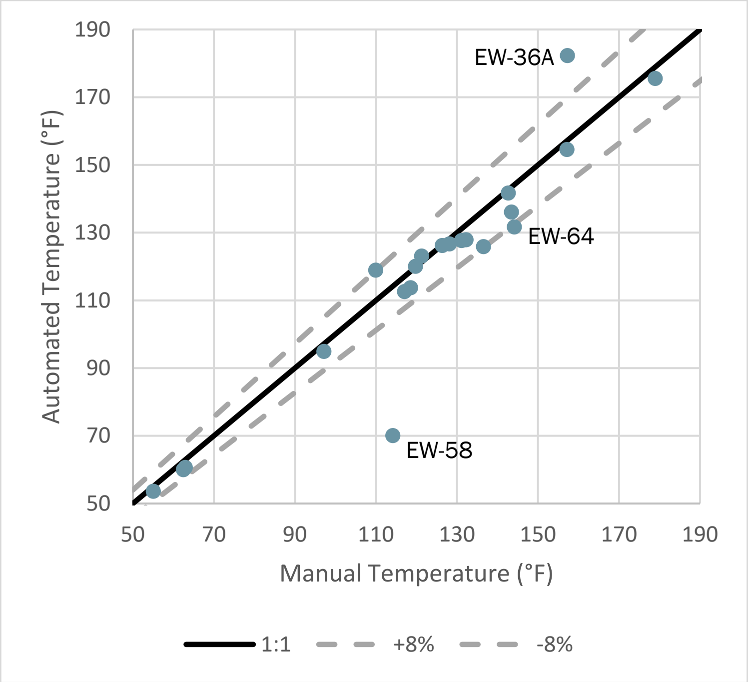
- **Low average temperatures at certain wells:** Wells with average temperatures under 50°F are being investigated for their accuracy. This requires manual verification of the operation of the probe.

Figure 1. Average Automated Wellhead Temperatures



1.3.2 Comparison with Manual Temperature Measurements

Figure 2. Automated vs. Manual Temperature Measurements



Per the approval issued by VDEQ on August 2, 2023, the Facility ceased dedicated daily manual temperature measurements in the Permit No. 588 Landfill. In lieu of these measurements, the City has agreed to compare instantaneous hourly automated temperature measurements with temperatures measured at each wellhead with a handheld sensor during monthly compliance monitoring. These comparisons are shown in Figure 2, with the ±8% deviation goals as prescribed in the VDEQ approval.

Temperature comparisons outside the ±8% deviation goal lines were found for wells EW-36A and EW-58 and EW-64. At EW-36A, the stainless-steel well casing appears to be a limiting factor in obtaining precise LFG temperatures with a handheld sensor.

The manual temperature reading at EW-58 during compliance monitoring in December was recorded twice in a row, with both measurements showing radically different temperatures. SCS therefore believes that that the disparity between the automated temperature and the manual temperature is due to a one-time instrumentation error.

At EW-64, the wellhead's ball valve was mostly closed during the manual temperature readings, which SCS believes caused the lower automated temperature measurement, just outside the 8% threshold. SCS has historically noted challenges recording precise LFG temperatures at low flow rates when utilizing automated sensors.

1.3.3 Monthly Regulatory Wellhead Temperature Measurements

Routine monthly temperature monitoring for purposes of complying with 40 CFR 60.36f(a)(5) was conducted November 6, 2023, with follow-up monitoring several days after. Additionally, SCS typically measures wellhead temperatures at the SWP No. 588 Landfill on a semi-monthly basis. During this monitoring period, temperature exceedances were resolved at EW-36A, 65, and 94. See Table 3 for the status of all exceedances recorded during this monitoring period. An HOV request was submitted for EW-52, EW-64, EW-81, EW-85, EW-88, EW-89, EW-91, and EW-99 on November 8, 2023. The approval of this HOV request remains pending as of 12/31/23.

Table 3. December Temperature Exceedance Summary

Well ID	Initial Exceedance Date	Last date/temperature measured	Duration of Exceedance	Status as of 12/31/23
EW-36A	12/14/23	12/14/23 157.3°F	5 days	Resolved, within 15-day timeline
EW-36A	12/21/23	12/21/23 157.3°F	7 days	Resolved, within 15-day timeline
EW-52	12/18/23	12/27/23 159.6°F	14 days	Ongoing, within 15-day timeline
EW-65	11/22/23	12/27/23 143.9°F	35 days	Resolved, within 60-day timeline
EW-77	12/19/23	12/27/23 156.2°F	13 days	Ongoing, within 15-day timeline
EW-79	12/19/23	12/27/23 147.3°F	13 days	Ongoing, within 15-day timeline
EW-80	11/20/23	12/27/23 147.2°F	41 days	Ongoing, within 60-day timeline
EW-81	9/25/23	12/27/23 164.3°F	97 days	Ongoing, within 120-day timeline
EW-82	12/18/23	12/27/23 169.8°F	14 days	Ongoing, within 15-day timeline
EW-83	12/4/23	12/27/23 184.5°F	27 days	Ongoing, within 60-day timeline
EW-85	10/10/23	12/27/23 148.9°F	82 days	Ongoing, within 120-day timeline
EW-88	9/25/23	12/27/23 166.1°F	97 days	Ongoing, within 120-day timeline
EW-89	12/4/23	12/27/23 180.7°F	27 days	Ongoing, within 60-day timeline
EW-94	12/4/23	12/6/23 134.8°F	2 days	Resolved, within 15-day timeline

1.3.4 LFG Sampling

SCS collected weekly LFG samples from wells with temperature exceedances lasting more than 7 days using 1.5-L Summa canisters during December. The samples were sent to Enthalpy Analytical for lab analysis of carbon monoxide (CO) and hydrogen (H_2) content. As of 12/31/23, the City is in possession of lab results for sampling on November 17, 22, and 30, and December 6 and 14 to fulfill the requirement in 40 CFR 63.1961(a)(5). Lab results are summarized in Table 4.

Table 4. LFG Wellhead Sampling Summary

Sample Date		11/17/23	11/22/23	11/30/23	12/6/23	12/14/23
36A	CO (ppmv)	654	616	649	696	601
	H2 (Vol. %)	13.4	13	10.1	14.6	11.9
52	CO (ppmv)	ND	ND			
	H2 (Vol. %)	3.54	2.8			
55	CO (ppmv)	477				
	H2 (Vol. %)	9.36				
60	CO (ppmv)	490				
	H2 (Vol. %)	12.3				
65	CO (ppmv)		ND	ND	ND	ND
	H2 (Vol. %)		2.65	1.31	1.77	2.55
80	CO (ppmv)		ND	ND	117	ND
	H2 (Vol. %)		1.24	1.24	1.31	0.84
81	CO (ppmv)	418	175	205	301	287
	H2 (Vol. %)	10.8	2.89	3.66	8.92	4.77
83	CO (ppmv)				611	562
	H2 (Vol. %)				17.4	14.8
85	CO (ppmv)	580	331	401	330	383
	H2 (Vol. %)	12	7.42	9.89	7.26	8.62
88	CO (ppmv)	153	240	226	192	183
	H2 (Vol. %)	5.12	6.22	6.25	5.1	5.49
89	CO (ppmv)	1110	1180	1200	1150	1190
	H2 (Vol. %)	27.4	26.5	27.7	26.8	30.7
92	CO (ppmv)	1360	1610			
	H2 (Vol. %)	23.5	25.5			

The presence of hydrogen in the samples collected during this monitoring period indicates that combustion reactions are unlikely.

The wells with corresponding charts in Figures 3, 4, 5, 6, and 7 have been sampled for carbon monoxide and hydrogen for the last five weeks or more. Trends appear to be fairly consistent over time at for three wells.

Figure 3. EW-36A Enhanced Monitoring Trends

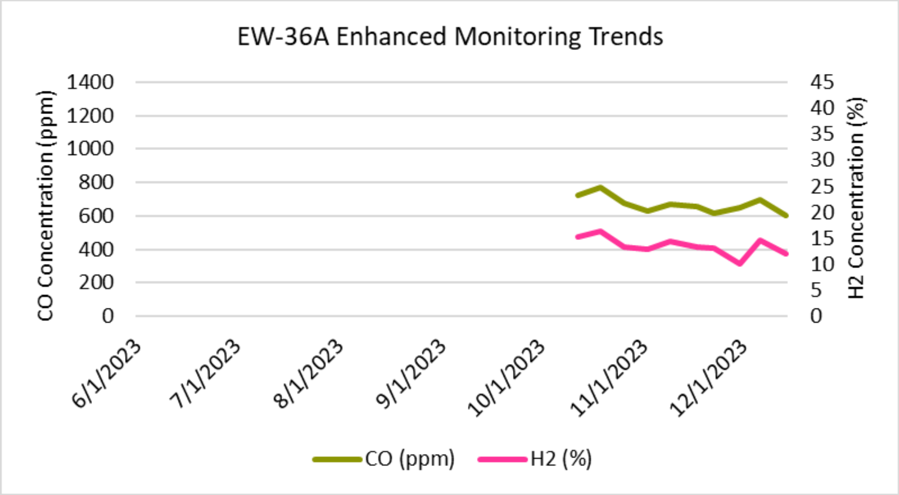


Figure 4. EW-81 Enhanced Monitoring Trends

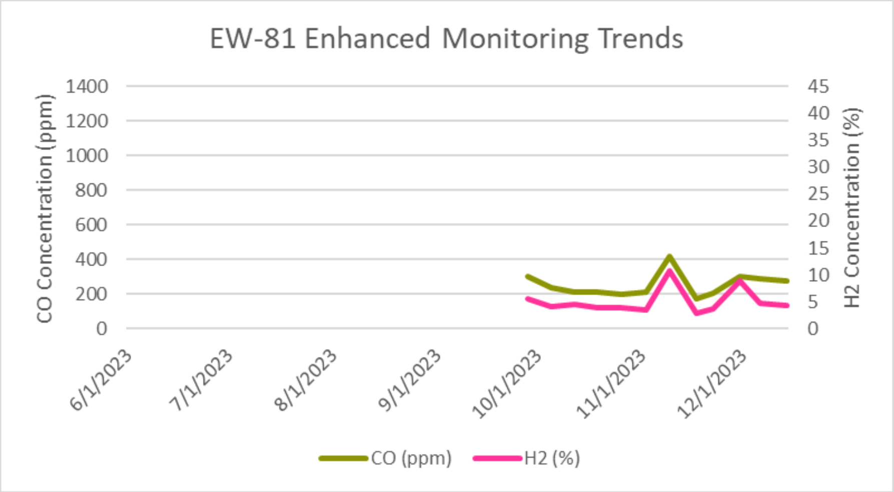


Figure 5. EW-85 Enhanced Monitoring Trends

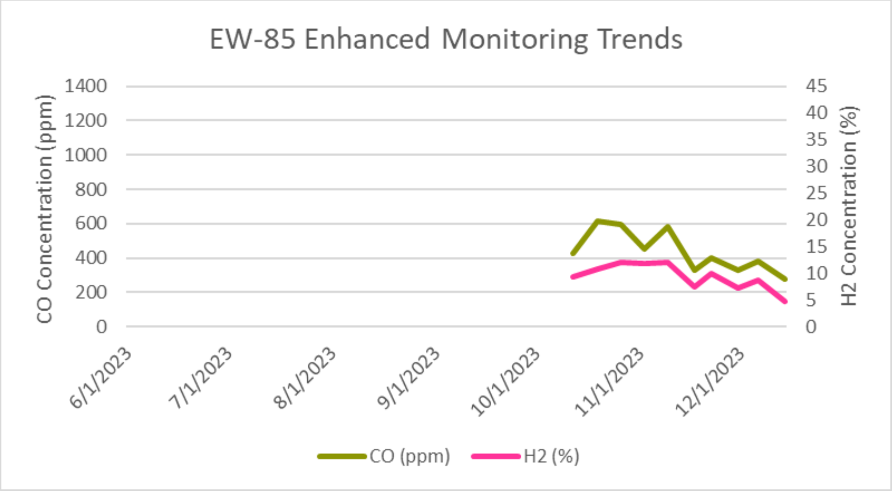


Figure 6. EW-88 Enhanced Monitoring Trends

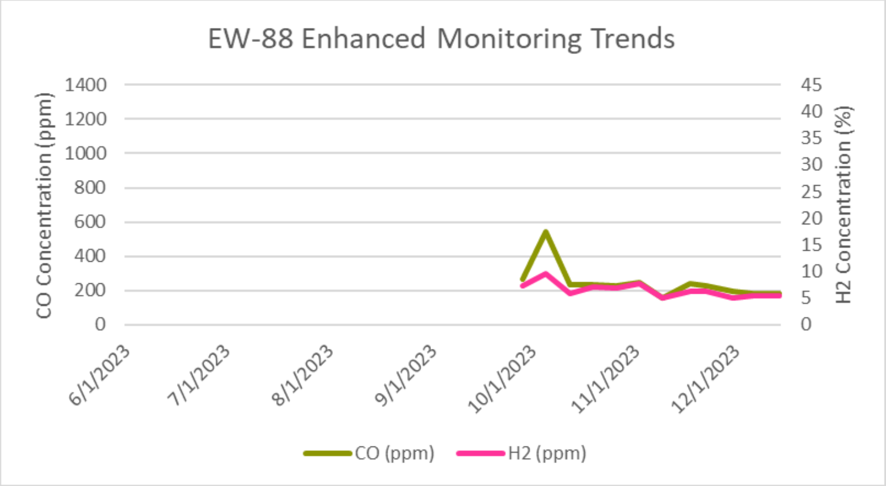
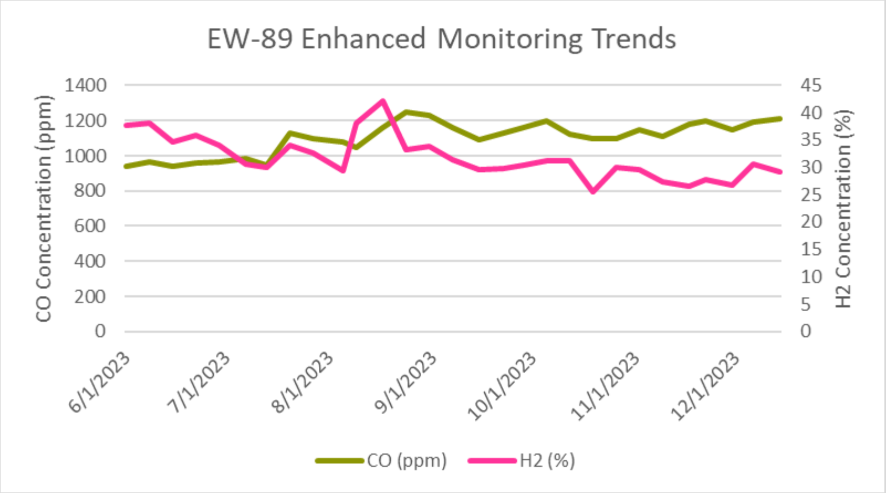


Figure 7. EW-89 Enhanced Monitoring Trends



1.4 LARGE-DIAMETER DUAL-PHASE EXTRACTION WELLS

SCS completed design work on an expansion of the existing GCCS during the month of December 2022. The proposed expansion includes at least 5 large diameter dual-phase extraction wells. SCS submitted the design to VDEQ prior to December 31, 2022. The City commenced solicitation of contractor's bids for this project by advertising for bids and received one bid for the project from SCS Field Services Construction (SCS-CONS). On January 26, 2023, the City awarded the project to SCS-CONS. The City's construction contractor left site as of the GCCS expansion project completion on October 12, 2023.

1.5 VDEQ CONCURRENCE ON WELLS

As described in previous monthly compliance reports, the City engaged with VDEQ in discussions about the proposed approach for landfill GCCS improvements and expansions. Upon completion of the landfill gas collection system, SCS will submit updated as-built drawings depicting the completed system to VDEQ. The City intends to delay installation of interim or final cover systems until the City and VDEQ agree that the GCCS is sufficient.

2.0 SIDEWALL ODOR MITIGATION

The City has designed and constructed a system to control fugitive emissions emanating from the quarry sidewalls. Specific aspects of the proposed design features are described in the following sections.

2.1 PERIMETER GAS COLLECTION SYSTEM

SCS's design of the GCCS expansion described in Section 1.4 included perimeter LFG wells. These wells are closer to the sidewall to intercept landfill gas that potentially could migrate to the quarry wall. These wells supplement the sidewall odor mitigation system described in Section 2.2. The City completed bidding and construction for the perimeter LFG wells as part of the large diameter dual extraction well installation described in Section 1.4.

As described in the April 2023 Monthly Compliance Report for the SWP No. 588 Landfill, construction of the perimeter gas collection system was completed. SCS submitted a letter to VDEQ documenting completion of the Perimeter Gas Collection System on May 1, 2023.

2.2 SIDEWALL ODOR MITIGATION SYSTEM

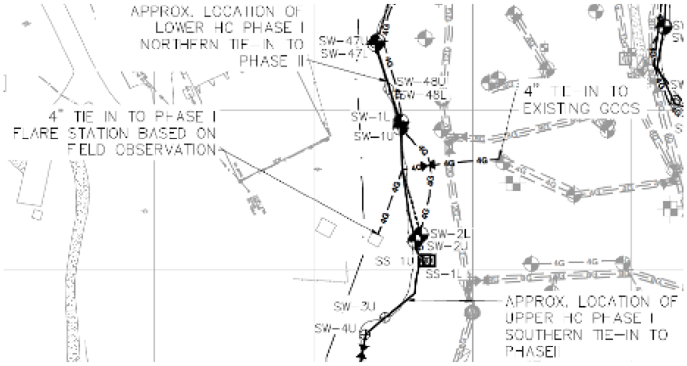
On behalf of the City and in an effort to capture emissions from the quarry sidewall, SCS designed a sidewall odor mitigation system (SOMS) during the month of October 2022. On October 20, 2022 SCS provided an overview of the proposed system to VDEQ staff. The design of this system was prepared and submitted to VDEQ on November 1, 2022. A project manual detailing the specifications of the system was developed concurrently with the design of the system.

2.3 PILOT SYSTEM CONSTRUCTION

SCS-CONS completed substantial construction of Phase 1 of the SOMS during the month of February 2023, SCS-FS began monitoring Phase 1 connected Horizontal Collector (HC) wellheads during the month of March, and SCS-FS continued weekly wellhead monitoring into the month of May 2023. Phase 1 is considered the pilot system portion of the SOMS. SCS submitted a design engineer certification to VDEQ on February 10, 2023 that documented the substantial completion of Phase 1 of the SOMS. Details of Phase 1 construction progress and monitoring can be found in the monthly compliance reports for the SWP No. 588 landfill.

Figure 8 shows the Phase 1 as-built, which includes the locations of the HC wellheads and HC sumps installed in Phase I, as well as the 4" header connection to the existing LFGCCS. The lower collector installed as part of Phase II was tied-in to the north end of the Phase I lower collector, and the upper collector installed as part of Phase II was tied-in to the south end of the Phase I upper collector.

Figure 8. SOMS Phase I As-Built[1]



Both the upper and lower collectors of Phase 1 of the system have been connected to the substantially completed Phase 2 of the system. Collection of landfill gas by both the upper and lower collectors indicates that the system is working as intended. Based on this data, Phase 2 was constructed utilizing the same general configuration.

2.4 FULL SYSTEM CONSTRUCTION

SCS-CONS substantially completed construction of Phase 2 of the SOMS during the month of June 2023 as Phase 2 was connected to vacuum as of June 14, 2023. Cover soil placement continued into the month of October, and ceased when the construction crew left site on October 12, 2023 upon project final completion. Figure 9 shows SOMS Phase 2 wellhead installation and connections at HC wells along the southeastern perimeter of the landfill.

Figure 9. Phase 2 SOMS Wellhead Connections

During the month of December 2023, SCS-FS collected monitoring data at each wellhead under vacuum. A summary of those measurements is shown in Table 5.

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[1] Location data was collected using mapping grade global positioning system equipment.

Table 5. Sidewall HC Wellhead Gas Quality Measurements – System Averages

Record Date	Average CH4 [%]	Average CO2 [%]	Average O2 [%]	Average Bal Gas [%]
12/5/2023	4.0	8.2	17.1	70.7
12/(19-26)/2023	3.7	7.8	18.3	70.3

Isolation valves have been installed on the SOMS to allow for manipulation of flow routed to the supplemental flare, currently being leased. The flare was constructed by Perennial Energy Incorporated (PEI). The gas is being re-routed to the supplemental flare because of the lower quality of the gas. The City is attempting to improve the quality of the gas directed to the primary flare and energy generation facility.

The sidewall system average gas composition indicates lower methane content than typical landfill gas collection systems. The gas quality measurements indicate that the SOMS is functioning as designed because landfill gas is being withdrawn and oxygen intrusion is acceptable. The wide-ranged gas composition may indicate that some areas of the landfill may be experiencing higher landfill gas concentrations than areas where methane content is seemingly insignificant. SCS-FS will adjust SOMS wellheads based on gas quality to increase flow from sections of the system with high methane content and reduce flow from sections of the system with low methane content. Phase 2 lower and upper collectors locations, including HC wellhead riser and sump locations, are shown in the as-built depicted as Figure 10[2].

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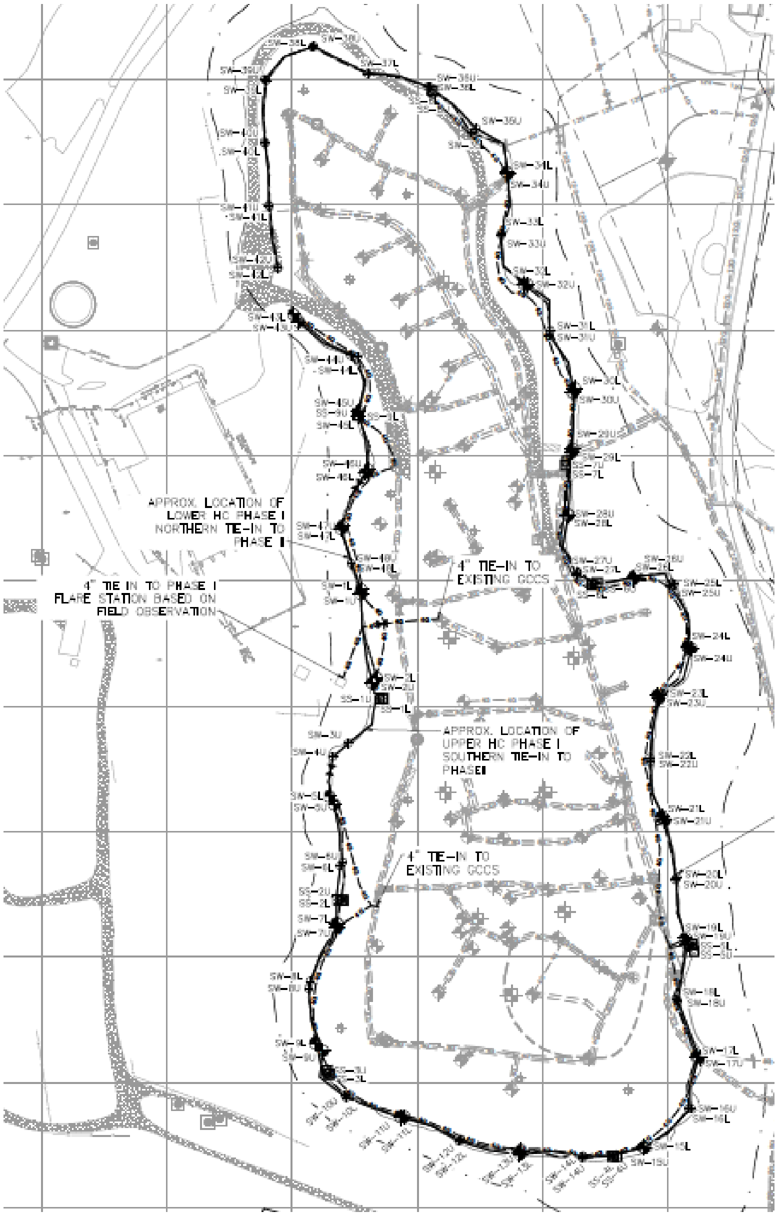
[2] During construction, redundant risers were put in place to accommodate supplemental wellhead and installation in the future. Figure 10 shows all riser and sump locations. The final submittal to VDEQ, Revised June 26, 2023, shows the locations of actual wellhead installation. The facility may relocate wellheads based on field conditions.

Figure 10. Phase 2 Sidewall Odor Mitigation System As-Built[3]



At this time, not every SOMS horizontal collector riser has a wellhead installed, but HC risers may receive a wellhead at a future date as warranted by field conditions.

During the month of December, there were some visible emissions around a few portions of the sidewall. Colder ambient temperatures likely increased visibility of the fugitives in these sections. There were three visible sidewall emissions locations, and these areas of the sidewall received application of an enhanced Posi-Shell® mixture. Posi-Shell® mixture details and application procedures were discussed in the November 2023 Compliance Report.

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[3] Location data was collected using mapping grape global positioning system equipment.

To further address sidewall emissions, additional wellheads were placed on risers adjacent to areas where visual sidewall emissions were observed. Wellheads were added at locations SW-20U, SW-22L, and SW-22U. Header pipes were installed to connect the wellheads at these locations to the rest of the LFGCCS collection system.

3.0 WASTE TEMPERATURE MONITORING

On behalf of the City, SCS designed a temperature monitoring system to collect temperature data throughout the waste mass. The steps taken by the City to implement this system are described in the following sections.

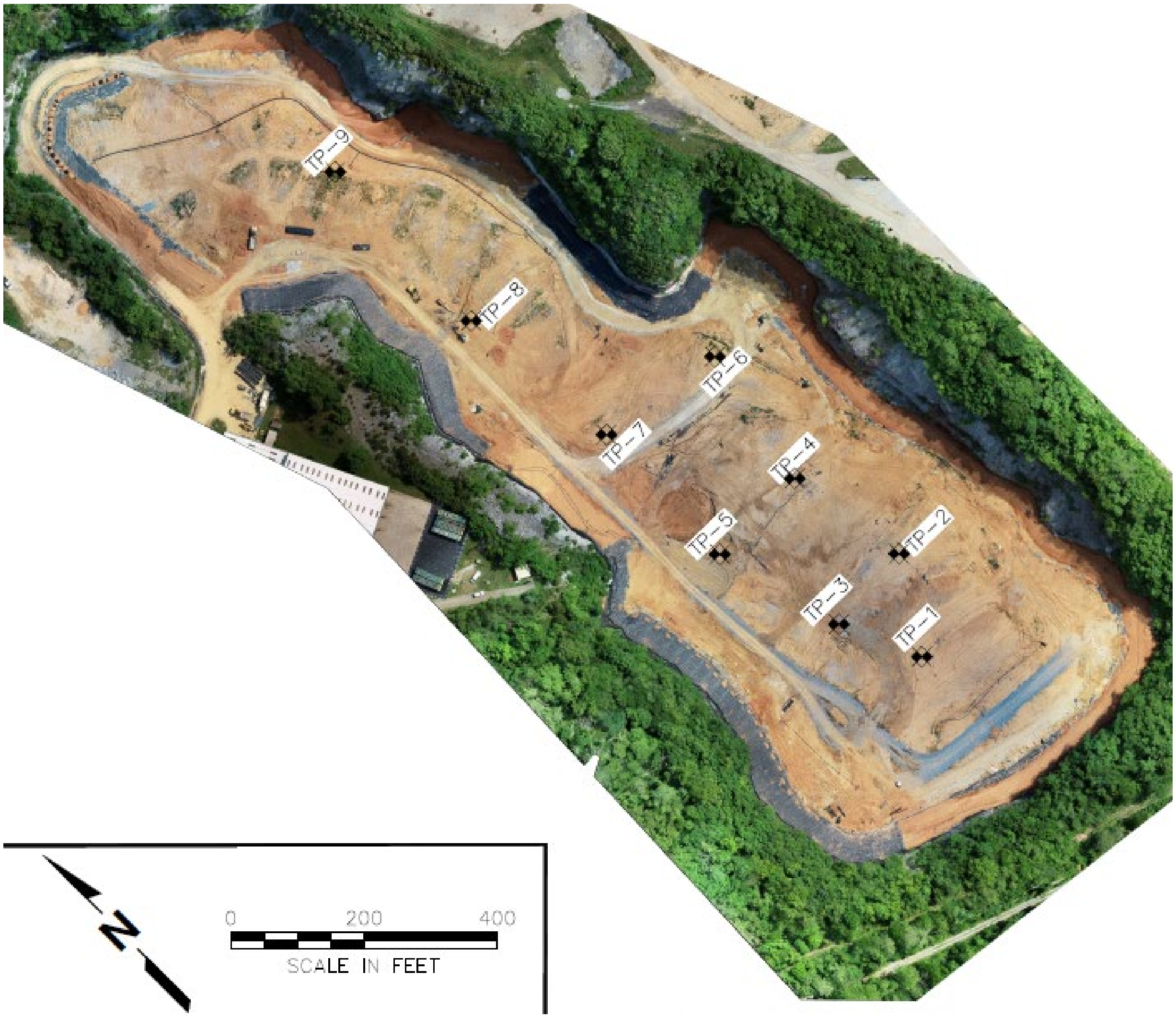
3.1 TEMPERATURE MONITORING SYSTEM DESIGN

The temperature monitoring system consists of 9 boreholes drilled into the waste mass. A steel casing was placed in each borehole and the hole was backfilled around the casing with aggregate. A series of temperature sensors was placed inside the steel casing. At the top of each borehole, an IIoT transmitter collects the data from the sensors and transmits it to a cloud-based RMC system. The City submitted design of the temperature monitoring system to VDEQ on November 30, 2022.

3.2 TEMPERATURE MONITORING SYSTEM INSTALLATION

Installation of the in-situ Landfill Temperature Monitoring System began in October of 2022 and installation of replacement sensors was completed in February of 2023. Details of construction progress can be found in the monthly compliance reports for the SWP No. 588 Landfill. The locations of the temperature probes are shown in Figure 11.

Figure 11. Temperature Monitoring Probe Locations



SCS began collecting temperature data daily on February 15, 2023. The temperature sensors continued to transmit temperature data during the month of December. Average daily temperatures recorded by the sensors for the Month of December are included in Appendix D. Each week the average temperatures from a select day of that week are downloaded and compared to temperatures recorded during the previous week. Average daily temperatures recorded on select days during the month of December are shown in Appendix B. The average temperatures recorded during the months of March through December are shown in Figures 12 through 20 on the following pages.

Figure 12 shows daily average temperatures record by Temperature Probe 1 (TP-1) during the months of March through December. Based on the data, temperatures were consistent from March through May and saw increases during the months of June, July and August at depths or 100 feet and below. In September, average temperatures showed little change when compared to August and in some cases, show a small decrease. Temperatures have stayed consistent from readings taken in September, October, November, and December of 2023.

TP-1 was originally drilled to a depth of 180 feet, but the contractor was unable to install the casing beyond a depth of 160 feet. TP-1 did not record temperatures between July 23, 2023 and July 30, 2023 due to a dead battery. The battery was replaced and TP-1 began recording temperatures again on July 31, 2023.

Figure 12. Average Temperatures within TP-1 During the Months of March through December

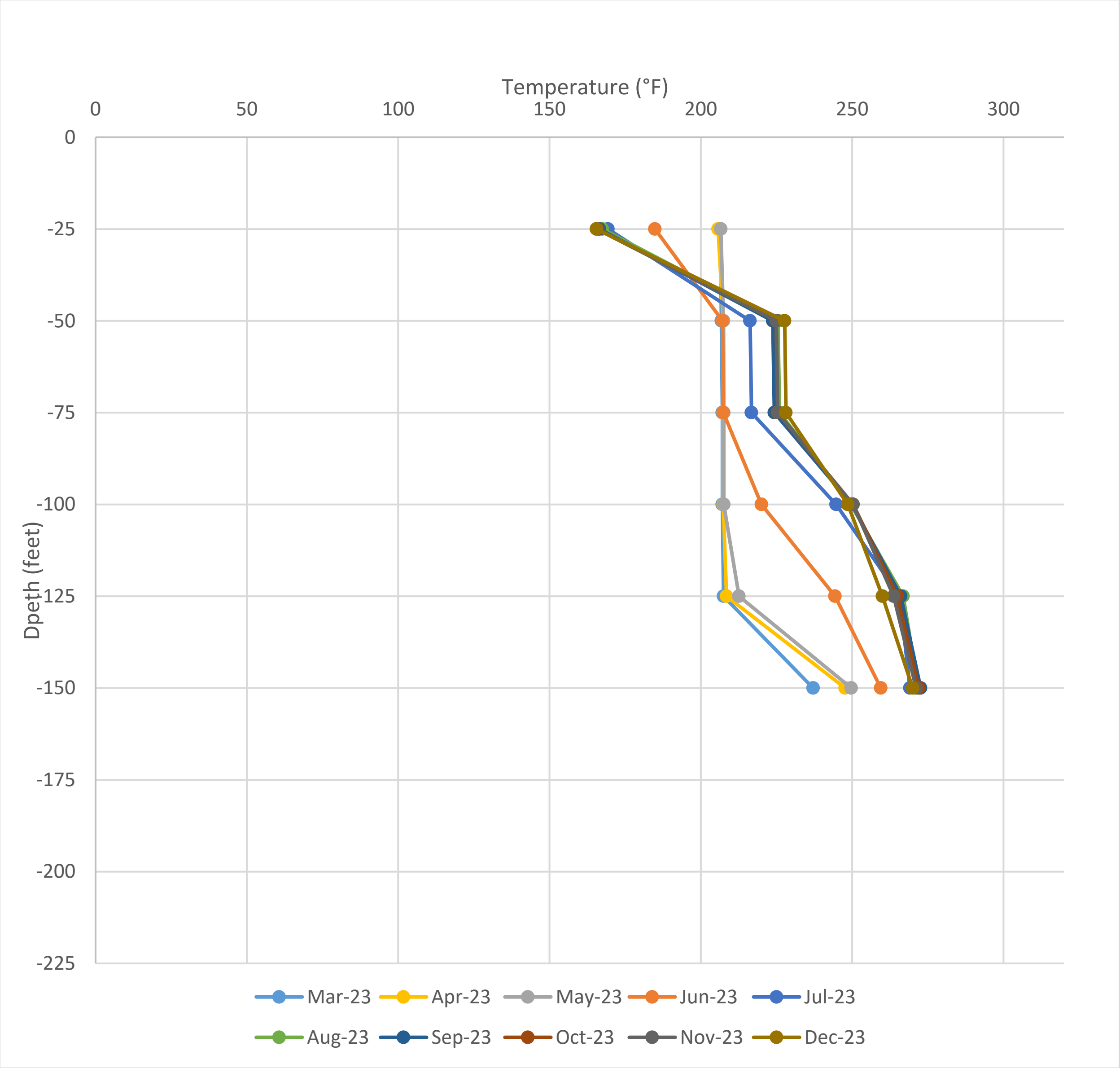


Figure 13 shows daily average temperatures in Temperature Probe 2 (TP-2) during the months of March through December. Based on the data, temperatures have been consistent during the last nine months.

TP-2 was originally drilled to a depth of 160 feet. TP-2 did not record temperatures between August 15, 2023 and September 17, 2023 due to a dead battery. A replacement battery was installed in September of 2023 and TP-2 recording temperatures again on September 18, 2023.

Figure 13. Average Temperatures within TP-2 During the Months of March through December

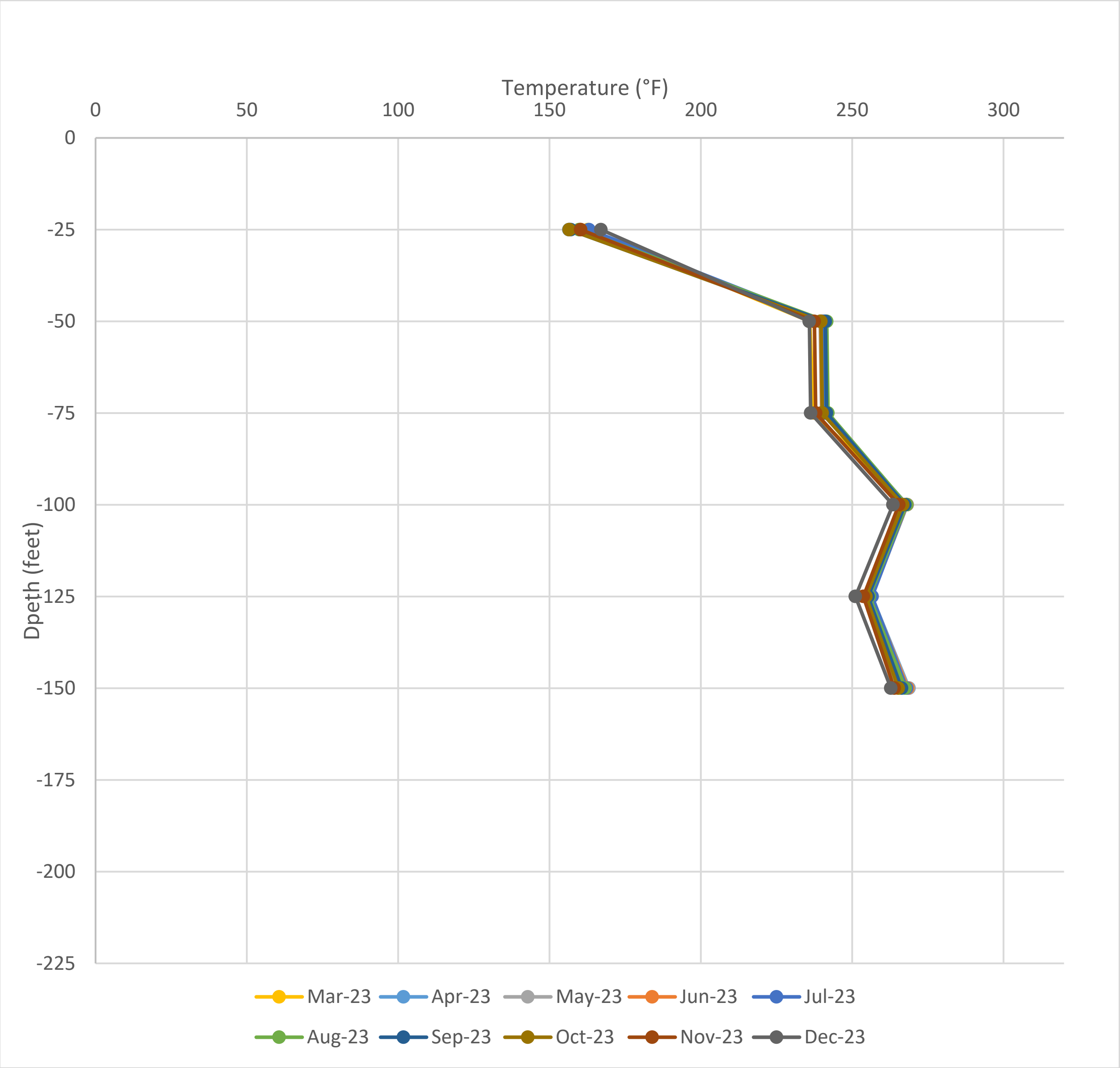


Figure 14 shows daily average temperatures in Temperature Probe 3 (TP-3) during the months of March through December. Based on the data, temperatures have been generally consistent during the last nine months. There has been an increase in temperatures during the months of October, November, and December at the 50-foot and 75-foot depths. SCS noted that a forcemain check valve near an adjacent well had failed. This may have limited liquids removal in the area and resulted in higher temperatures. Temperatures were consistent during the months of November and December of 2023. SCS will continue to review temperature data recorded by this probe.

Figure 14. Average Temperatures within TP-3 During the Months of March through December

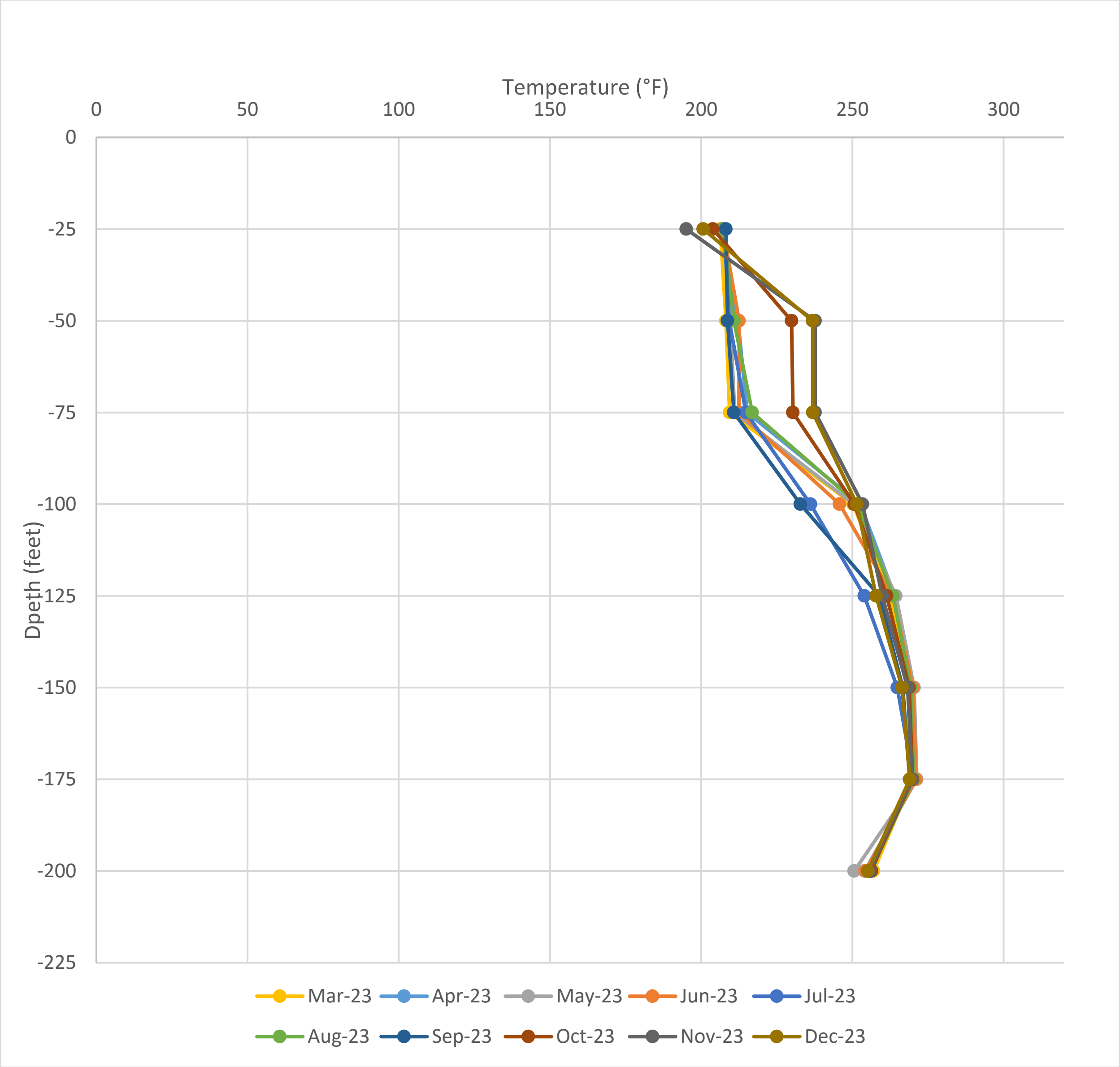


Figure 15 shows daily average temperatures in Temperature Probe 4 (TP-4) during the months of March through December. Based on the data, temperatures appeared to drop during the months of April and May, but returned to levels closer to baseline during the months of June, July, August, September, and October. December temperatures appear to be closer to baseline than the low temperatures observed in April and May.

Figure 15. Average Temperatures within TP-4 During the Months of March through December

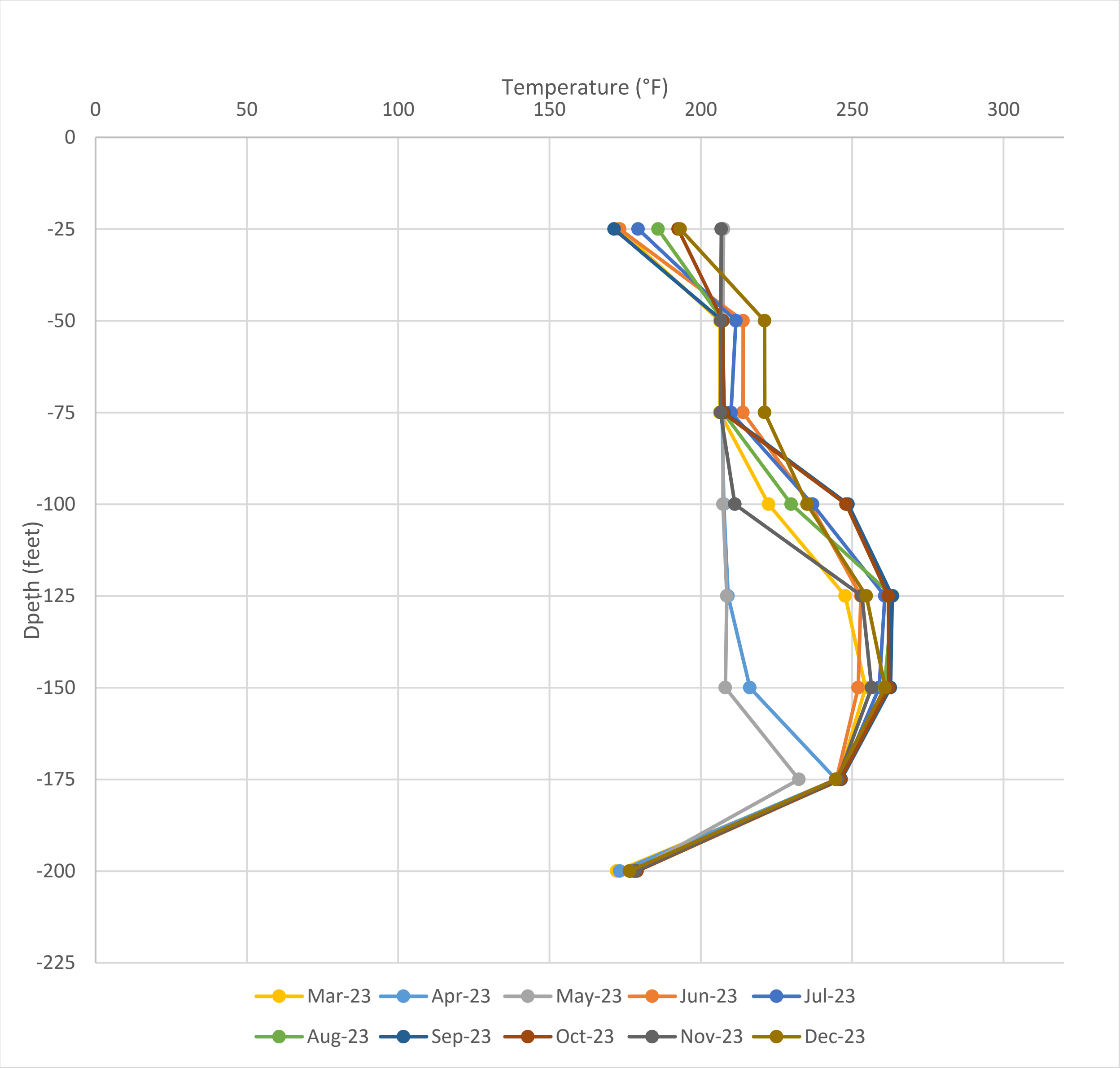


Figure 16 shows daily average temperatures in Temperature Probe 5 (TP-5) during the months of March through December. Based on the data, temperatures have been consistent during the last nine months.

TP-5 was damaged in late October and the sensors at the 125-foot, 150-foot, 175-foot, and 200-foot depths stopped functioning. SCS did troubleshooting and the sensors were repaired for the month of November.

Figure 16. Average Temperatures within TP-5 During the Months of March through December

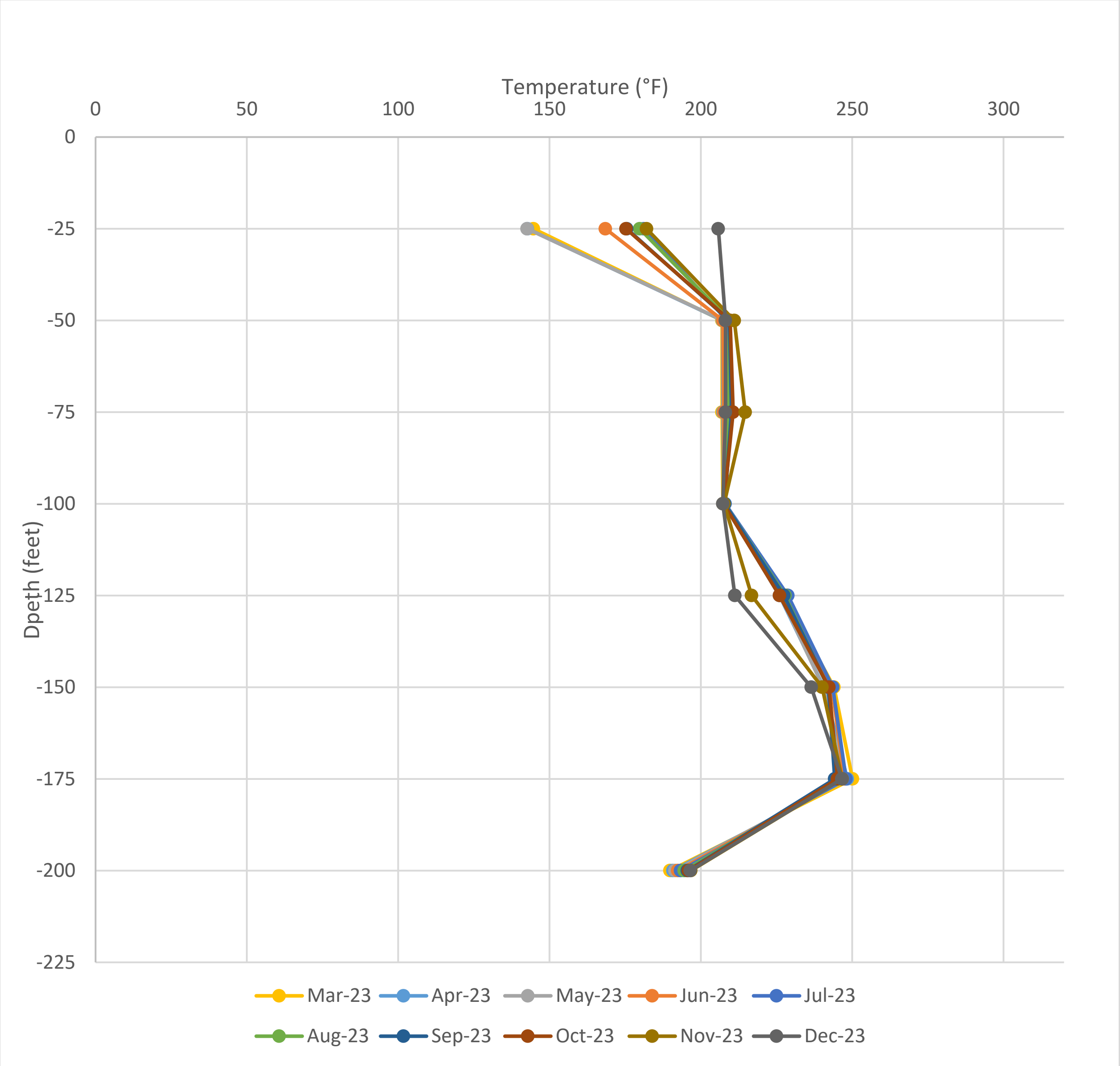


Figure 17 shows daily average temperatures in Temperature Probe 6 (TP-6) during the months of March through December. Based on the data, temperatures have been generally consistent during the last nine months below the 25-foot level. A decrease at the 25-foot level was observed during the months of June, September, and October. Temperatures returned to baseline during the months of July and August. November saw a slight increase from October. Temperatures at the 25-foot level dropped again in December.

TP-6 was originally drilled to a depth of 208 feet and casing was installed to the full depth. During the installation of the installation of replacement sensors, a blockage within the casing prevented placement of sensors below the 125-foot depth.

Figure 17. Average Temperatures within TP-6 During the Months of March through December

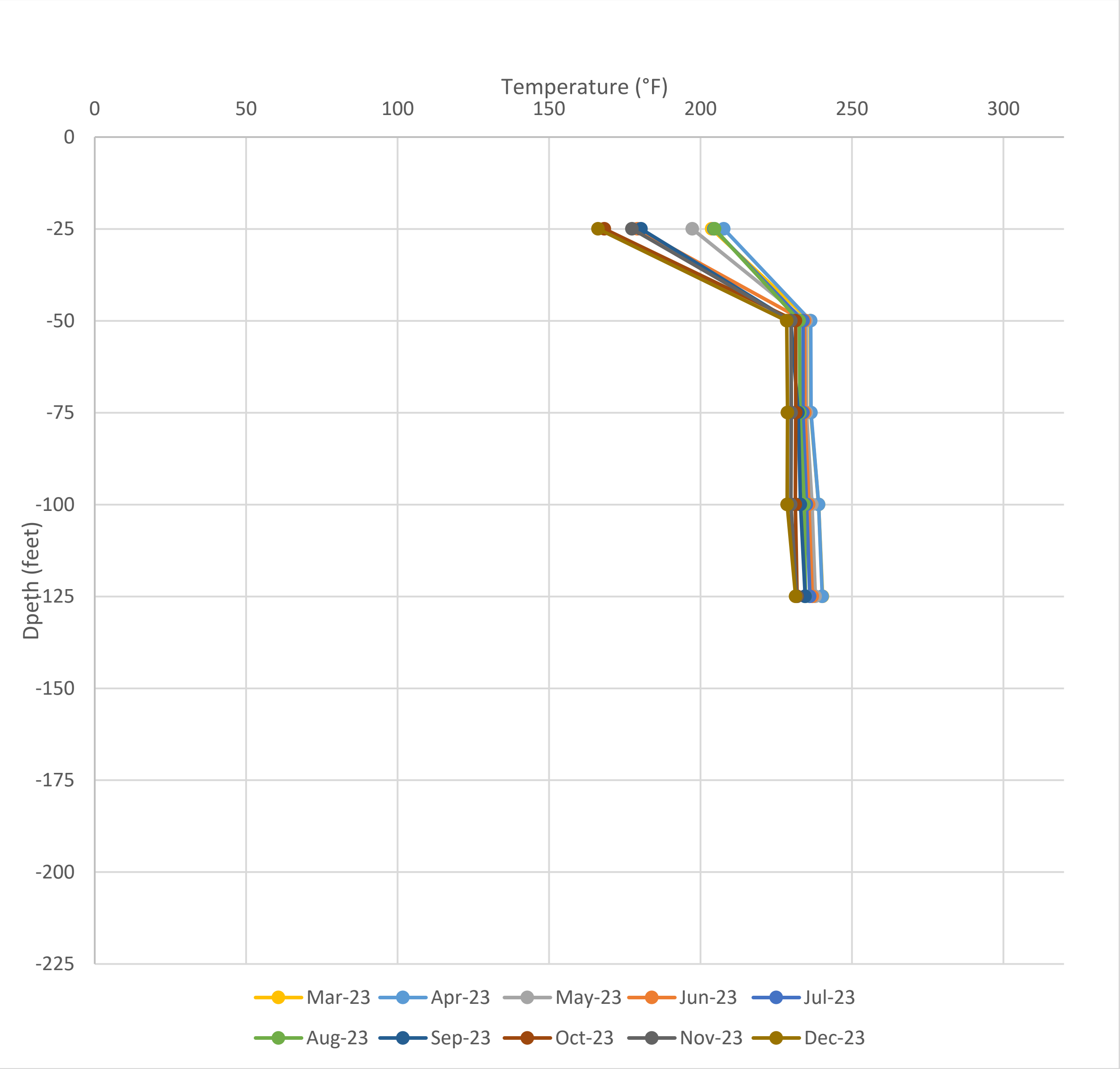


Figure 18 shows daily average temperatures in Temperature Probe 7 (TP-7) during the months of March through December. Based on the data, temperatures have been consistent during the months of March 2023 through November 2023. Average temperatures dropped during the month of December 2023. Observations of adjacent wells indicate that there may be below grade settlement of waste occurring in this area.

TP-7 did not record temperatures between August 15, 2023 and September 17, 2023 due to a dead battery. A replacement battery was installed in September of 2023 and TP-7 recording temperatures again on September 18, 2023.

Figure 18. Average Temperatures within TP-7 During the Months of March through December

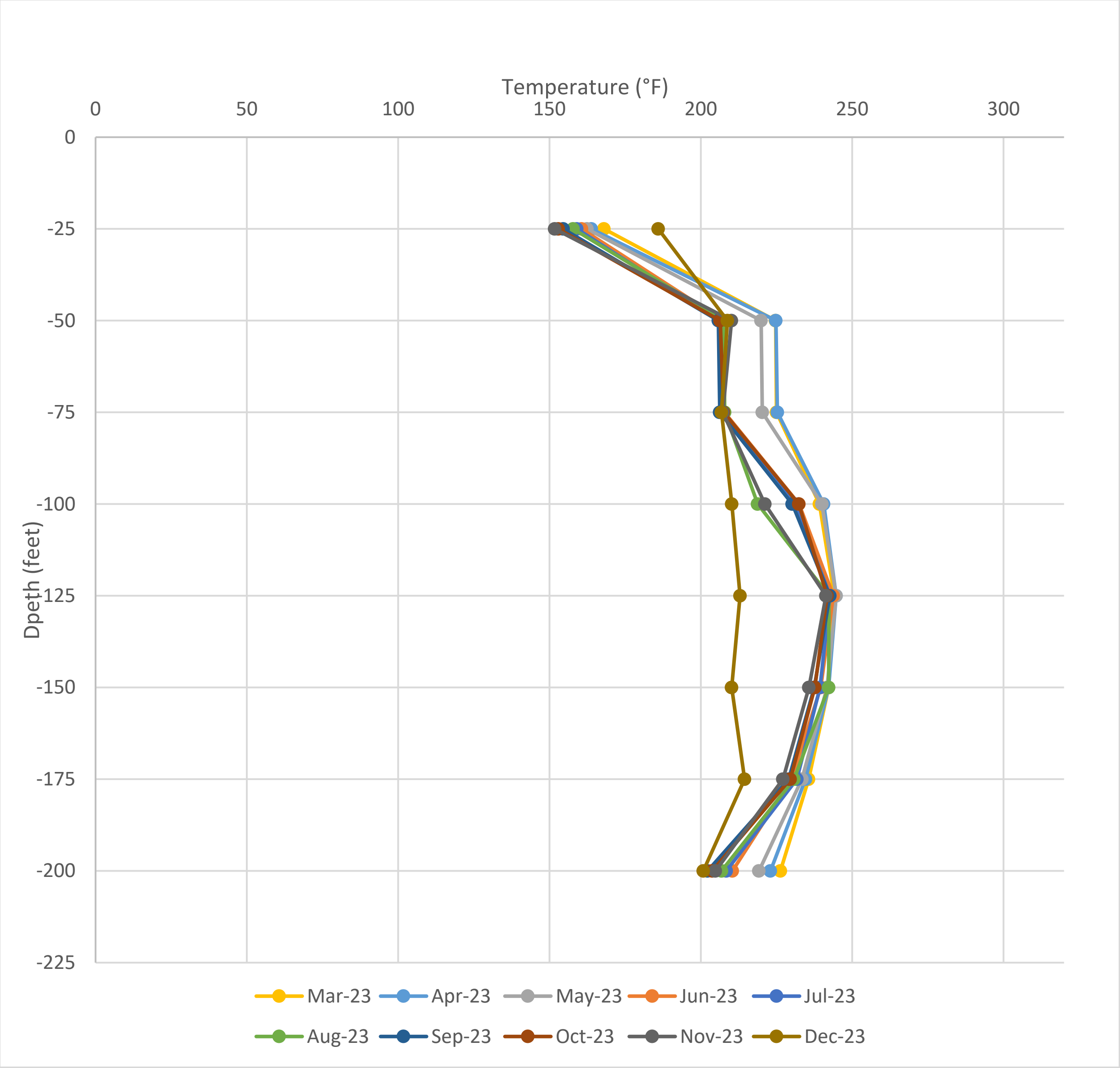


Figure 19 shows daily average temperatures in Temperature Probe 8 (TP-8) during the months of March through December. Based on the data, temperatures have increased during the last ten months. The rate of increase appears to have slowed between September 2023 and December 2023.

TP-8 Did not read from November 8 to November 27 due to faulty battery which was replaced on November 28.

Figure 19. Average Temperatures within TP-8 During the Months of March through December

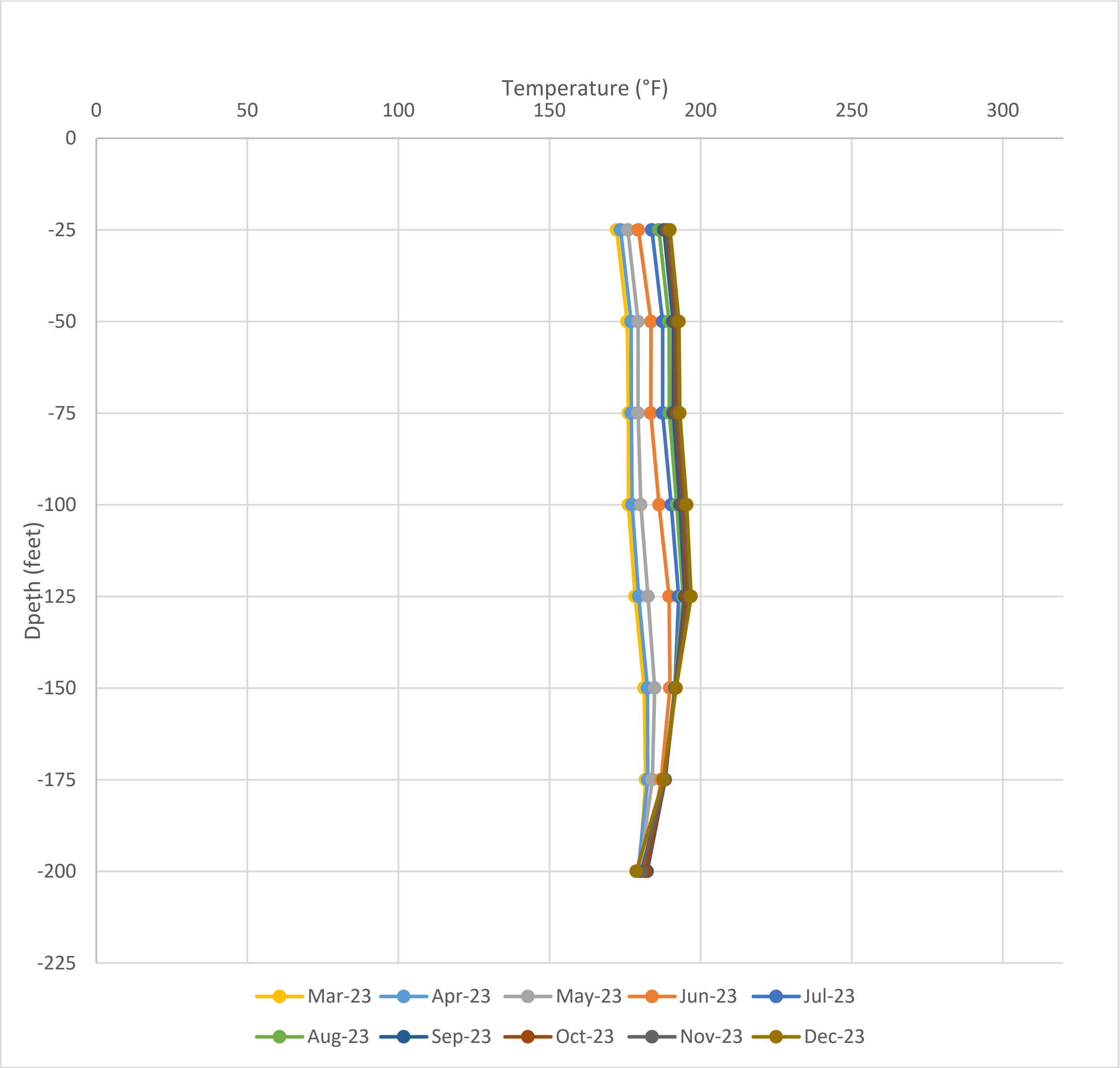
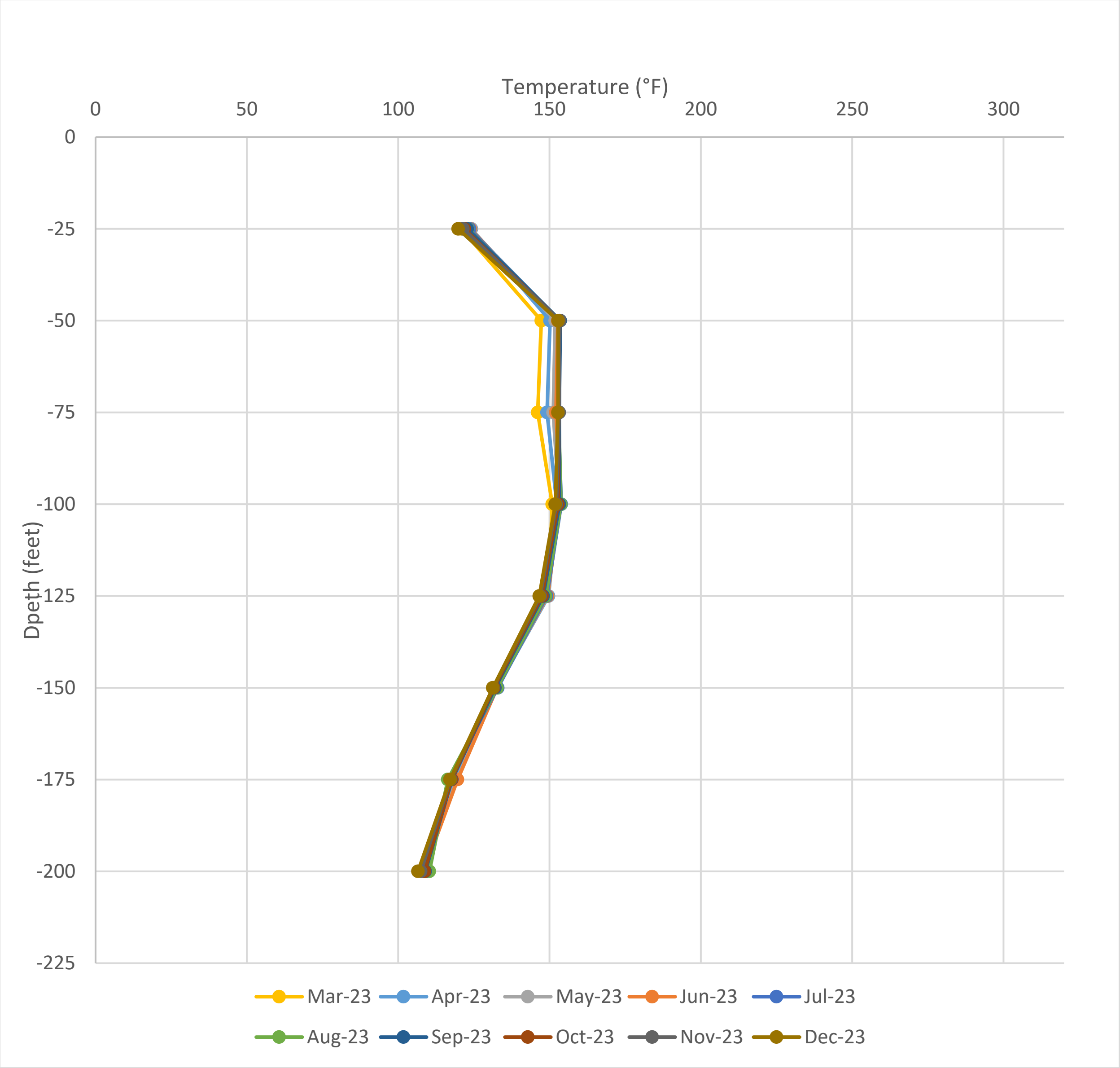


Figure 20 shows daily average temperatures in Temperature Probe 9 (TP-9) during the months of March through December. Based on the data, temperatures have been consistent during the last ten months.

Figure 20. Average Temperatures within TP-9 During the Months of March through December



The data indicates that temperatures within the landfill are generally stable and are typical of those observed at elevated temperature landfills (ETLFs). During the months of May through September, there has been substantial construction at the landfill including deep dual extraction wells that may have impacted temperatures within the waste mass adjacent to the probes. While quantifying the effect of the construction of addition wells is difficult, changes in wellhead temperature have been observed in existing wells adjacent to newly installed wells. The temperatures recorded are substantially lower than those associated with landfill fires or other combustion processes, which can exceed 1000°F. This further indicates that the elevated temperatures are due to sources other than combustion.

4.0 LEACHATE EXTRACTION AND MONITORING

The City has begun taking steps to improve the extraction of leachate from the waste mass and collect analytical data on leachate characteristics. The following sections detail steps taken to achieve these goals.

4.1 EXISTING SYSTEM OPTIMIZATION

During bimonthly gas extraction well monitoring, SCS also collected stroke counter data from the pumps installed in the GCCS extraction wells. Stroke count measurements are also collected weekly as part of routine pump maintenance. These stroke counts were collected from 42 wells on 5 consecutive weeks, as shown Table 6. Cells marked with "*" represent dates when the pump was removed from the well for maintenance or had not yet been installed.

Table 6. Summary of Dual Extraction Well Pump Stroke Counter Data

Well	November 29, 2023	December 4, 2023	December 13, 2023	December 18, 2023	December 28,2023
EW33B	17	17	17	17	17
EW36A	110,426	998,964	109,268	137,975	137,975
EW49	777,885	777,885	777,885	777,893	777,893
EW50	1,316,885	1,334,215	1,340,298	1,358,195	1,387,088
EW52	367,549	367,549	387,345	395,659	421,655
EW53	2,330,786	2,330,796	2,330,797	2,359,272	2,435,234
EW54	597,295	597,295	597,301	597,301	597,301
EW55	713,756	713,759	713,760	713,760	713,760
EW57	24,490	44,625	44,626	44,644	44,644
EW58	*	*	*	*	*
EW59	2,491,012	2,494,036	2,498,097	2,500,102	2,501,483
EW60	616,567	617,025	617,025	617,025	617,039
EW61	11,440	11,440	11,440	11,440	22,389
EW62	202,202	202,202	202,311	202,311	202,363
EW64	177,601	177,601	177,601	177,605	177,605
EW65	4,806	4,806	4,806	4,817	4,817
EW67	864,971	864,971	865,001	865,688	865,688
EW68	2,235,605	2,235,605	2,258,582	2,265,573	2,265,867
EW70	9	9	9	9	9
EW72	15	15	15	15	15
EW73	23	23	23	23	23
EW74	16	16	16	25	25

Well	November 29, 2023	December 4, 2023	December 13, 2023	December 18, 2023	December 28,2023
EW75	18	18	18	11	11
EW76	23	23	23	23	23
EW78	71,913	73,405	73,405	78,789	85,201
EW81	283,570	283,570	283,570	304,902	304,902
EW82	98,268	98,268	98,268	98,268	98,268
EW83	417,784	417,784	498,766	498,766	498,766
EW85	124,111	124,111	124,111	124,123	124,123
EW87	940,763	940,763	940,763	940,779	940,779
EW88	342,522	342,522	342,522	397,726	407,370
EW89	*	209,555	421,500	429,757	511,625
EW90	170,676	170,678	170,678	170,679	170,679
EW91	390,250	659,103	937,486	265,766	265,766
EW92	387,453	387,453	387,723	389,507	389,507
EW93	302,222	302,222	302,222	302,222	302,222
EW94	519,848	519,848	519,848	520,385	520,385
EW95	10	10	10	10	10
EW96	527,901	571,413	571,413	571,413	571,413
EW98	1,532,388	1,563,231	1,631,089	1,682,070	1,739,764
EW99	12	12	12	12	12
EW100	376,908	398,247	470,122	470,158	470,158

Based on this data, SCS can estimate the number of gallons of liquid pumped from each well. SCS assumed that each stroke from a float-style pneumatic pump correlates to approximately 0.3 gallons of liquid removed from the well. Additionally, Blackhawk piston-style pumps remove approximately 0.11 gallons per stroke recorded. Five-gallon bucket tests are also used to determine the amount of liquid removal by Blackhawk Pumps. This data will then be used to identify pumps for repair or replacements or identify nonfunctional stroke counters for replacement. Estimates of the quantities of liquids removed between the reading dates are shown in Table 7.

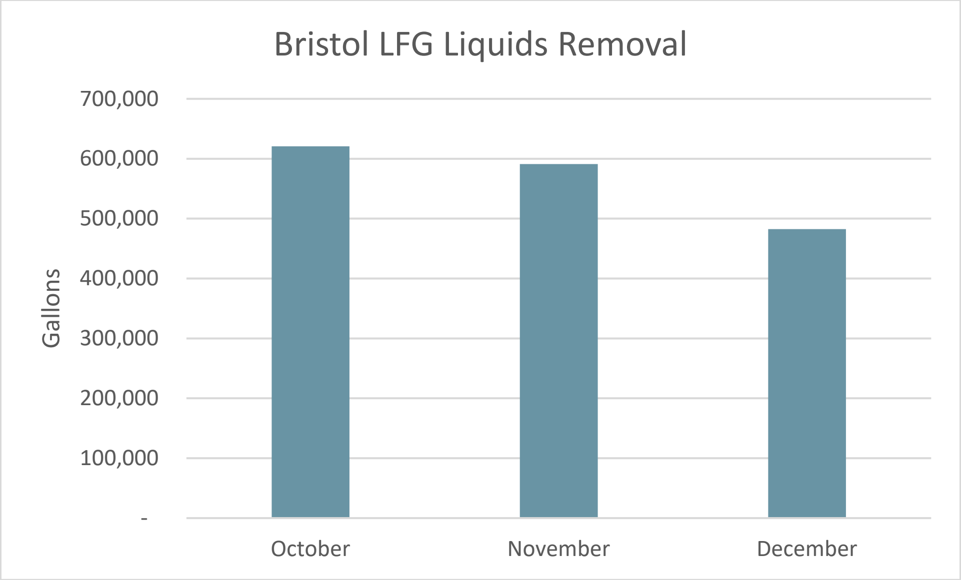
Table 7. Summary of Dual Extraction Well Pump Liquids Removal

Well	Liquids Removed (gal) 11/29/23 to 12/4/23	Liquids Removed (gal) 12/4/23 to 12/13/23	Liquids Removed (gal) 12/13/23 to 12/18/23	Liquids Removed (gal) 12/18/23 to 12/28/23
EW33B	0	0	0	0
EW36A	99,516	12,354	3,215	0
EW49	0	0	2	0
EW50	5,199	1,825	5,369	8,668
EW52	0	5,939	2,494	7,799

Well	Liquids Removed (gal) 11/29/23 to 12/4/23	Liquids Removed (gal) 12/4/23 to 12/13/23	Liquids Removed (gal) 12/13/23 to 12/18/23	Liquids Removed (gal) 12/18/23 to 12/28/23
EW53	3	0	8,543	22,789
EW54	0	2	0	0
EW55	1	0	0	0
EW57	6,041	0	5	0
EW58	0	0	0	0
EW59	907	1,218	602	414
EW60	137	0	0	4
EW61	0	0	3,432	3,285
EW62	0	33	0	16
EW64	0	0	1	0
EW65	0	0	3	0
EW67	0	3	77	0
EW68	0	6,893	2,097	88
EW70	0	0	3	0
EW72	0	0	0	0
EW73	0	0	0	0
EW74	0	0	3	0
EW75	0	0	0	0
EW76	0	0	0	0
EW78	448	0	1,615	1,924
EW81	0	0	2,389	0
EW82	0	0	0	0
EW83	0	9,070	0	0
EW85	0	0	1	0
EW87	0	0	2	0
EW88	0	0	6,183	1,080
EW89	23,470	23,738	925	9,169
EW90	1	0	0	0
EW91	30,112	31,179	36,767	0
EW92	0	30	200	0
EW93	0	0	90,667	0
EW94	3	0	60	0
EW95	74,883	41,990	0	0
EW96	4,873	0	0	0
EW98	0	0	15,294	17,308
EW100	6,402	21,563	0	0

SCS estimates that approximately 480,000 gallons of liquids were removed from the landfill gas collection and control system during the month of December. This figure includes the amount of liquids that were removed by the Blackhawk pumps that were installed in September 2023. SCS-FS continues to implement an aggressive maintenance schedule for landfill gas liquids removal pumps. The pump at EW-36A continues was the best performing pump at 115,085 gallons in December. The progress in landfill gas liquids removal over the last three months is depicted in Figure 21.

Figure 21. Estimated Volume of Liquids Removed from Landfill Gas Wells



The City and SCS understand that operations of dewatering pumps are critical to address issues related to heat, odors, and the efficient operation of the GCCS. The landfill conditions present a challenging environment for pump operations. Pumps require servicing after relatively short intervals. During the month of December 2023, pump maintenance occurred on the dates shown in Tables 6 and 7. Additionally, minor pump modifications and repairs were made throughout the month to extend pump runtimes before failure. The SWP No. 588 Landfill's float-style pumps are bump checked daily and Blackhawk piston drive rods are cleaned routinely each week.

In some cases, low volumes of landfill liquids removed correlate to low measured liquid levels within the gas wells. During the landfill gas well liquids monitoring event, the following wells were noted to be dry or have low liquid levels: EW-36A, EW-63, EW-69, EW-72, EW-79, and EW-80, EW-81, EW-82, and EW-99. When this condition is identified, pumps may be relocated to wells with consistently higher liquid levels. Pumps that were removed previously due to wells being dry were relocated to EW-65, EW-93, and EW-95 in December.

During the construction of the LFGCCS expansion outlined in Sections 1.4 and 2.1, multiple types of leachate extraction pumps were installed. The City and SCS will continue to evaluate the performance of those pumps in the coming months. Based on that evaluation, the City will select the pump type that is most effective given the landfill conditions.

To improve the accuracy of landfill gas liquids flow rate estimates. Two flow meters were installed on the landfill gas liquids forcemains. One flow meter was installed on the SWP No. 588 primary landfill gas liquid forcemain and another was installed on the SWP No. 588 alternate landfill gas liquids forcemain, which also serves as the conduit for condensate from the temporary perennial flare and the SWP No. 588 stormwater pump. The SWP No. 588 alternate landfill gas liquids forcemain will also serve as the SWP No. 498 landfill gas liquids forcemain in the future. A photo of equipment installed with the flow meter is shown in Figure 25. SCS intends to report the volumes of liquids measured by the flow meters in future compliance reports and compare to volumes calculated using pump stroke counts.

Figure 25. Flow Meter Installation

4.2 SAMPLING AND ANALYSIS PLAN

On November 1, 2022, SCS submitted to VDEQ the Dual Phase Landfill Gas Extraction Well Leachate Monitoring Plan for the Bristol Integrated Solid Waste Management Facility Solid Waste Permit No. 588 Landfill and the plan was subsequently revised on December 1, 2022. Refer to the November 2022 and December 2022 Compliance Reports for the SWP No. 588 Landfill for additional information.

4.2.1 Sample Collection

On December 11 and 12, 2023, SCS collected leachate samples from three Dual Phase LFG-EWs (EW-52, EW-68, and EW-78). At the time of sample collection dissolved oxygen, oxidation-reduction potential, pH, specific conductance, temperature, and turbidity were measured and recorded. The sample collection log is included in **Appendix F**.

SCS' field staff were not able to collect samples from the following wells for the following reasons:

- Pump was not running at the time of monitoring for the following wells: EW-33B, EW-49, EW-50, EW-59, EW-60, EW-61, EW-62, EW-64, EW-74, EW-75, EW-76, EW-83, EW-87, EW-89, EW-90, EW-91, EW-92, EW-96, EW-98, and EW-100.
- Pump was disconnected at the time of monitoring for the following wells: EW-53, EW-54, EW-55, EW-57, EW-58, EW-67, EW-94, and EW-97.
- There was no sample port and the pump was disconnected at the time of monitoring for the following well: EW-85. The City and SCS-FS are coordinating to get sample port installed on this well.
- Pump was running at the time of monitoring, but there is no sample port for the following well: EW-88. The City and SCS-FS are coordinating to get a sample port installed on this well.
- Pump was not running and the well appeared dry at the time of monitoring for the following wells: EW-36A, EW-81, and EW-82.
- There is no pump at the time of the monitoring for the following wells: EW-51, EW-56, EW-63, EW-65, EW-69, EW-71, EW-72, EW-73, EW-77, EW-79, EW-80, EW-84, EW-86, EW-93, EW-95, and EW-99.
- Well EW-70 was not accessible during the monitoring event.

The samples were delivered to Enthalpy Analytical (Enthalpy) in Richmond, Virginia and Pace Analytical Services, LLC (Pace) in Baton Rouge, Louisiana for analysis. The Enthalpy's and Pace's Virginia Division of Consolidated Laboratory Services (VELAP) certifications are provided on the certificate of analysis (COA) included in **Appendix F**. The samples were analyzed for the parameters utilizing the analytical methods described in the Dual Phase Landfill Gas Extraction Well Leachate Monitoring Plan.

4.2.2 Quality Assurance and Quality Control

Field quality control (QC) involved the collection and analysis of trip blanks to verify that the sample collection and handling processes did not impair the quality of the samples. Trip blanks were prepared for VOC analysis via Solid Waste (SW)-846 Method 8260D. In conjunction with the preparation of the groundwater sample collection bottle set, laboratory personnel filled each trip blank sample bottle with distilled/deionized water and transported them with the empty bottle kits to SCS. Field personnel handled the trip blanks like a sample; they remained un-opened, were transported in the sample cooler, and were returned to the laboratory for analyses. A trip blank is used to indicate potential contamination due to the potential migration of VOCs from the air at the site or in the sample shipping containers, through the septum or around the lid of the sampling vials and into the sample.

Laboratory quality assurance/quality control (QA/QC) involves the routine collection and analysis of method reagent blanks, matrix spike (MS) and matrix spike duplicate (MSD) samples, and laboratory control samples (LCS). A summary of each of these is presented below:

- **Method Blank** – The method blank is deionized water subjected to the same reagents and manipulations to which site samples are subjected. Positive results in the method blanks may indicate either contamination of the chemical reagents or the glassware and implements used to store or prepare the sample and resulting solutions.

- **MS/MSD** – A MS is an aliquot of a field sample with a known concentration of target parameter added to it. An MSD is an intra-laboratory split sample spiked with a known concentration of target parameter. Spiking for each occurs prior to sample analysis. MS/MSD samples are collected for every batch of twenty or fewer samples. Matrix spike recoveries are used to indicate what effect the sample matrix may have on the reported concentration and/or the performance of the sample preparation and analysis.

- **LCS** – These samples consist of distilled/deionized water injected with the parameters of interest for single parameter methods and selected parameters for multi-parameter methods according to the appropriate analytical method. LCS samples are prepared and analyzed for each batch containing twenty or fewer samples. LCS recoveries are used to monitor analytical accuracy.

Surrogate recoveries are also measured as a part of laboratory QA/QC. Surrogates are organic compounds that are like the parameters of interest in chemical composition, extraction, and chromatography, but are not normally found in environmental samples. These compounds are inserted into blank, standards, samples, and spiked samples prior to analysis for organic parameters only. Percent recoveries are calculated for each surrogate. Spike recoveries at or below acceptance criteria indicate whether analytical results can be considered biased high or biased low.

Xylenes was detected in the trip blank at a concentration of 2.64 ug/L for the December 2023 monitoring event. No method blank detects were identified for the December 2023 monitoring event. The laboratory analysis reports for the December 2023 monitoring event trip blanks are included in **Appendix F**. The December 2023 monitoring event laboratory QA/QC reports, including the method blank results, are included in the COA in **Appendix F**.

4.2.3 Data Validation

To identify analytical data that may not represent valid results, data from the monitoring events were validated by the Laboratory and SCS in accordance with United States Environmental Protection Agency (EPA) guidance[4]. Data flagged with a "J" qualifier indicates the quantitation of the parameter is less than the laboratory's limit of quantitation but greater than the laboratory's limit of detection (LOD); thus, the concentration is considered estimated. Samples with parameter detections less than five times that of the trip blank, field blank, and/or method blank detection but greater than the laboratory's LOD are flagged with a "B" qualifier. Samples with common laboratory contaminant parameter detections less than 10 times that of the trip blank, field blank, and/or method/laboratory blank detection but greater than the laboratory's LOD are flagged with a "B" qualifier. Data with a "B" qualifier are considered not validated as the detection may be anomalous due to cross-contamination during sampling, transportation of samples, or laboratory analysis.

No leachate results were flagged with a "B" qualifier for the December 2023 monitoring event as the xylenes detections in the leachate samples were greater than five times the concentration detected in the trip blank. The December 2023 detections flagged with a "J" qualifier are shown on **Table 8.**

4.2.4 Laboratory Analytical Results

The analytical results for the December 2023 leachate samples collected from extraction wells EW-52, EW-68, and EW-78 are summarized in **Table 8.** The associated COAs are included in **Appendix F.** Parameter results from December 2023 and previous monitoring events (November 2022 – December 2023) are presented on a table in **Appendix F.** Time-series plots of each VOC for the wells that have historically been sampled are also included in **Appendix F.**

Table 8. Monthly LFG-EW Leachate Monitoring Event Summary

Well ID	**EW-52**	**EW-68**	**EW-78**	**LOD**	**LOQ**
Parameter	**December 2023 Concentration**				
Ammonia as N (mg/L)	---	---	**1540**	73.1	100
	2900	**2200**	---	146	200
Biological Oxygen Demand (mg/L)	**>44105**	**13700**	**681**	0.2	2
Chemical Oxygen Demand (mg/L)	---	---	**4870**	1000	1000
	---	**19900**	---	5000	5000
	94200	---	---	10000	10000
Nitrate as N (mg/L)	ND	---	ND	1.1	5.1
	---	ND	---	1.5	5.5
Nitrite as N (mg/L)	ND	ND	ND	1	5

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[4] United States Environmental Protection Agency. Guidance for Data Usability in Risk Assessment (Part A-14). April 1992.
United States Environmental Protection Agency. Office of Superfund Remediation and Technology Innovation. National Functional Guidelines for Inorganic Superfund Methods Data Review. November 2020.
United States Environmental Protection Agency. Office of Superfund Remediation and Technology Innovation. National Functional Guidelines for Organic Superfund Methods Data Review. November 2020.

Table 8. Monthly LFG-EW Leachate Monitoring Event Summary

Well ID	**EW-52**	**EW-68**	**EW-78**	**LOD**	**LOQ**
Parameter	**December 2023 Concentration**				
Total Kjeldahl Nitrogen (mg/L)	---	**1880**	---	80	200
	3130	---	**1890**	100	250
Total Recoverable Phenolics (mg/L)	---	---	**3.72**	0.06	0.1
	---	**23**	---	0.75	1.25
	34.2	---	---	1.5	2.5
SEMI-VOLATILE ORGANIC COMPOUND (ug/L)					
Anthracene	---	---	ND	50	100
	---	ND	---	100	200
	ND	---	---	200	400
TOTAL METALS (mg/L)					
Arsenic	**0.4**	**0.26**	---	0.0025	0.005
	---	---	**0.24**	0.001	0.002
Barium	**0.68**	**1.36**	---	0.005	0.025
	---	---	**0.672**	0.002	0.01
Cadmium	ND	**0.000604 J**	---	0.0005	0.0015
	---	---	ND	0.0002	0.002
Chromium	**1.34**	**0.259**	---	0.002	0.005
	---	---	**0.219**	0.0008	0.002
Copper	**0.00184**	ND	---	0.0015	0.0015
	---	---	**0.0034**	0.0006	0.002
Lead	---	---	**0.0043**	0.002	0.002
	0.16	**0.002**	---	0.0015	0.0015
Mercury	**0.00484**	ND	---	0.001	0.001
	---	---	ND	0.0004	0.0004
Nickel	**0.6091**	**0.1447**	---	0.005	0.005
	---	---	**0.2127**	0.002	0.002
Selenium	**0.00785**	**0.00253**	---	0.0015	0.0015
	---	---	**0.00215**	0.0017	0.002
Silver	ND	ND	---	0.00025	0.001
	---	---	ND	0.00012	0.002
Zinc	**52.7**	---	---	0.25	0.5
	---	---	**0.061**	0.005	0.01
	---	**0.0462**	---	0.025	0.025

Table 8. Monthly LFG-EW Leachate Monitoring Event Summary

Well ID	**EW-52**	**EW-68**	**EW-78**	**LOD**	**LOQ**
Parameter	**December 2023 Concentration**				
VOLATILE FATTY ACIDS (mg/L)					
Acetic Acid	---	**660**	---	---	100
	---	---	ND	---	250
	11200	---	---	---	1000
Butyric Acid	---	**336**	---	---	100
	---	---	ND	---	250
	3390	---	---	---	1000
Lactic Acid	---	ND	---	---	100
	---	---	ND	---	250
	9050	---	---	---	1000
Propionic Acid	---	**996**	---	---	100
	---	---	ND	---	250
	2280	---	---	---	1000
Pyruvic Acid	---	ND	---	---	100
	---	---	ND	---	250
	ND	---	---	---	1000
VOLATILE ORGANIC COMPOUNDS (ug/L)					
2-Butanone (MEK)	**13700**	**7060**	ND	150	500
Acetone	---	ND	---	140	200
	---	---	ND	350	500
	44300	---	---	1750	2500
Benzene	---	**932**	---	8	20
	1330	---	**463**	20	50
Ethylbenzene	---	**46**	---	8	20
	69.5	---	**44 J**	20	50
Tetrahydrofuran	---	**4240**	---	200	200
	2620	---	**502**	500	500
Toluene	---	**73.2**	---	10	20
	83.5	---	**74.5**	25	50
Xylenes, Total	---	**167**	---	20	60
	224	---	ND	50	150

--- = not available
J = Constituent was detected at a concentration above the laboratory's LOD but below the laboratory's LOQ. Concentration is estimated and not validated.
LOD = laboratory's Limit of Detection
LOQ = laboratory's Limit of Quantitation
mg/L = milligrams per liter
ND = Not Detected
ug/L = micrograms per liter

5.0 SETTLEMENT MONITORING AND MANAGEMENT

The City is taking steps to track and manage settlement occurring in the landfill. A summary of actions taken to quantify and manage settlement is included in the sections below.

5.1 SETTLEMENT MONITORING AND MANAGEMENT PLAN

On behalf of the City, SCS submitted a settlement monitoring and management plan to VDEQ on November 15, 2022. Refer to the 2022 November Monthly Compliance Report for the SWP No. 588 Landfill for additional information.

5.2 MONTHLY SURVEYS

5.2.1 Topographic Data Collection

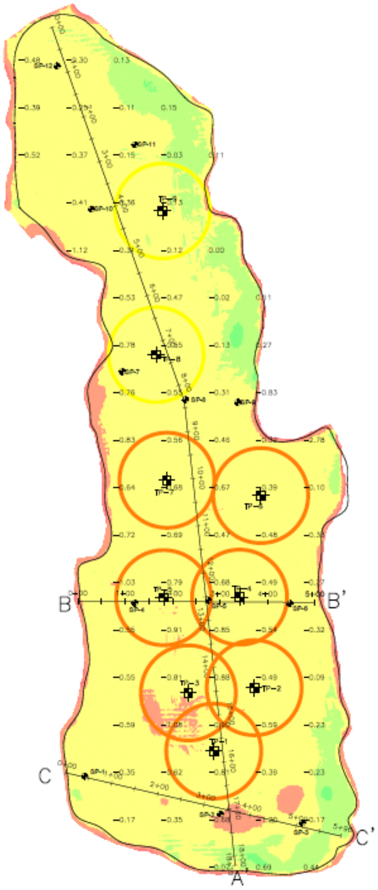
The City, through SCS, collected topographic data of the Solid Waste Permit No. 588 Landfill using photogrammetric methods via an unmanned aerial vehicle (UAV or drone). On December 20, 2023, the flight was completed and the topographic data collected. The topographic data collected is shown on Sheet 4 in Appendix E. On the date that the data was collected, there was snow on the ground in parts of the landfill. This may have impacted the imagery used to calculate elevations.

The topography within the landfill footprint was compared to topographic data collected by SCS using photogrammetric methods on November 16, 2023. A drawing depicting the November 16, 2023 topography is included as Sheet 3 in Appendix E.

Based on a comparison of the topographic data collected on those two dates, settlement occurred that reduced the volume of waste in the landfill by approximately 14,100 cubic yards. During that same time period, approximately 700 cubic yards of construction related fill were placed on the landfill. SCS could not identify the source of most of this fill, but suspects that snow on the landfill surface may have impacted elevation measurements. This resulted in a net volume decrease of approximately 13,400 cubic yards.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 26. Areas in yellow, orange, and red indicate where elevations decreased and areas in green indicate areas where elevations have increased. Darker colors indicate greater changes in elevation. This drawing is also included as Sheet 5 in Appendix E.

Figure 26. 1-Month Elevation Change Color Map



The locations of in-waste temperature monitoring probes are also shown on Figure 26, Figure 27, and Figure 28. The circles around the probes indicate how high the average temperatures measured by the probe are. The circles shown are offset from the probes for clarity only and do not necessarily indicate temperatures measured at locations away from the probe. Probes with a yellow circle around them, typically measure an average temperature across the full depth of the probe of less than 200°F. Probes with an orange circle around them, typically measure an average temperature across the full depth of the probe greater than 200°F and less than 250°F. Probes with a red circle around them typically measure an average temperature across the full depth of the probe greater than 250 degrees Fahrenheit and less than 300°F. There were no probes measuring average temperatures greater than 250°F and less than 300°F during the month of December.

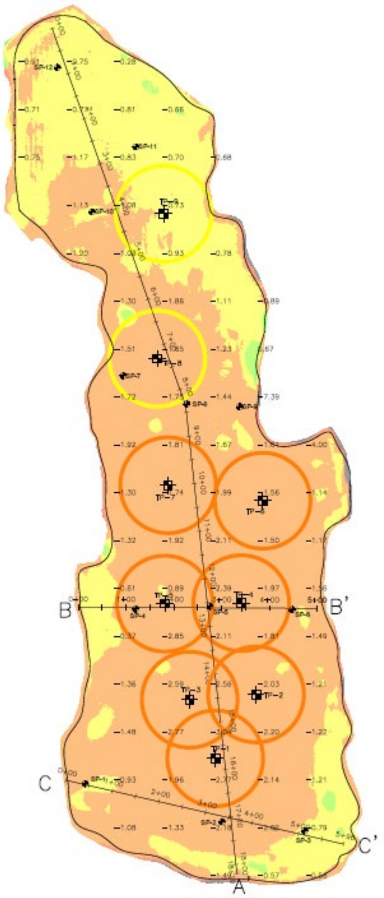
The largest settlement occurred primarily in the middle-southern end of the landfill where the waste settled by approximately 1 foot or more in some areas. The southern end of the landfill is the location of the gas wells and temperature probes exhibiting higher temperatures. These higher settlement values are typical of elevated temperature landfill conditions. A small portion of the landfill exhibited an increase in elevation in some areas, likely due to continued soil placement associated with construction of the sidewall odor mitigation system. Some soil stockpile locations associated with the sidewall odor mitigation system showed large elevation changes due to material removal from the stockpiles.

SCS calculated the waste footprint for purposes of analysis to be 752,610 square feet. Based on that area and the net volume change, the average elevation decrease was approximately 0.48 feet.

SCS also compared the topographic data collected in December to the topographic data collected on September 15, 2023. Based on a comparison of the topographic data collected on those two dates, settlement occurred that reduced the volume of waste in the landfill by approximately 42,200 cubic yards. During that same time period approximately 100 cubic yards of construction-related fill were placed on the landfill. This fill was primarily soil placed as part of the sidewall odor mitigation system construction. This resulted in a net volume decrease of approximately 42,100 cubic yards.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 27. Areas in red indicate where elevations decreased and areas in green indicate areas where elevations have increased. Darker colors indicate greater changes in elevation. This drawing is also included as Sheet 6 in Appendix E.

Figure 27. 3-Month Elevation Change Color Map



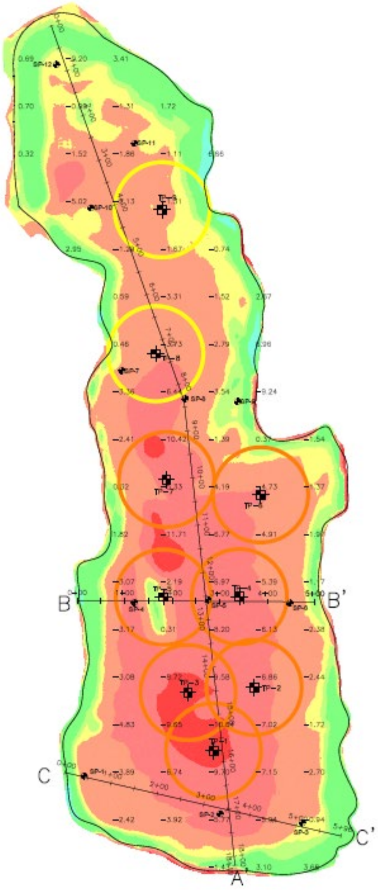
Based on the area of the landfill and the net volume change, the average elevation decrease was approximately 1.51 feet.

The largest settlement occurred primarily in the southern end of the landfill where the waste settled by approximately 3 feet or more in some areas. The southern end of the landfill is the location of the gas wells and temperature probes exhibiting higher temperatures, and where the waste is deepest. Higher settlements are typical of elevated temperature landfill conditions. Settlement in the northern portion of the landfill was generally less substantial or was offset by soil placement associated with construction activities. Changes in elevation in these areas are more representative of typical settlement at municipal landfills. Some portions of the landfill perimeter exhibited an increase in elevation, likely due to sediment deposition during storm events and soil placement associated with construction and maintenance of the sidewall odor mitigation system. There were some large variations in elevation associated with soil stockpiling operations.

SCS also compared the topographic data collected in December to the drone topographic data collected on December 2, 2022 by SCS. Based on a comparison of the topographic data collected on those two dates, settlement occurred that reduced the volume of waste in the landfill by approximately 92,800 cubic yards. During that same time period approximately 11,900 cubic yards of construction-related fill were placed on the landfill. This fill was primarily soil placed as part of the sidewall odor mitigation system construction. This resulted in a net volume decrease of approximately 80,800 cubic yards.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 28. Areas in red indicate where elevations decreased and areas in green indicate areas where elevations have increased. Darker colors indicate greater changes in elevation. This drawing is also included as Sheet 7 in Appendix E.

Figure 28. 1-Year Elevation Change Color Map



The largest settlement occurred primarily in the southern end of the landfill where the waste settled by approximately 16 feet or more in some areas. These significant settlement values are typical of elevated temperature landfill conditions. The landfill perimeter exhibited an increase in elevation, likely due to soil placement associated with construction of the Sidewall Odor Mitigation System. There were variations in elevation associated with soil stockpiling operations.

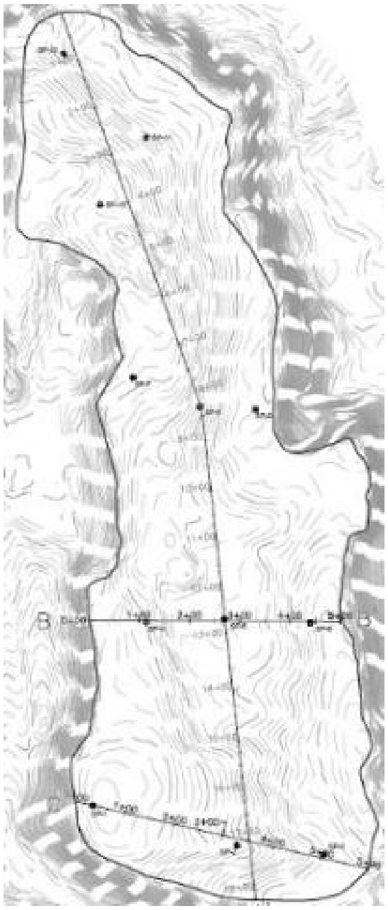
Based on the landfill area and the net volume change, the average elevation decrease was approximately 2.9 feet.

SCS will collect topographic data covering the landfill surface again in January using photogrammetric methods via UAV. This data will be compared to the data collected in October 2023, December 2023, and January 2023.

5.2.2 Settlement Plate Surveys

On November 7, 2022 SCS field services installed 12 settlement plates on the Solid Waste Permit No. 588 landfill. The construction and installation of the settlement plates generally conforms to the design outline in the Settlement Monitoring and Management Plan. The tops of the PVC pipes were spray painted orange to improve visibility. The settlement plate locations are depicted in Figure 29 and on Sheet 1 in Appendix E.

Figure 29. Settlement Plate Locations



The locations of the settlement plates were surveyed by the City's surveyor on November 14, 2022. The settlement plates were surveyed again on December 13, 2022; January 3, 2023; February 6, 2023; March 8, 2023; April 3, 2023; May 11, 2023; June 5, 2023; July 10, 2023; August 17, 2023; September 11, 2023; October 11, 2023; November 6, 2023; and December 12, 2023. The surveyed coordinates[5] and elevation changes of the settlement plates are shown in Table 9.

Table 9. Settlement Plate Locations

Settlement Plate	Northing	Easting	Elevation on December 12, 2023	Elevation Change Since November 6, 2023	Strain[6] Since November 6, 2023	Elevation Change Since Installation	Strain Since Installation
SP-1	3,397,887.1	10,412,079.4	1,830.8	-0.2	-0.3%	-3.6	-5.5%
SP-2	3,397,809.8	10,412,365.8	1,802.6	-0.7	-0.4%	-8.0	-4.9%
SP-3[7]	3,397,787.5	10,412,537.9	N/A	N/A	N/A	N/A	N/A
SP-4[8]	3,398,250.3	10,412,187.4	1,808.7	-0.7	-0.4%	-8.7	-5.6%
SP-5	3,398,255.9	10,412,339.0	1,793.6	-0.7	-0.3%	-7.2	-2.8%
SP-6	3,398,249.0	10,412,510.4	1,775.0	-0.3	-0.2%	-2.7	-2.0%
SP-7[9]	3,398,735.3	10,412,158.1	1,825.7	-0.4	-0.4%	-2.9	-2.6%
SP-8	3,398,678.8	10,412,291.0	1,802.5	-0.3	-0.1%	-4.8	-2.0%
SP-9[10]	3,398,673.4	10,412,400.9	N/A	N/A	N/A	N/A	N/A
SP-10	3,399,080.1	10,412,093.0	1,838.3	-0.1	-0.1%	-1.9	-0.7%
SP-11	3,399,216.4	10,412,183.7	1,815.4	-0.1	0.0%	-0.9	-0.4%
SP-12	3,399,382.0	10,412,019.7	1,810.2	-0.2	-0.1%	-0.5	-0.4%

Settlement Plates 2, 4, and 7 demonstrated larger settlements than at other locations. Settlement Plates 4 and 7 were damaged during construction operations. Settlement Plates 2 is located in the southern end of the landfill. This area is the location of the gas wells and temperature probes exhibiting higher temperatures. These higher settlement values are typical of elevated temperature landfill conditions.

The change in elevation at Settlement Plates 8, 10, 11, and 12 was lower and more representative of typical settlement at municipal landfills with waste of similar depth. The change in elevation at Settlement Plates 1, 5, and 6 falls somewhere in between these two categories. Settlement Plate 3 was damaged and unable to be measured during September, October, November, and December of 2023. Settlement Plate 9 was located in standing water and was unable to be read for the month of December 2023.

Figure 30 shows the changes in elevation of select settlement plates over time. Best fit lines for these changes in elevation are also shown on the graph. Currently settlement rates are represented

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[5] Settlement plate locations and coordinates are based on a local coordinate system.

[6] Strain is defined as the change in elevation divided by the estimated waste depth.

[7] SCS suspects that SP-3 was damaged as a result of construction activities.

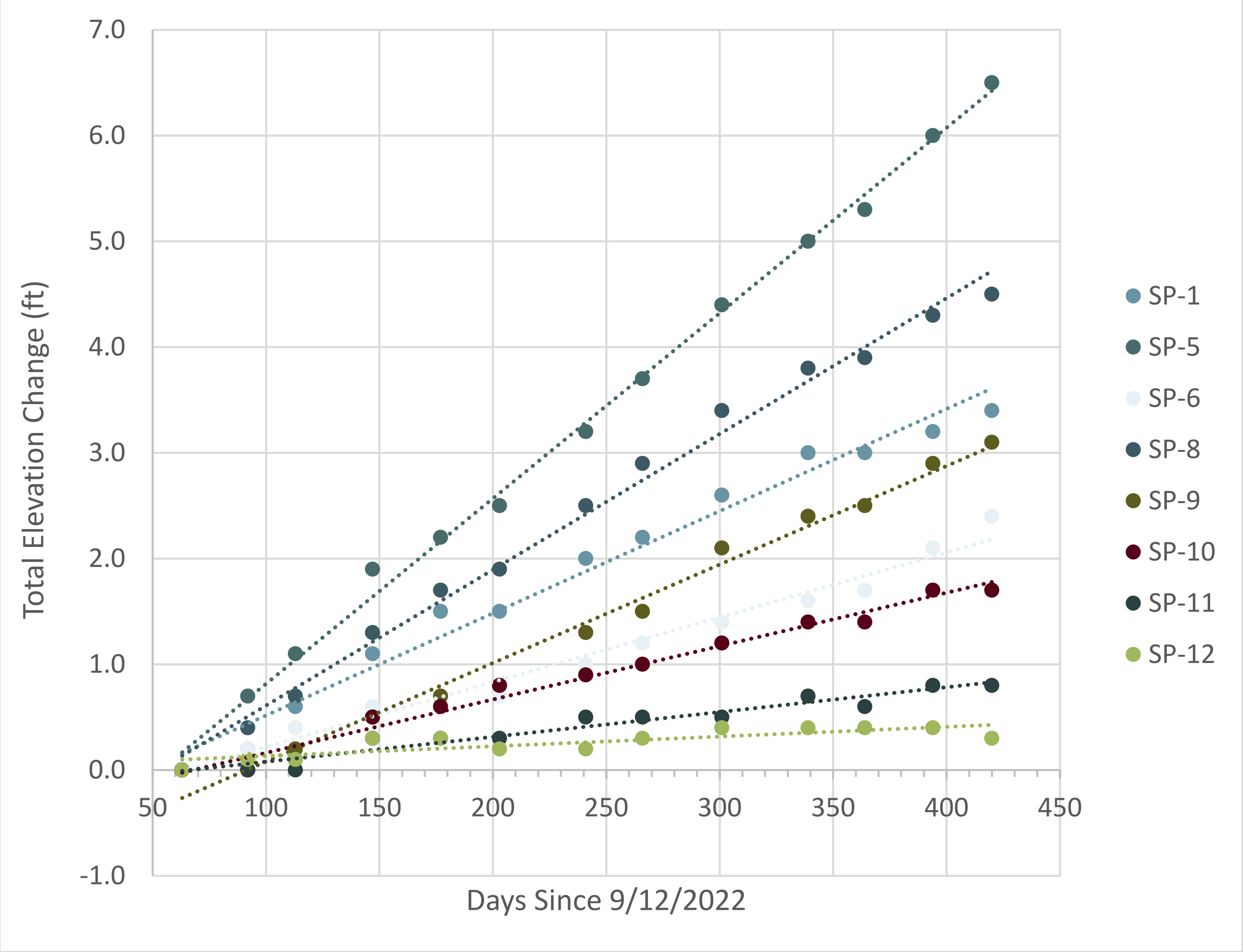
[8] Based on field observations SP-4 appears to have been disturbed during grading on an adjacent roadway.

[9] Based on field observations SP-7 appears to have been disturbed during grading on an adjacent stockpile.

[10] SCS suspects that SP-9 was damaged as a result of construction activities.

better by best fine lines generated using linear equations that logarithmic equations. For the purposes of recording data in this figure, times are measured in days since the landfill was required to stop accepting waste.

Figure 30. Changes in Settlement Plate Elevations



The settlement plates will be surveyed again during the month of January 2024. The elevations surveyed will be compared to the elevations surveyed the previous months.

6.0 INTERMEDIATE COVER AND EVOH COVER SYSTEM

The City is taking steps to provide intermediate and temporary cover of the wastes in the landfill. The sections below outline the steps taken by the City.

6.1 INTERMEDIATE COVER INSTALLATION

The City completed hauling and placement of a 12-inch thick intermediate cover across the entire landfill prior to October 10, 2022. The cover was placed in accordance with 9VAC20-81-140(B)(1)(d). SCS coordinated with the City to dig a series of test holes to verify cover thickness in select locations.

Details of these verifications were discussed in the October 2022 Monthly Compliance Report for the SWP No. 588 Landfill.

6.2 EVOH COVER SYSTEM DESIGN

SCS submitted responses, including revised documents, on March 20, 2023 to comments received from VDEQ concerning the Interim EVOH Cover System Preliminary Design Plans. The submitted documents included a revised operations manual and settlement calculations for the proposed stormwater basin. On April 28, 2023, SCS submitted the EVOH Cover System Stormwater Management Plan to VDEQ for the No. 588 landfill. SCS received a comment letter dated May 16, 2023 concerning the stormwater management plan. SCS prepared a response letter with revised drawings, documents, and calculations. The response package was submitted to VDEQ on June 23, 2023.

SCS is preparing construction drawings for the EVOH Cover System, including revisions discussed in the response to comments letters. The construction drawings build upon the preliminary design plans and the stormwater management plan. Potential modifications to the stormwater management plan (SWMP) submitted to VDEQ on April 28, 2023 will be included in the construction drawings. Stormwater modeling calculations will be provided as an attachment. Other additions to the construction drawings include additional design cross sections, landfill gas management plans and details, access road design, and other items.

SCS held a call with VDEQ personnel on August 31, 2023 to discuss potential changes to the EVOH Cover System design. The modifications include installing three separate stormwater basins within the quarry rather than one single basin. The proposed stormwater pumping infrastructure will be expanded to meet the requirements of the three basins. SCS submitted a letter to VDEQ on October 17, 2023 documenting the proposed changes.

On December 4, 2023, SCS submitted a revised stormwater management plan to submit to VDEQ, including revised drawings and calculations. The revised SWMP includes the three quarry basins, additional stormwater pumps, new stormwater force mains, and the preliminary layout of the new electrical infrastructure along the quarry rim.

SCS continues to prepare specifications, drawings, and contract documents for the construction of the EVOH Cover System.

6.3 EVOH COVER SYSTEM PROCUREMENT

Drawings used for the purposes of bidding, procurement and construction of the EVOH cover system will generally conform to the layout and details in the drawings described in section 6.2. SCS also prepared and submitted to VDEQ a specification for the EVOH geomembrane on January 30, 2023 based upon industry standards and discussions with material manufacturers. This specification and drawing set represent the first steps in the procurement process. SCS and the City have coordinated with potential suppliers to specify a product that is not currently anticipated to have long lead times. SCS has received a pro-forma data sheet from one manufacturer which is preparing a customized EVOH product for the No. 588 landfill.

6.4 EVOH COVER SYSTEM INSTALLATION

Timeline discussions are ongoing for the EVOH Cover System installation. Ongoing settlement concerns and other work at the site are being considered.

7.0 STORMWATER MANAGEMENT

The City is taking steps to implement a stormwater management plan at the landfill. The sections below outline the steps taken by the City.

7.1 STORMWATER MANAGEMENT PLAN DEVELOPMENT

The initial stormwater management plan (SWMP) was submitted to VDEQ on April 28, 2023. The plan addressed the stormwater volume calculations, assumptions, design, and control measures. SCS received a comment letter dated May 16, 2023 and prepared a response letter with revised drawings, documents, and calculations. The response package was submitted to VDEQ on June 23, 2023. A follow-up discussion was held with VDEQ on August 31, 2023 to discuss modifications to the SWMP. The new modifications include increasing the number of stormwater basins within the quarry and reducing required earthwork.

The revised SWMP was submitted to VDEQ on December 4, 2023. The plan proposes a stormwater pumping system to convey stormwater collected atop the EVOH cover system to an existing discharge point permitted under VPDES permit VAR050053. The proposed system includes the construction of three stormwater collection basins in the quarry and the installation of pairs of skid-mounted stormwater pumps. The stormwater will be conveyed by force main pipes to the existing stormwater basins located west of the quarry.

The plan proposes modifications to the existing stormwater basins west of the quarry to achieve discharge quantity targets. Modifications include increasing the basin depths and installing new outlet riser structures.

7.2 STORMWATER MANAGEMENT BASIN DESIGN AND CONSTRUCTION

The landfill surface will be regraded to form the SWM basins proposed in the stormwater management plan. The earthwork will be completed as the first stage of the interim EVOH cover system installation project. A revised landfill gas management plan is being prepared to facilitate the regrading of the landfill, which will affect existing landfill gas infrastructure. The landfill gas system will be modified to accommodate the earthwork.

Attention is being given to settlement concerns in the vicinity of the stormwater basin or basins. Calculations provided to VDEQ on June 23, 2023 demonstrate the weight of the ponded water should not cause excessive settlement relative to ongoing settlement observed within the quarry. Including additional stormwater basins within the quarry will distribute the weight of ponded water over a wider area relative to the single stormwater basin design.

7.3 STORMWATER MANAGEMENT PLAN IMPLEMENTATION

The stormwater management plan design drawings are being incorporated into the overall construction drawings for the interim EVOH cover system. The interim EVOH cover system installation and stormwater management features will be bid and constructed as one project to facilitate simultaneous progress and completion.

7.4 LONG-TERM STORMWATER CONTROL AND REMOVAL

The stormwater management plan is designed with resiliency and redundancy to promote long-term operation. Two stormwater pumps will be installed for each basin, with each pump capable of operating independently. The pumps may be operated in parallel in contingency scenarios. The City plans to install a backup generator for the stormwater pumps to allow for continued operation in the event of a temporary power loss. The pumps have been selected to include additional pumping capacity to allow for future settlement.

A variable frequency drive control system is planned for the stormwater pumping system. The water level will be gauged using a transducer cable or comparable monitoring system to allow for automation of the pumping system. Appropriate telemetry will be used to allow for remote monitoring of the pumping system.

The operations manual will be updated to discuss the long-term operation and maintenance of the pumping system and other stormwater management features. Periodic inspections of the stormwater management system will be completed. The regular inspections will include monitoring the rate of settlement. If excessive settlement occurs, repairs will be planned and conducted as necessary to maintain the stormwater management system and cover system integrity.

7.5 STORMWATER MONITORING

Stormwater monitoring will commence upon initial discharge of stormwater from the quarry stormwater pumping system. As stated in the stormwater management plan drawings, the stormwater shall be monitored in accordance with the facility's VPDES general permit for discharge of stormwater associated with industrial activity. Additional requirements include collecting additional stormwater samples at the discharge pipes for the quarry stormwater pumping system. The stormwater from the quarry basins will be sampled on a monthly basis prior to discharge to the upper stormwater ponds. The Operations Manual will be revised to include these additional requirements.

If the stormwater becomes contaminated or sampling indicates contamination above discharge limits, the stormwater will be diverted to the sanitary sewer system. The diversion to the sanitary sewer system will continue until the source of contamination is identified and resolved. The stormwater discharge pipe alignment will pass adjacent to the existing sanitary sewer manhole. A tee with isolation valves will be used to direct the stormwater to the upper basins or the sanitary sewer manhole.

8.0 MISCELLANEOUS

8.1 CEASE WASTE ACCEPTANCE

The City ceased acceptance of offsite waste at the Solid Waste Permit No. 588 landfill prior to September 12, 2022.

8.2 LONG-TERM PLAN

SCS submitted the Monitoring, Maintenance, and Repair Plan to VDEQ for the SWP No. 588 landfill on December 30, 2022. Refer to the December 2022 Monthly Compliance Report for the SWP No.

588 Landfill for additional information. The City has taken steps to implement the plan that were detailed in the March 2023 Monthly Compliance Report for the SWP No. 588 Landfill.

8.3 MONTHLY COMPLIANCE REPORTS

As described in the introduction this report is intended to provide comprehensive updates regarding progress towards completion of each item described in Appendix A of the Consent Decree between the City and VDEQ,

8.4 COMMUNITY OUTREACH PROGRAM

The City's consultant leading community outreach, McGuireWoods Consulting, described the actions taken as part of their community outreach efforts. For the month of December, those actions include:

- **Ongoing basis**: Nine posts on the BristalVALandfill.org site and the existing City of Bristol Landfill Notifications and Information page covering important updates including:
  - Progress updates related to remediation efforts at the quarry landfill
  - Included updates as well as related to steps towards closing landfill 498 in order to make sure residents are aware activities are occurring on another site in addition to ongoing work at the 588 landfill
  - Public announcement from Bristol, VA about hiring a new Director of Solid Waste
  - Published news articles about the financial aspects of landfill remediation and other relevant news
- **Weekly updates on landing page on Bristolvalandfill.org titled "Air Sampling and Air Monitoring" that includes a summary of the air sampling and monitoring being conducted by Bristol, VA around the quarry landfill.**
  - Website now includes twenty-seven weekly monitoring reports starting with May 15th, 2023 and running through December 17th of 2023
- **E-mail communication sent to the list of members of the public signed up through the Bristol, VA website, the BristolVALandfill.org website, or at subsequent Open Houses to receive information via e-mail**
  - E-mails sent included weekly remediation progress update and links to website updates and latest news articles on the following days:
    - Friday, December 1st
    - Friday, December 8th
    - Monday, December 18th

Appendix A

Surface Emissions Monitoring Summary Letters

SCS ENGINEERS
Environmental Consulting & Contracting

December 6, 2023
File No. 02218208.04

Mr. Jonathan Chapman
Enforcement Specialist
Virginia Department of Environmental Quality
SW Regional Office
355-A Deadmore Street
Abingdon, VA 24210

Subject: Weekly Surface Emissions Monitoring Event – December 1, 2023
Bristol Integrated Solid Waste Facility – Bristol, Virginia

Dear Mr. Chapman:

On behalf of the City of Bristol (City), SCS Engineers (SCS), is pleased to submit the results of the Weekly Surface Emissions Monitoring event performed at the Bristol Integrated Solid Waste Facility located in Bristol, Virginia on December 1, 2023. This Weekly Surface Emissions Monitoring (SEM) Event was performed in accordance with Appendix A.1.i of the Consent Decree between the Commonwealth of Virginia and the City of Bristol.

The monitoring generally conforms to the requirements of 40 CFR 63.1960(c) and (d), and 40 CFR 60.36f(c) and (d), and 40 CFR 60, Appendix A, Method 21. The landfill gas (LFG) collection system is required to operate such that the methane concentration is less than 500 ppm above background at the landfill surface.

The monitoring route includes the entire waste footprint of the Permit No. 588 Landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at 23 surface cover penetrations within the waste footprint, including at the temperature probes. Note that due to an instrument error, sampling was unable to be performed at several of the cover penetrations during this monitoring event. The approximate monitoring route and sampling locations are presented in the attached Drawing.

At the time of monitoring, all areas of the Permit No. 588 Landfill footprint are subject to regulatory monitoring based on the regulatory time schedule stipulated in 40 CFR 63.1960(b) and 40 CFR 60.36f(b). The Permit No. 588 Landfill has a surface area of approximately 17.3 acres. Therefore, the minimum number of sampling points to cover the appropriate portion of the landfill footprint, utilizing a 30-meter grid interval, is approximately 82 (4.75 points per acre). A summary of the results of the surface emissions monitoring is provided in Table 1.

15521 Midlothian Turnpike, Suite 305, Midlothian, VA 23113 | 804-378-7440

Table 1. Summary of Surface Emissions Monitoring

Description	**Quantity**
Number of Points Sampled	123
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations[1]	23
Number of Exceedances	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

Note: Sampling was unable to performed at several Surface Cover Penetrations due to an instrument error

REMONITORING OF ONGOING EXCEEDANCES

In accordance with 40 CFR 63.1960(c)(4)(ii) and 40 CFR 60.36f(c)(4)(ii), corrective actions and a remonitoring event are to be performed within 10 days of the initial exceedance. In accordance with 40 CFR 63.1960(c)(4)(iii) and 40 CFR 60.36f(c)(4)(iii) additional corrective actions and a second 10-day retest are to be performed if the initial 10-day retest indicates methane values greater than the regulatory threshold. The Facility performs corrective actions, as necessary, including wellhead vacuum adjustments, the installation of well-bore seals, and addition of soil cover prior to weekly monitoring events at locations that previously exhibited elevated methane concentrations.

In accordance with 40 CFR 63.1960(c)(4)(v) and 40 CFR 60.36f(c)(4)(v) a new well or collection device must be installed or an alternate remedy must be submitted within 120 days at locations that continue to exhibit methane concentrations above the regulatory threshold for two consecutive re-tests.

A summary of ongoing exceedance points is provided in Table 2.

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	12/1/23 Event	12/1/23 Event Result[1]	Comments
EW-90	8/11/23	N/A	NM	Subject to 40 CFR 63.1960(c)(4)(v)
EW-66	10/30/23	30-Day Retest	NM	Not monitored; Requires 30-Day Retest
EW-87	11/15/23	N/A	NM	Not monitored; Requires 30-Day Retest
EW-88	11/15/23	N/A	NM	Not monitored; Requires 30-Day Retest
EW-39	11/20/23	10-Day Retest	NM	Not monitored; Requires 10-Day Retest
EW-76	11/20/23	10-Day Retest	Passed	Requires 30-Day Retest

Note: NM = Not Monitored due to Instrument Error

If you have questions or require additional information, please contact either of the undersigned.

Sincerely,

Wylie Hicklin

Lucas S. Nachman

Wylie R Hicklin
Associate Staff Professional
SCS Engineers

Lucas S. Nachman
Senior Project Professional
SCS Engineers

LSN/WRH/cjw

cc: Randall Eads, City of Bristol
Mike Martin, City of Bristol
Joey Lamie, City of Bristol
Jonathan Hayes, City of Bristol
Jake Chandler, City of Bristol
Susan “Tracey” Blalock, VDEQ

Encl. Surface Emissions Monitoring Results
Bristol SEM Route Drawing

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 1, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	GPS Coordinates Long.	Comments
1	4.0 PPM	OK			Start Serpentine Route
2	0.0 PPM	OK			
3	0.2 PPM	OK			
4	0.1 PPM	OK			
5	0.1 PPM	OK			
6	0.1 PPM	OK			
7	0.2 PPM	OK			
8	0.1 PPM	OK			
9	6.8 PPM	OK			
10	7.5 PPM	OK			
11	12.3 PPM	OK			
12	9.7 PPM	OK			
13	7.9 PPM	OK			
14	9.0 PPM	OK			
15	8.2 PPM	OK			
16	11.7 PPM	OK			
17	11.7 PPM	OK			
18	12.5 PPM	OK			
19	8.4 PPM	OK			
20	12.0 PPM	OK			
21	8.6 PPM	OK			
22	8.5 PPM	OK			
23	8.7 PPM	OK			
24	7.2 PPM	OK			
25	9.7 PPM	OK			
26	8.8 PPM	OK			
27	9.0 PPM	OK			
28	4.9 PPM	OK			
29	3.3 PPM	OK			
30	9.2 PPM	OK			
31	8.6 PPM	OK			
32	5.3 PPM	OK			
33	18.8 PPM	OK			
34	38.7 PPM	OK			
35	64.1 PPM	OK			
36	77.2 PPM	OK			
37	42.0 PPM	OK			
38	31.6 PPM	OK			
39	6.5 PPM	OK			
40	3.9 PPM	OK			
41	8.6 PPM	OK			
42	3.2 PPM	OK			
43	1.4 PPM	OK			
44	2.0 PPM	OK			
45	4.0 PPM	OK			
46	2.8 PPM	OK			
47	2.2 PPM	OK			
48	1.3 PPM	OK			
49	1.8 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 1, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates		Comments
			Lat.	Long.	
50	0.5 PPM	OK			
51	0.1 PPM	OK			
52	0.2 PPM	OK			
53	0.4 PPM	OK			
54	0.4 PPM	OK			
55	0.9 PPM	OK			
56	4.1 PPM	OK			
57	1.6 PPM	OK			
58	1.7 PPM	OK			
59	2.8 PPM	OK			
60	41.5 PPM	OK			
61	10.1 PPM	OK			
62	14.1 PPM	OK			
63	16.5 PPM	OK			
64	2.2 PPM	OK			
65	244.0 PPM	OK			
66	3.1 PPM	OK			
67	2.3 PPM	OK			
68	4.1 PPM	OK			
69	13.1 PPM	OK			
70	12.7 PPM	OK			
71	9.6 PPM	OK			
72	151.0 PPM	OK			
73	298.0 PPM	OK			
74	197.0 PPM	OK			
75	106.0 PPM	OK			
76	157.0 PPM	OK			
77	98.0 PPM	OK			
78	147.0 PPM	OK			
79	11.1 PPM	OK			
80	26.7 PPM	OK			
81	72.1 PPM	OK			
82	40.1 PPM	OK			
83	45.1 PPM	OK			
84	13.0 PPM	OK			
85	10.6 PPM	OK			
86	5.5 PPM	OK			
87	3.9 PPM	OK			
88	4.2 PPM	OK			
89	30.8 PPM	OK			
90	7.5 PPM	OK			
91	11.8 PPM	OK			
92	11.5 PPM	OK			
93	11.2 PPM	OK			
94	9.8 PPM	OK			
95	9.7 PPM	OK			
96	1.1 PPM	OK			
97	1.3 PPM	OK			
98	1.4 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 1, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
99	0.7 PPM	OK			
100	0.8 PPM	OK			End Serpentine Route
101	0.4 PPM	OK			EW-69
102	0.5 PPM	OK			EW-71
103	1.2 PPM	OK			EW-32R
104	4.0 PPM	OK			EW-62
105	1.2 PPM	OK			EW-74
106	3.5 PPM	OK			EW-29R
107	480.0 PPM	OK			EW-75
108	62.2 PPM	OK			EW-33B
109	187.0 PPM	OK			EW-63
110	4.1 PPM	OK			EW-42
111	102.0 PPM	OK			EW-76
112	251.0 PPM	OK			TP-9
113	74.1 PPM	OK			EW-73
114	23.8 PPM	OK			EW-70
115	0.7 PPM	OK			EW-64
116	16.0 PPM	OK			EW-79
117	7.9 PPM	OK			EW-77
118	7.2 PPM	OK			TP-8
119	42.3 PPM	OK			EW-81
120	39.4 PPM	OK			EW-80
121	38.3 PPM	OK			EW-84
122	51.0 PPM	OK			EW-83
123	38.8 PPM	OK			EW-65

Number of locations sampled:	123
Number of exceedance locations:	0

NOTES:

Points 1 through 100 represent serpentine SEM route.

Points 101 through 123 represent SEM at Pipe Penetrations

Due to an instrument error, sampling was unable to be performed at several Pipe Penetrations

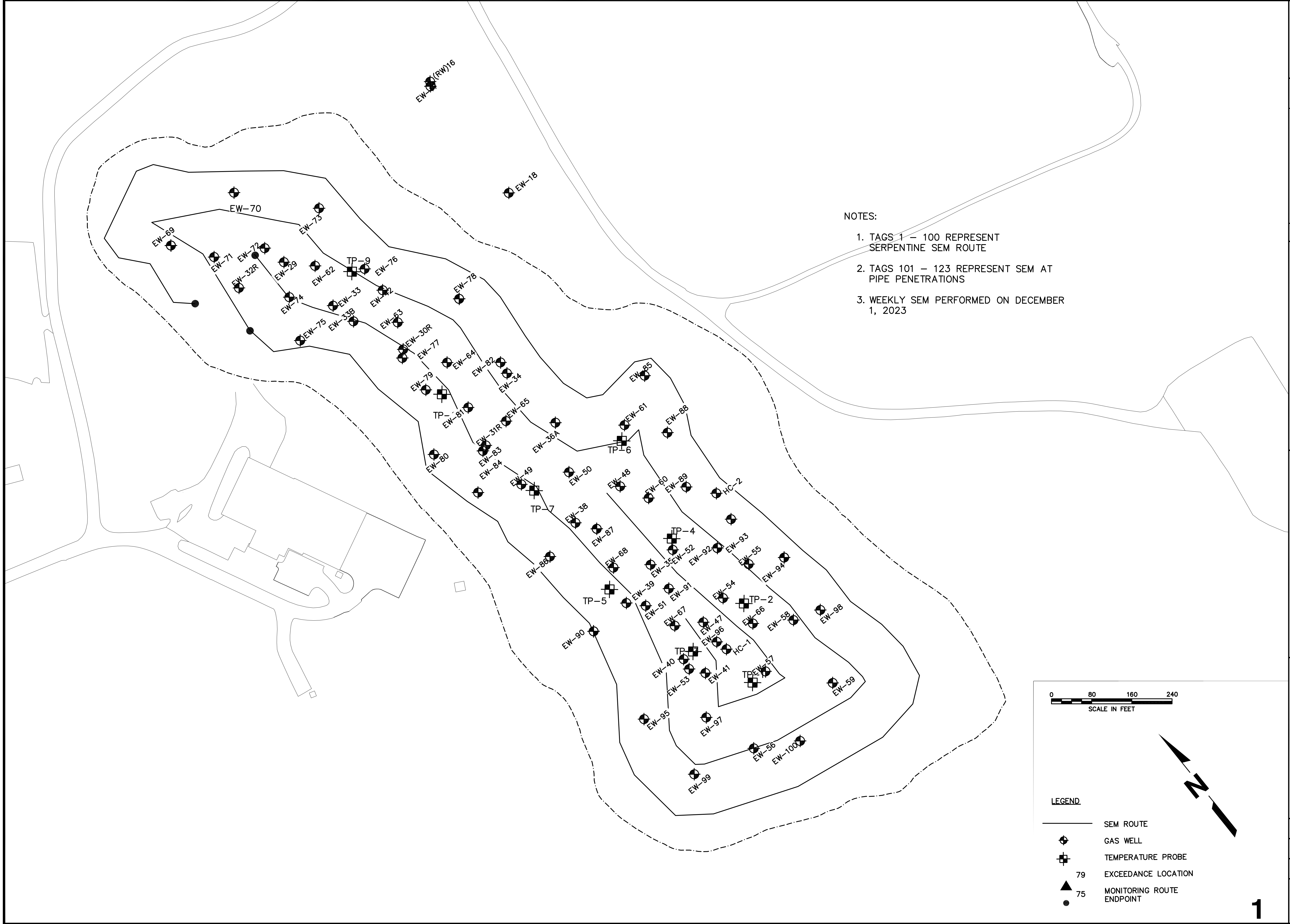
Weather Conditions: Overcast and rainy, 48˚F Wind: 0 MPH

Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm

12/1/2023	8:24	ZERO	0.0	PPM
12/1/2023	8:27	SPAN	512.0	PPM

Background Reading:

12/1/2023	11:02	Upwind	0.0	PPM
12/1/2023	11:18	Downwind	2.0	PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 123 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON DECEMBER 1, 2023

LEGEND

—	SEM ROUTE
⊕	GAS WELL
⊞	TEMPERATURE PROBE
79	EXCEEDANCE LOCATION
▲ 75	MONITORING ROUTE ENDPOINT
●	

NO.	REVISION	DATE
△		
△		
△		
△		
△		
△		

SHEET TITLE
WEEKLY SEM ROUTE

PROJECT TITLE
SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113
PH. (804) 378-7440 FAX. (804) 378-7433

PROJ. NO. 02218208.04	DWN. BY: LSN	Q/A RVW BY:
DSN. BY: LSN	CHK. BY: DBK	APP. BY:

FILE: 02218208.04

DATE: 12/1/23

SCALE: AS SHOWN

DRAWING NO.
1
of 1

SCS ENGINEERS

Environmental Consulting & Contracting

December 13, 2023
File No. 02218208.04

Mr. Jonathan Chapman
Enforcement Specialist
Virginia Department of Environmental Quality
SW Regional Office
355-A Deadmore Street
Abingdon, VA 24210

Subject: Weekly Surface Emissions Monitoring Event – December 7, 2023
Bristol Integrated Solid Waste Facility – Bristol, Virginia

Dear Mr. Chapman:

On behalf of the City of Bristol (City), SCS Engineers (SCS), is pleased to submit the results of the Weekly Surface Emissions Monitoring event performed at the Bristol Integrated Solid Waste Facility located in Bristol, Virginia on December 7, 2023. This Weekly Surface Emissions Monitoring (SEM) Event was performed in accordance with Appendix A.1.i of the Consent Decree between the Commonwealth of Virginia and the City of Bristol.

The monitoring generally conforms to the requirements of 40 CFR 63.1960(c) and (d), and 40 CFR 60.36f(c) and (d), and 40 CFR 60, Appendix A, Method 21. The landfill gas (LFG) collection system is required to operate such that the methane concentration is less than 500 ppm above background at the landfill surface.

The monitoring route includes the entire waste footprint of the Permit No. 588 Landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at all surface cover penetrations within the waste footprint, including at the temperature probes and the newly installed and connected gas extraction wells. The approximate monitoring route and sampling locations are presented in the attached Drawing.

At the time of monitoring, all areas of the Permit No. 588 Landfill footprint are subject to regulatory monitoring based on the regulatory time schedule stipulated in 40 CFR 63.1960(b) and 40 CFR 60.36f(b). The Permit No. 588 Landfill has a surface area of approximately 17.3 acres. Therefore, the minimum number of sampling points to cover the appropriate portion of the landfill footprint, utilizing a 30-meter grid interval, is approximately 82 (4.75 points per acre). A summary of the results of the surface emissions monitoring is provided in Table 1.

Table 1. Summary of Surface Emissions Monitoring

Description	**Quantity**
Number of Points Sampled	172
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	72
Number of Exceedances	6
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	6

REMONITORING OF ONGOING EXCEEDANCES

In accordance with 40 CFR 63.1960(c)(4)(ii) and 40 CFR 60.36f(c)(4)(ii), corrective actions and a remonitoring event are to be performed within 10 days of the initial exceedance. In accordance with 40 CFR 63.1960(c)(4)(iii) and 40 CFR 60.36f(c)(4)(iii) additional corrective actions and a second 10-day retest are to be performed if the initial 10-day retest indicates methane values greater than the regulatory threshold. The Facility performs corrective actions, as necessary, including wellhead vacuum adjustments, the installation of well-bore seals, and addition of soil cover prior to weekly monitoring events at locations that previously exhibited elevated methane concentrations.

In accordance with 40 CFR 63.1960(c)(4)(v) and 40 CFR 60.36f(c)(4)(v) a new well or collection device must be installed or an alternate remedy must be submitted within 120 days at locations that continue to exhibit methane concentrations above the regulatory threshold for two consecutive re-tests.

A summary of ongoing exceedance points is provided in Table 2.

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	12/7/23 Event	12/7/23 Event Result	Comments
EW-66	10/30/23	30-Day Retest	Passed	Exceedance Resolved
EW-87	11/15/23	N/A	Failed	Requires 2nd 10-Day Retest
EW-88	11/15/23	N/A	Passed	Requires 30-Day Retest
EW-39	11/20/23	10-Day Retest	Passed	Requires 30-Day Retest
EW-76	11/20/23	N/A	Passed	Requires 30-Day Retest

If you have questions or require additional information, please contact either of the undersigned.

Sincerely,

Wylie Hicklin

Lucas S. Nachman

Wylie R Hicklin
Associate Staff Professional
SCS Engineers

Lucas S. Nachman
Senior Project Professional
SCS Engineers

LSN/WRH/cjw

cc: Randall Eads, City of Bristol
Mike Martin, City of Bristol
Joey Lamie, City of Bristol
Jonathan Hayes, City of Bristol
Jake Chandler, City of Bristol
Susan “Tracey” Blalock, VDEQ

Encl. Surface Emissions Monitoring Results
Bristol SEM Route Drawing

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 7, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

	Methane		GPS Coordinates		
ID #	Concentration	Compliance	Lat.	Long.	Comments
1	1.7 PPM	OK			Start Serpentine Route
2	4.8 PPM	OK			
3	1.5 PPM	OK			
4	1.3 PPM	OK			
5	1.3 PPM	OK			
6	1.4 PPM	OK			
7	1.5 PPM	OK			
8	1.3 PPM	OK			
9	1.4 PPM	OK			
10	1.2 PPM	OK			
11	1.2 PPM	OK			
12	1.2 PPM	OK			
13	4.0 PPM	OK			
14	1.6 PPM	OK			
15	1.6 PPM	OK			
16	1.7 PPM	OK			
17	2.8 PPM	OK			
18	3.2 PPM	OK			
19	11.6 PPM	OK			
20	1.5 PPM	OK			
21	1.3 PPM	OK			
22	1.3 PPM	OK			
23	1.2 PPM	OK			
24	1.1 PPM	OK			
25	1.1 PPM	OK			
26	4.1 PPM	OK			
27	4.4 PPM	OK			
28	5.6 PPM	OK			
29	41.4 PPM	OK			
30	76.2 PPM	OK			
31	15.7 PPM	OK			
32	84.1 PPM	OK			
33	109.0 PPM	OK			
34	113.0 PPM	OK			
35	11.1 PPM	OK			
36	75.6 PPM	OK			
37	47.2 PPM	OK			
38	5.2 PPM	OK			
39	4.3 PPM	OK			
40	5.5 PPM	OK			
41	3.7 PPM	OK			
42	6.5 PPM	OK			
43	2.5 PPM	OK			
44	2.0 PPM	OK			
45	2.0 PPM	OK			
46	1.4 PPM	OK			
47	1.3 PPM	OK			
48	2.0 PPM	OK			
49	1.5 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 7, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
50	2.7 PPM	OK			
51	1.9 PPM	OK			
52	11.8 PPM	OK			
53	1.8 PPM	OK			
54	4.3 PPM	OK			
55	101.0 PPM	OK			
56	41.6 PPM	OK			
57	1.7 PPM	OK			
58	4.2 PPM	OK			
59	1.8 PPM	OK			
60	1.4 PPM	OK			
61	2.8 PPM	OK			
62	9.2 PPM	OK			
63	2.2 PPM	OK			
64	1.2 PPM	OK			
65	1.4 PPM	OK			
66	26.1 PPM	OK			
67	3.5 PPM	OK			
68	16.7 PPM	OK			
69	22.9 PPM	OK			
70	23.1 PPM	OK			
71	96.3 PPM	OK			
72	266.0 PPM	OK			
73	342.0 PPM	OK			
74	3.5 PPM	OK			
75	5.5 PPM	OK			
76	40.4 PPM	OK			
77	15.6 PPM	OK			
78	13.1 PPM	OK			
79	68.9 PPM	OK			
80	4.0 PPM	OK			
81	3.2 PPM	OK			
82	2.9 PPM	OK			
83	1.6 PPM	OK			
84	1.4 PPM	OK			
85	1.4 PPM	OK			
86	1.5 PPM	OK			
87	1.6 PPM	OK			
88	1.1 PPM	OK			
89	0.7 PPM	OK			
90	0.9 PPM	OK			
91	1.4 PPM	OK			
92	0.9 PPM	OK			
93	1.1 PPM	OK			
94	1.0 PPM	OK			
95	0.9 PPM	OK			
96	0.8 PPM	OK			
97	0.8 PPM	OK			
98	0.8 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 7, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
99	0.7 PPM	OK			
100	0.7 PPM	OK			End Serpentine Route
101	0.8 PPM	OK			EW-69
102	1.9 PPM	OK			EW-71
103	0.8 PPM	OK			EW-32R
104	0.9 PPM	OK			EW-72
105	0.7 PPM	OK			EW-29R
106	0.7 PPM	OK			EW-74
107	1.4 PPM	OK			EW-62
108	1.3 PPM	OK			EW-75
109	0.6 PPM	OK			EW-33B
110	0.6 PPM	OK			EW-63
111	1.3 PPM	OK			EW-77
112	2.2 PPM	OK			EW-64
113	0.5 PPM	OK			EW-79
114	0.6 PPM	OK			TP-8
115	1.3 PPM	OK			EW-81
116	0.8 PPM	OK			EW-42
117	0.5 PPM	OK			EW-80
118	1.1 PPM	OK			EW-84
119	2.0 PPM	OK			EW-83
120	7.9 PPM	OK			EW-65
121	4.8 PPM	OK			EW-50
122	438.0 PPM	OK			TP-7
123	1.4 PPM	OK			EW-49
124	248.0 PPM	OK			EW-86
125	68.6 PPM	OK			EW-38
126	1617.0 PPM	HIGH_ALRM	36.59934	-82.14782	EW-87
127	25.8 PPM	OK			EW-48
128	9.8 PPM	OK			EW-60
129	7.3 PPM	OK			TP-4
130	224.0 PPM	OK			EW-52
131	310.0 PPM	OK			EW-35
132	4.7 PPM	OK			TP-5
133	156.0 PPM	OK			EW-39
134	17.8 PPM	OK			EW-68
135	28.7 PPM	OK			EW-90
136	801.0 PPM	HIGH_ALRM	36.59884	-82.14787	EW-51
137	26.7 PPM	OK			EW-91
138	4124.0 PPM	HIGH_ALRM	36.59866	-82.14779	EW-67
139	14.5 PPM	OK			TP-3
140	13.3 PPM	OK			EW-53
141	153.0 PPM	OK			EW-41
142	10.3 PPM	OK			EW-96
143	166.0 PPM	OK			EW-47
144	34.7 PPM	OK			EW-54
145	2.5 PPM	OK			TP-2
146	7.3 PPM	OK			EW-55

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 7, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
147	21.3 PPM	OK			EW-92
148	112.0 PPM	OK			EW-95
149	1715.0 PPM	HIGH_ALRM	36.59816	-82.14799	EW-97
150	2188.0 PPM	HIGH_ALRM	36.59795	-82.14829	EW-99
151	125.0 PPM	OK			EW-56
152	22.0 PPM	OK			EW-100
153	7.1 PPM	OK			EW-59
154	11.9 PPM	OK			TP-1
155	55.2 PPM	OK			EW-57
156	48.0 PPM	OK			EW-66
157	15.8 PPM	OK			EW-58
158	1395.0 PPM	HIGH_ALRM	36.59826	-82.14693	EW-98
159	27.4 PPM	OK			EW-94
160	3.0 PPM	OK			EW-93
161	1.6 PPM	OK			EW-89
162	155.0 PPM	OK			EW-88
163	1.5 PPM	OK			EW-85
164	5.5 PPM	OK			EW-61
165	2.6 PPM	OK			TP-6
166	28.4 PPM	OK			EW-36A
167	274.0 PPM	OK			EW-82
168	3.7 PPM	OK			EW-78
169	29.7 PPM	OK			EW-76
170	198.0 PPM	OK			TP-9
171	13.8 PPM	OK			EW-73
172	0.3 PPM	OK			EW-70

Number of locations sampled:	172
Number of exceedance locations:	6

NOTES:

Points 1 through 100 represent serpentine SEM route.
Points 101 through 172 represent SEM at Pipe Penetrations
Weather Conditions: Sunny, 44°F Wind: E 10 MPH

Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm

12/7/2023	11:09	ZERO	0.0	PPM
12/7/2023	11:11	SPAN	499.0	PPM

Background Reading:

12/7/2023	11:11	Upwind	1.7	PPM
12/7/2023	11:20	Downwind	1.6	PPM

NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 172 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON DECEMBER 7, 2023

LEGEND

—	SEM ROUTE
⊕	GAS WELL
⊞	TEMPERATURE PROBE
79	EXCEEDANCE LOCATION
▲ 75	MONITORING ROUTE
●	ENDPOINT

NO.	REVISION	DATE
△		
△		
△		
△		
△		
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SHEET TITLE

WEEKLY SEM ROUTE

PROJECT TITLE

SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

CLIENT

CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113
PH. (804) 378-7440 FAX. (804) 378-7433

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APP. BY:

FILE: 02218208.04
DATE: 12/7/23
SCALE: AS SHOWN
DRAWING NO.

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of 1

SCS ENGINEERS

Environmental Consulting & Contracting

December 27, 2023
File No. 02218208.04

Mr. Jonathan Chapman
Enforcement Specialist
Virginia Department of Environmental Quality
SW Regional Office
355-A Deadmore Street
Abingdon, VA 24210

Subject: Weekly Surface Emissions Monitoring Event – December 21, 2023
Bristol Integrated Solid Waste Facility – Bristol, Virginia

Dear Mr. Chapman:

On behalf of the City of Bristol (City), SCS Engineers (SCS), is pleased to submit the results of the Weekly Surface Emissions Monitoring event performed at the Bristol Integrated Solid Waste Facility located in Bristol, Virginia on December 21, 2023. This Weekly Surface Emissions Monitoring (SEM) Event was performed in accordance with Appendix A.1.i of the Consent Decree between the Commonwealth of Virginia and the City of Bristol.

The monitoring generally conforms to the requirements of 40 CFR 63.1960(c) and (d), and 40 CFR 60.36f(c) and (d), and 40 CFR 60, Appendix A, Method 21. The landfill gas (LFG) collection system is required to operate such that the methane concentration is less than 500 ppm above background at the landfill surface.

The monitoring route includes the entire waste footprint of the Permit No. 588 Landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at all surface cover penetrations within the waste footprint, including at the temperature probes and the newly installed and connected gas extraction wells. The approximate monitoring route and sampling locations are presented in the attached Drawing.

At the time of monitoring, all areas of the Permit No. 588 Landfill footprint are subject to regulatory monitoring based on the regulatory time schedule stipulated in 40 CFR 63.1960(b) and 40 CFR 60.36f(b). The Permit No. 588 Landfill has a surface area of approximately 17.3 acres. Therefore, the minimum number of sampling points to cover the appropriate portion of the landfill footprint, utilizing a 30-meter grid interval, is approximately 82 (4.75 points per acre). A summary of the results of the surface emissions monitoring is provided in Table 1.

Table 1. Summary of Surface Emissions Monitoring

Description	Quantity
Number of Points Sampled	172
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	72
Number of Exceedances	5
Number of Serpentine Exceedances	1
Number of Pipe Penetration Exceedances	4

REMONITORING OF ONGOING EXCEEDANCES

In accordance with 40 CFR 63.1960(c)(4)(ii) and 40 CFR 60.36f(c)(4)(ii), corrective actions and a remonitoring event are to be performed within 10 days of the initial exceedance. In accordance with 40 CFR 63.1960(c)(4)(iii) and 40 CFR 60.36f(c)(4)(iii) additional corrective actions and a second 10-day retest are to be performed if the initial 10-day retest indicates methane values greater than the regulatory threshold. The Facility performs corrective actions, as necessary, including wellhead vacuum adjustments, the installation of well-bore seals, and addition of soil cover prior to weekly monitoring events at locations that previously exhibited elevated methane concentrations.

In accordance with 40 CFR 63.1960(c)(4)(v) and 40 CFR 60.36f(c)(4)(v) a new well or collection device must be installed or an alternate remedy must be submitted within 120 days at locations that continue to exhibit methane concentrations above the regulatory threshold for two consecutive re-tests.

A summary of ongoing exceedance points is provided in Table 2.

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	12/21/23 Event	12/21/23 Event Result	Comments
EW-39	11/20/23	30-Day Retest	Passed	Exceedance Resolved
EW-76	11/20/23	30-Day Retest	Passed	Exceedance Resolved
EW-51	12/7/23	N/A	Passed	Requires 30-Day Retest
EW-67	12/7/23	N/A	Failed	Requires 2nd 10-Day Retest
EW-97	12/7/23	N/A	Passed	Requires 30-Day Retest
EW-98	12/7/23	N/A	Failed	Requires 2nd 10-Day Retest
EW-99	12/7/23	N/A	Passed	Requires 30-Day Retest
EW-90	12/14/23	10-Day Retest	Passed	Requires 30-Day Retest

If you have questions or require additional information, please contact either of the undersigned.

Sincerely,

Wylie Hicklin

Lucas S. Nachman

Wylie R Hicklin
Associate Staff Professional
SCS Engineers

Lucas S. Nachman
Senior Project Professional
SCS Engineers

LSN/WRH/cjw

cc: Randall Eads, City of Bristol
Jonathan Hayes, City of Bristol
Jake Chandler, City of Bristol
Susan “Tracey” Blalock, VDEQ

Encl. Surface Emissions Monitoring Results
Bristol SEM Route Drawing

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 21, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	6.0 PPM	OK			Start Serpentine Route
2	3.2 PPM	OK			
3	4.3 PPM	OK			
4	3.6 PPM	OK			
5	3.7 PPM	OK			
6	3.6 PPM	OK			
7	2.9 PPM	OK			
8	3.7 PPM	OK			
9	3.5 PPM	OK			
10	4.9 PPM	OK			
11	6.9 PPM	OK			
12	7.0 PPM	OK			
13	5.2 PPM	OK			
14	4.8 PPM	OK			
15	6.1 PPM	OK			
16	7.0 PPM	OK			
17	30.5 PPM	OK			
18	39.4 PPM	OK			
19	70.2 PPM	OK			
20	353.0 PPM	OK			
21	10.4 PPM	OK			
22	10.2 PPM	OK			
23	10.4 PPM	OK			
24	10.0 PPM	OK			
25	36.5 PPM	OK			
26	7.9 PPM	OK			
27	34.0 PPM	OK			
28	61.1 PPM	OK			
29	182.0 PPM	OK			
30	7.9 PPM	OK			
31	78.8 PPM	OK			
32	262.0 PPM	OK			
33	231.0 PPM	OK			
34	16.3 PPM	OK			
35	7.6 PPM	OK			
36	14.7 PPM	OK			
37	10.8 PPM	OK			
38	6.8 PPM	OK			
39	5.5 PPM	OK			
40	7.8 PPM	OK			
41	4.9 PPM	OK			
42	3.7 PPM	OK			
43	1.9 PPM	OK			
44	2.2 PPM	OK			
45	4.5 PPM	OK			
46	3.8 PPM	OK			
47	3.1 PPM	OK			
48	3.6 PPM	OK			
49	3.5 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 21, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
50	3.5 PPM	OK			
51	2.6 PPM	OK			
52	3.4 PPM	OK			
53	3.7 PPM	OK			
54	5.2 PPM	OK			
55	3.1 PPM	OK			
56	2.4 PPM	OK			
57	1.9 PPM	OK			
58	3.2 PPM	OK			
59	12.4 PPM	OK			
60	4.1 PPM	OK			
61	7.6 PPM	OK			
62	11.0 PPM	OK			
63	3.7 PPM	OK			
64	5.2 PPM	OK			
65	6.6 PPM	OK			
66	58.9 PPM	OK			
67	63.6 PPM	OK			
68	1.4 PPM	OK			
69	1.3 PPM	OK			
70	1.4 PPM	OK			
71	91.9 PPM	OK			
72	25.7 PPM	OK			
73	3.5 PPM	OK			
74	3274.0 PPM	HIGH_ALRM	36.59823	-82.14790	
75	36.1 PPM	OK			
76	143.0 PPM	OK			
77	4.0 PPM	OK			
78	46.9 PPM	OK			
79	13.2 PPM	OK			
80	14.8 PPM	OK			
81	2.0 PPM	OK			
82	2.0 PPM	OK			
83	94.0 PPM	OK			
84	13.4 PPM	OK			
85	3.3 PPM	OK			
86	2.9 PPM	OK			
87	2.3 PPM	OK			
88	2.3 PPM	OK			
89	1.9 PPM	OK			
90	2.0 PPM	OK			
91	4.0 PPM	OK			
92	35.4 PPM	OK			
93	54.1 PPM	OK			
94	71.9 PPM	OK			
95	48.8 PPM	OK			
96	5.2 PPM	OK			
97	5.1 PPM	OK			
98	6.0 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 21, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
99	64.1 PPM	OK			
100	5.8 PPM	OK			End Serpentine Route
101	149.0 PPM	OK			EW-35
102	286.0 PPM	OK			EW-52
103	159.0 PPM	OK			TP-4
104	302.0 PPM	OK			EW-60
105	12.6 PPM	OK			EW-48
106	6.1 PPM	OK			TP-6
107	5.9 PPM	OK			EW-61
108	7.6 PPM	OK			EW-50
109	10600.0 PPM	HIGH_ALRM	36.59866	-82.14779	EW-67
110	20.8 PPM	OK			EW-47
111	4.8 PPM	OK			EW-54
112	24.0 PPM	OK			EW-55
113	15.1 PPM	OK			EW-92
114	6.9 PPM	OK			EW-91
115	11.1 PPM	OK			EW-96
116	10.4 PPM	OK			TP-2
117	6.6 PPM	OK			EW-66
118	14.6 PPM	OK			EW-58
119	77.4 PPM	OK			EW-57
120	64.4 PPM	OK			TP-1
121	23.6 PPM	OK			EW-59
122	11.1 PPM	OK			EW-100
123	267.0 PPM	OK			EW-56
124	106.0 PPM	OK			EW-97
125	25.3 PPM	OK			EW-41
126	78.0 PPM	OK			EW-53
127	6.5 PPM	OK			TP-3
128	6.1 PPM	OK			EW-51
129	8.8 PPM	OK			EW-39
130	5.0 PPM	OK			TP-5
131	279.0 PPM	OK			EW-68
132	2729.0 PPM	HIGH_ALRM	36.59934	-82.14782	EW-87
133	347.0 PPM	OK			EW-38
134	163.0 PPM	OK			TP-7
135	3.0 PPM	OK			EW-49
136	2.5 PPM	OK			EW-83
137	1.7 PPM	OK			EW-65
138	3.3 PPM	OK			EW-81
139	1.0 PPM	OK			TP-8
140	0.9 PPM	OK			EW-64
141	3.1 PPM	OK			EW-63
142	6.8 PPM	OK			EW-42
143	23.1 PPM	OK			EW-76
144	297.0 PPM	OK			TP-9
145	2.5 PPM	OK			EW-62
146	1.0 PPM	OK			EW-29R

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 21, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
147	53.5 PPM	OK			EW-74
148	9.0 PPM	OK			EW-32R
149	1.0 PPM	OK			EW-69
150	1.2 PPM	OK			EW-71
151	74.2 PPM	OK			EW-72
152	0.8 PPM	OK			EW-70
153	407.0 PPM	OK			EW-73
154	1.0 PPM	OK			EW-78
155	1.8 PPM	OK			EW-82
156	7.4 PPM	OK			EW-36A
157	5.3 PPM	OK			EW-85
158	1.3 PPM	OK			EW-88
159	10.3 PPM	OK			EW-89
160	3.3 PPM	OK			EW-93
161	67.1 PPM	OK			EW-94
162	2017.0 PPM	HIGH_ALRM	36.59842	-82.14692	EW-98
163	190.0 PPM	OK			EW-99
164	1052.0 PPM	HIGH_ALRM	36.59828	-82.14833	EW-95
165	11.4 PPM	OK			EW-90
166	24.1 PPM	OK			EW-86
167	2.0 PPM	OK			EW-84
168	1.4 PPM	OK			EW-80
169	0.9 PPM	OK			EW-79
170	1.0 PPM	OK			EW-77
171	144.0 PPM	OK			EW-33B
172	13.0 PPM	OK			EW-75

Number of locations sampled:	172
Number of exceedance locations:	5

NOTES:

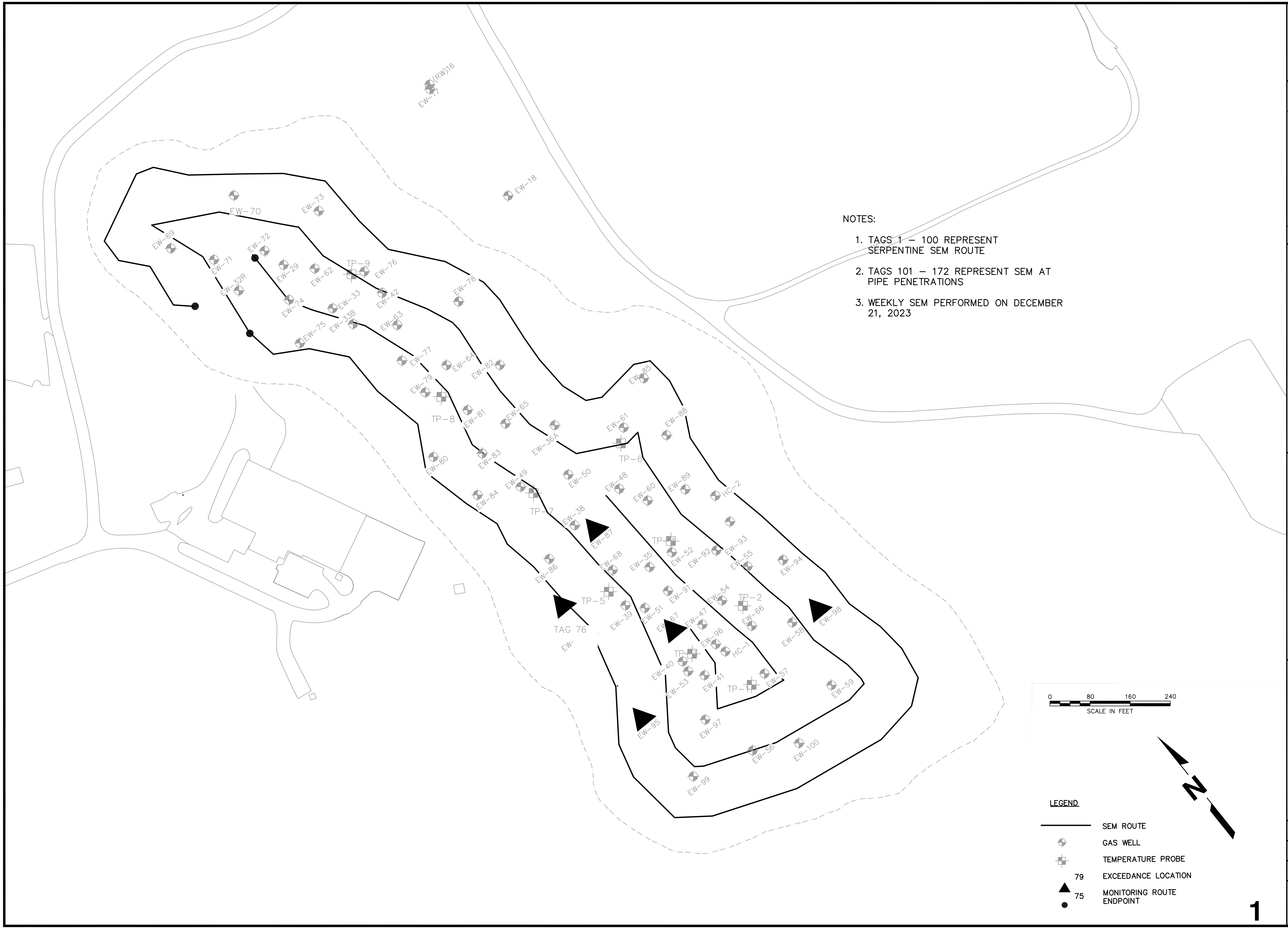
Points 1 through 100 represent serpentine SEM route.
Points 101 through 172 represent SEM at Pipe Penetrations
Weather Conditions: Sunny, 41˚F Wind: None

Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm

12/21/2023	11:22	ZERO	0.0	PPM
12/21/2023	11:27	SPAN	502.0	PPM

Background Reading:

12/21/2023	11:29	Upwind	3.8	PPM
12/21/2023	11:31	Downwind	3.4	PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 172 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON DECEMBER 21, 2023

0 80 160 240
SCALE IN FEET

LEGEND

— SEM ROUTE
⊕ GAS WELL
⊞ TEMPERATURE PROBE
79 EXCEEDANCE LOCATION
▲ 75 MONITORING ROUTE
● ENDPOINT

1

NO.	REVISION	DATE
△		
△		
△		
△		
△		
△		

SHEET TITLE
WEEKLY SEM ROUTE

PROJECT TITLE
SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113
PH. (804) 378-7440 FAX. (804) 378-7433

PROJ. NO. 02218208.04
DSN. BY: LSN
DWN. BY: LSN
CHK. BY: DBK
Q/A RVW BY:
APP. BY:

FILE: 02218208.04
DATE: 12/21/23
SCALE: AS SHOWN
DRAWING NO.
of 1

SCS ENGINEERS

Environmental Consulting & Contracting

December 20, 2023
File No. 02218208.04

Mr. Jonathan Chapman
Enforcement Specialist
Virginia Department of Environmental Quality
SW Regional Office
355-A Deadmore Street
Abingdon, VA 24210

Subject: Weekly Surface Emissions Monitoring Event – December 14, 2023
Bristol Integrated Solid Waste Facility – Bristol, Virginia

Dear Mr. Chapman:

On behalf of the City of Bristol (City), SCS Engineers (SCS), is pleased to submit the results of the Weekly Surface Emissions Monitoring event performed at the Bristol Integrated Solid Waste Facility located in Bristol, Virginia on December 14, 2023. This Weekly Surface Emissions Monitoring (SEM) Event was performed in accordance with Appendix A.1.i of the Consent Decree between the Commonwealth of Virginia and the City of Bristol.

The monitoring generally conforms to the requirements of 40 CFR 63.1960(c) and (d), and 40 CFR 60.36f(c) and (d), and 40 CFR 60, Appendix A, Method 21. The landfill gas (LFG) collection system is required to operate such that the methane concentration is less than 500 ppm above background at the landfill surface.

The monitoring route includes the entire waste footprint of the Permit No. 588 Landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at all surface cover penetrations within the waste footprint, including at the temperature probes and the newly installed and connected gas extraction wells. The approximate monitoring route and sampling locations are presented in the attached Drawing.

At the time of monitoring, all areas of the Permit No. 588 Landfill footprint are subject to regulatory monitoring based on the regulatory time schedule stipulated in 40 CFR 63.1960(b) and 40 CFR 60.36f(b). The Permit No. 588 Landfill has a surface area of approximately 17.3 acres. Therefore, the minimum number of sampling points to cover the appropriate portion of the landfill footprint, utilizing a 30-meter grid interval, is approximately 82 (4.75 points per acre). A summary of the results of the surface emissions monitoring is provided in Table 1.

Table 1. Summary of Surface Emissions Monitoring

Description	**Quantity**
Number of Points Sampled	171
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	71
Number of Exceedances	2
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	2

REMONITORING OF ONGOING EXCEEDANCES

In accordance with 40 CFR 63.1960(c)(4)(ii) and 40 CFR 60.36f(c)(4)(ii), corrective actions and a remonitoring event are to be performed within 10 days of the initial exceedance. In accordance with 40 CFR 63.1960(c)(4)(iii) and 40 CFR 60.36f(c)(4)(iii) additional corrective actions and a second 10-day retest are to be performed if the initial 10-day retest indicates methane values greater than the regulatory threshold. The Facility performs corrective actions, as necessary, including wellhead vacuum adjustments, the installation of well-bore seals, and addition of soil cover prior to weekly monitoring events at locations that previously exhibited elevated methane concentrations.

In accordance with 40 CFR 63.1960(c)(4)(v) and 40 CFR 60.36f(c)(4)(v) a new well or collection device must be installed or an alternate remedy must be submitted within 120 days at locations that continue to exhibit methane concentrations above the regulatory threshold for two consecutive re-tests.

A summary of ongoing exceedance points is provided in Table 2.

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	12/14/23 Event	12/14/23 Event Result	Comments
EW-87	11/15/23	30-Day Retest	Passed	Exceedance Resolved
EW-88	11/15/23	30-Day Retest	Passed	Exceedance Resolved
EW-39	11/20/23	N/A	Passed	Requires 30-Day Retest
EW-76	11/20/23	N/A	Failed	Requires 30-Day Retest
EW-51	12/7/23	10-Day Retest	Passed	Requires 30-Day Retest
EW-67	12/7/23	10-Day Retest	Passed	Requires 30-Day Retest
EW-97	12/7/23	10-Day Retest	Passed	Requires 30-Day Retest
EW-98	12/7/23	10-Day Retest	Passed	Requires 30-Day Retest
EW-99	12/7/23	10-Day Retest	Passed	Requires 30-Day Retest

If you have questions or require additional information, please contact either of the undersigned.

Sincerely,

Wylie Hicklin

Lucas S. Nachman

Wylie R Hicklin
Associate Staff Professional
SCS Engineers

Lucas S. Nachman
Senior Project Professional
SCS Engineers

LSN/WRH/cjw

cc: Randall Eads, City of Bristol
Mike Martin, City of Bristol
Joey Lamie, City of Bristol
Jonathan Hayes, City of Bristol
Jake Chandler, City of Bristol
Susan “Tracey” Blalock, VDEQ

Encl. Surface Emissions Monitoring Results
Bristol SEM Route Drawing

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 14, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	2.6 PPM	OK			Start Serpentine Route
2	7.6 PPM	OK			
3	4.8 PPM	OK			
4	4.9 PPM	OK			
5	4.9 PPM	OK			
6	4.4 PPM	OK			
7	3.8 PPM	OK			
8	3.6 PPM	OK			
9	3.4 PPM	OK			
10	3.5 PPM	OK			
11	4.1 PPM	OK			
12	4.9 PPM	OK			
13	20.7 PPM	OK			
14	3.8 PPM	OK			
15	2.7 PPM	OK			
16	2.5 PPM	OK			
17	11.3 PPM	OK			
18	4.6 PPM	OK			
19	16.3 PPM	OK			
20	7.0 PPM	OK			
21	8.3 PPM	OK			
22	4.1 PPM	OK			
23	4.9 PPM	OK			
24	2.7 PPM	OK			
25	3.1 PPM	OK			
26	6.1 PPM	OK			
27	14.5 PPM	OK			
28	3.8 PPM	OK			
29	28.6 PPM	OK			
30	126.0 PPM	OK			
31	4.4 PPM	OK			
32	5.8 PPM	OK			
33	5.6 PPM	OK			
34	28.0 PPM	OK			
35	13.2 PPM	OK			
36	6.5 PPM	OK			
37	25.1 PPM	OK			
38	5.5 PPM	OK			
39	1.9 PPM	OK			
40	2.4 PPM	OK			
41	1.9 PPM	OK			
42	1.8 PPM	OK			
43	2.1 PPM	OK			
44	1.9 PPM	OK			
45	1.8 PPM	OK			
46	1.9 PPM	OK			
47	1.9 PPM	OK			
48	1.7 PPM	OK			
49	3.0 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 14, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
50	5.1 PPM	OK			
51	2.9 PPM	OK			
52	2.0 PPM	OK			
53	2.1 PPM	OK			
54	1.9 PPM	OK			
55	2.2 PPM	OK			
56	1.7 PPM	OK			
57	1.9 PPM	OK			
58	2.3 PPM	OK			
59	2.6 PPM	OK			
60	6.5 PPM	OK			
61	14.5 PPM	OK			
62	2.7 PPM	OK			
63	27.9 PPM	OK			
64	11.5 PPM	OK			
65	2.8 PPM	OK			
66	6.6 PPM	OK			
67	10.4 PPM	OK			
68	9.2 PPM	OK			
69	34.7 PPM	OK			
70	413.0 PPM	OK			
71	242.0 PPM	OK			
72	256.0 PPM	OK			
73	14.6 PPM	OK			
74	9.4 PPM	OK			
75	12.0 PPM	OK			
76	18.5 PPM	OK			
77	3.3 PPM	OK			
78	40.7 PPM	OK			
79	2.6 PPM	OK			
80	2.7 PPM	OK			
81	8.0 PPM	OK			
82	1.8 PPM	OK			
83	1.5 PPM	OK			
84	1.7 PPM	OK			
85	2.3 PPM	OK			
86	1.7 PPM	OK			
87	1.3 PPM	OK			
88	1.7 PPM	OK			
89	1.7 PPM	OK			
90	1.7 PPM	OK			
91	2.7 PPM	OK			
92	3.1 PPM	OK			
93	421.0 PPM	OK			
94	112.0 PPM	OK			
95	6.1 PPM	OK			
96	1.8 PPM	OK			
97	1.7 PPM	OK			
98	13.4 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 14, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
99	22.3 PPM	OK			
100	9.2 PPM	OK			End Serpentine Route
101	118.0 PPM	OK			EW-35
102	181.0 PPM	OK			EW-52
103	100.0 PPM	OK			TP-4
104	332.0 PPM	OK			EW-60
105	62.5 PPM	OK			EW-48
106	8.0 PPM	OK			TP-6
107	4.4 PPM	OK			EW-61
108	3.9 PPM	OK			EW-50
109	23.8 PPM	OK			EW-67
110	4.8 PPM	OK			EW-47
111	3.2 PPM	OK			EW-54
112	1.7 PPM	OK			EW-55
113	19.7 PPM	OK			EW-92
114	20.2 PPM	OK			EW-91
115	1.5 PPM	OK			EW-96
116	4.9 PPM	OK			TP-2
117	11.5 PPM	OK			EW-66
118	7.5 PPM	OK			EW-58
119	76.9 PPM	OK			EW-57
120	25.0 PPM	OK			TP-1
121	28.4 PPM	OK			EW-59
122	15.4 PPM	OK			EW-100
123	32.9 PPM	OK			EW-56
124	3.6 PPM	OK			EW-97
125	2.3 PPM	OK			EW-41
126	5.1 PPM	OK			EW-53
127	1.8 PPM	OK			TP-3
128	14.3 PPM	OK			EW-51
129	37.3 PPM	OK			EW-39
130	3.5 PPM	OK			TP-5
131	5.1 PPM	OK			EW-68
132	1.7 PPM	OK			EW-87
133	23.3 PPM	OK			EW-38
134	126.0 PPM	OK			TP-7
135	3.8 PPM	OK			EW-49
136	1.6 PPM	OK			EW-65
137	0.9 PPM	OK			EW-81
138	1.1 PPM	OK			TP-8
139	1.1 PPM	OK			EW-64
140	0.7 PPM	OK			EW-63
141	0.7 PPM	OK			EW-42
142	1584.0 PPM	HIGH_ALRM	36.60124	-82.14803	EW-76
143	93.7 PPM	OK			TP-9
144	0.8 PPM	OK			EW-62
145	0.8 PPM	OK			EW-29R
146	0.6 PPM	OK			EW-74

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - DECEMBER 14, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
147	1.3 PPM	OK			EW-32R
148	0.6 PPM	OK			EW-69
149	0.7 PPM	OK			EW-71
150	1.1 PPM	OK			EW-72
151	2.6 PPM	OK			EW-70
152	3.9 PPM	OK			EW-73
153	17.8 PPM	OK			EW-78
154	34.0 PPM	OK			EW-82
155	7.1 PPM	OK			EW-36A
156	1.0 PPM	OK			EW-85
157	1.1 PPM	OK			EW-88
158	17.2 PPM	OK			EW-89
159	5.6 PPM	OK			EW-93
160	1.0 PPM	OK			EW-94
161	0.9 PPM	OK			EW-98
162	69.6 PPM	OK			EW-99
163	325.0 PPM	OK			EW-95
164	1180.0 PPM	HIGH_ALRM	36.59877	-82.14825	EW-90
165	4.1 PPM	OK			EW-86
166	1.0 PPM	OK			EW-84
167	2.1 PPM	OK			EW-80
168	0.9 PPM	OK			EW-79
169	1.0 PPM	OK			EW-77
170	0.9 PPM	OK			EW-33B
171	0.6 PPM	OK			EW-75

Number of locations sampled:	171
Number of exceedance locations:	2

NOTES:

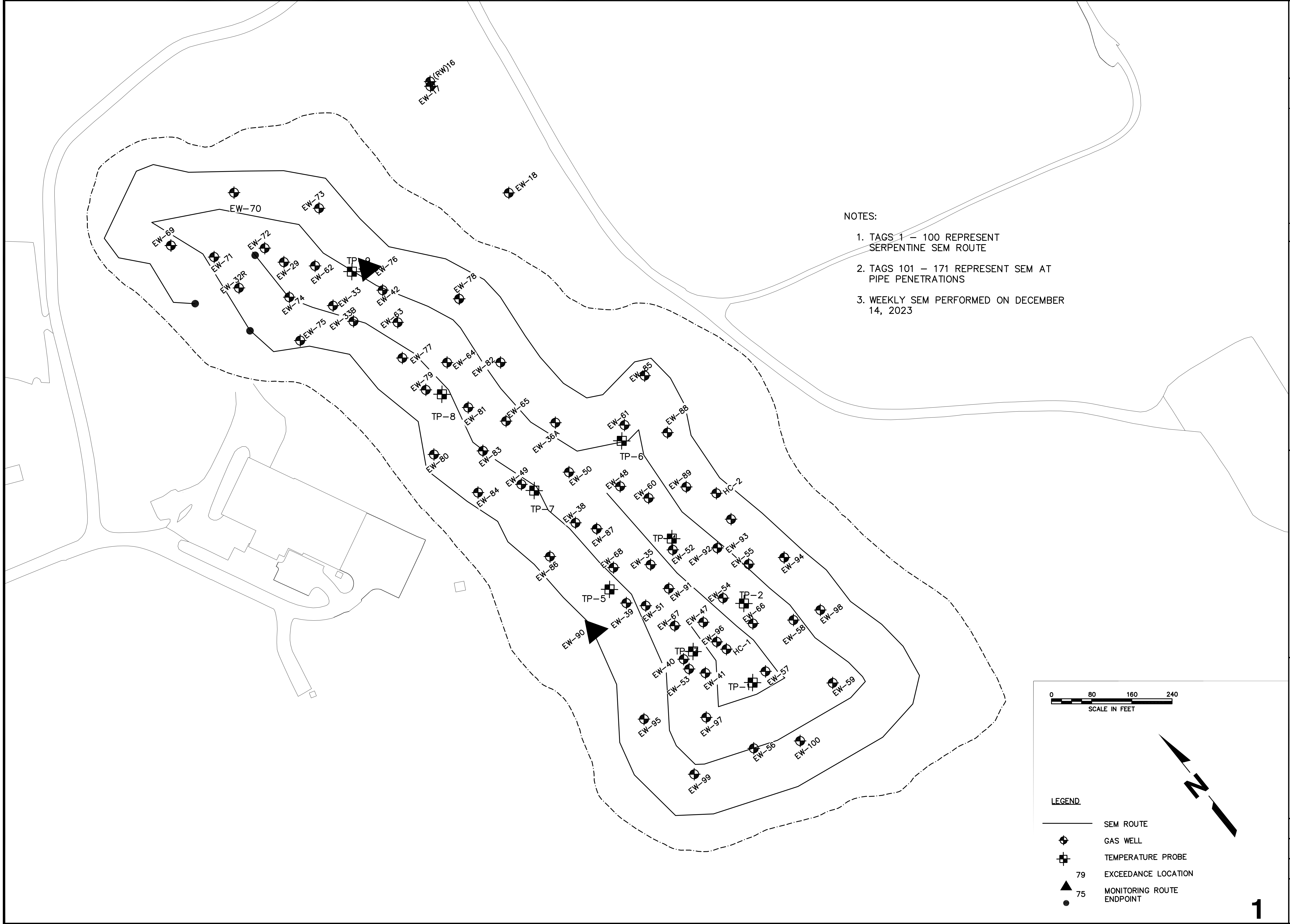
Points 1 through 100 represent serpentine SEM route.
Points 101 through 171 represent SEM at Pipe Penetrations
Weather Conditions: Sunny, 47°F Wind: NW 6 MPH

Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm

12/14/2023	10:57	ZERO	0.1	PPM
12/14/2023	10:59	SPAN	501.0	PPM

Background Reading:

12/14/2023	11:01	Upwind	2.1	PPM
12/14/2023	11:04	Downwind	2.5	PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 171 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON DECEMBER 14, 2023

LEGEND

—	SEM ROUTE
⊕	GAS WELL
⊞	TEMPERATURE PROBE
79	EXCEEDANCE LOCATION
▲ 75	MONITORING ROUTE ENDPOINT
●	

1

NO.	REVISION	DATE
△		
△		
△		
△		
△		
△		

SHEET TITLE
WEEKLY SEM ROUTE

PROJECT TITLE
SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113
PH. (804) 378-7440 FAX. (804) 378-7433

PROJ. NO. 02218208.04	DWN. BY: LSN	Q/A RVW BY:
DSN. BY: LSN	CHK. BY: DBK	APP. BY:

FILE: 02218208.04

DATE: 12/14/23

SCALE: AS SHOWN

DRAWING NO.

of 1

Appendix B

In-Waste Temperatures on Select Days in December

Appendix B Figures

Figure B- 1. Average Temperatures Recorded by TP-1 on December 6, 2023

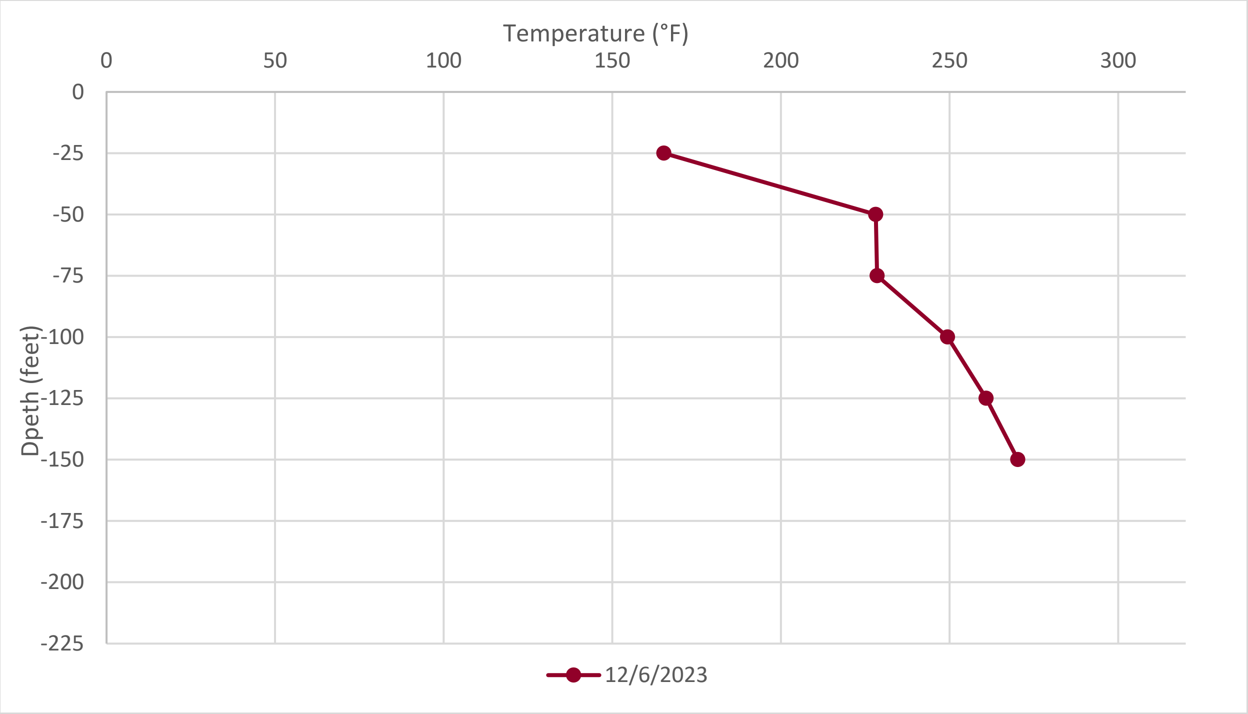


Figure B- 2. Average Temperatures Recorded by TP-1 on December 13, 2023

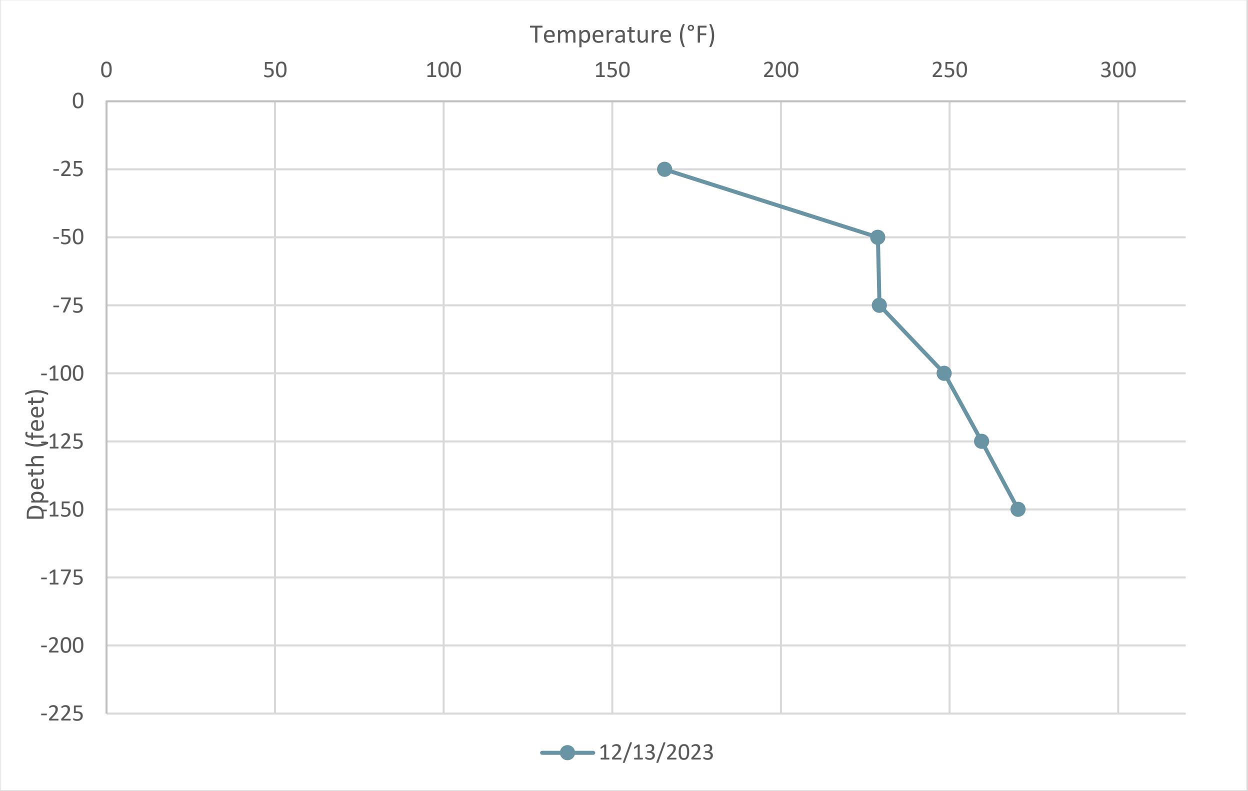


Figure B- 3. Average Temperatures Recorded by TP-1 on December 20, 2023

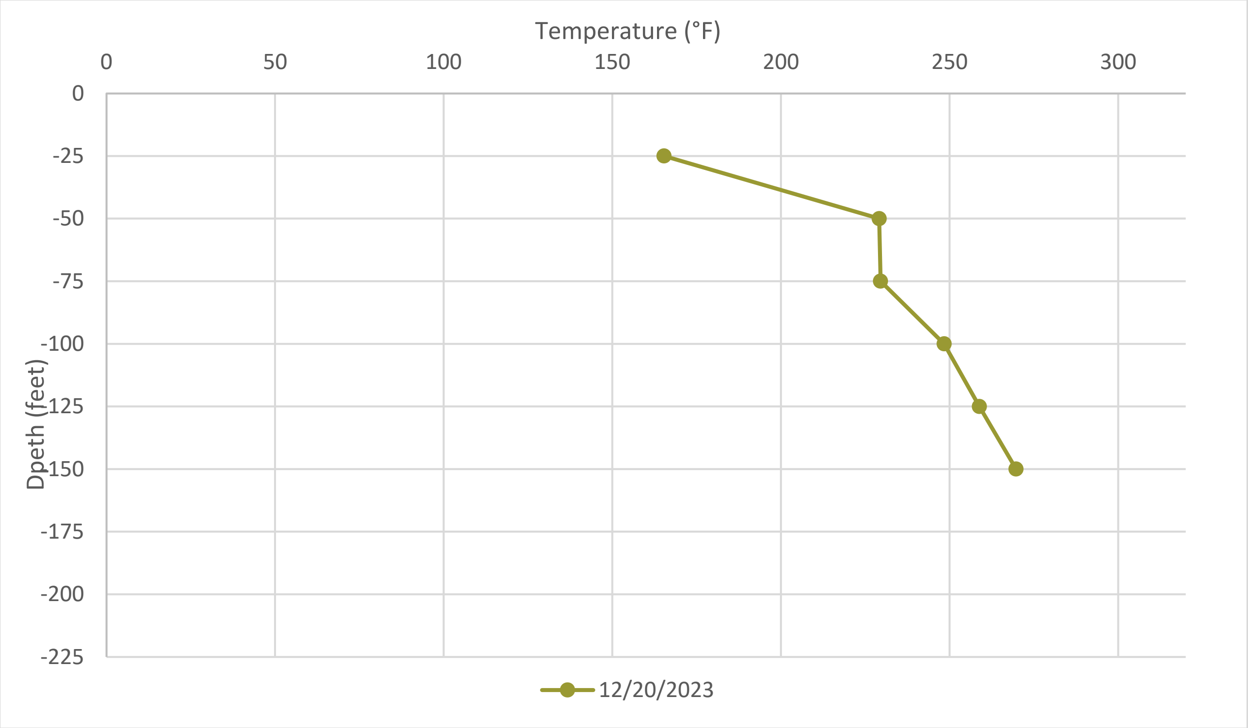


Figure B- 4. Average Temperatures Recorded by TP-1 on December 27, 2023

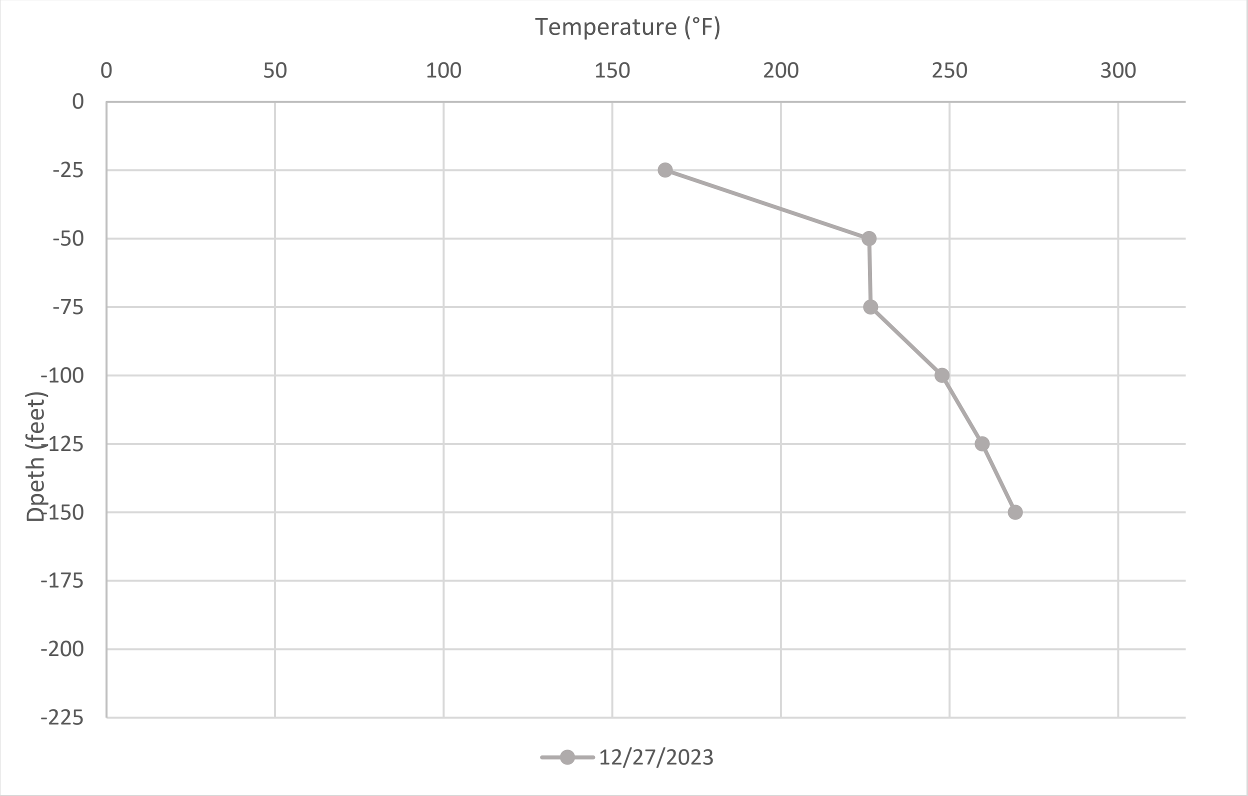


Figure B- 5. Average Temperatures Recorded by TP-2 on December 6, 2023

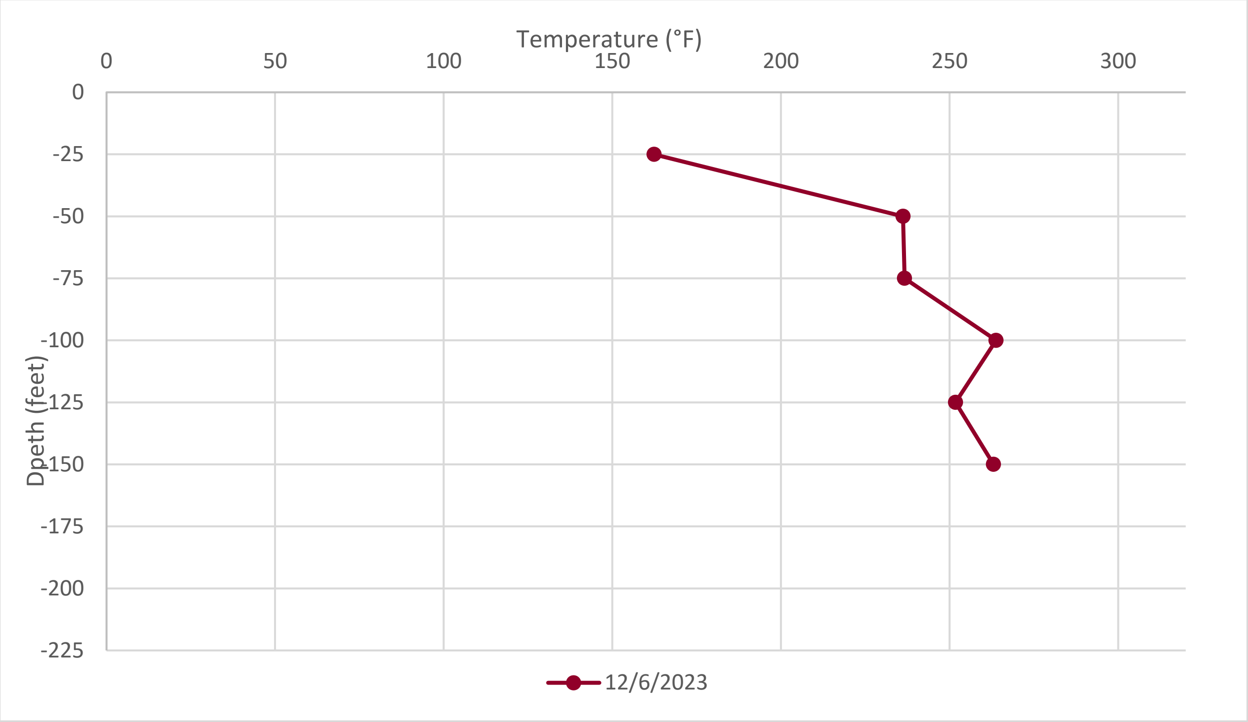


Figure B- 6. Average Temperatures Recorded by TP-2 on December 13, 2023

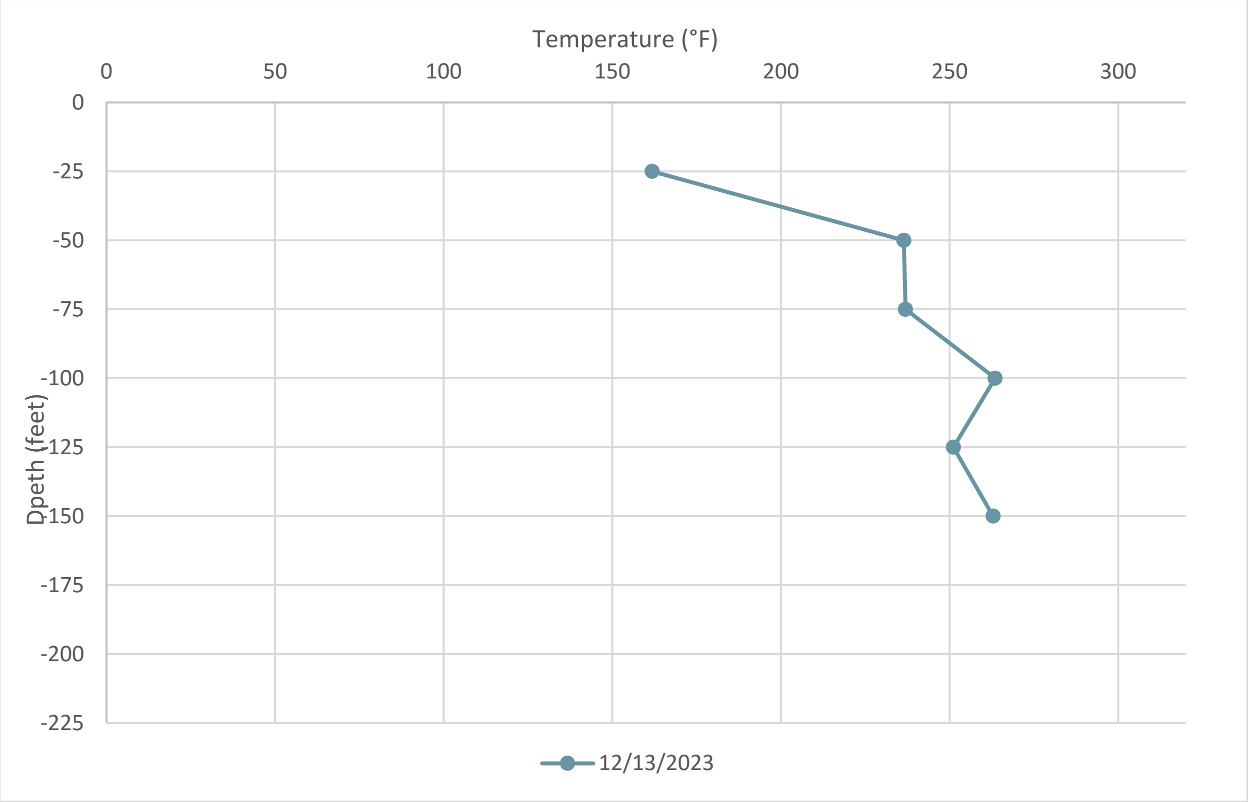


Figure B- 7. Average Temperatures Recorded by TP-2 on December 20, 2023

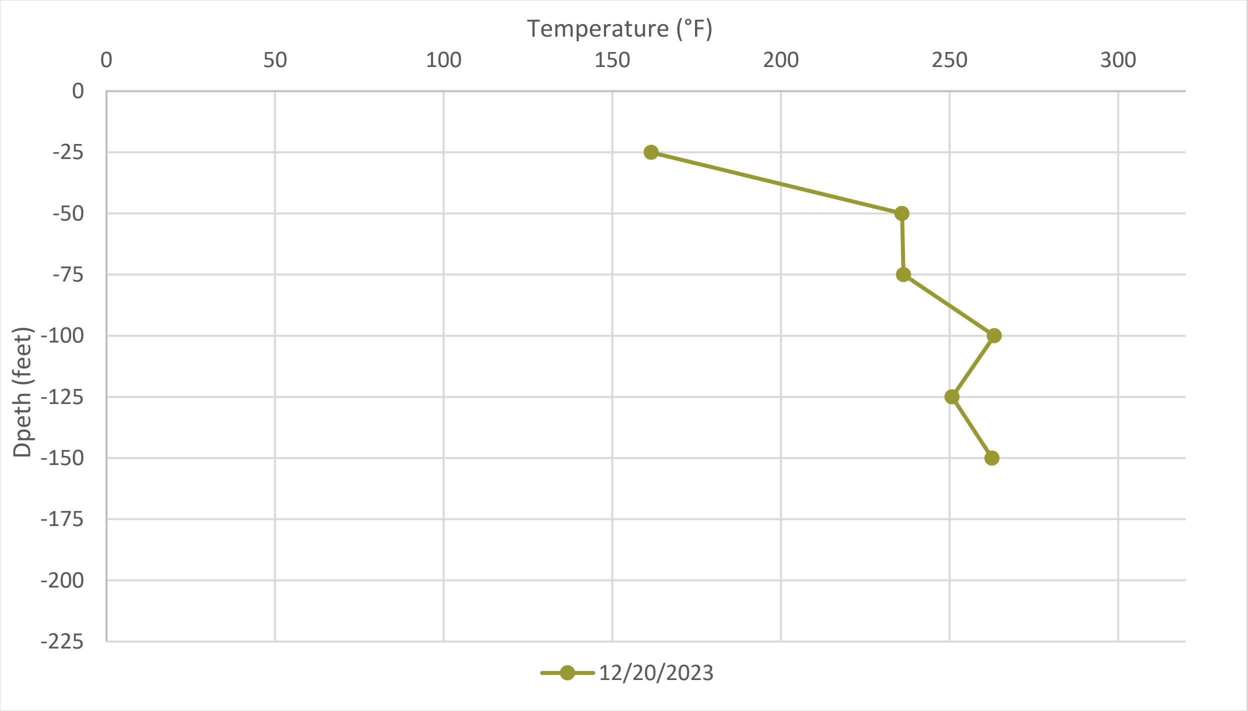


Figure B- 8. Average Temperatures Recorded by TP-2 on December 27, 2023

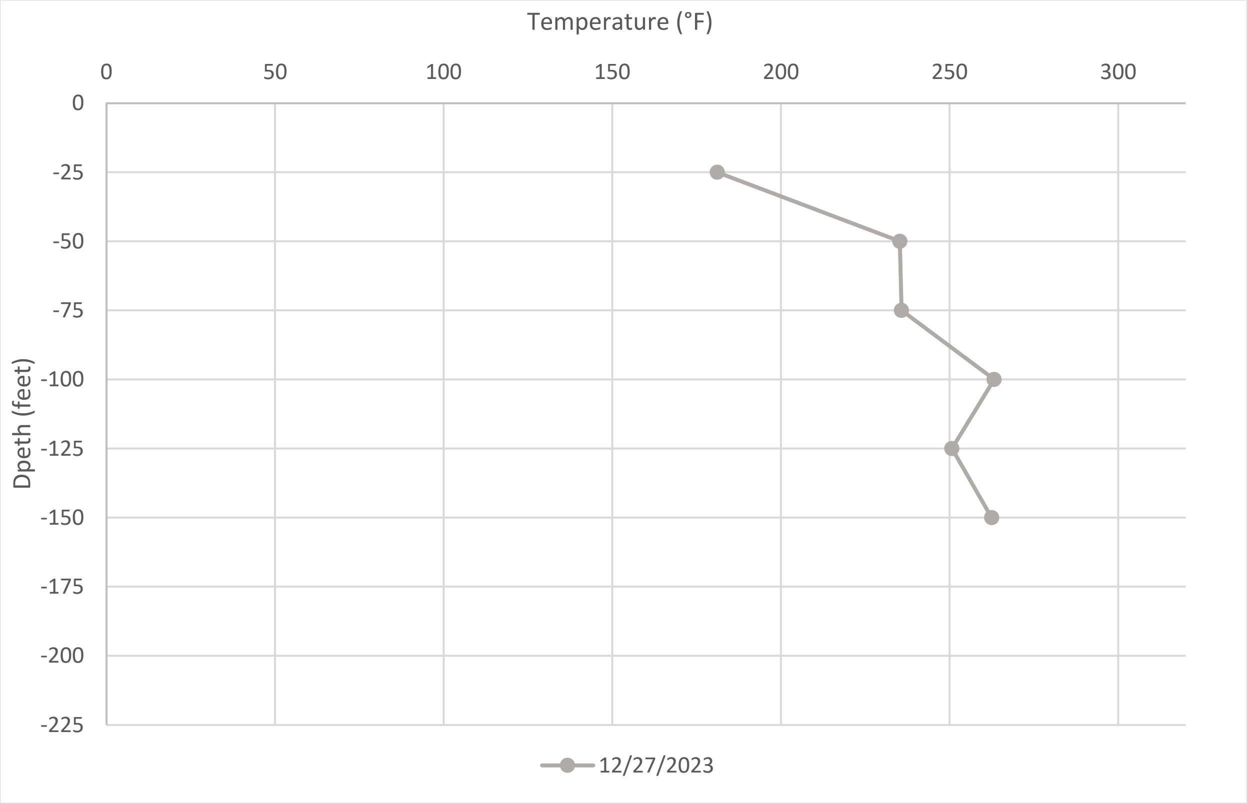


Figure B- 9. Average Temperatures Recorded by TP-3 on December 6, 2023

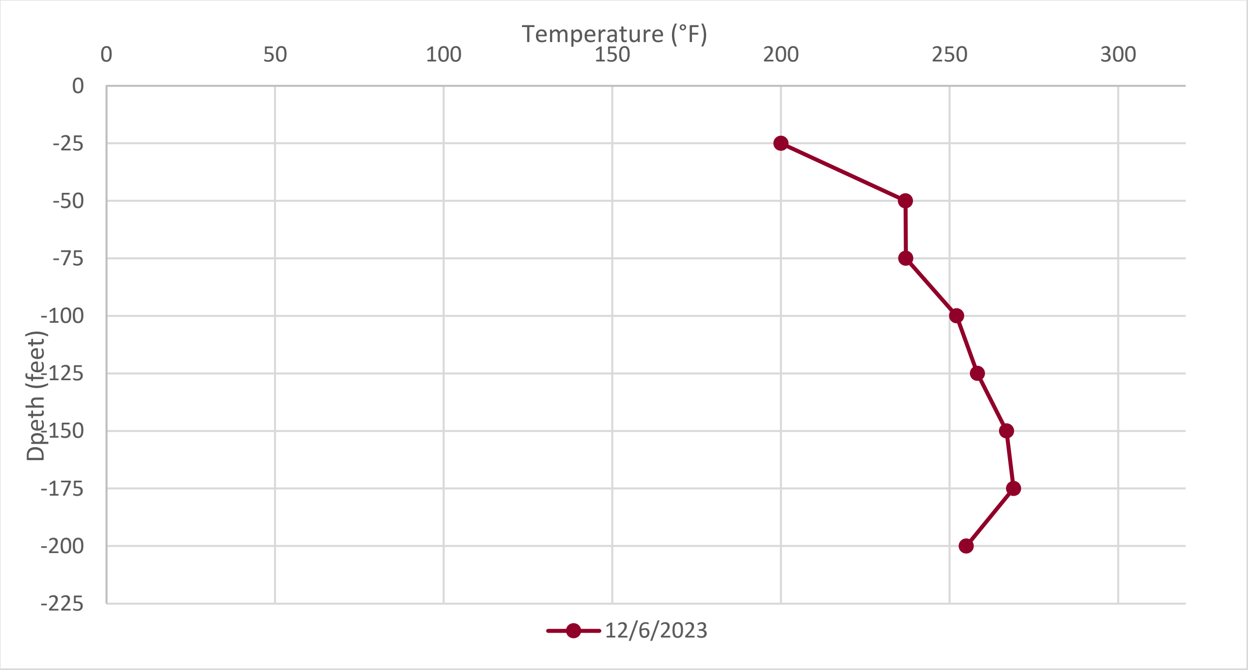


Figure B- 10. Average Temperatures Recorded by TP-3 on December 13, 2023

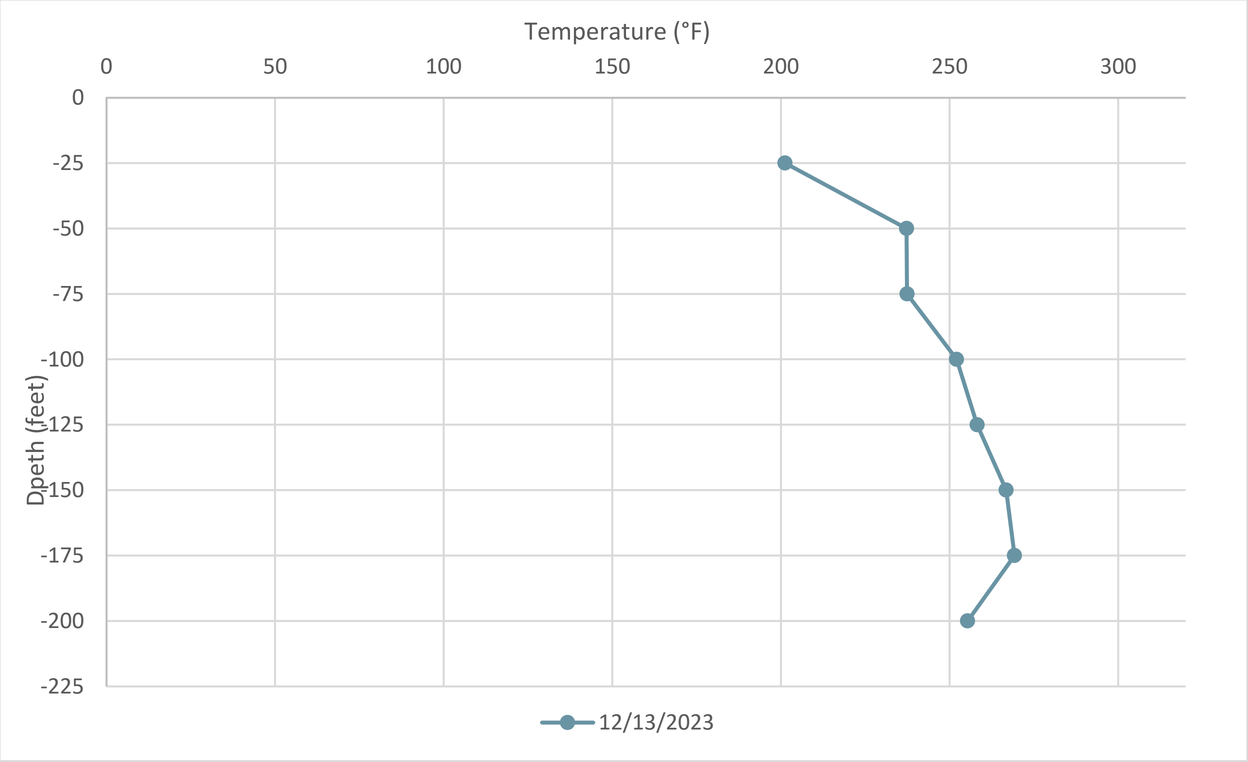


Figure B- 11. Average Temperatures Recorded by TP-3 on December 20, 2023

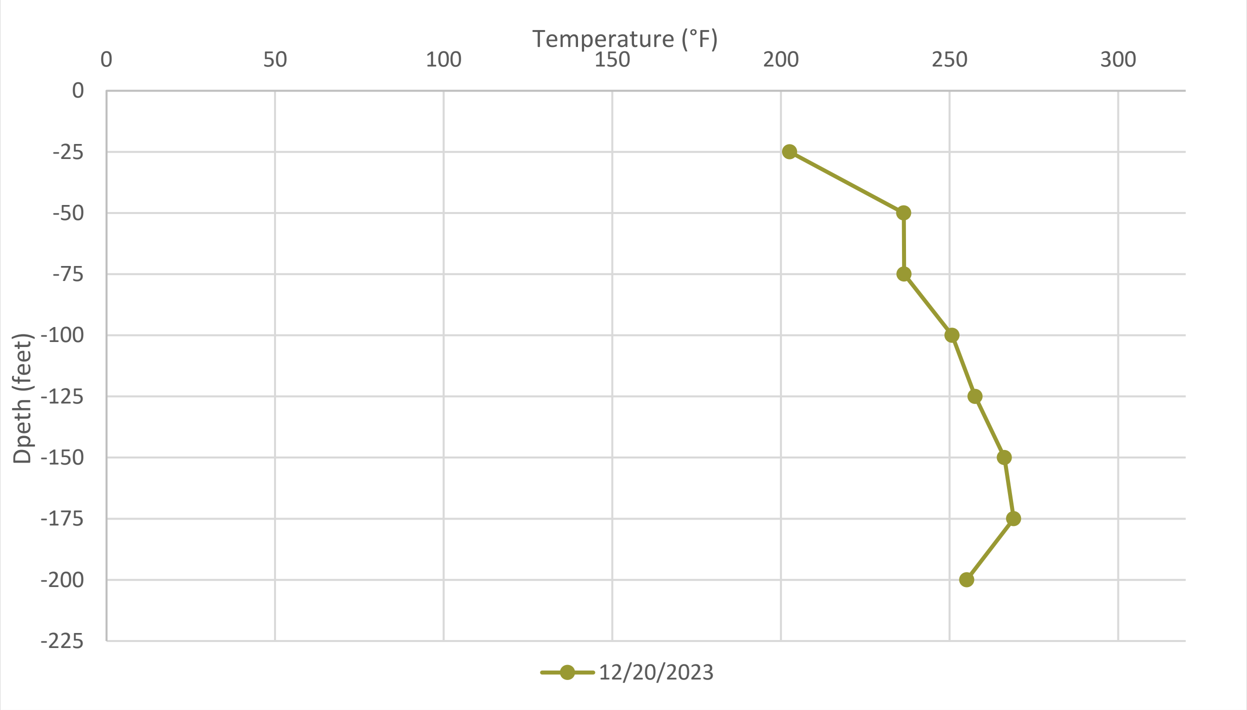


Figure B- 12. Average Temperatures Recorded by TP-3 on December 27, 2023

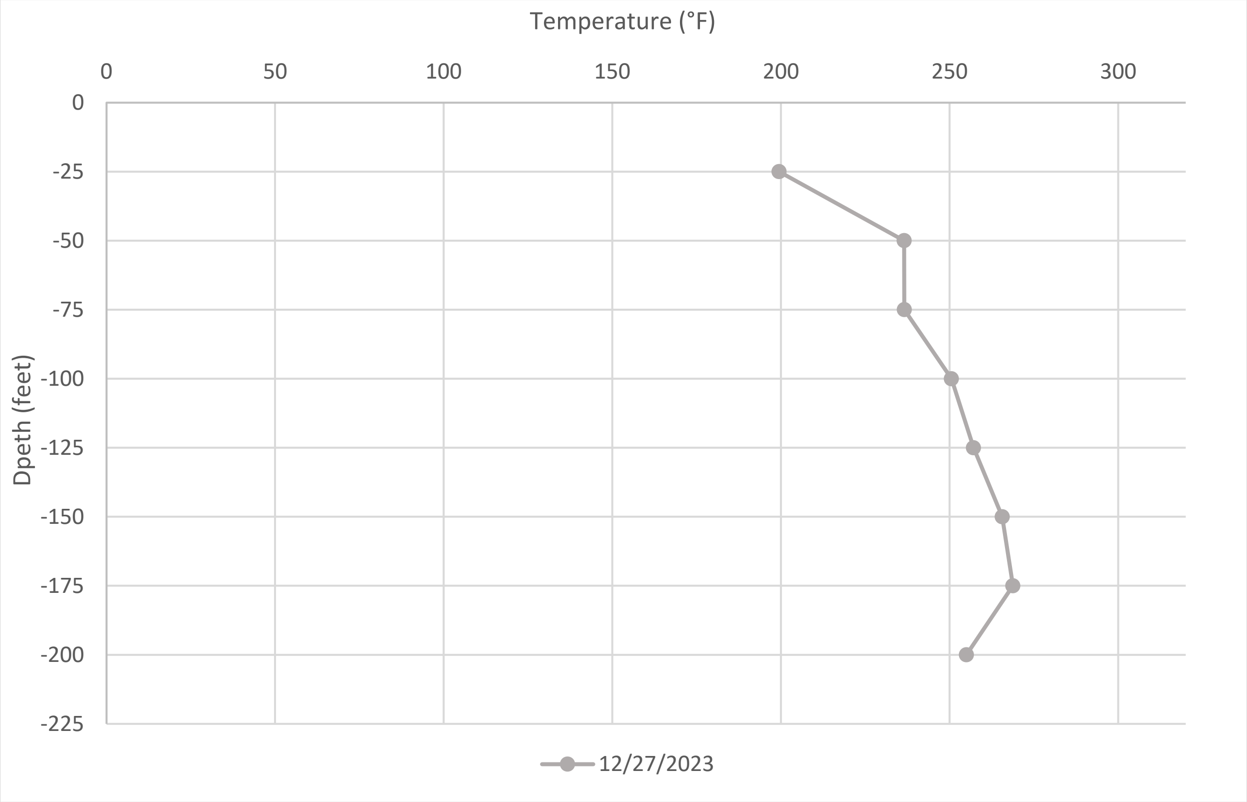


Figure B- 13. Average Temperatures Recorded by TP-4 on December 6, 2023

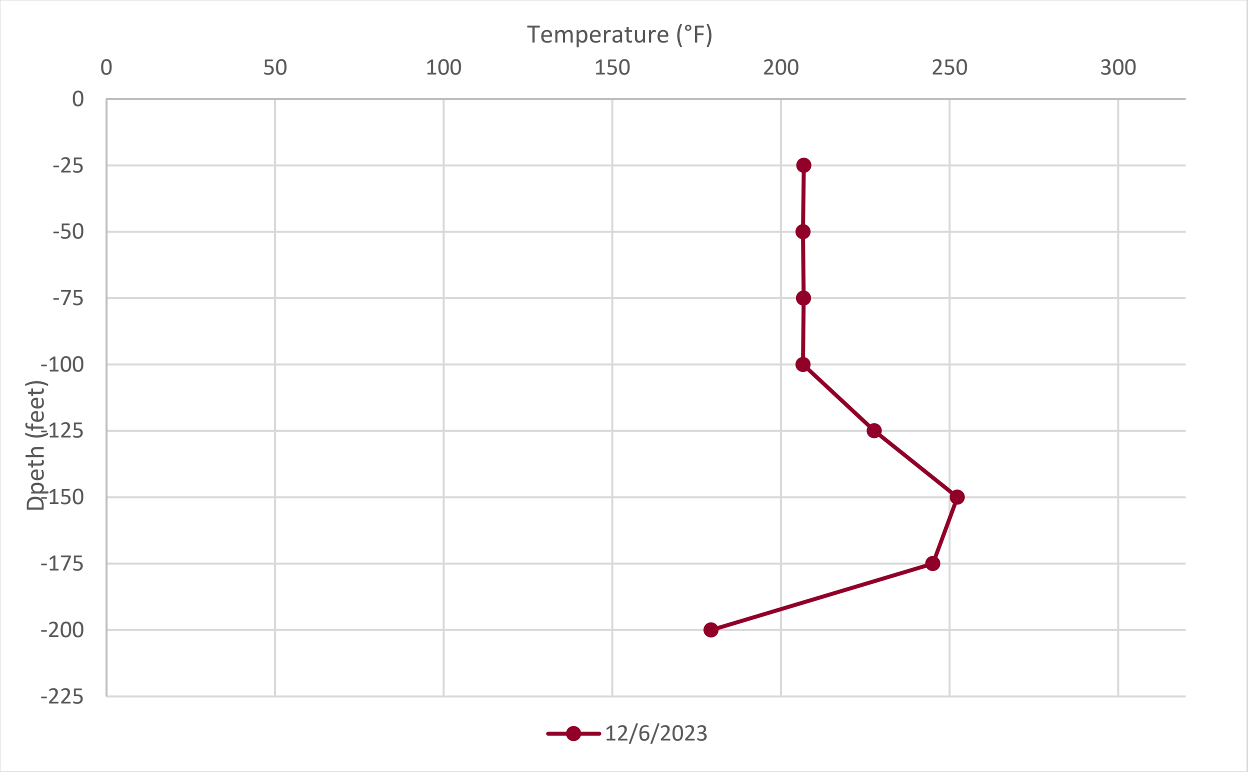


Figure B- 14. Average Temperatures Recorded by TP-4 on December 13, 2023

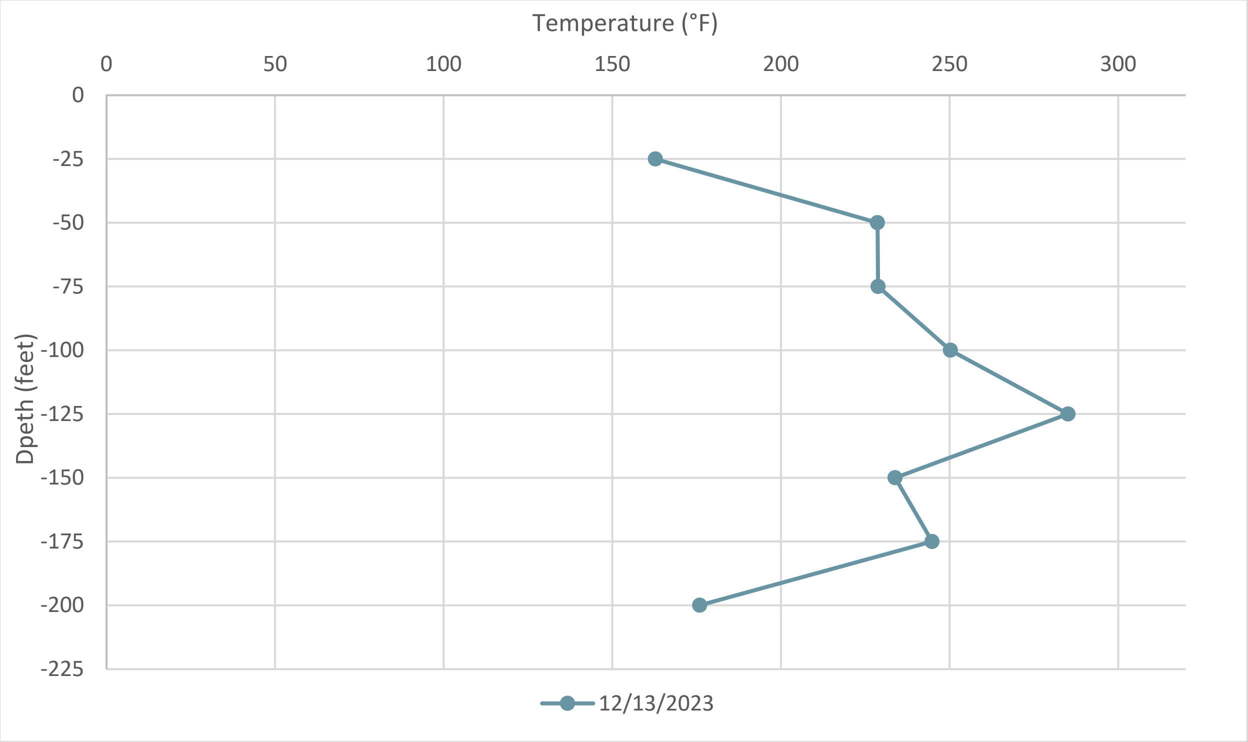


Figure B- 15. Average Temperatures Recorded by TP-4 on December 20, 2023

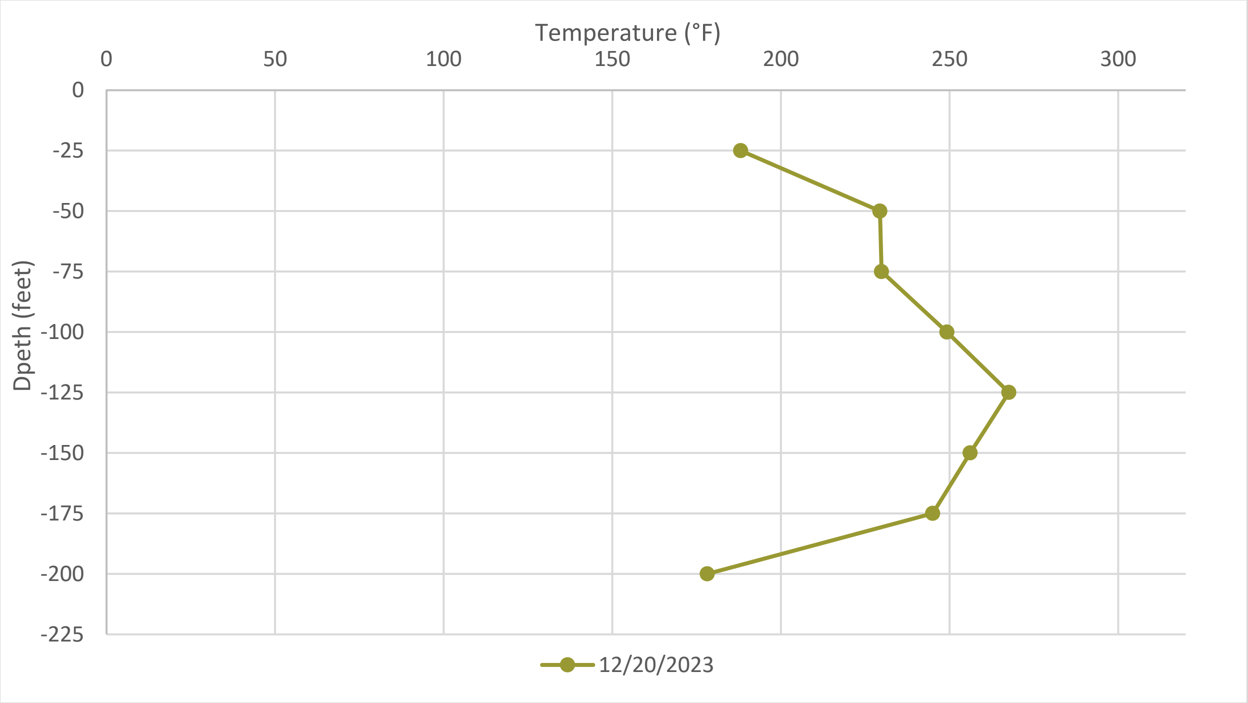


Figure B- 16. Average Temperatures Recorded by TP-4 on December 27, 2023

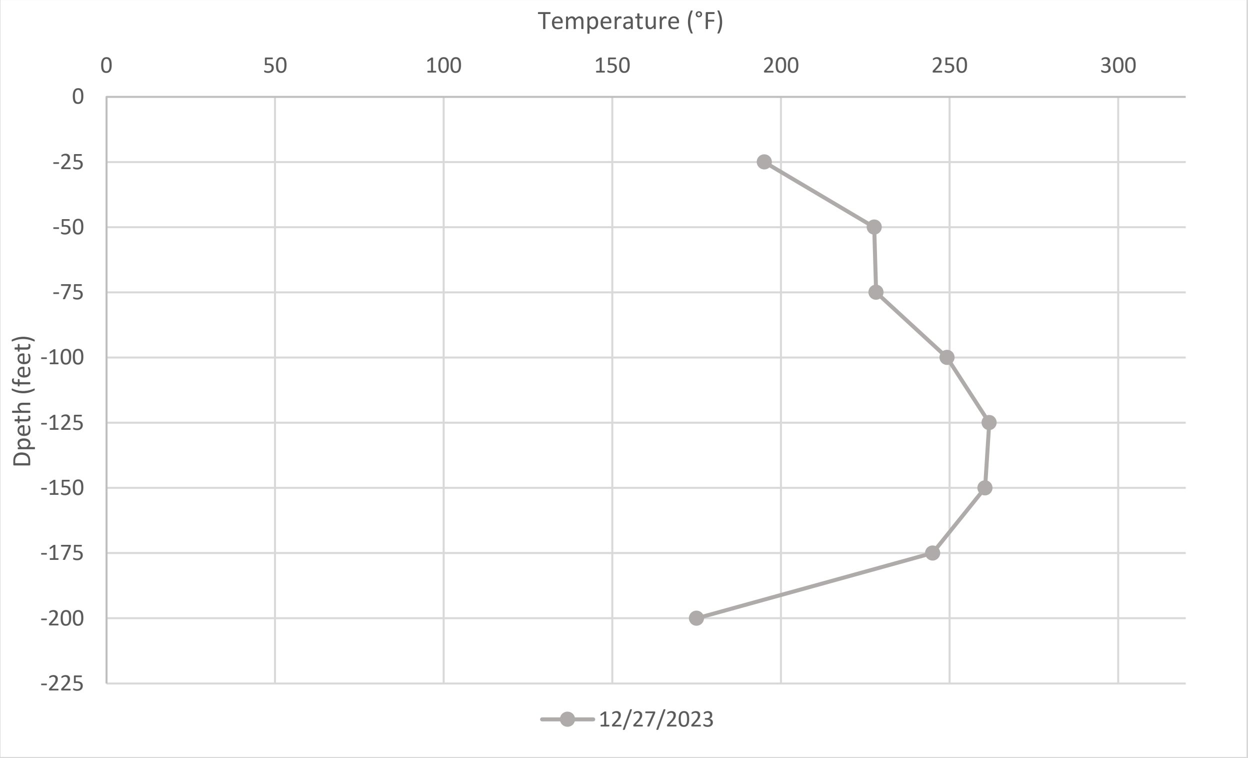


Figure B- 17. Average Temperatures Recorded by TP-5 on December 6, 2023

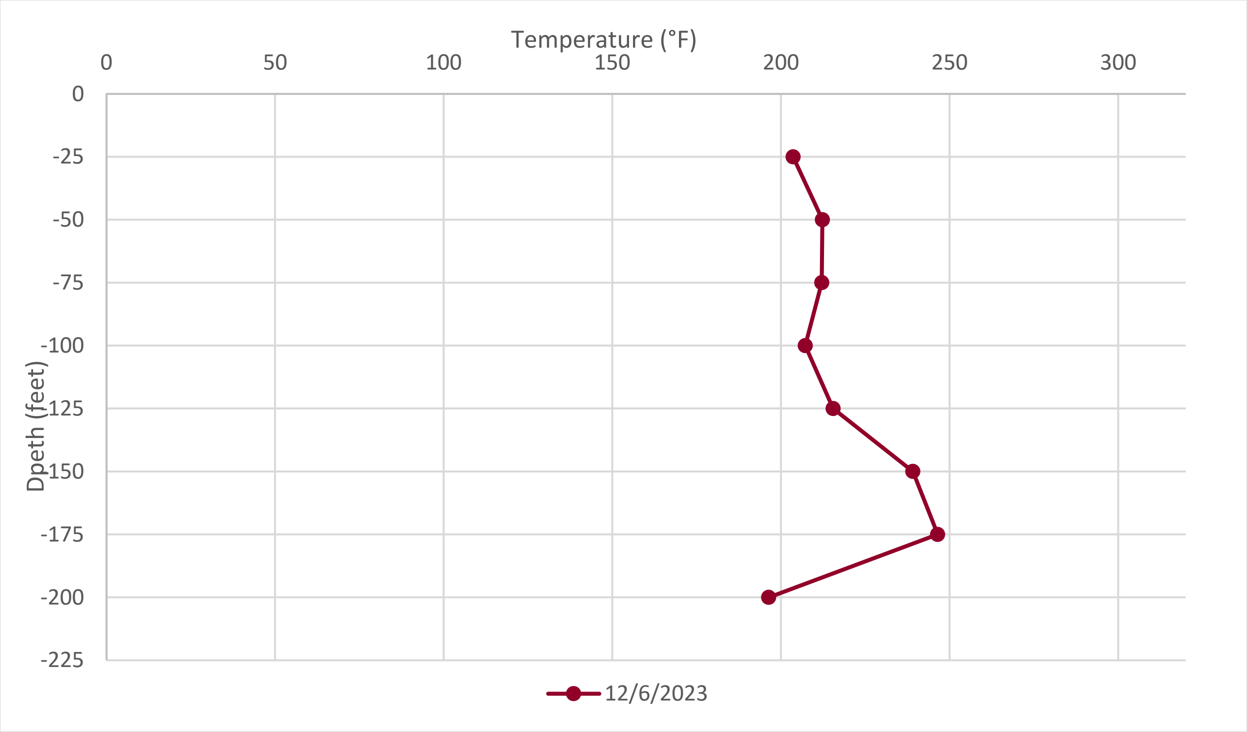


Figure B- 18. Average Temperatures Recorded by TP-5 on December 13, 2023

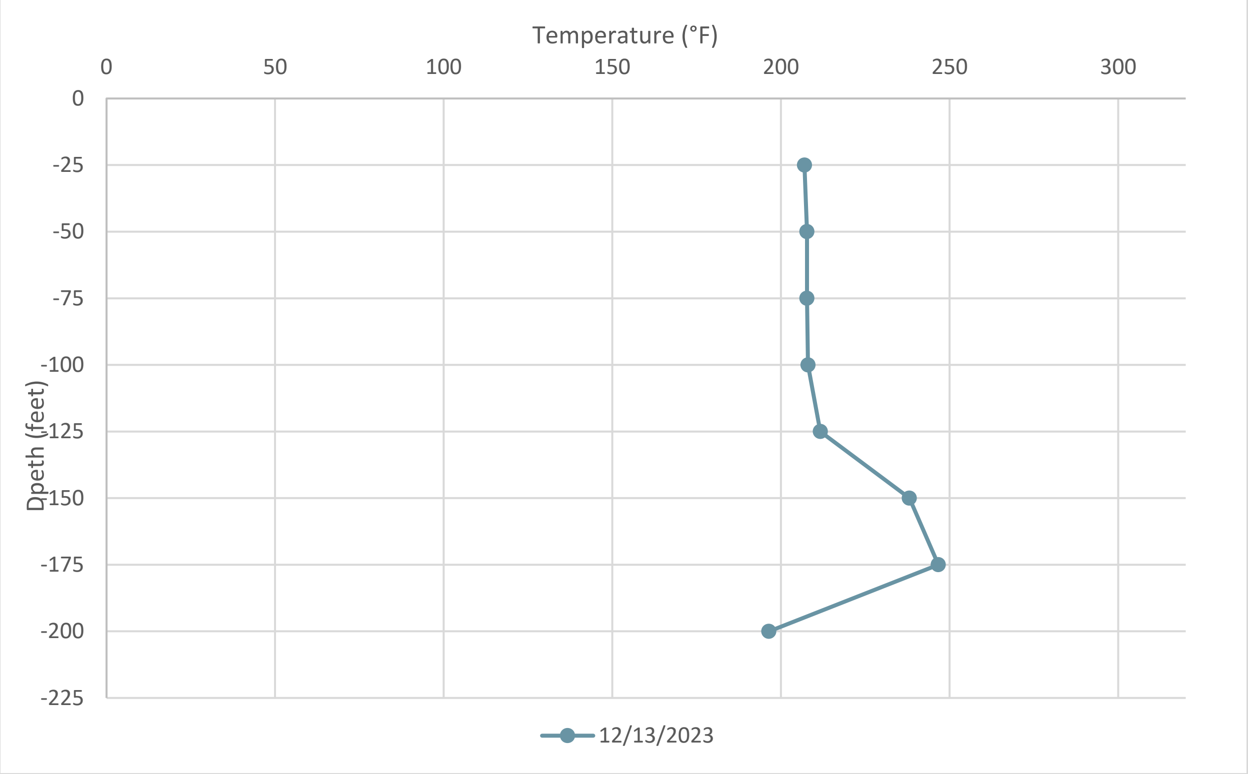


Figure B- 19. Average Temperatures Recorded by TP-5 on December 20, 2023

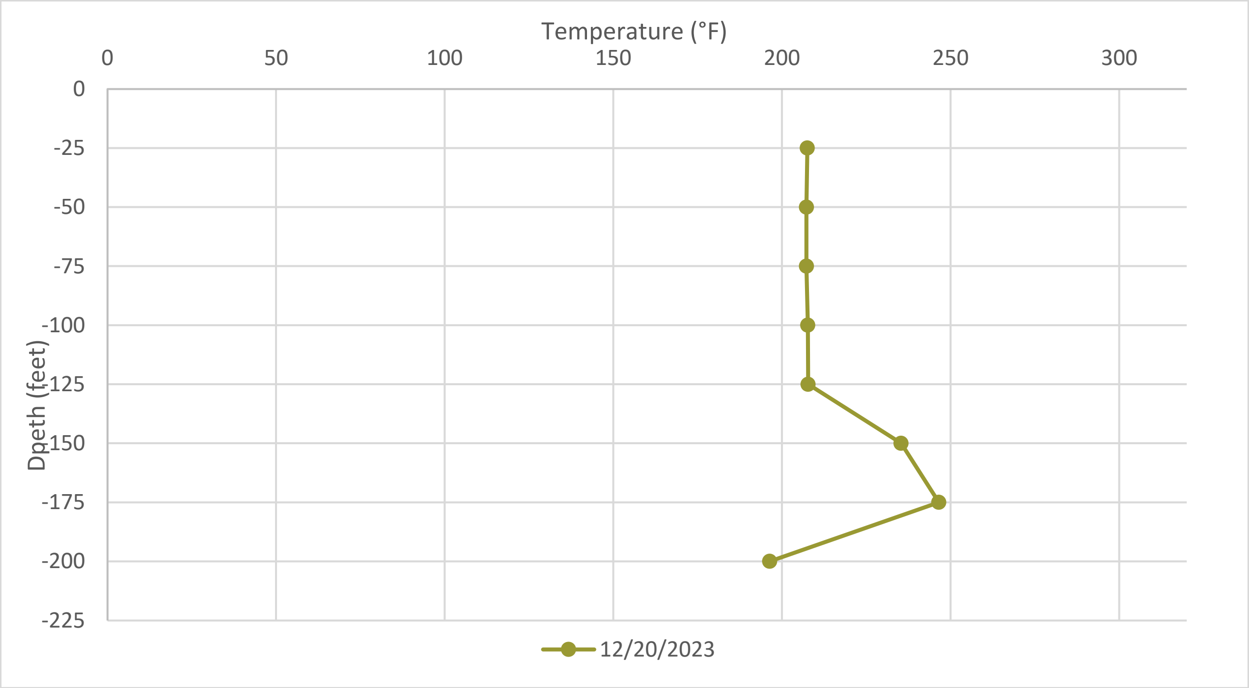


Figure B- 20. Average Temperatures Recorded by TP-5 on December 27, 2023

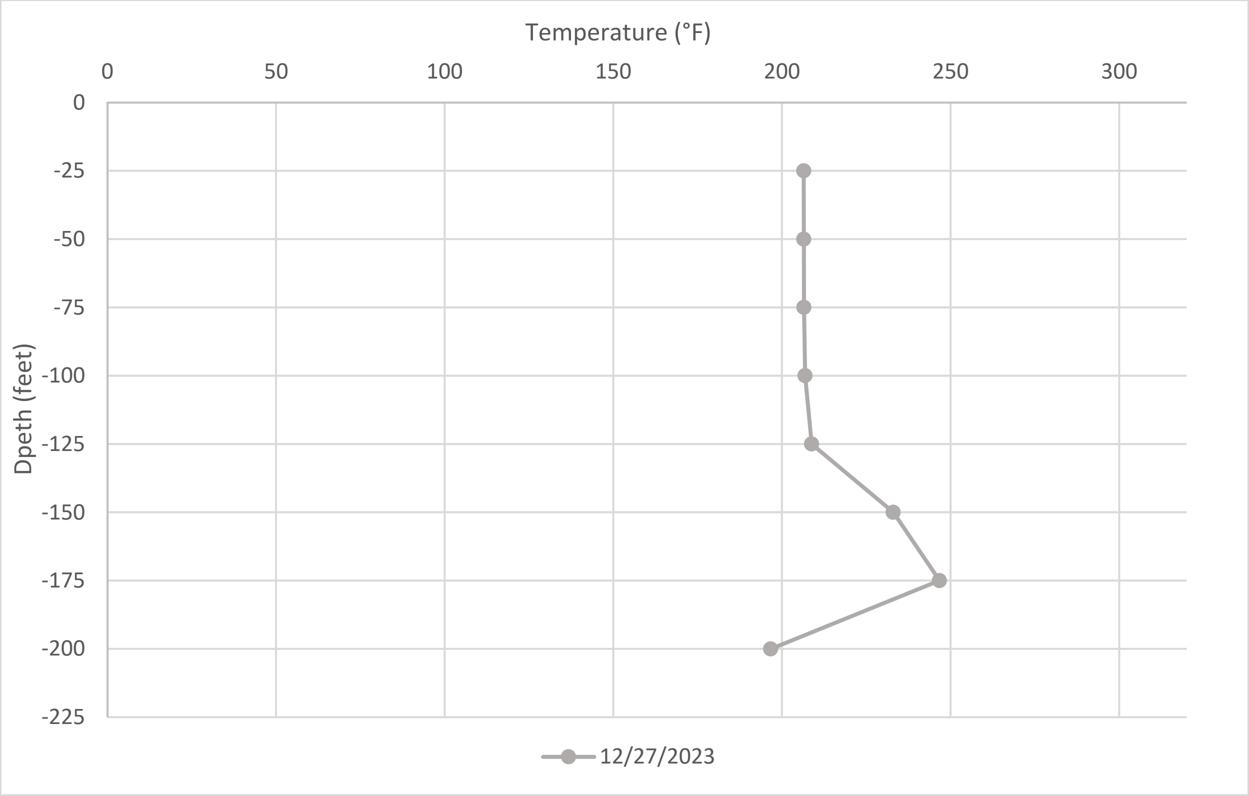


Figure B- 21. Average Temperatures Recorded by TP-6 on December 6, 2023

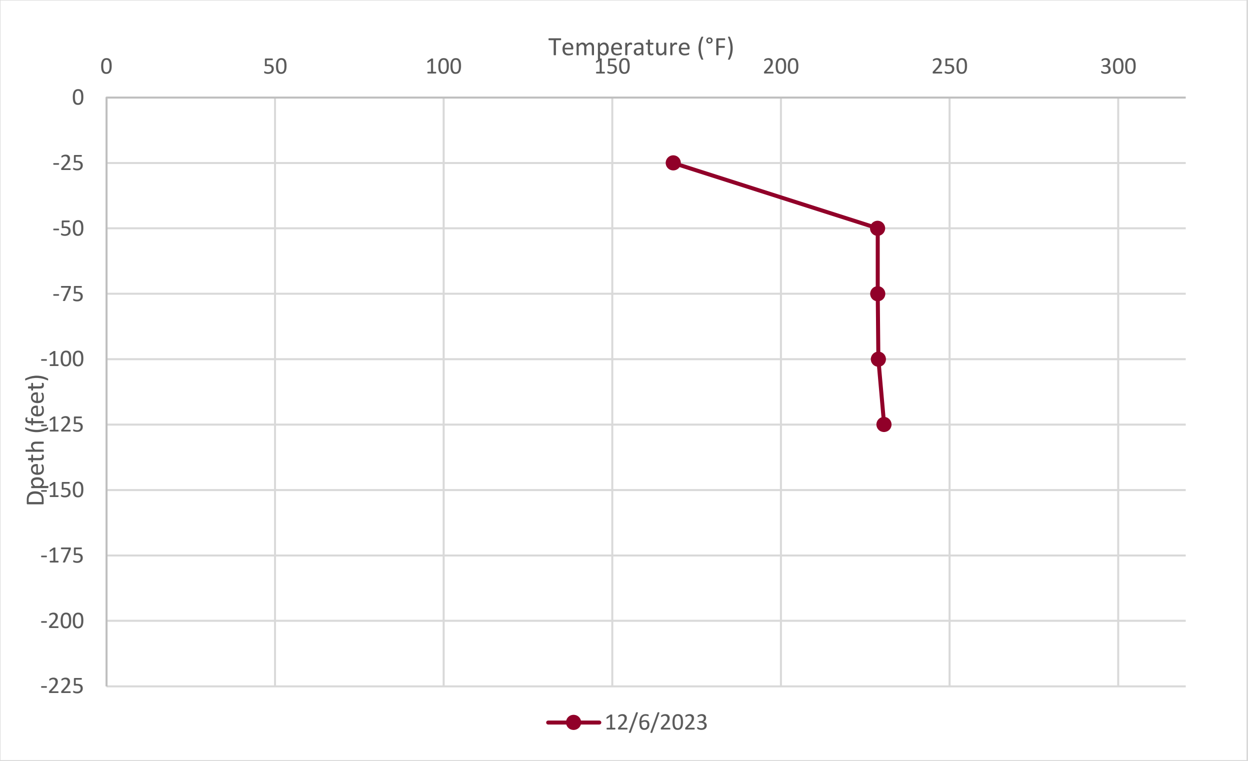


Figure B- 22. Average Temperatures Recorded by TP-6 on December 13, 2023

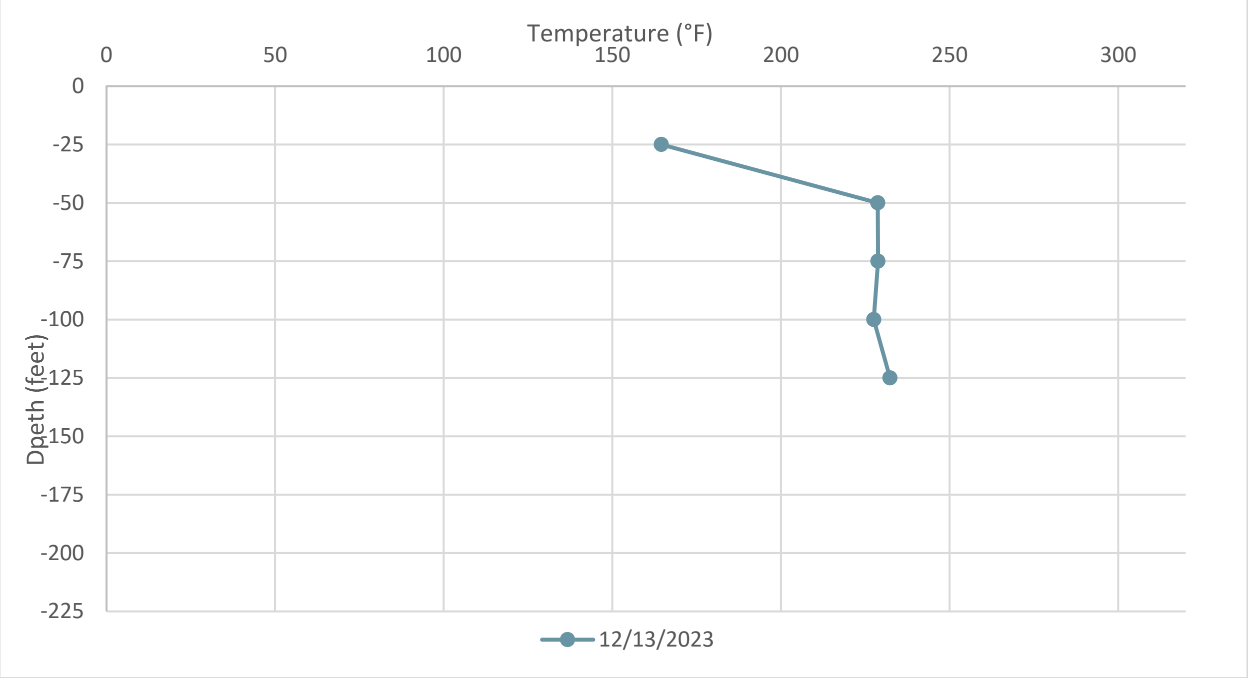


Figure B- 23. Average Temperatures Recorded by TP-6 on December 20, 2023

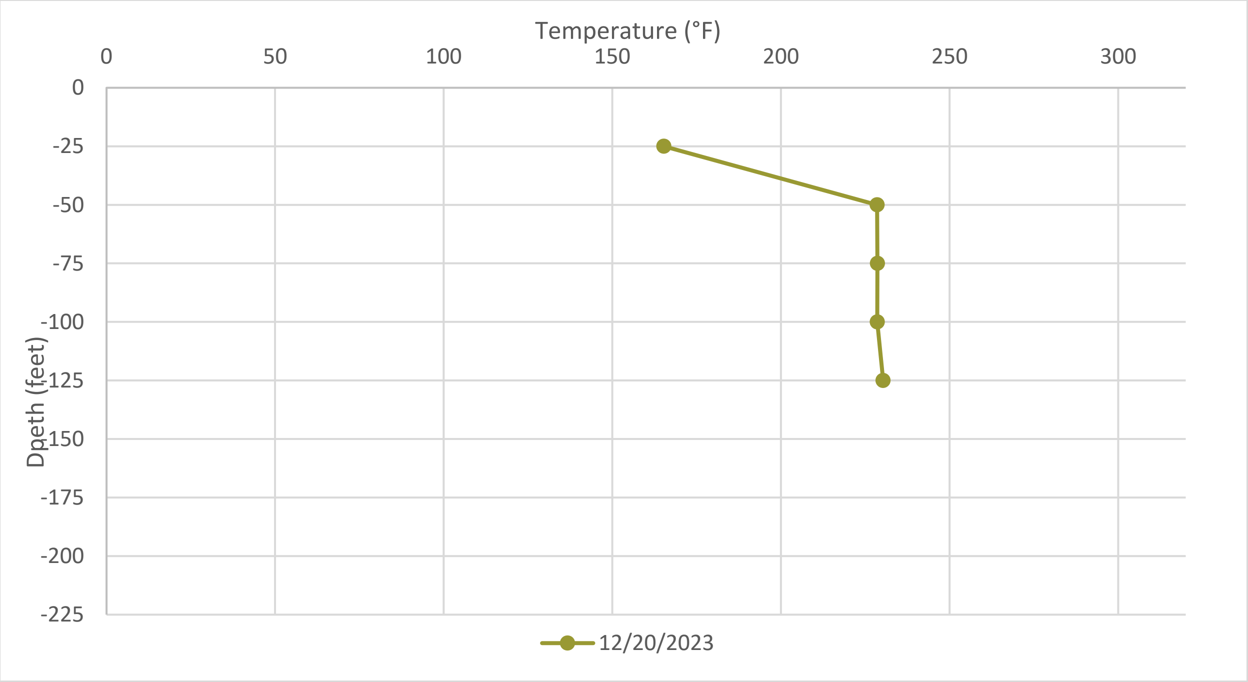


Figure B- 24. Average Temperatures Recorded by TP-6 on December 27, 2023

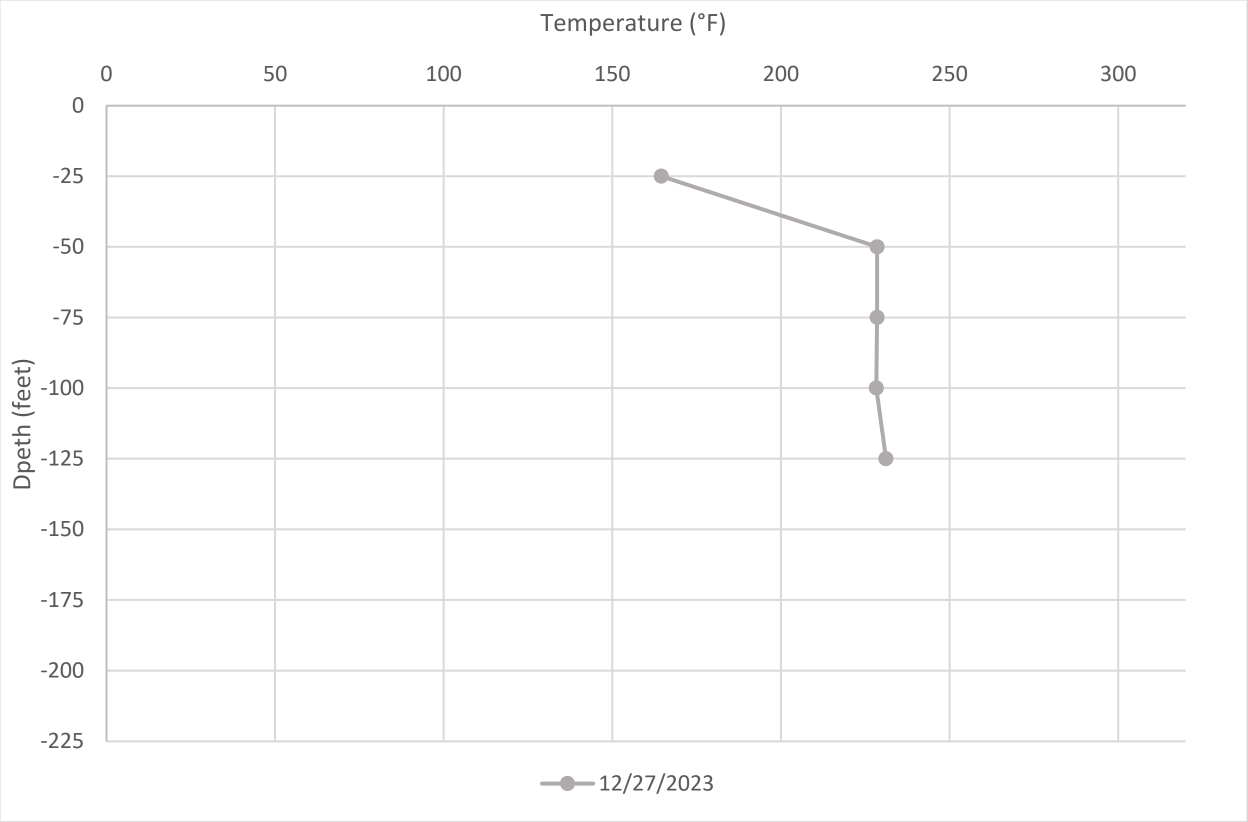


Figure B- 25. Average Temperatures Recorded by TP-7 on December 6, 2023

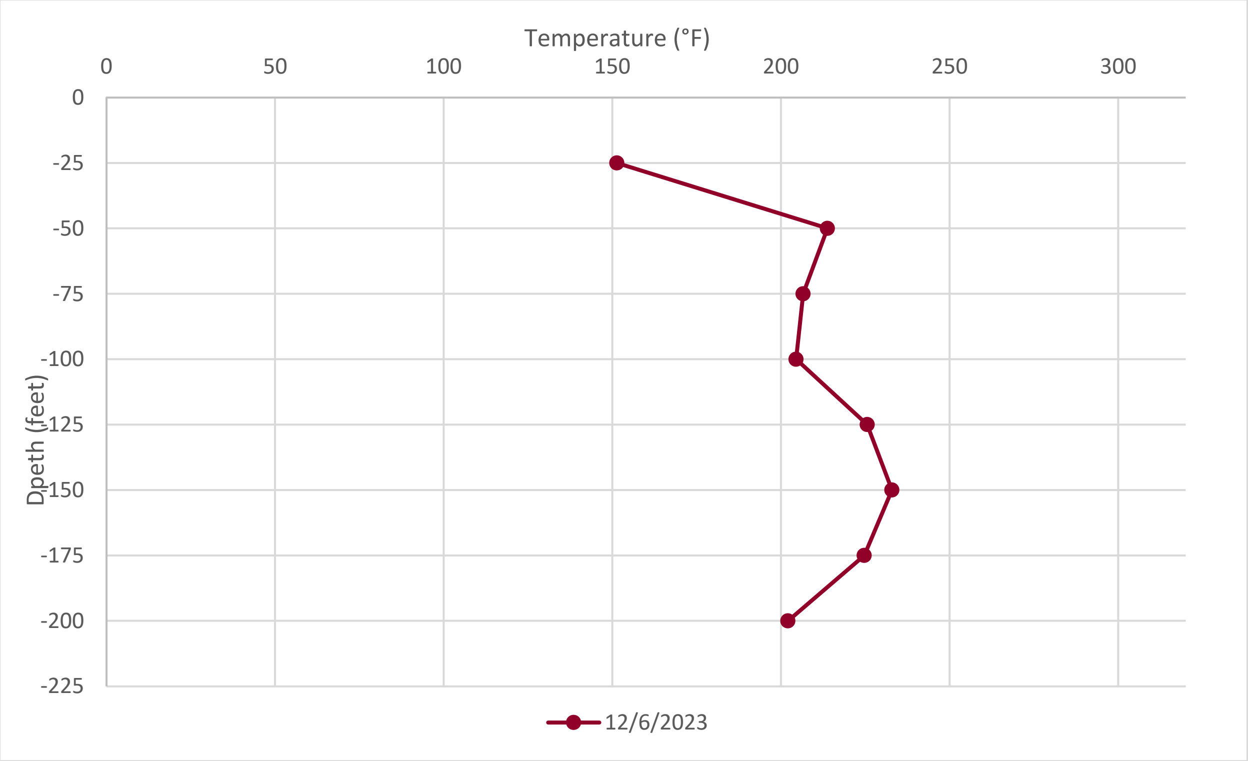


Figure B- 26. Average Temperatures Recorded by TP-7 on December 13, 2023

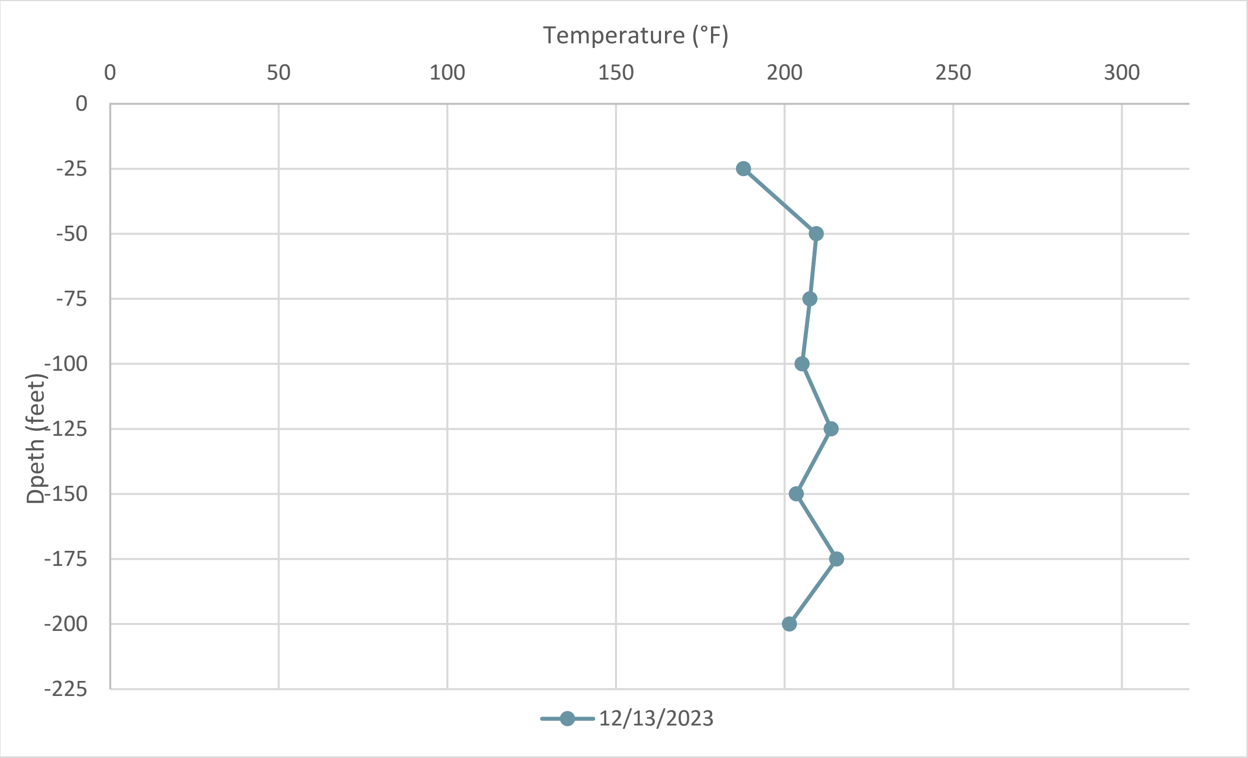


Figure B- 27. Average Temperatures Recorded by TP-7 on December 20, 2023

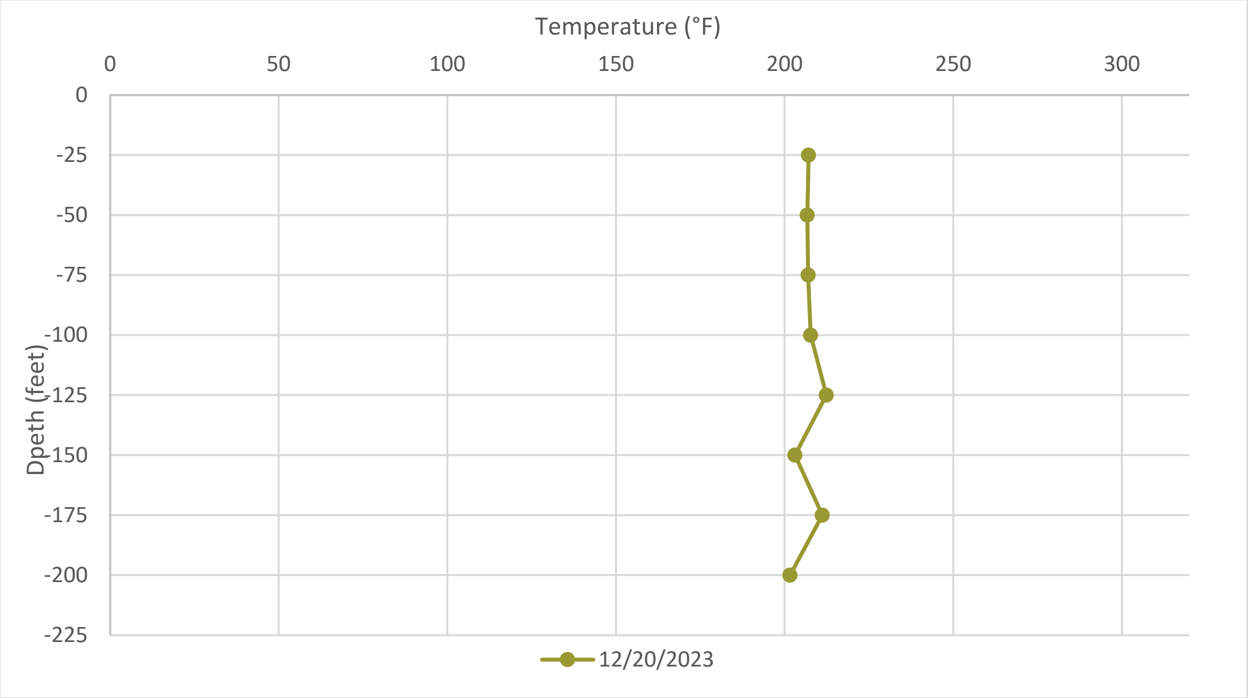


Figure B- 28. Average Temperatures Recorded by TP-7 on December 27, 2023

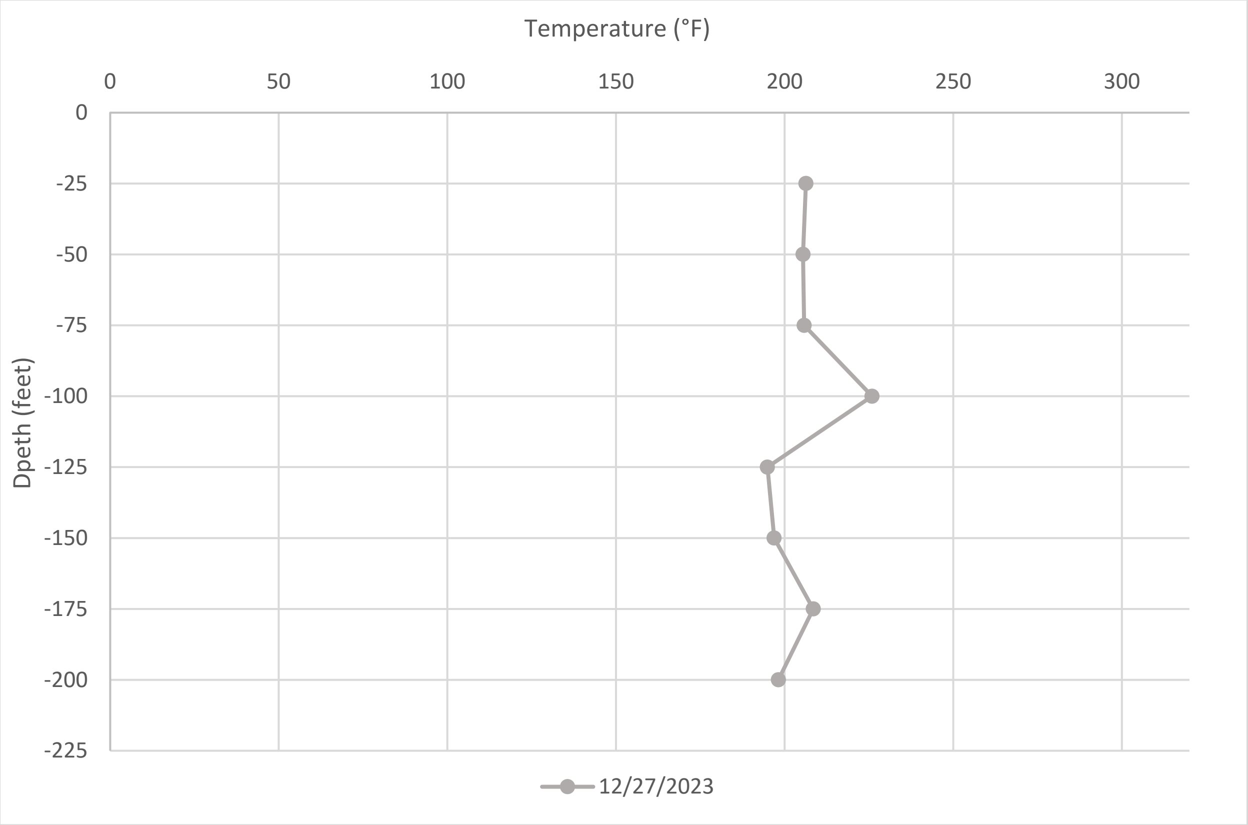


Figure B- 29. Average Temperatures Recorded by TP-8 on December 6, 2023

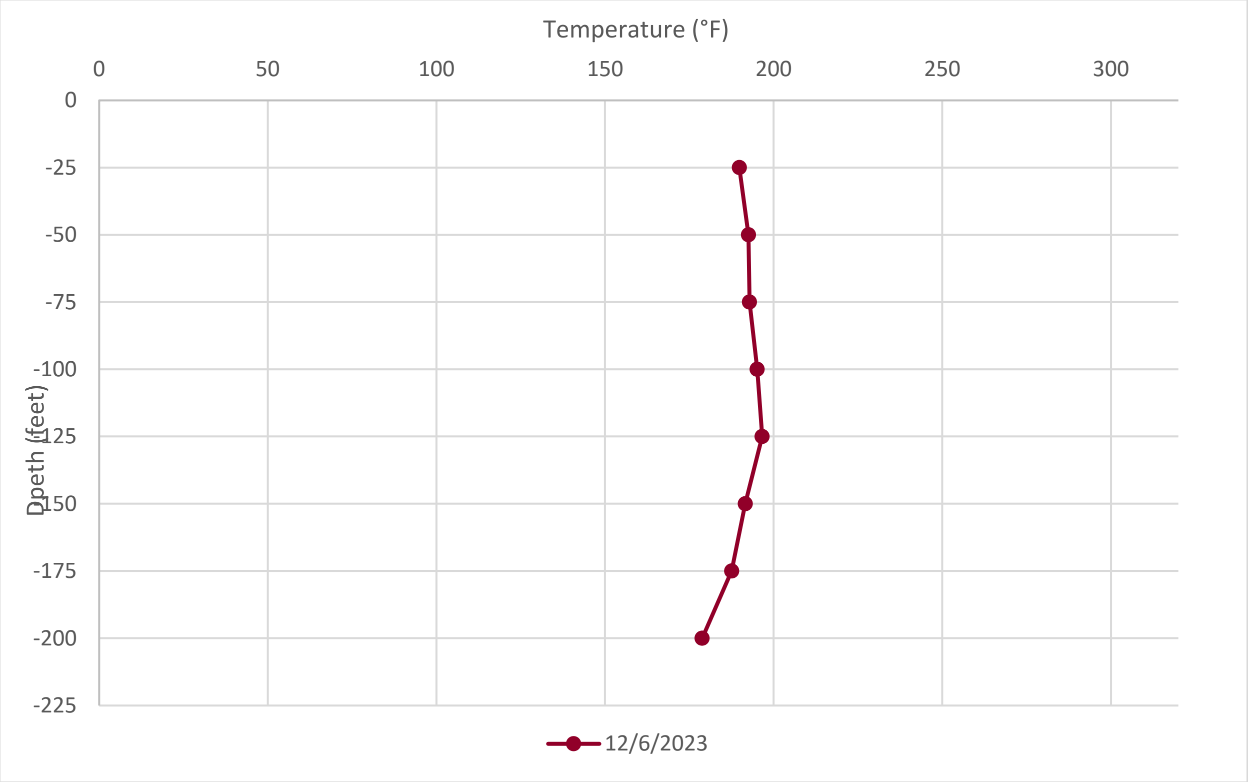


Figure B- 30. Average Temperatures Recorded by TP-8 on December 13, 2023

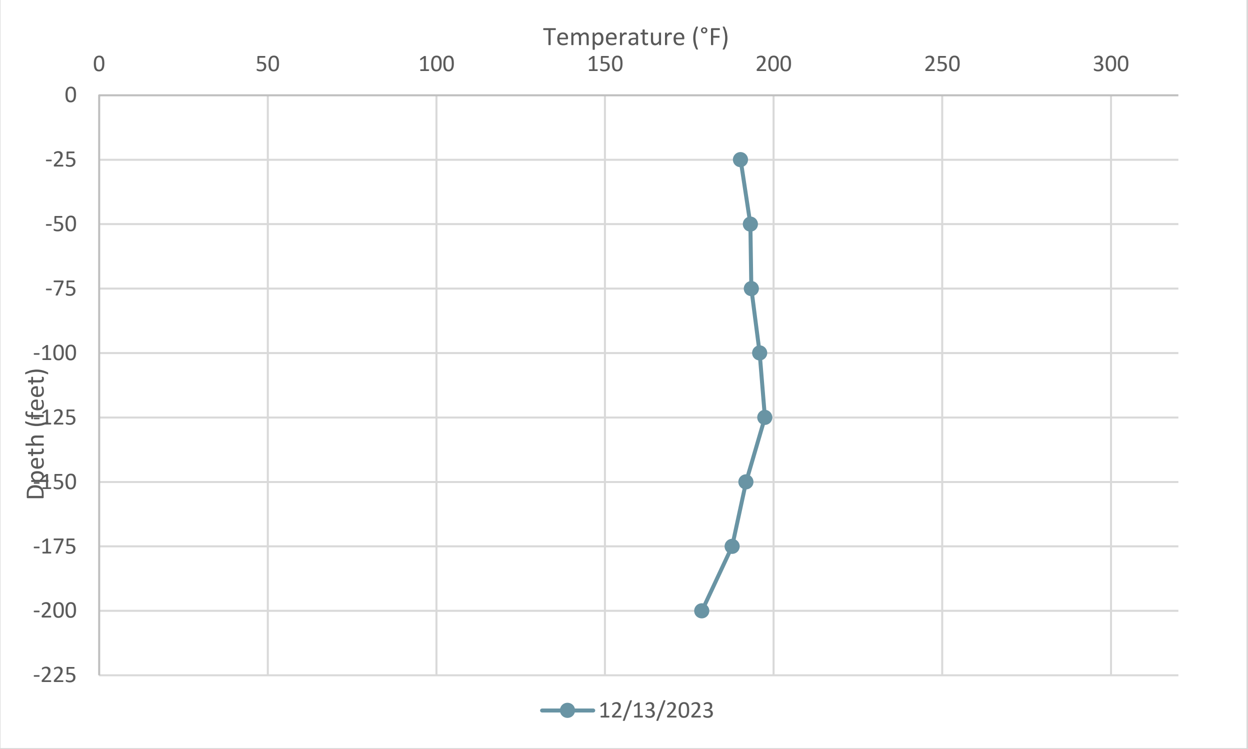


Figure B- 31. Average Temperatures Recorded by TP-8 on December 20, 2023

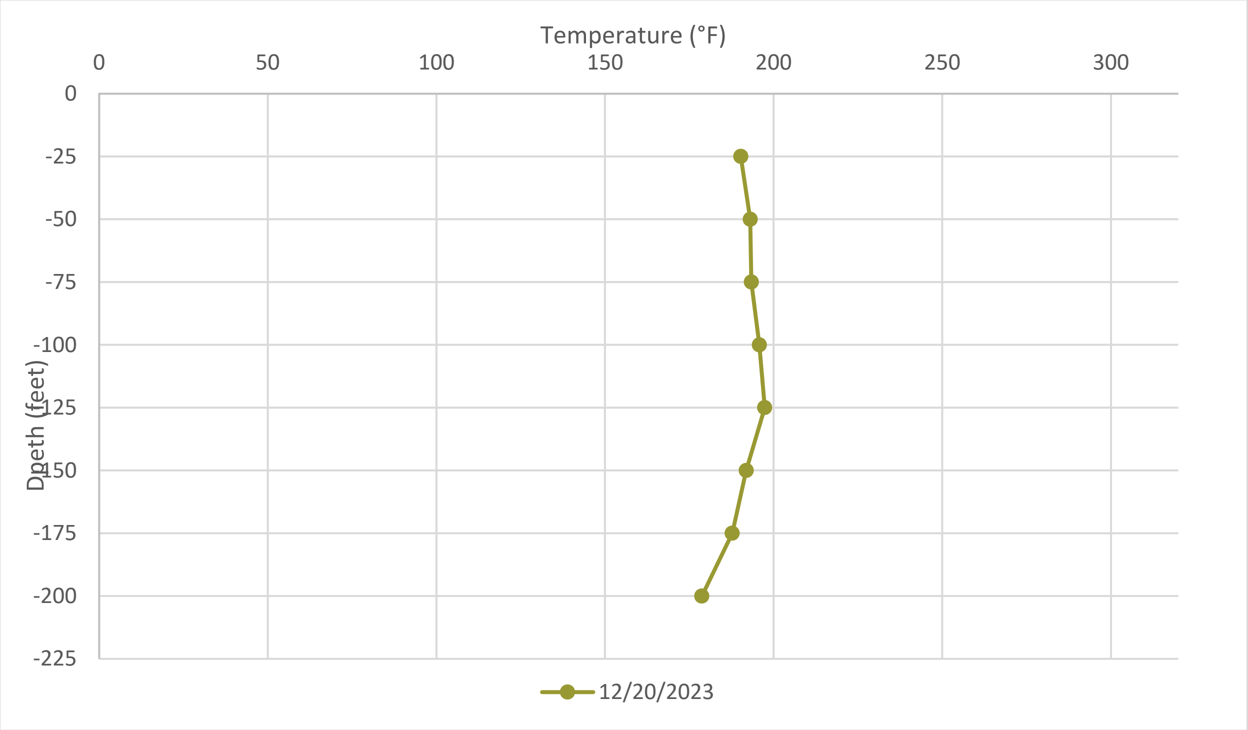


Figure B- 32. Average Temperatures Recorded by TP-8 on December 27, 2023

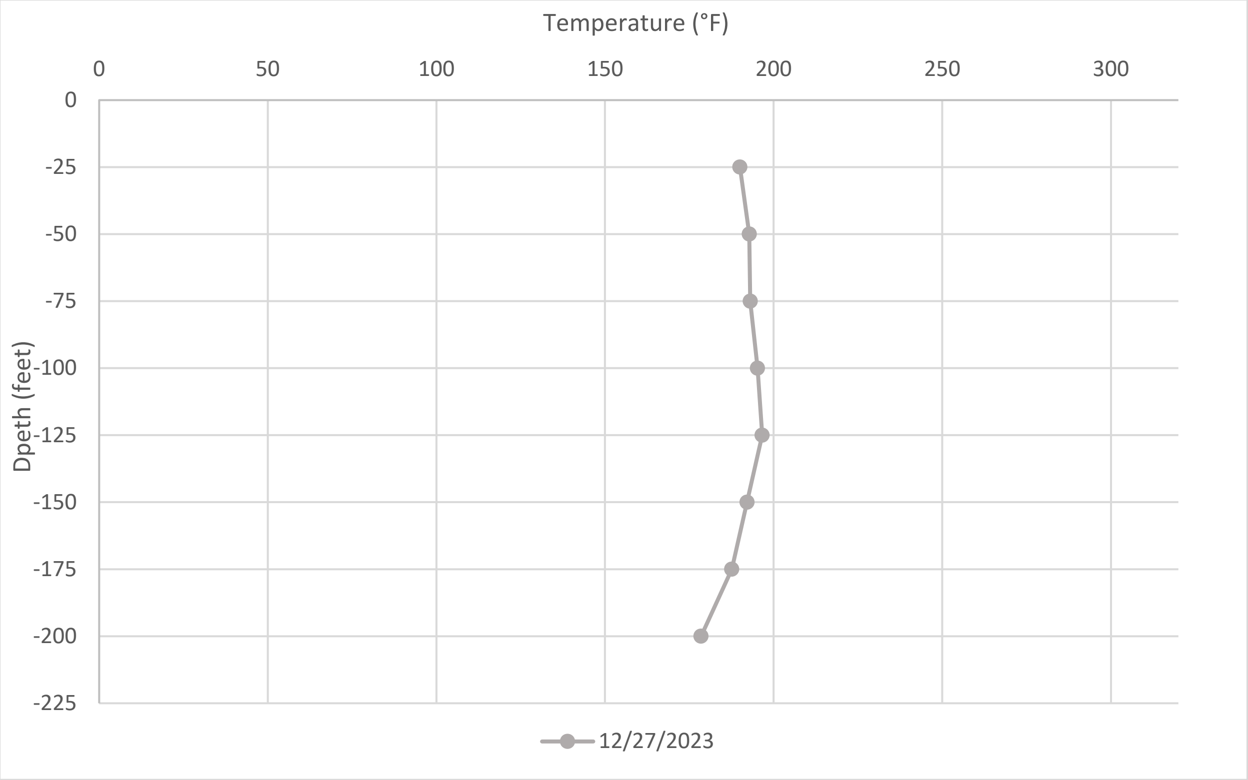


Figure B- 33. Average Temperatures Recorded by TP-9 on December 6, 2023

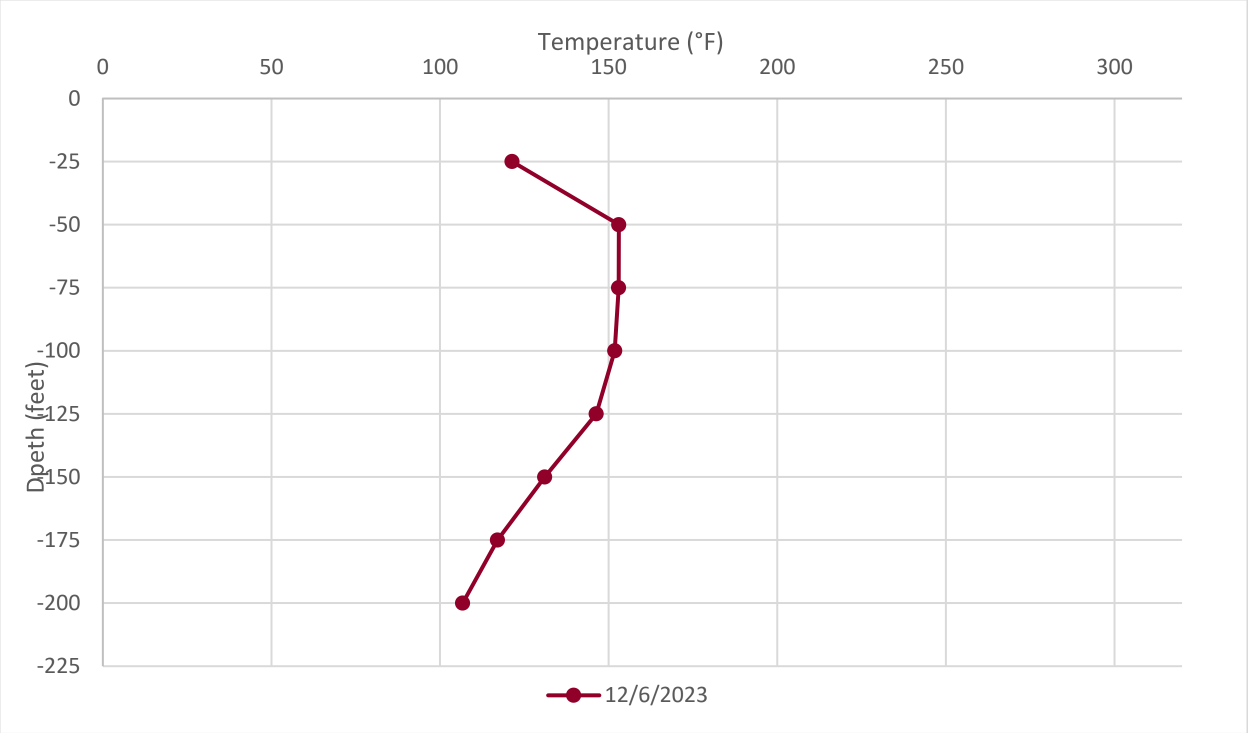


Figure B- 34. Average Temperatures Recorded by TP-9 on December 13, 2023

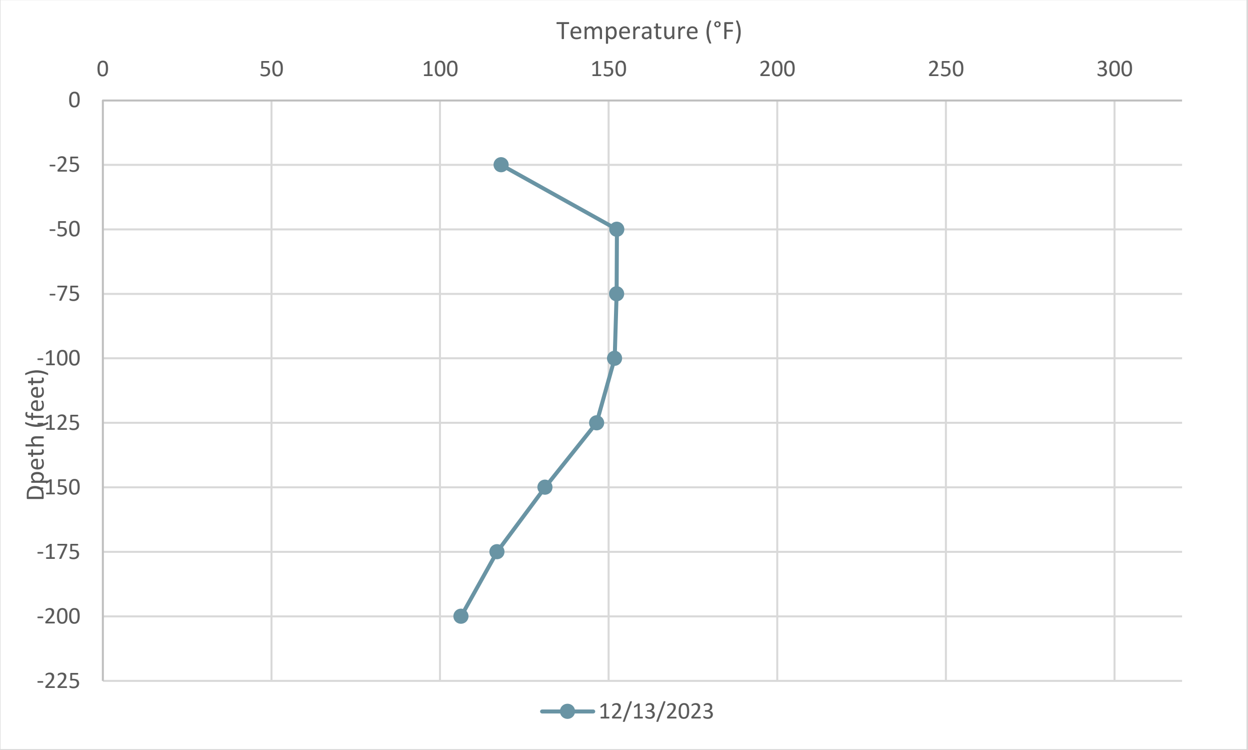


Figure B- 35. Average Temperatures Recorded by TP-9 on December 20, 2023

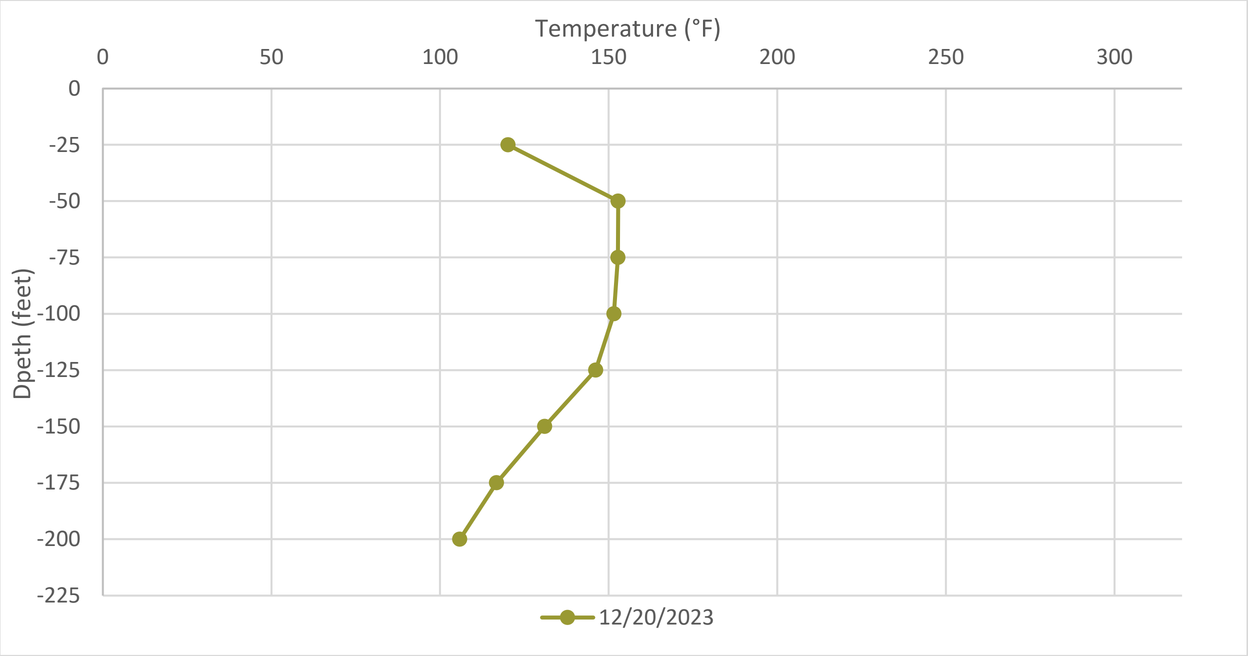
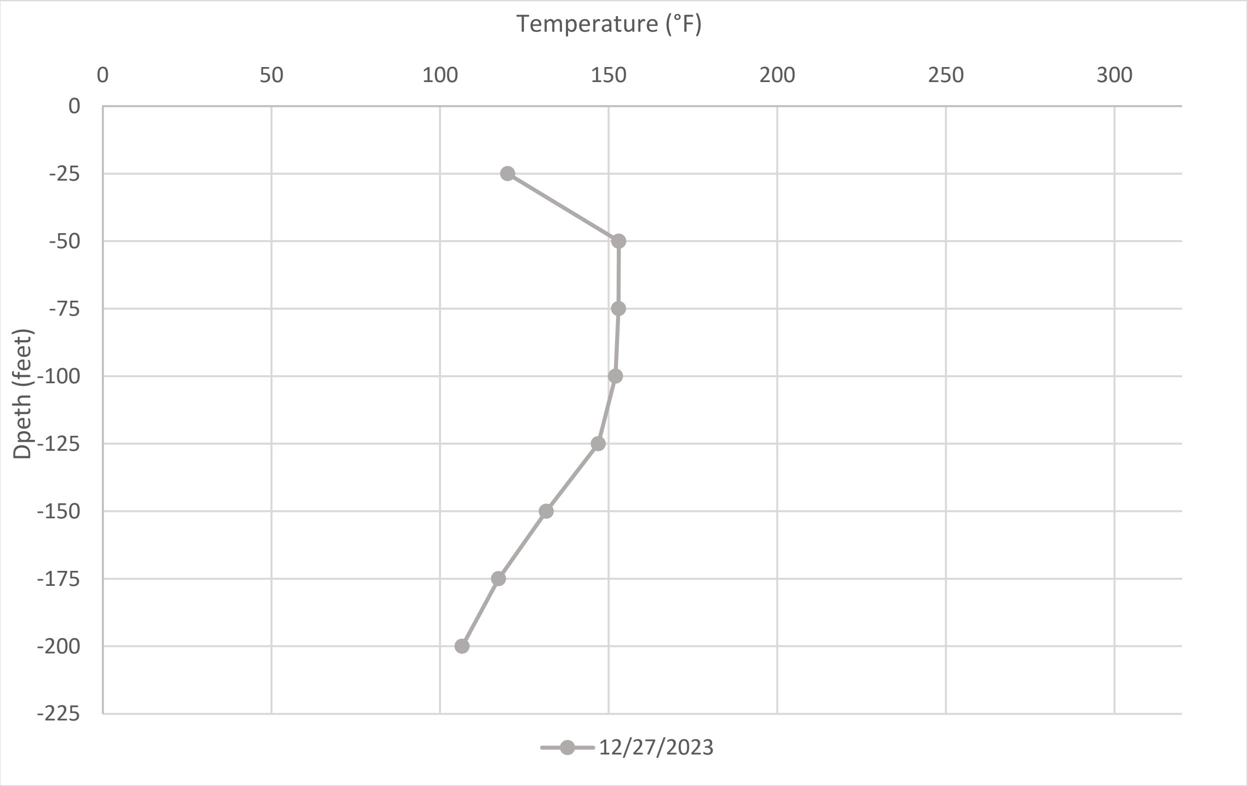


Figure B- 36. Average Temperatures Recorded by TP-9 on December 27, 2023



Appendix C

Daily Wellhead Temperature Averages

Solid Waste Permit 588 Daily Wellhead Temperature Averages

The data provided in this report represent initial readings provided by field instrumentation without Validation, analysis, quality assurance review, or context based on operating conditions. This report is subject to revision following quality assurance review and an analysis of operating conditions. SCS will continue to provide a supplemental report with additional information and further analysis on a monthly basis at a minimum.

SCS ENGINEERS

07222143.00 | January 7, 2024

274 Granite Run Drive
Lancaster, PA 17601
717-550-6330

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 32R

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	111.8	110.2	114.9
Dec 2	112.3	110.0	115.1
Dec 3	111.2	107.5	114.6
Dec 4	109.7	106.5	113.7
Dec 5	111.5	109.4	113.4
Dec 6	107.3	56.9	111.2
Dec 7	111.8	108.2	115.7
Dec 8	113.4	110.0	118.6
Dec 9	114.0	109.5	120.3
Dec 10	112.2	106.6	117.1
Dec 11	107.4	105.3	111.4
Dec 12	109.0	105.5	113.4
Dec 13	110.7	106.9	114.7
Dec 14	112.1	108.2	116.8
Dec 15	114.1	110.1	120.3
Dec 16	114.2	111.1	118.7
Dec 17	116.0	114.0	117.8
Dec 18	96.2	27.1	114.8
Dec 19	79.8	27.1	112.4
Dec 20	106.8	39.8	114.9
Dec 21	81.5	27.1	118.7
Dec 22	114.0	111.3	118.1
Dec 23	113.6	111.2	117.3
Dec 24	114.5	112.2	119.7
Dec 25	114.6	113.0	116.7
Dec 26	111.2	86.7	115.9
Dec 27	113.7	111.7	115.3
Dec 28	112.5	110.8	116.1
Dec 29	110.0	108.2	112.3
Dec 30	83.1	40.6	109.6
Summary	**108.3**	**79.8**	**116.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 34

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	45.9	34.7	55.0
Dec 2	52.9	43.6	64.6
Dec 3	56.1	42.6	67.5
Dec 4	42.8	34.3	68.8
Dec 5	40.8	35.6	47.3
Dec 6	40.2	33.1	60.8
Dec 7	38.3	26.3	62.3
Dec 8	44.0	29.3	74.6
Dec 9	49.0	36.5	78.4
Dec 10	48.8	37.5	54.6
Dec 11	36.8	27.1	55.8
Dec 12	35.9	26.3	61.0
Dec 13	38.4	26.3	64.9
Dec 14	39.1	26.3	71.7
Dec 15	40.8	26.3	77.8
Dec 16	44.1	28.0	70.7
Dec 17	47.9	44.7	52.0
Dec 18	39.5	26.3	51.1
Dec 19	32.5	26.3	54.5
Dec 20	35.4	26.3	65.6
Dec 21	36.3	26.3	69.8
Dec 22	31.4	27.7	34.8
Dec 23	0.0	31.4	31.4
Dec 24	0.0	31.4	31.4
Dec 25	0.0	31.4	31.4
Dec 26	0.0	31.4	31.4
Dec 27	0.0	31.4	31.4
Dec 28	0.0	31.4	31.4
Dec 29	0.0	31.4	31.4
Dec 30	0.0	31.4	31.4
Summary	**30.6**	**0.0**	**56.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 35

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	50.6	42.5	58.4
Dec 2	56.2	49.3	64.8
Dec 3	58.0	47.8	65.4
Dec 4	47.1	40.3	65.5
Dec 5	46.0	41.5	51.3
Dec 6	41.9	33.3	53.1
Dec 7	41.0	26.7	59.7
Dec 8	48.4	36.1	68.6
Dec 9	52.3	43.2	70.0
Dec 10	50.0	37.7	56.7
Dec 11	37.3	29.5	51.0
Dec 12	36.1	26.5	54.1
Dec 13	38.9	26.5	57.8
Dec 14	39.5	26.8	60.6
Dec 15	41.8	26.5	67.4
Dec 16	45.6	31.7	62.0
Dec 17	48.8	47.0	50.8
Dec 18	40.3	26.5	47.5
Dec 19	32.2	26.5	46.2
Dec 20	34.6	26.5	54.3
Dec 21	36.8	26.5	60.8
Dec 22	44.1	31.3	63.6
Dec 23	44.4	32.3	61.6
Dec 24	50.3	37.0	71.8
Dec 25	53.9	41.5	59.5
Dec 26	54.8	52.0	62.1
Dec 27	49.7	38.2	54.4
Dec 28	43.0	36.2	57.5
Dec 29	37.6	35.3	40.7
Dec 30	37.0	34.9	40.7
Summary	**44.6**	**32.2**	**58.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 36A

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	185.6	97.8	194.8
Dec 2	72.7	66.6	89.6
Dec 3	64.4	58.6	71.9
Dec 4	119.5	47.6	196.7
Dec 5	146.3	57.0	195.8
Dec 6	145.6	53.3	194.0
Dec 7	191.6	190.7	192.2
Dec 8	191.1	187.3	192.2
Dec 9	82.4	56.7	190.7
Dec 10	52.8	39.5	61.3
Dec 11	120.6	39.4	195.2
Dec 12	144.0	68.9	192.6
Dec 13	145.2	61.6	190.0
Dec 14	176.2	171.4	183.5
Dec 15	173.6	166.7	178.3
Dec 16	177.6	174.8	179.6
Dec 17	178.3	176.2	179.6
Dec 18	173.4	168.5	176.7
Dec 19	178.7	168.6	182.0
Dec 20	182.9	178.8	184.9
Dec 21	185.2	183.7	187.1
Dec 22	185.9	184.2	186.6
Dec 23	186.0	185.0	186.9
Dec 24	178.0	152.0	186.1
Dec 25	152.2	143.9	165.8
Dec 26	163.8	124.0	176.3
Dec 27	176.0	173.8	177.0
Dec 28	176.5	175.4	177.4
Dec 29	175.4	173.4	176.8
Dec 30	174.9	173.2	176.8
Summary	**155.2**	**52.8**	**191.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 40

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	46.6	36.3	55.1
Dec 2	53.0	44.6	63.3
Dec 3	55.2	41.4	65.8
Dec 4	42.0	33.7	64.6
Dec 5	40.4	34.7	47.1
Dec 6	39.1	31.4	56.6
Dec 7	36.8	27.0	53.7
Dec 8	42.2	29.4	67.6
Dec 9	48.4	38.8	63.8
Dec 10	47.4	34.8	54.4
Dec 11	33.6	27.0	43.5
Dec 12	33.6	27.0	54.3
Dec 13	36.6	27.0	61.0
Dec 14	38.2	27.0	65.5
Dec 15	40.4	27.0	66.7
Dec 16	45.5	30.0	65.8
Dec 17	48.1	46.4	50.6
Dec 18	39.6	27.0	48.6
Dec 19	29.7	27.0	44.3
Dec 20	33.6	27.0	55.7
Dec 21	34.7	27.0	49.8
Dec 22	31.9	28.3	34.8
Dec 23	0.0	32.1	32.1
Dec 24	0.0	32.1	32.1
Dec 25	0.0	32.1	32.1
Dec 26	0.0	32.1	32.1
Dec 27	0.0	32.1	32.1
Dec 28	0.0	32.1	32.1
Dec 29	0.0	32.1	32.1
Dec 30	0.0	32.1	32.1
Summary	**29.9**	**0.0**	**55.2**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 47

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	48.0	35.6	57.7
Dec 2	54.7	46.1	64.4
Dec 3	56.8	44.6	68.9
Dec 4	43.7	34.3	60.6
Dec 5	41.5	35.9	46.7
Dec 6	38.8	32.4	49.1
Dec 7	37.6	26.6	55.0
Dec 8	44.2	30.2	69.7
Dec 9	49.3	37.7	72.7
Dec 10	47.4	34.2	55.0
Dec 11	34.5	26.6	45.0
Dec 12	35.9	26.6	56.9
Dec 13	38.8	26.6	60.9
Dec 14	39.5	27.2	64.0
Dec 15	41.8	26.9	72.0
Dec 16	46.6	30.3	67.7
Dec 17	49.4	47.1	51.6
Dec 18	39.9	26.6	49.6
Dec 19	31.3	26.6	46.2
Dec 20	35.7	26.6	61.6
Dec 21	37.1	26.6	66.2
Dec 22	45.0	29.5	70.0
Dec 23	44.9	31.3	68.8
Dec 24	51.8	35.6	78.1
Dec 25	54.8	41.2	60.7
Dec 26	55.6	52.3	62.8
Dec 27	50.1	39.0	54.2
Dec 28	41.8	35.1	57.5
Dec 29	36.2	33.8	40.0
Dec 30	35.5	33.4	38.6
Summary	**43.6**	**31.3**	**56.8**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 49

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	125.0	116.5	131.1
Dec 2	128.5	120.1	132.9
Dec 3	126.6	120.3	133.5
Dec 4	122.3	109.3	133.0
Dec 5	121.9	114.1	125.3
Dec 6	95.8	56.7	122.3
Dec 7	108.3	65.4	131.5
Dec 8	127.2	118.3	138.7
Dec 9	128.2	118.8	139.7
Dec 10	121.2	103.1	135.1
Dec 11	108.2	85.7	118.9
Dec 12	107.7	29.9	126.0
Dec 13	121.8	105.5	130.8
Dec 14	123.4	114.3	135.1
Dec 15	126.5	113.6	140.5
Dec 16	128.0	123.1	136.7
Dec 17	130.3	122.7	136.0
Dec 18	111.6	93.5	121.8
Dec 19	114.9	97.1	128.4
Dec 20	126.4	108.1	138.5
Dec 21	132.2	126.9	138.8
Dec 22	134.1	129.0	138.3
Dec 23	134.4	130.7	137.1
Dec 24	135.0	130.4	138.9
Dec 25	131.4	126.4	134.9
Dec 26	132.4	124.8	136.1
Dec 27	133.9	129.2	137.1
Dec 28	132.2	127.9	135.0
Dec 29	123.9	108.1	131.8
Dec 30	115.0	106.0	123.4
Summary	**123.6**	**95.8**	**135.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 50

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	119.9	118.8	120.7
Dec 2	120.4	118.9	120.9
Dec 3	119.7	118.9	120.6
Dec 4	118.6	117.0	120.6
Dec 5	117.8	115.4	118.4
Dec 6	107.5	87.1	118.0
Dec 7	106.2	87.6	118.4
Dec 8	116.2	114.5	118.5
Dec 9	116.4	115.2	118.7
Dec 10	114.5	111.3	116.5
Dec 11	110.8	93.3	113.6
Dec 12	108.5	69.2	116.2
Dec 13	115.0	108.9	117.7
Dec 14	116.3	114.8	118.0
Dec 15	117.2	115.6	119.9
Dec 16	117.2	116.0	118.9
Dec 17	117.5	116.5	118.4
Dec 18	115.1	112.1	116.5
Dec 19	113.6	105.9	116.4
Dec 20	114.5	108.8	117.6
Dec 21	116.3	112.3	119.9
Dec 22	117.0	114.5	118.7
Dec 23	116.1	114.2	117.7
Dec 24	118.2	116.4	120.3
Dec 25	117.5	116.4	118.1
Dec 26	117.6	115.3	118.4
Dec 27	117.5	116.8	118.2
Dec 28	116.6	115.9	118.0
Dec 29	115.0	114.1	116.1
Dec 30	113.0	111.9	113.6
Summary	**115.6**	**106.2**	**120.4**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 51

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	46.8	37.1	55.3
Dec 2	53.0	45.1	61.1
Dec 3	54.9	43.6	63.2
Dec 4	41.9	33.6	55.1
Dec 5	40.0	36.0	45.4
Dec 6	37.7	32.3	44.6
Dec 7	36.6	26.0	54.6
Dec 8	42.9	29.9	66.3
Dec 9	48.2	37.3	65.7
Dec 10	46.6	33.5	54.0
Dec 11	33.4	26.0	44.5
Dec 12	34.0	25.9	51.3
Dec 13	37.4	25.9	54.1
Dec 14	38.0	26.7	58.6
Dec 15	40.0	26.3	66.7
Dec 16	45.1	30.2	61.3
Dec 17	48.9	47.5	51.2
Dec 18	38.8	26.0	47.6
Dec 19	29.2	26.0	38.9
Dec 20	33.1	25.9	51.5
Dec 21	34.8	26.0	56.3
Dec 22	42.7	29.2	60.4
Dec 23	43.5	31.3	61.1
Dec 24	49.7	35.3	67.7
Dec 25	54.7	41.2	59.6
Dec 26	55.0	51.9	59.6
Dec 27	49.0	36.5	54.3
Dec 28	40.6	34.9	49.6
Dec 29	35.4	33.2	39.3
Dec 30	35.1	33.0	37.1
Summary	**42.2**	**29.2**	**55.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 52

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	142.5	136.0	146.3
Dec 2	142.5	135.5	146.2
Dec 3	142.8	140.5	144.6
Dec 4	151.5	133.8	174.6
Dec 5	152.7	146.1	174.0
Dec 6	139.8	128.9	147.5
Dec 7	139.1	131.9	144.3
Dec 8	141.9	140.3	144.4
Dec 9	142.2	139.9	145.5
Dec 10	141.3	137.7	143.8
Dec 11	151.9	129.1	177.3
Dec 12	149.5	138.3	158.7
Dec 13	147.6	140.0	167.0
Dec 14	147.4	141.7	167.7
Dec 15	155.9	142.2	177.6
Dec 16	148.0	145.2	149.9
Dec 17	145.6	143.6	146.5
Dec 18	153.9	140.7	175.6
Dec 19	145.2	142.9	146.8
Dec 20	142.8	138.2	145.4
Dec 21	157.2	140.0	181.1
Dec 22	149.0	146.3	151.0
Dec 23	145.6	144.4	147.3
Dec 24	144.6	142.5	146.5
Dec 25	142.7	141.8	143.7
Dec 26	155.3	140.7	178.9
Dec 27	157.1	148.4	179.5
Dec 28	146.6	144.7	148.0
Dec 29	158.8	143.3	178.4
Dec 30	152.5	147.0	172.9
Summary	**147.8**	**139.1**	**158.8**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 53

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	114.0	101.6	122.2
Dec 2	116.9	112.2	122.5
Dec 3	109.4	99.3	116.7
Dec 4	93.6	76.1	120.4
Dec 5	92.3	74.3	106.1
Dec 6	91.0	74.4	104.4
Dec 7	97.3	72.8	115.0
Dec 8	97.2	70.6	123.5
Dec 9	106.3	86.9	125.1
Dec 10	94.8	67.7	110.7
Dec 11	76.1	60.6	100.8
Dec 12	90.8	72.2	110.2
Dec 13	130.3	84.8	187.3
Dec 14	169.8	131.6	192.2
Dec 15	129.4	106.1	176.1
Dec 16	108.1	97.7	121.5
Dec 17	104.4	98.0	110.9
Dec 18	140.2	92.2	188.1
Dec 19	180.4	142.2	193.8
Dec 20	146.2	116.9	193.6
Dec 21	156.8	109.9	194.4
Dec 22	139.2	127.2	150.9
Dec 23	125.6	117.7	134.7
Dec 24	124.1	115.6	137.4
Dec 25	117.8	113.1	120.4
Dec 26	141.5	109.5	189.4
Dec 27	168.0	136.5	192.8
Dec 28	129.4	122.7	135.2
Dec 29	129.6	110.7	180.3
Dec 30	67.7	62.6	107.8
Summary	**119.6**	**67.7**	**180.4**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 54

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	46.2	34.8	55.2
Dec 2	52.9	44.7	62.6
Dec 3	55.8	43.4	67.3
Dec 4	43.3	33.5	61.4
Dec 5	40.2	35.0	46.0
Dec 6	38.9	32.9	48.5
Dec 7	38.5	27.4	59.5
Dec 8	44.5	30.0	74.3
Dec 9	48.7	37.3	75.6
Dec 10	46.7	34.2	53.8
Dec 11	37.2	32.2	52.6
Dec 12	38.7	27.4	57.9
Dec 13	42.6	31.3	62.6
Dec 14	42.7	32.4	64.4
Dec 15	44.1	31.8	75.1
Dec 16	45.3	29.8	67.2
Dec 17	48.6	46.6	50.4
Dec 18	39.8	27.4	47.7
Dec 19	32.5	27.4	48.8
Dec 20	35.5	27.4	61.7
Dec 21	36.6	27.4	66.1
Dec 22	43.6	29.4	72.3
Dec 23	43.9	31.0	71.4
Dec 24	50.8	35.4	78.4
Dec 25	54.0	40.6	59.9
Dec 26	54.7	51.6	62.5
Dec 27	49.1	36.9	53.1
Dec 28	41.8	34.7	58.3
Dec 29	35.5	33.3	39.2
Dec 30	34.9	32.8	37.7
Summary	**43.6**	**32.5**	**55.8**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 55

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	123.6	116.6	129.8
Dec 2	127.1	120.1	131.6
Dec 3	123.9	117.1	129.8
Dec 4	121.8	115.7	130.5
Dec 5	120.7	116.1	125.8
Dec 6	103.8	71.8	120.5
Dec 7	109.0	85.9	127.4
Dec 8	126.6	118.9	138.3
Dec 9	129.1	123.4	136.5
Dec 10	124.0	111.4	134.5
Dec 11	116.7	85.0	132.1
Dec 12	120.9	71.3	138.3
Dec 13	123.9	115.4	131.4
Dec 14	121.7	116.9	130.6
Dec 15	122.9	112.4	134.3
Dec 16	120.4	116.4	130.7
Dec 17	122.4	114.6	126.4
Dec 18	102.9	90.2	112.0
Dec 19	105.8	89.4	118.0
Dec 20	114.0	102.5	125.7
Dec 21	114.9	105.0	127.0
Dec 22	117.2	108.4	124.4
Dec 23	117.6	112.7	126.4
Dec 24	120.2	114.6	128.5
Dec 25	116.4	111.4	121.3
Dec 26	119.8	113.7	124.6
Dec 27	119.2	113.9	124.3
Dec 28	118.5	111.1	121.7
Dec 29	110.9	103.3	118.4
Dec 30	106.3	99.8	110.9
Summary	**118.1**	**102.9**	**129.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 56

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	108.9	102.1	114.3
Dec 2	111.8	109.4	115.0
Dec 3	112.6	106.9	116.2
Dec 4	102.1	91.6	108.3
Dec 5	99.8	95.5	102.5
Dec 6	90.2	81.1	98.6
Dec 7	91.1	77.4	99.8
Dec 8	99.2	94.9	102.0
Dec 9	101.3	92.8	108.1
Dec 10	98.1	88.7	105.6
Dec 11	88.1	80.8	91.1
Dec 12	88.8	69.6	98.3
Dec 13	95.2	88.1	99.6
Dec 14	93.6	85.5	98.0
Dec 15	96.8	92.9	101.2
Dec 16	98.5	90.7	105.0
Dec 17	101.6	95.8	106.7
Dec 18	92.4	79.0	99.8
Dec 19	82.3	75.8	87.1
Dec 20	84.7	78.1	90.7
Dec 21	84.9	75.1	93.4
Dec 22	91.8	85.5	99.1
Dec 23	93.2	87.0	100.8
Dec 24	95.3	90.3	100.2
Dec 25	96.7	93.3	98.7
Dec 26	96.5	90.6	101.7
Dec 27	98.2	94.2	100.8
Dec 28	93.8	91.4	95.9
Dec 29	88.7	85.9	93.4
Dec 30	85.3	83.8	87.1
Summary	**95.4**	**82.3**	**112.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 57

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	151.2	136.0	175.8
Dec 2	149.5	145.8	153.7
Dec 3	167.1	128.3	176.5
Dec 4	147.0	114.3	176.2
Dec 5	125.7	115.6	133.0
Dec 6	118.0	110.2	123.5
Dec 7	128.3	117.4	138.3
Dec 8	135.0	128.0	147.7
Dec 9	137.7	129.5	147.4
Dec 10	135.8	126.4	142.7
Dec 11	124.5	116.6	141.2
Dec 12	129.1	109.9	143.6
Dec 13	138.9	131.4	147.1
Dec 14	139.5	134.6	144.7
Dec 15	142.6	135.7	152.1
Dec 16	143.4	134.5	151.8
Dec 17	144.9	140.2	149.9
Dec 18	135.7	125.3	143.1
Dec 19	133.3	121.9	145.6
Dec 20	139.5	127.4	150.9
Dec 21	141.5	136.4	149.7
Dec 22	144.5	137.4	152.0
Dec 23	143.1	137.9	149.2
Dec 24	145.6	140.0	154.2
Dec 25	144.4	143.1	146.1
Dec 26	144.0	137.4	147.3
Dec 27	145.1	141.1	148.2
Dec 28	143.4	140.4	147.2
Dec 29	139.5	136.1	142.2
Dec 30	136.5	134.6	138.0
Summary	**139.8**	**118.0**	**167.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 58

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	79.3	72.5	85.2
Dec 2	82.9	77.2	88.4
Dec 3	83.4	79.7	87.7
Dec 4	75.5	67.9	90.6
Dec 5	74.7	70.9	79.2
Dec 6	63.2	41.4	78.8
Dec 7	58.2	32.7	77.6
Dec 8	74.7	65.5	88.9
Dec 9	79.5	71.6	91.2
Dec 10	76.1	66.3	82.6
Dec 11	65.5	59.3	71.0
Dec 12	63.7	30.5	80.7
Dec 13	71.8	61.8	81.6
Dec 14	72.1	63.0	82.6
Dec 15	73.7	63.2	88.7
Dec 16	76.7	64.9	88.5
Dec 17	78.5	74.9	81.1
Dec 18	67.7	56.9	74.4
Dec 19	62.1	52.7	72.3
Dec 20	67.2	53.2	83.6
Dec 21	69.8	61.5	80.6
Dec 22	74.7	63.2	86.9
Dec 23	74.5	66.0	84.4
Dec 24	78.7	71.4	92.3
Dec 25	80.2	73.0	83.4
Dec 26	80.3	75.3	83.8
Dec 27	76.9	68.2	81.7
Dec 28	73.5	69.2	78.7
Dec 29	67.9	65.0	71.2
Dec 30	66.0	64.7	67.8
Summary	**73.0**	**58.2**	**83.4**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 59

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	119.2	118.4	120.1
Dec 2	119.6	118.2	121.9
Dec 3	120.1	119.0	121.8
Dec 4	119.7	118.3	121.0
Dec 5	119.5	119.0	120.1
Dec 6	112.6	96.2	119.2
Dec 7	113.1	99.9	127.8
Dec 8	117.6	116.2	120.0
Dec 9	118.8	117.3	120.0
Dec 10	118.4	117.0	119.4
Dec 11	116.8	113.3	118.3
Dec 12	115.1	88.2	122.1
Dec 13	117.4	115.6	119.7
Dec 14	116.9	116.2	117.8
Dec 15	117.4	116.3	119.4
Dec 16	117.5	115.9	118.3
Dec 17	118.0	117.5	118.3
Dec 18	116.7	114.8	120.0
Dec 19	115.4	113.7	116.6
Dec 20	116.0	114.1	117.2
Dec 21	115.8	103.3	117.3
Dec 22	116.6	115.9	117.4
Dec 23	116.6	115.8	117.5
Dec 24	116.8	116.0	117.4
Dec 25	116.9	116.3	117.1
Dec 26	116.9	116.3	117.6
Dec 27	116.8	116.1	117.3
Dec 28	116.2	115.7	116.5
Dec 29	115.5	115.0	116.4
Dec 30	114.9	114.5	115.2
Summary	**117.0**	**112.6**	**120.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 60

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	115.0	113.0	117.3
Dec 2	116.2	113.5	117.8
Dec 3	115.3	114.3	117.0
Dec 4	113.6	112.1	117.0
Dec 5	112.4	109.0	113.8
Dec 6	98.4	72.5	112.8
Dec 7	96.8	71.4	114.1
Dec 8	111.9	109.2	115.8
Dec 9	113.1	110.7	117.4
Dec 10	110.9	106.8	114.6
Dec 11	105.9	96.5	109.8
Dec 12	99.9	55.7	109.7
Dec 13	105.1	97.8	111.2
Dec 14	104.6	100.7	108.9
Dec 15	105.8	101.7	112.4
Dec 16	105.2	102.4	109.5
Dec 17	106.1	103.4	108.5
Dec 18	99.8	92.9	104.1
Dec 19	96.7	82.7	104.1
Dec 20	101.1	89.1	107.7
Dec 21	102.2	90.5	108.9
Dec 22	104.1	100.6	109.1
Dec 23	103.8	100.2	109.7
Dec 24	105.3	101.6	110.4
Dec 25	104.6	102.3	106.7
Dec 26	105.4	102.0	110.9
Dec 27	104.5	100.3	107.1
Dec 28	103.5	100.4	107.1
Dec 29	100.5	97.1	103.3
Dec 30	98.6	95.9	99.9
Summary	**105.5**	**96.7**	**116.2**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 62

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	126.0	125.0	126.9
Dec 2	126.5	124.8	127.2
Dec 3	126.1	125.2	126.9
Dec 4	125.0	122.2	127.4
Dec 5	124.9	123.6	125.7
Dec 6	123.6	121.1	125.2
Dec 7	124.4	122.6	126.3
Dec 8	125.4	123.6	128.1
Dec 9	125.6	122.7	128.5
Dec 10	124.2	121.9	126.3
Dec 11	122.5	121.6	124.2
Dec 12	122.6	118.7	125.0
Dec 13	123.0	121.5	124.6
Dec 14	123.0	117.1	125.5
Dec 15	124.0	121.8	127.1
Dec 16	123.8	122.4	125.8
Dec 17	124.3	122.6	125.5
Dec 18	108.1	43.5	123.9
Dec 19	90.3	33.8	121.8
Dec 20	115.1	50.8	123.3
Dec 21	88.4	30.4	125.6
Dec 22	121.8	119.3	125.4
Dec 23	121.6	119.3	124.7
Dec 24	122.0	119.8	125.5
Dec 25	120.5	119.5	122.4
Dec 26	112.8	83.0	120.9
Dec 27	117.9	114.2	120.4
Dec 28	118.4	117.0	121.0
Dec 29	115.4	113.0	117.0
Dec 30	85.3	40.1	113.4
Summary	**118.4**	**85.3**	**126.5**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 63

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	127.3	125.7	128.9
Dec 2	128.8	125.1	130.5
Dec 3	127.7	125.8	129.1
Dec 4	125.6	118.0	129.7
Dec 5	125.4	123.1	126.8
Dec 6	120.6	97.9	125.2
Dec 7	123.5	119.6	127.2
Dec 8	125.6	121.0	131.4
Dec 9	126.2	121.6	132.6
Dec 10	124.2	119.9	127.7
Dec 11	121.7	119.4	126.7
Dec 12	122.5	118.7	126.7
Dec 13	123.0	120.1	127.2
Dec 14	122.1	104.1	127.9
Dec 15	124.8	120.4	130.4
Dec 16	123.7	121.7	128.9
Dec 17	124.2	120.6	125.7
Dec 18	102.6	26.6	121.9
Dec 19	78.9	26.6	116.3
Dec 20	103.5	34.6	116.7
Dec 21	75.9	26.6	121.9
Dec 22	101.8	91.9	112.6
Dec 23	91.9	82.8	103.1
Dec 24	94.7	85.3	113.1
Dec 25	87.7	83.5	90.5
Dec 26	80.6	59.0	90.8
Dec 27	85.0	79.1	88.7
Dec 28	83.3	78.9	93.6
Dec 29	73.9	68.3	78.2
Dec 30	54.2	35.8	68.7
Summary	**107.7**	**54.2**	**128.8**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 64

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	132.2	130.2	133.8
Dec 2	133.7	130.7	134.5
Dec 3	132.5	131.2	133.4
Dec 4	131.0	126.7	132.9
Dec 5	130.2	127.1	131.7
Dec 6	126.9	124.1	130.3
Dec 7	127.9	124.7	131.2
Dec 8	130.7	128.3	133.3
Dec 9	131.3	128.0	134.7
Dec 10	130.1	126.5	133.2
Dec 11	127.4	126.2	128.8
Dec 12	128.4	126.1	131.5
Dec 13	128.7	127.0	131.4
Dec 14	128.6	124.6	132.1
Dec 15	130.7	127.7	134.3
Dec 16	130.6	129.1	133.0
Dec 17	131.1	129.2	132.5
Dec 18	112.5	42.8	129.1
Dec 19	87.4	39.4	124.4
Dec 20	112.5	55.5	120.3
Dec 21	85.4	34.1	124.2
Dec 22	120.4	116.0	125.0
Dec 23	120.8	117.6	124.0
Dec 24	122.1	118.9	126.3
Dec 25	120.0	118.0	122.1
Dec 26	116.1	92.6	121.5
Dec 27	119.2	115.9	121.2
Dec 28	117.3	114.9	119.6
Dec 29	113.2	110.2	114.8
Dec 30	89.3	56.9	112.4
Summary	**121.6**	**85.4**	**133.7**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 65

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	149.2	148.6	149.7
Dec 2	63.1	45.7	148.7
Dec 3	56.1	44.4	65.0
Dec 4	109.2	34.2	156.5
Dec 5	132.4	41.7	154.7
Dec 6	133.4	37.4	152.1
Dec 7	147.6	146.5	148.4
Dec 8	147.3	145.9	149.1
Dec 9	100.9	48.2	147.1
Dec 10	47.5	34.9	54.7
Dec 11	100.9	32.4	154.2
Dec 12	111.9	26.5	154.3
Dec 13	116.2	26.5	152.9
Dec 14	147.4	146.3	148.6
Dec 15	146.6	144.7	148.6
Dec 16	145.8	144.6	147.1
Dec 17	145.5	143.7	146.5
Dec 18	141.0	136.6	143.7
Dec 19	138.8	130.7	143.2
Dec 20	141.0	132.3	144.8
Dec 21	141.9	130.9	146.4
Dec 22	143.2	140.3	145.9
Dec 23	142.6	140.4	145.0
Dec 24	143.0	141.2	145.9
Dec 25	140.4	138.4	143.0
Dec 26	140.8	134.8	143.0
Dec 27	140.6	137.1	143.5
Dec 28	139.0	137.0	140.7
Dec 29	135.9	132.4	138.2
Dec 30	132.8	130.9	134.2
Summary	**127.4**	**47.5**	**149.2**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 66

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	138.2	133.4	140.6
Dec 2	139.5	135.7	141.2
Dec 3	138.6	135.4	141.2
Dec 4	136.6	130.7	141.7
Dec 5	136.8	134.6	139.5
Dec 6	118.6	82.9	137.2
Dec 7	115.6	85.9	137.4
Dec 8	134.9	128.5	140.3
Dec 9	137.9	134.4	142.2
Dec 10	135.2	129.2	140.2
Dec 11	129.1	113.2	133.2
Dec 12	127.3	76.5	141.1
Dec 13	136.3	124.4	142.2
Dec 14	135.8	132.0	140.6
Dec 15	136.8	132.1	142.0
Dec 16	137.0	131.5	141.8
Dec 17	138.5	134.2	141.6
Dec 18	130.1	123.6	134.7
Dec 19	130.0	117.0	138.0
Dec 20	134.7	122.5	141.5
Dec 21	136.0	119.0	140.8
Dec 22	138.1	133.6	141.5
Dec 23	137.9	133.6	142.7
Dec 24	139.5	134.7	144.4
Dec 25	137.1	133.7	139.9
Dec 26	138.5	134.4	141.2
Dec 27	138.6	135.3	141.6
Dec 28	138.0	134.5	139.7
Dec 29	135.3	131.3	138.7
Dec 30	133.0	127.7	134.6
Summary	**134.7**	**115.6**	**139.5**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 67

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	126.2	110.4	135.9
Dec 2	128.9	123.6	134.2
Dec 3	128.3	123.8	132.2
Dec 4	121.5	104.9	133.4
Dec 5	122.4	115.6	129.0
Dec 6	105.0	88.7	120.7
Dec 7	114.8	102.8	127.4
Dec 8	123.4	111.2	140.3
Dec 9	126.8	110.4	142.2
Dec 10	120.8	100.6	136.0
Dec 11	106.4	87.2	124.9
Dec 12	113.6	97.0	128.8
Dec 13	117.0	105.3	129.6
Dec 14	115.6	98.9	129.8
Dec 15	121.7	105.5	139.8
Dec 16	120.7	104.4	132.3
Dec 17	122.4	112.4	136.0
Dec 18	106.0	84.5	115.8
Dec 19	103.7	87.0	121.1
Dec 20	112.9	96.7	131.2
Dec 21	118.2	105.0	136.5
Dec 22	124.9	111.4	136.8
Dec 23	124.2	113.7	133.1
Dec 24	127.1	119.0	138.5
Dec 25	119.8	115.8	126.2
Dec 26	117.7	100.8	127.7
Dec 27	124.9	117.3	130.4
Dec 28	121.8	114.7	125.9
Dec 29	113.0	101.5	120.7
Dec 30	108.1	99.2	113.3
Summary	**118.6**	**103.7**	**128.9**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 68

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Dec 1	129.6	128.2	130.7
Dec 2	128.0	126.4	128.9
Dec 3	127.0	126.1	127.8
Dec 4	125.9	121.2	127.8
Dec 5	132.9	125.5	141.2
Dec 6	135.6	128.1	141.1
Dec 7	130.5	121.9	139.0
Dec 8	130.1	128.6	132.0
Dec 9	128.4	126.8	130.4
Dec 10	126.0	120.7	128.8
Dec 11	124.1	105.0	135.8
Dec 12	123.7	98.0	131.8
Dec 13	125.7	118.9	127.8
Dec 14	129.1	123.5	136.0
Dec 15	131.3	126.0	139.8
Dec 16	128.0	123.0	129.8
Dec 17	126.7	125.1	127.8
Dec 18	123.8	121.2	128.4
Dec 19	122.4	113.8	125.8
Dec 20	122.9	106.3	127.4
Dec 21	124.7	112.7	126.7
Dec 22	125.4	124.1	126.7
Dec 23	124.9	123.5	126.2
Dec 24	125.4	124.2	126.9
Dec 25	124.7	124.2	125.3
Dec 26	124.6	122.9	127.2
Dec 27	124.4	123.7	125.1
Dec 28	124.0	123.3	124.8
Dec 29	123.2	122.2	124.4
Dec 30	122.3	121.5	123.3
Summary	**126.5**	**122.3**	**135.6**

Appendix D

Solid Waste Permit 588 Daily Borehole Temperature Averages

Appendix D Table of Contents

Section Page

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 1

	Depth from Surface					
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft
1-Dec	165.4	225.2	225.7	249.9	262.9	270.4
2-Dec	165.7	225.6	226.1	250.3	262.8	270.7
3-Dec	165.8	226.1	226.5	250.3	262.3	270.8
4-Dec	165.4	226.8	227.3	250.1	261.7	270.6
5-Dec	165.3	227.4	227.8	249.5	260.9	270.2
6-Dec	165.3	228.1	228.5	249.4	260.8	270.3
7-Dec	165.4	228.3	228.8	249.2	260.8	270.3
8-Dec	165.6	228.4	228.8	249.1	260.5	270.6
9-Dec	165.6	228.9	229.4	249.3	260.6	270.4
10-Dec	165.6	228.3	228.8	248.5	260.1	270.2
11-Dec	165.3	228.0	228.4	248.1	259.5	269.9
12-Dec	165.4	228.2	228.6	248.3	259.8	270.2
13-Dec	165.5	228.7	229.2	248.5	259.6	270.4
14-Dec	165.5	228.8	229.2	248.4	259.3	270.1
15-Dec	165.6	228.8	229.3	248.3	259.5	270.2
16-Dec	165.6	228.8	229.2	248.2	259.3	270.2
17-Dec	165.6	228.8	229.1	248.1	259.3	270.1
18-Dec	165.4	228.9	229.3	248.1	259.0	269.8
19-Dec	165.3	228.9	229.4	248.3	259.1	269.9
20-Dec	165.4	229.1	229.5	248.4	258.9	269.7
21-Dec	165.3	229.3	229.6	248.4	258.8	269.4
22-Dec	165.6	229.4	229.8	248.5	259.0	269.7
23-Dec	165.5	228.7	229.2	248.0	258.9	269.6
24-Dec	165.8	228.1	228.7	248.4	259.6	270.1
25-Dec	165.7	227.6	228.0	248.1	259.6	269.7
26-Dec	165.9	226.9	227.3	248.0	259.8	269.8
27-Dec	165.7	226.2	226.6	247.8	259.7	269.5
28-Dec	165.6	225.9	226.3	247.6	259.8	269.5
29-Dec	165.2	225.2	225.7	247.1	259.4	269.1
30-Dec	165.3	225.0	225.5	247.4	259.8	269.1
31-Dec	165.5	225.7	226.1	247.6	259.6	269.4
Average	**165.5**	**227.7**	**228.1**	**248.6**	**260.0**	**270.0**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 2

	Depth from Surface					
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft
1-Dec	161.5	236.4	236.8	264.1	251.7	263.2
2-Dec	162.1	236.5	236.9	264.2	252.1	263.3
3-Dec	162.3	236.3	236.8	264.1	251.9	263.5
4-Dec	163.4	236.1	236.6	264.0	252.1	263.1
5-Dec	161.8	236.0	236.4	263.7	251.5	262.9
6-Dec	162.4	236.2	236.6	263.8	251.8	263.0
7-Dec	161.7	236.1	236.7	263.7	251.5	263.0
8-Dec	161.7	236.2	236.7	263.8	251.6	263.2
9-Dec	161.7	236.2	236.6	263.8	251.6	263.1
10-Dec	162.1	235.9	236.3	263.5	251.2	262.9
11-Dec	162.1	235.9	236.4	263.4	251.6	262.9
12-Dec	163.5	236.3	236.8	263.8	252.4	262.9
13-Dec	161.9	236.5	237.0	263.5	251.2	262.9
14-Dec	161.4	236.5	236.9	263.4	251.0	262.9
15-Dec	161.1	236.3	236.8	263.5	251.1	263.0
16-Dec	161.1	236.2	236.6	263.6	251.2	262.9
17-Dec	161.5	235.7	236.1	263.4	250.8	262.8
18-Dec	163.4	235.3	235.7	263.2	250.7	262.6
19-Dec	162.1	235.7	236.2	263.2	250.6	262.6
20-Dec	161.6	235.9	236.4	263.3	250.8	262.6
21-Dec	161.3	235.9	236.3	263.3	250.8	262.6
22-Dec	161.9	235.8	236.3	263.3	250.6	262.7
23-Dec	162.7	235.9	236.3	263.2	250.6	262.6
24-Dec	163.9	235.9	236.4	263.4	250.8	262.8
25-Dec	166.6	235.7	236.2	263.3	250.6	262.7
26-Dec	172.0	235.7	236.1	263.4	250.6	262.7
27-Dec	181.0	235.3	235.8	263.2	250.7	262.5
28-Dec	187.7	234.9	235.3	263.1	250.4	262.4
29-Dec	193.8	234.6	235.0	262.8	250.0	262.1
30-Dec	192.9	234.7	235.1	262.8	250.0	262.1
31-Dec	192.6	234.9	235.3	263.1	250.3	262.3
Average	**167.0**	**235.9**	**236.3**	**263.5**	**251.1**	**262.8**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 3

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-Dec	197.1	237.4	237.4	252.3	258.7	267.2	269.1	255.0
2-Dec	198.2	237.5	237.7	252.5	258.9	267.5	269.3	255.2
3-Dec	197.6	237.7	237.7	252.7	259.0	267.5	269.4	255.4
4-Dec	198.3	237.3	237.4	252.3	258.5	267.1	269.1	255.1
5-Dec	199.2	236.9	237.0	252.1	258.2	266.8	268.8	254.8
6-Dec	200.0	236.9	237.0	252.1	258.3	266.9	269.0	255.0
7-Dec	200.9	237.1	237.2	252.3	258.5	267.1	269.3	255.3
8-Dec	201.3	237.3	237.5	252.5	258.6	267.3	269.5	255.5
9-Dec	201.4	237.3	237.3	252.2	258.4	266.9	269.2	255.2
10-Dec	201.1	237.0	237.1	252.0	258.1	266.7	268.9	255.0
11-Dec	200.6	236.8	236.9	251.8	257.8	266.4	268.8	254.8
12-Dec	201.1	237.2	237.3	252.1	258.2	266.8	269.2	255.3
13-Dec	201.2	237.3	237.4	252.1	258.2	266.8	269.3	255.4
14-Dec	201.5	237.2	237.2	251.6	258.1	266.7	269.2	255.3
15-Dec	201.5	237.0	237.0	251.6	258.1	266.7	269.2	255.4
16-Dec	201.6	236.9	237.0	251.5	257.9	266.6	269.1	255.2
17-Dec	201.8	236.8	236.8	251.5	257.8	266.4	268.9	255.0
18-Dec	201.8	236.5	236.6	251.1	257.4	266.1	268.7	254.8
19-Dec	201.9	236.5	236.6	250.9	257.5	266.2	268.9	255.1
20-Dec	202.6	236.4	236.5	250.8	257.6	266.3	269.0	255.1
21-Dec	202.6	236.3	236.4	250.6	257.4	266.0	268.8	254.9
22-Dec	203.1	236.6	236.7	250.9	257.7	266.3	269.1	255.3
23-Dec	202.8	236.6	236.7	251.0	257.5	266.1	269.0	255.2
24-Dec	202.5	236.9	237.0	251.3	257.7	266.3	269.2	255.5
25-Dec	201.8	236.8	236.9	251.2	257.5	266.1	269.0	255.1
26-Dec	199.4	237.0	237.0	251.2	257.5	266.0	268.9	255.1
27-Dec	199.5	236.6	236.6	250.6	257.1	265.6	268.8	255.0
28-Dec	199.8	236.2	236.2	250.3	256.9	265.4	268.6	254.9
29-Dec	199.4	235.9	236.0	250.1	256.6	265.0	268.4	254.6
30-Dec	199.2	235.9	236.0	250.1	256.5	264.9	268.3	254.6
31-Dec	200.1	236.4	236.4	250.1	256.8	265.2	268.6	255.0
Average	**200.7**	**236.8**	**236.9**	**251.5**	**257.8**	**266.4**	**269.0**	**255.1**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 4

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-Dec	206.4	206.2	206.4	206.3	232.6	254.0	244.7	178.5
2-Dec	206.6	206.4	206.6	206.5	235.5	254.4	244.9	178.8
3-Dec	206.7	206.5	206.6	206.5	234.0	254.8	245.4	179.5
4-Dec	206.5	206.4	206.5	206.4	230.5	253.9	245.2	179.4
5-Dec	206.5	206.2	206.4	206.3	228.1	252.4	244.8	179.0
6-Dec	206.8	206.6	206.7	206.5	227.7	252.3	245.0	179.3
7-Dec	206.8	206.5	206.8	206.7	226.2	251.9	245.1	179.3
8-Dec	206.5	206.3	206.5	206.5	228.8	251.2	244.9	179.3
9-Dec	205.8	206.8	207.3	212.9	222.7	611.9	241.4	162.8
10-Dec	205.8	206.1	205.0	204.4	226.1	227.5	236.2	175.9
11-Dec	193.5	213.8	213.4	231.1	230.9	204.2	243.6	174.4
12-Dec	156.8	228.2	228.8	250.2	292.4	222.3	244.6	175.1
13-Dec	162.6	228.7	228.8	250.3	285.3	233.7	244.9	175.9
14-Dec	173.4	228.2	228.5	250.1	280.1	240.6	245.0	176.1
15-Dec	181.6	229.3	229.6	249.9	275.4	247.4	245.3	176.0
16-Dec	187.0	229.7	230.3	249.6	272.3	251.1	245.0	176.8
17-Dec	187.5	229.4	229.8	248.9	271.3	253.0	244.8	176.5
18-Dec	186.0	228.1	228.4	249.6	270.6	252.5	244.8	177.0
19-Dec	185.9	228.5	229.0	249.1	269.7	254.1	245.1	177.6
20-Dec	188.1	229.4	229.8	249.2	267.7	256.1	245.0	178.2
21-Dec	189.6	229.2	229.6	249.4	263.9	258.8	244.9	177.5
22-Dec	191.8	229.2	229.7	249.5	263.6	259.4	245.2	177.4
23-Dec	193.4	229.7	230.3	249.6	262.4	260.7	245.1	177.1
24-Dec	195.1	229.1	229.6	249.6	262.6	260.6	245.4	176.4
25-Dec	194.7	228.8	229.3	249.4	262.3	260.7	245.2	175.6
26-Dec	194.1	229.3	221.2	249.3	263.9	262.5	245.2	175.9
27-Dec	195.2	227.8	228.3	249.3	261.8	260.6	245.0	175.0
28-Dec	193.7	228.8	229.3	249.2	261.8	260.4	245.1	175.2
29-Dec	193.0	227.9	228.3	248.4	261.8	250.2	244.7	173.9
30-Dec	191.1	227.5	227.9	248.6	261.3	237.0	244.6	174.7
31-Dec	190.9	228.7	229.2	249.1	261.4	237.9	245.1	175.2
Average	**193.2**	**221.1**	**221.1**	**235.1**	**254.7**	**260.9**	**244.6**	**176.4**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 5

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-Dec	201.5	212.5	213.4	207.1	216.3	239.6	246.5	196.5
2-Dec	203.2	212.7	213.2	207.2	216.2	239.9	246.7	196.6
3-Dec	203.2	212.2	212.7	207.0	216.2	240.1	246.8	196.7
4-Dec	203.0	211.9	211.8	206.9	216.1	239.7	246.5	196.4
5-Dec	203.9	211.6	211.8	206.9	215.8	239.4	246.4	196.2
6-Dec	203.6	212.3	212.1	207.2	215.5	239.1	246.5	196.3
7-Dec	205.5	212.0	209.3	207.3	215.3	239.2	246.5	196.4
8-Dec	202.6	207.0	207.2	207.3	215.3	239.5	246.7	196.5
9-Dec	202.9	207.0	207.1	207.3	214.5	239.3	246.8	196.6
10-Dec	205.7	206.5	206.6	206.8	213.0	238.9	246.6	196.5
11-Dec	204.7	206.7	206.8	207.1	212.7	238.6	246.5	196.3
12-Dec	205.0	207.4	207.5	207.7	212.5	238.3	246.6	196.3
13-Dec	207.1	207.7	207.7	208.0	211.6	238.1	246.7	196.4
14-Dec	207.5	207.8	207.8	208.1	210.6	238.0	246.6	196.4
15-Dec	207.8	207.7	207.6	207.9	209.8	237.8	246.7	196.5
16-Dec	207.3	207.3	207.2	207.6	208.8	237.0	246.7	196.5
17-Dec	206.7	206.5	206.5	206.9	207.4	236.2	246.7	196.5
18-Dec	206.3	206.2	206.1	206.5	206.8	235.6	246.5	196.3
19-Dec	207.2	207.1	207.0	207.4	207.7	235.6	246.6	196.5
20-Dec	207.5	207.3	207.3	207.7	207.8	235.4	246.5	196.4
21-Dec	207.5	207.3	207.3	207.7	207.8	235.0	246.6	196.4
22-Dec	207.6	207.3	207.3	207.7	208.5	234.7	246.8	196.6
23-Dec	207.3	207.3	207.3	207.6	208.8	234.2	246.7	196.5
24-Dec	207.3	207.4	207.4	207.7	209.1	233.9	246.9	196.7
25-Dec	207.3	207.1	207.1	207.5	209.6	233.7	246.9	196.8
26-Dec	207.1	206.9	206.9	207.3	209.2	233.5	246.9	196.8
27-Dec	206.5	206.5	206.5	206.9	208.8	233.0	246.7	196.7
28-Dec	206.4	206.2	206.3	206.7	209.2	232.4	246.6	196.6
29-Dec	206.4	206.0	206.1	206.6	208.7	231.8	246.3	196.4
30-Dec	206.5	206.2	206.3	206.7	209.5	231.7	246.2	196.5
31-Dec	206.9	206.5	206.6	207.0	210.1	231.7	246.3	196.6
Average	**205.8**	**208.1**	**208.1**	**207.3**	**211.3**	**236.5**	**246.6**	**196.5**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 6

	Depth from Surface				
Date	25 ft	50 ft	75 ft	100 ft	125 ft
1-Dec	171.8	229.1	229.1	229.0	230.9
2-Dec	171.6	229.2	229.3	229.3	231.1
3-Dec	170.3	229.3	229.3	229.4	231.1
4-Dec	169.4	228.9	229.0	229.1	230.7
5-Dec	168.5	228.7	228.7	228.8	230.6
6-Dec	168.1	228.7	228.7	228.9	230.6
7-Dec	167.9	228.8	228.9	228.9	230.8
8-Dec	167.9	229.0	229.0	229.2	230.7
9-Dec	167.5	228.9	229.0	229.1	230.6
10-Dec	166.4	226.6	228.8	230.6	235.4
11-Dec	164.8	224.1	228.6	228.9	240.5
12-Dec	164.2	228.6	228.8	227.2	232.9
13-Dec	164.6	228.7	228.8	227.5	232.4
14-Dec	164.8	228.8	228.8	228.2	231.8
15-Dec	165.4	228.8	228.9	228.4	231.4
16-Dec	165.7	228.8	228.9	228.6	230.8
17-Dec	165.7	228.7	228.8	228.7	230.2
18-Dec	165.6	228.5	228.5	228.4	230.0
19-Dec	165.5	228.5	228.6	228.5	230.3
20-Dec	165.3	228.5	228.6	228.6	230.3
21-Dec	165.2	228.5	228.6	228.6	230.0
22-Dec	165.3	228.6	228.7	229.0	229.8
23-Dec	165.2	228.6	228.7	229.1	229.6
24-Dec	165.3	228.9	228.9	229.4	230.0
25-Dec	165.0	228.7	228.7	228.9	230.4
26-Dec	165.1	228.8	228.8	228.9	231.0
27-Dec	164.5	228.5	228.5	228.3	231.2
28-Dec	164.2	228.4	228.4	227.5	232.0
29-Dec	163.9	228.0	228.0	226.9	232.3
30-Dec	163.9	228.0	227.9	227.2	232.0
31-Dec	164.1	228.2	228.2	227.5	232.3
Average	**166.2**	**228.5**	**228.7**	**228.6**	**231.4**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 7

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-Dec	152.2	210.5	210.4	205.1	235.0	234.8	227.0	208.2
2-Dec	152.2	211.9	210.7	205.3	234.2	234.6	226.1	206.4
3-Dec	151.8	219.5	206.6	203.9	231.3	233.4	223.8	202.7
4-Dec	152.0	217.9	206.1	204.1	229.0	233.1	224.2	202.2
5-Dec	151.9	217.6	206.3	204.2	226.2	232.0	224.2	202.1
6-Dec	151.3	213.8	206.6	204.5	225.6	232.9	224.7	202.1
7-Dec	151.6	210.1	206.7	204.2	214.0	232.6	224.6	201.3
8-Dec	152.4	211.0	206.7	204.4	209.6	232.2	225.2	201.8
9-Dec	152.0	212.2	206.9	204.9	207.6	224.6	225.6	201.7
10-Dec	151.4	209.8	206.5	204.4	209.9	206.3	225.2	201.0
11-Dec	158.9	208.9	206.7	204.7	211.0	203.3	223.7	201.5
12-Dec	182.7	208.8	207.2	205.4	212.4	203.9	213.8	201.8
13-Dec	187.4	209.4	207.5	205.2	213.9	203.5	215.4	201.5
14-Dec	203.2	208.9	207.6	206.5	212.1	204.2	207.8	201.7
15-Dec	206.5	207.7	207.4	208.4	211.0	204.3	205.6	201.4
16-Dec	207.0	206.8	207.1	207.8	211.7	203.6	206.9	201.8
17-Dec	206.6	206.0	206.4	206.9	211.5	202.5	203.1	201.3
18-Dec	206.2	205.6	206.0	206.4	211.1	202.0	202.3	201.1
19-Dec	206.8	206.4	206.7	207.8	211.5	203.0	208.9	202.1
20-Dec	207.1	206.7	207.0	207.8	212.4	203.1	211.2	201.6
21-Dec	207.3	206.7	207.0	207.0	212.6	203.6	211.7	202.0
22-Dec	207.3	206.7	207.0	206.0	213.6	203.4	211.4	202.0
23-Dec	207.3	206.6	206.8	205.7	214.2	202.5	210.3	201.4
24-Dec	207.4	206.7	206.8	204.8	218.9	199.6	208.8	199.5
25-Dec	207.2	206.3	206.4	205.2	220.4	197.0	208.6	198.1
26-Dec	207.0	206.2	206.2	209.5	212.6	198.9	209.5	199.1
27-Dec	206.3	205.4	205.7	226.3	194.8	196.8	208.4	198.1
28-Dec	206.0	204.6	205.9	230.3	193.8	196.1	207.7	196.8
29-Dec	205.6	202.7	205.2	236.3	193.3	195.7	207.0	195.3
30-Dec	205.6	204.6	205.4	236.1	193.5	196.3	207.6	194.5
31-Dec	206.0	205.9	205.5	238.3	192.7	195.7	207.5	193.3
Average	**185.9**	**208.8**	**206.8**	**210.2**	**213.0**	**210.2**	**214.4**	**200.8**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 8

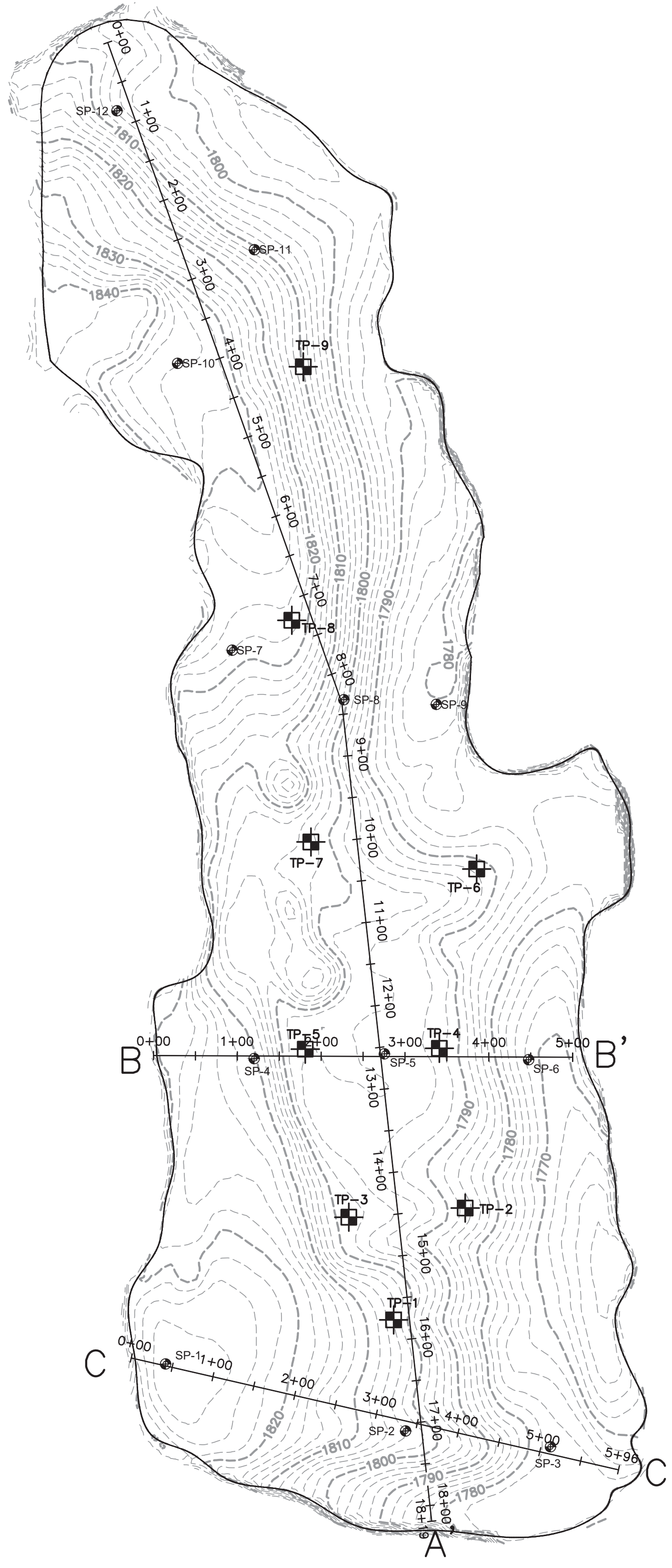
	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-Dec	189.7	192.5	192.7	195.0	196.4	191.5	187.5	178.9
2-Dec	189.3	192.7	192.9	195.1	196.5	191.7	187.7	179.1
3-Dec	189.9	192.7	193.0	195.1	196.5	191.9	187.8	179.2
4-Dec	189.8	192.4	192.7	194.9	196.3	191.6	187.5	178.9
5-Dec	189.7	192.4	192.6	194.8	196.2	191.3	187.3	178.6
6-Dec	189.8	192.5	192.9	195.1	196.6	191.6	187.6	178.8
7-Dec	190.0	192.7	193.0	195.3	196.8	191.7	187.7	178.9
8-Dec	190.1	192.8	193.2	195.4	196.9	192.0	187.9	179.1
9-Dec	190.1	192.8	193.1	195.3	196.8	192.0	187.7	178.9
10-Dec	189.1	192.6	192.8	195.0	196.4	191.9	187.5	178.7
11-Dec	187.7	192.7	193.0	195.3	196.7	191.9	187.7	178.8
12-Dec	189.7	193.0	193.3	195.7	197.2	191.9	187.7	178.9
13-Dec	190.2	193.1	193.4	195.9	197.4	191.8	187.7	178.7
14-Dec	190.3	193.2	193.5	196.0	197.5	191.8	187.7	178.8
15-Dec	190.3	193.3	193.5	196.0	197.5	192.0	187.7	178.8
16-Dec	190.1	193.1	193.3	195.7	197.2	191.9	187.6	178.7
17-Dec	189.6	192.8	193.1	195.2	196.6	191.9	187.5	178.5
18-Dec	189.2	192.5	192.8	194.9	196.3	191.8	187.5	178.6
19-Dec	190.0	192.9	193.2	195.5	197.0	191.9	187.7	178.8
20-Dec	190.3	193.1	193.4	195.8	197.4	191.9	187.8	178.7
21-Dec	190.2	193.1	193.3	195.7	197.2	191.8	187.6	178.5
22-Dec	190.3	193.1	193.4	195.8	197.3	192.1	187.7	178.7
23-Dec	190.3	193.1	193.4	195.7	197.2	192.0	187.6	178.6
24-Dec	190.5	193.3	193.6	195.9	197.4	192.3	187.9	178.8
25-Dec	190.3	193.1	193.3	195.6	197.0	192.1	187.6	178.5
26-Dec	190.2	193.1	193.4	195.6	196.9	192.3	187.8	178.7
27-Dec	190.0	192.8	193.1	195.2	196.6	192.1	187.6	178.5
28-Dec	190.0	192.7	193.0	195.2	196.6	192.2	187.7	178.6
29-Dec	189.9	192.5	192.8	195.0	196.3	191.9	187.4	178.2
30-Dec	189.9	192.6	192.8	195.1	196.4	191.8	187.4	178.2
31-Dec	189.5	192.9	193.2	195.5	196.9	192.1	187.7	178.4
Average	**189.9**	**192.8**	**193.1**	**195.4**	**196.8**	**191.9**	**187.6**	**178.7**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 9

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-Dec	121.6	153.2	153.2	152.1	146.6	131.4	117.4	107.2
2-Dec	121.8	153.5	153.4	152.4	147.0	131.6	117.6	107.5
3-Dec	121.6	153.5	153.4	152.5	147.1	131.7	117.7	107.5
4-Dec	121.4	153.1	153.1	152.0	146.5	131.2	117.1	106.9
5-Dec	121.2	152.9	152.9	151.8	146.4	131.1	117.1	106.8
6-Dec	121.4	153.0	153.0	151.8	146.3	131.0	117.1	106.7
7-Dec	121.4	153.0	153.0	151.8	146.3	131.0	117.0	106.6
8-Dec	121.7	153.3	153.3	152.0	146.5	131.2	117.2	106.8
9-Dec	121.7	153.4	153.4	152.2	146.7	131.5	117.5	107.1
10-Dec	114.6	152.2	152.1	152.2	147.0	131.4	117.3	107.0
11-Dec	112.0	150.6	150.6	151.8	147.1	131.0	116.9	106.6
12-Dec	115.9	151.7	151.7	151.7	146.7	131.0	116.8	106.3
13-Dec	118.1	152.5	152.4	151.8	146.5	131.1	116.9	106.3
14-Dec	119.2	152.7	152.7	151.7	146.4	131.2	117.0	106.2
15-Dec	119.9	152.9	152.8	151.8	146.5	131.2	117.1	106.3
16-Dec	120.2	152.9	152.9	152.0	146.7	131.4	117.2	106.4
17-Dec	120.1	152.9	152.9	152.1	146.8	131.5	117.4	106.6
18-Dec	119.7	152.6	152.5	151.8	146.6	131.2	117.1	106.2
19-Dec	120.0	152.6	152.6	151.5	146.2	131.0	116.8	105.8
20-Dec	120.2	152.8	152.8	151.6	146.2	131.0	116.8	105.8
21-Dec	120.2	152.9	152.8	151.7	146.3	131.1	116.9	106.0
22-Dec	120.3	153.1	153.1	151.9	146.5	131.3	117.1	106.2
23-Dec	120.2	153.1	153.0	151.9	146.7	131.3	117.2	106.3
24-Dec	120.6	153.3	153.2	152.1	147.1	131.6	117.4	106.5
25-Dec	120.5	153.4	153.3	152.3	147.3	131.8	117.5	106.8
26-Dec	120.3	153.3	153.2	152.3	147.3	131.8	117.6	106.9
27-Dec	120.1	153.0	153.0	152.1	147.0	131.5	117.4	106.6
28-Dec	119.7	152.7	152.7	151.8	146.6	131.3	117.1	106.3
29-Dec	119.5	152.5	152.4	151.6	146.4	131.1	116.9	106.2
30-Dec	119.5	152.5	152.5	151.5	146.3	131.1	116.9	106.2
31-Dec	120.0	152.9	152.8	151.7	146.4	131.2	117.0	106.3
Average	**119.8**	**152.8**	**152.8**	**151.9**	**146.6**	**131.3**	**117.2**	**106.5**

Appendix E

Monthly Topography Analysis



LEGEND

—— MAJOR CONTOURS (EVERY 10')

—— MINOR CONTOURS (EVERY 2')

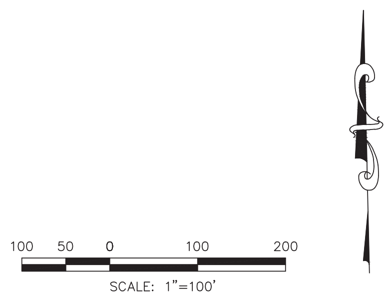
—— APPROXIMATE SIDEWALL LOCATION

● SP-9 SETTLEMENT PLATE

TP-3 ⊞ TEMPERATURE MONITORING PROBE

NOTES:

1. GRADES SHOWN AS CONTOUR LINES ONLY WITHIN THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON DECEMBER 2, 2022 BY SCS ENGINEERS.
2. ANY DETERMINATION OF TOPOGRAPHY OR CONTOURS, OR ANY DEPICTION OF PHYSICAL IMPROVEMENTS, PROPERTY LINES, OR BOUNDARIES IS FOR GENERAL INFORMATION ONLY AND SHALL NOT BE USED FOR DESIGN, MODIFICATION, OR CONSTRUCTION OF IMPROVEMENTS TO REAL PROPERTY OR FLOOD PLAIN DETERMINATION.
3. THE HORIZONTAL DATUM IS STATE PLANE VIRGINIA SOUTH ZONE NAD-83 (2011).
4. THE VERTICAL DATUM IS BASED UPON NAVD-88.



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SHEET TITLE
DECEMBER 2022
LANDFILL TOPOGRAPHY

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VIRGINIA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113
PH. (804) 378-7440 FAX. (804) 378-7433

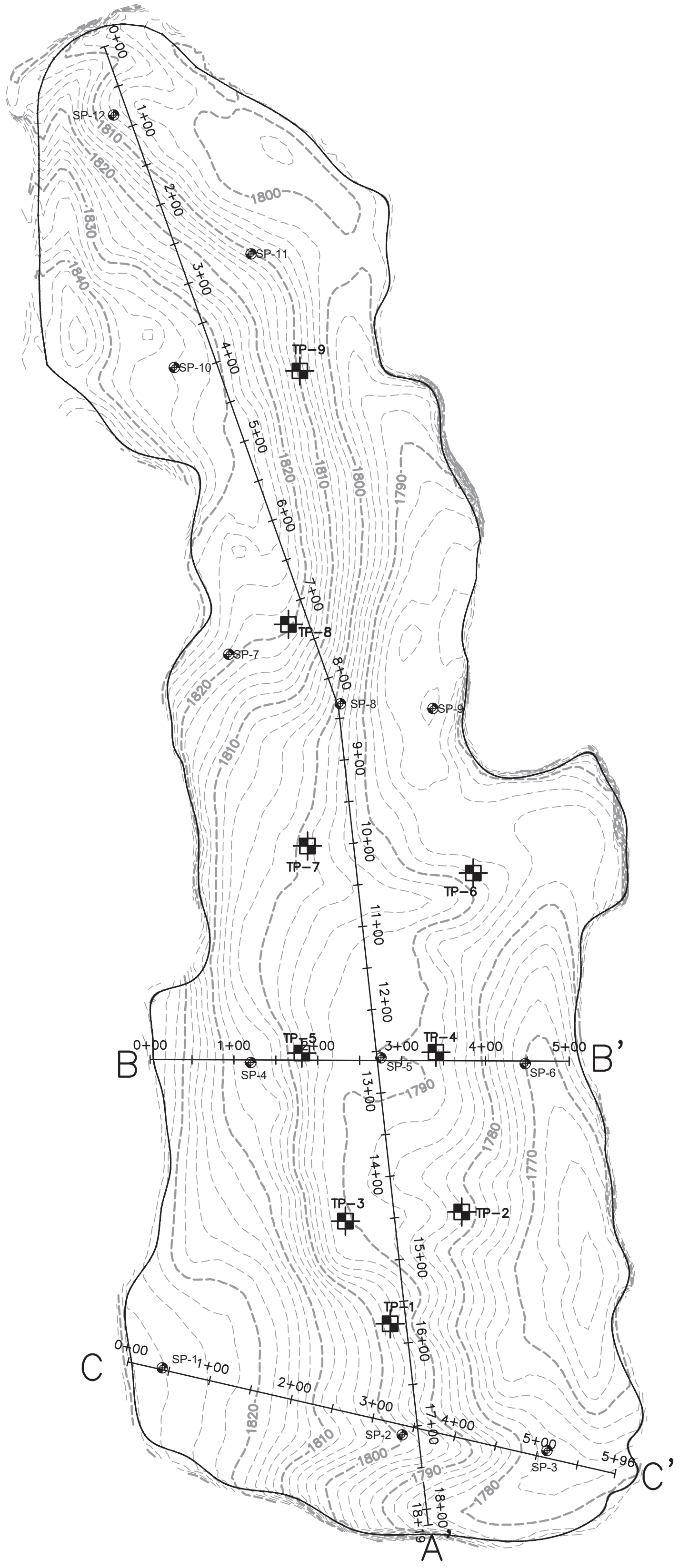
PROJ. NO. 02218208.05
DWN. BY: HGW
Q/A RVW BY: CJW
DSN. BY:
CHK. BY: CJW
APP. BY: CJW

CADD FILE: SURF COMP

DATE: 1/5/2024

SCALE:

DRAWING NO.
1 of **8**



LEGEND

—	MAJOR CONTOURS (EVERY 10')
—	MINOR CONTOURS (EVERY 2')
—	APPROXIMATE SIDEWALL LOCATION
● SP-9	SETTLEMENT PLATE
TP-3 ⊞	TEMPERATURE MONITORING PROBE

NOTES:

1. GRADES SHOWN AS CONTOUR LINES ONLY WITHIN THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON SEPTEMBER 15, 2023 BY SCS ENGINEERS.
2. ANY DETERMINATION OF TOPOGRAPHY OR CONTOURS, OR ANY DEPICTION OF PHYSICAL IMPROVEMENTS, PROPERTY LINES, OR BOUNDARIES IS FOR GENERAL INFORMATION ONLY AND SHALL NOT BE USED FOR DESIGN, MODIFICATION, OR CONSTRUCTION OF IMPROVEMENTS TO REAL PROPERTY OR FLOOD PLAIN DETERMINATION.
3. THE HORIZONTAL DATUM IS STATE PLANE VIRGINIA SOUTH ZONE NAD-83 (2011).
4. THE VERTICAL DATUM IS BASED UPON NAVD-88.

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SCALE: 1"=100'

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SHEET TITLE

SEPTEMBER 2023
LANDFILL TOPOGRAPHY

PROJECT TITLE

MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT

CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VIRGINIA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113
PH. (804) 378-7440 FAX. (804) 378-7433

PROJ. NO. 02218208.05
DWN. BY: HGW
Q/A RVW BY: CJW
DSN. BY:
CHK. BY: CJW
APP. BY: CJW

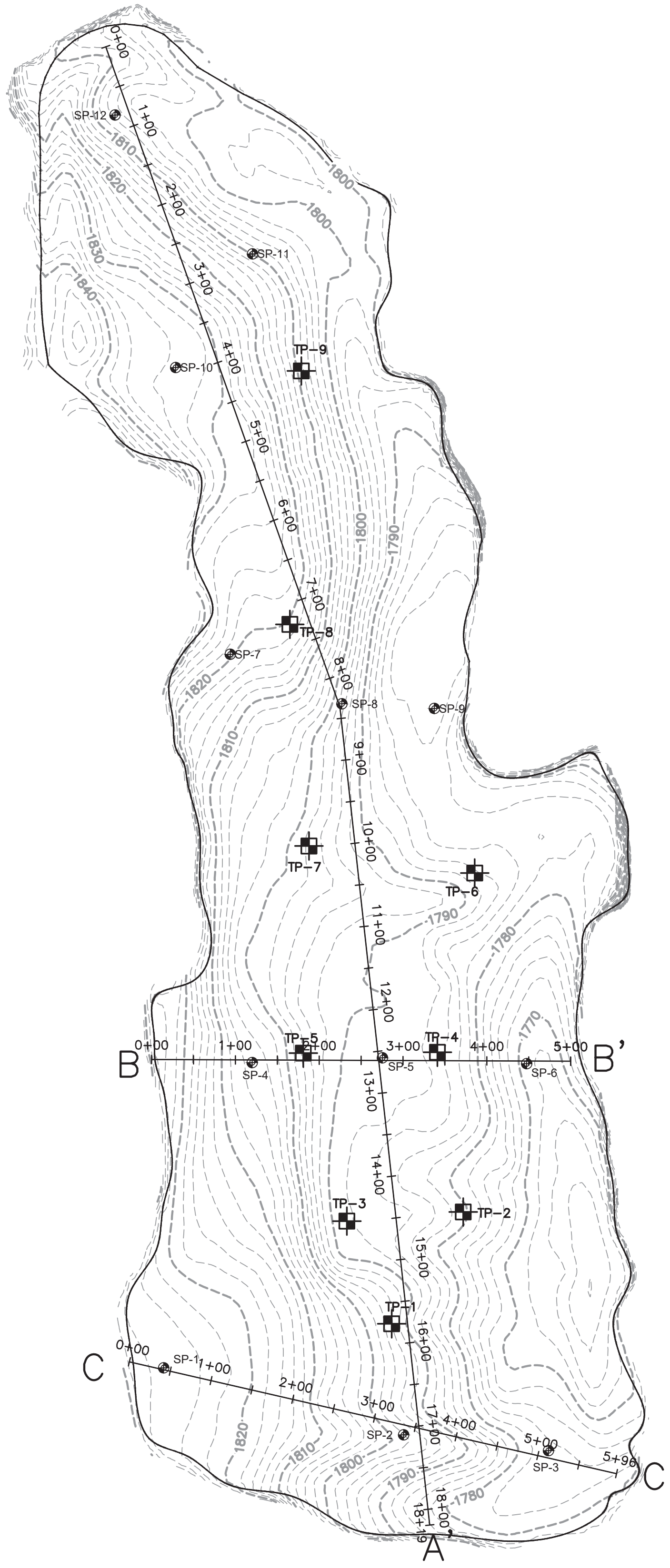
CADD FILE: SURF COMP

DATE: 1/5/2024

SCALE:

DRAWING NO.

2 of **8**

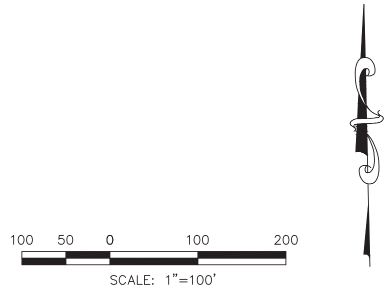


LEGEND

- MAJOR CONTOURS (EVERY 10')
- MINOR CONTOURS (EVERY 2')
- APPROXIMATE SIDEWALL LOCATION
- SP-9 SETTLEMENT PLATE
- TP-3 TEMPERATURE MONITORING PROBE

NOTES:

1. GRADES SHOWN AS CONTOUR LINES ONLY WITHIN THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON NOVEMBER 16 2023 BY SCS ENGINEERS.
2. ANY DETERMINATION OF TOPOGRAPHY OR CONTOURS, OR ANY DEPICTION OF PHYSICAL IMPROVEMENTS, PROPERTY LINES, OR BOUNDARIES IS FOR GENERAL INFORMATION ONLY AND SHALL NOT BE USED FOR DESIGN, MODIFICATION, OR CONSTRUCTION OF IMPROVEMENTS TO REAL PROPERTY OR FLOOD PLAIN DETERMINATION.
3. THE HORIZONTAL DATUM IS STATE PLANE VIRGINIA SOUTH ZONE NAD–83 (2011).
4. THE VERTICAL DATUM IS BASED UPON NAVD–88.



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SHEET TITLE
NOVEMBER 2023
LANDFILL TOPOGRAPHY

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VIRGINIA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
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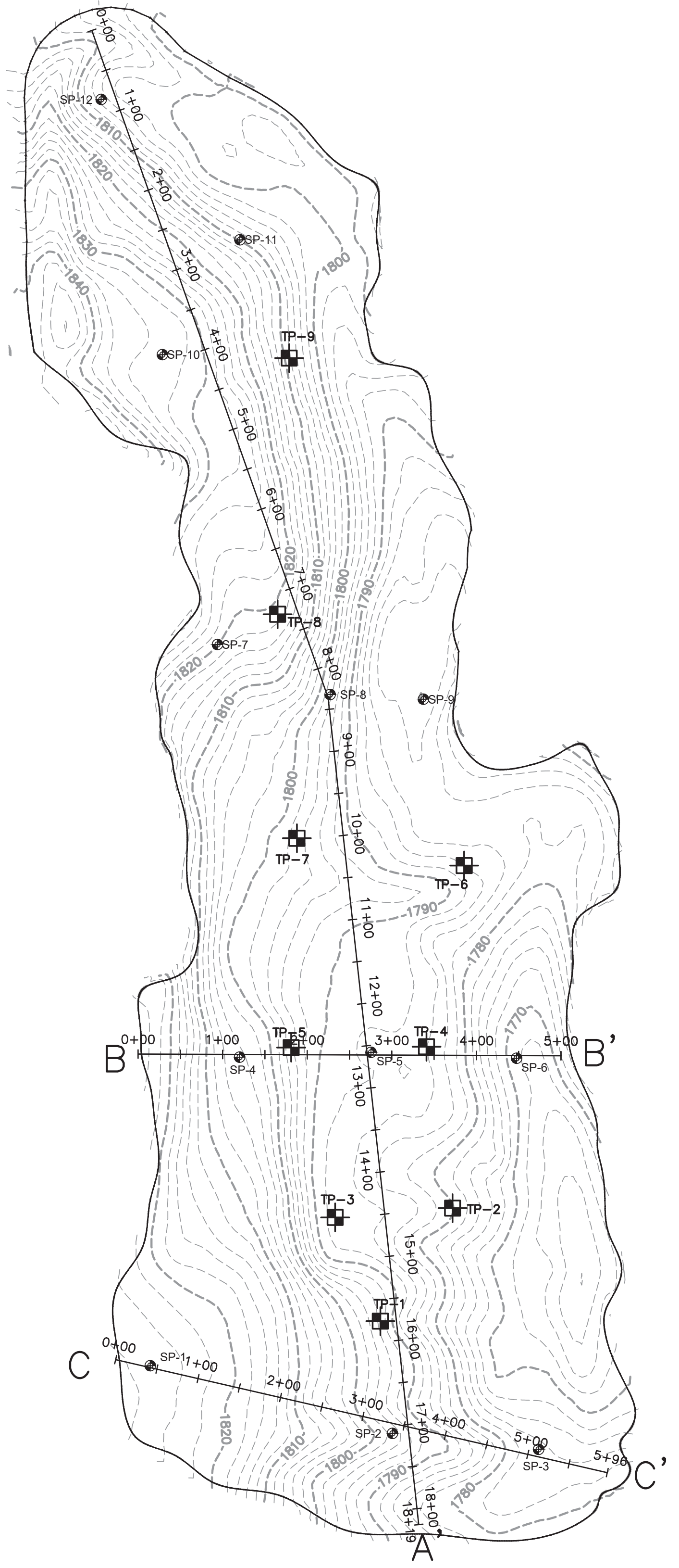
CADD FILE: SURF COMP
DATE: 1/5/2024
SCALE:
DRAWING NO.
3 of 8

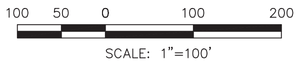


LEGEND

—	MAJOR CONTOURS (EVERY 10')
—	MINOR CONTOURS (EVERY 2')
—	APPROXIMATE SIDEWALL LOCATION
●SP-9	SETTLEMENT PLATE
TP-3 ⊞	TEMPERATURE MONITORING PROBE

NOTES:

1. GRADES SHOWN AS CONTOUR LINES ONLY WITHIN THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON DECEMBER 20, 2023 BY SCS ENGINEERS.
2. ANY DETERMINATION OF TOPOGRAPHY OR CONTOURS, OR ANY DEPICTION OF PHYSICAL IMPROVEMENTS, PROPERTY LINES, OR BOUNDARIES IS FOR GENERAL INFORMATION ONLY AND SHALL NOT BE USED FOR DESIGN, MODIFICATION, OR CONSTRUCTION OF IMPROVEMENTS TO REAL PROPERTY OR FLOOD PLAIN DETERMINATION.
3. THE HORIZONTAL DATUM IS STATE PLANE VIRGINIA SOUTH ZONE NAD-83 (2011).
4. THE VERTICAL DATUM IS BASED UPON NAVD-88.



SCALE: 1"=100'

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SHEET TITLE
DECEMBER 2023
LANDFILL TOPOGRAPHY

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VIRGINIA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113
PH. (804) 378-7440 FAX. (804) 378-7433

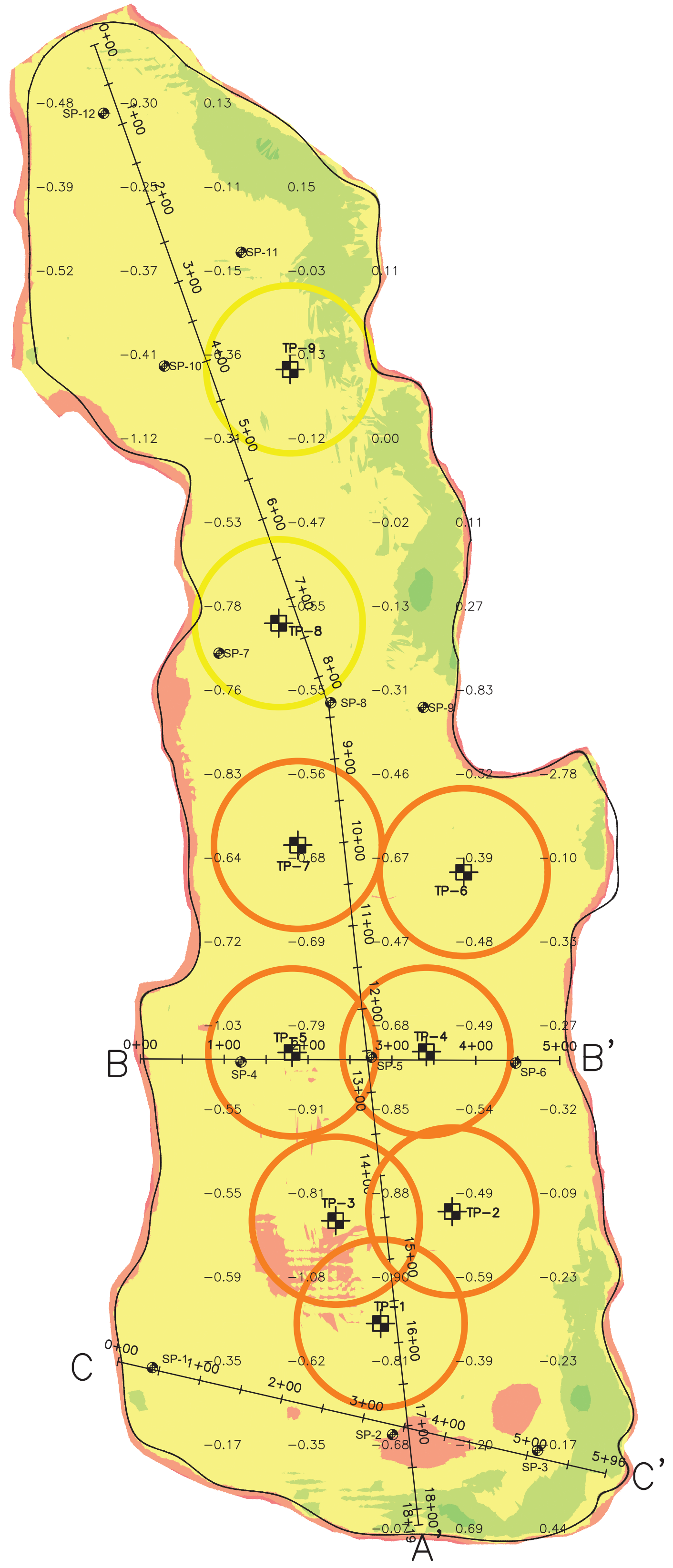
PROJ. NO. 02218208.05	DWN. BY: HGW	Q/A RVW BY: CJW
DSN. BY:	CHK. BY: CJW	APP. BY: CJW

CADD FILE: SURF COMP

DATE: 1/5/2024

SCALE:

DRAWING NO.
4 of **8**



LEGEND

MAJOR CONTOURS (EVERY 10')

MINOR CONTOURS (EVERY 2')

APPROXIMATE WASTE BOUNDARY

SP-9 SETTLEMENT PLATE

−0.39 SPOT ELEVATION ON 100' GRID

TP-8 TEMPERATURE MONITORING PROBE WITH AVERAGE TEMPERATURES AT DEPTH LESS THAN 200 °F

TP-1 TEMPERATURE MONITORING PROBE WITH AVERAGE TEMPERATURES AT DEPTH BETWEEN 200 °F AND 250 °F

TP-2 TEMPERATURE MONITORING PROBE WITH AVERAGE TEMPERATURES AT DEPTH BETWEEN 250 °F AND 300 °F

Volume
Base Surface TOPO – NOVEMBER 16, 2023
Comparison Surface TOPO – DECEMBER 20, 2023

Cut Volume	14,070	Cu. Yd.
Fill Volume	693	Cu. Yd.
Net Cut	13,376	Cu. Yd.

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	−8.000	−5.000	🟥
2	−5.000	−1.000	🟧
3	−1.000	0.000	🟨
4	0.000	1.000	🟩
5	1.000	5.000	🟩
6	5.000	10.000	🟦

NOTES:

1. THE ELEVATION CHANGES ARE CALCULATED BETWEEN THE AERIAL TOPOGRAPHY DATA CAPTURED ON NOVEMBER 16, 2023 AND DECEMBER 20, 2023 BY SCS ENGINEERS. POSITIVE VALUES (+) INDICATE AREAS OF FILL AND NEGATIVE VALUES (−) INDICATE AREAS OF CUT (SETTLEMENT). VALUES ARE ROUNDED TO THE NEAREST FOOT
2. ANY DETERMINATION OF TOPOGRAPHY OR CONTOURS, OR ANY DEPICTION OF PHYSICAL IMPROVEMENTS, PROPERTY LINES, OR BOUNDARIES IS FOR GENERAL INFORMATION ONLY AND SHALL NOT BE USED FOR DESIGN, MODIFICATION, OR CONSTRUCTION OF IMPROVEMENTS TO REAL PROPERTY OR FOR FLOOD PLAIN DETERMINATION.
3. THE HORIZONTAL DATUM IS STATE PLANE VIRGINIA SOUTH ZONE NAD–83 (2011)
4. THE VERTICAL DATUM IS BASED UPON NAVD–88.

100 50 0 100 200
SCALE: 1"=100'

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SHEET TITLE
DECEMBER VOLUME CHANGE
NOVEMBER 2023 TO DECEMBER 2023

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
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2655 VALLEY DRIVE
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CADD FILE: SURF COMP
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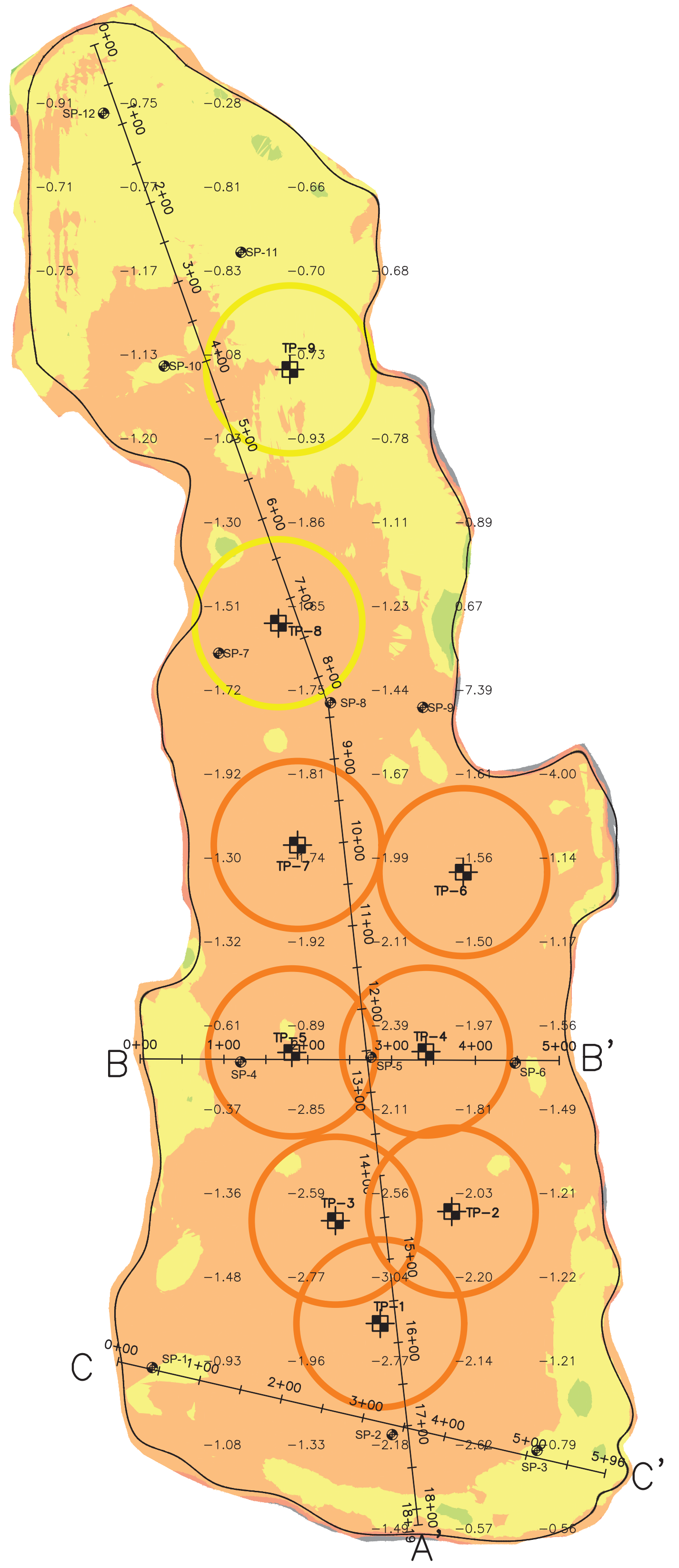
SCALE:
DRAWING NO. 5 of 8



LEGEND

MAJOR CONTOURS (EVERY 10')

MINOR CONTOURS (EVERY 2')

APPROXIMATE WASTE BOUNDARY

SP-9 SETTLEMENT PLATE

-0.39 SPOT ELEVATION ON 100' GRID

TP-8 TEMPERATURE MONITORING PROBE WITH AVERAGE TEMPERATURES AT DEPTH LESS THAN 200 °F

TP-1 TEMPERATURE MONITORING PROBE WITH AVERAGE TEMPERATURES AT DEPTH BETWEEN 200 °F AND 250 °F

TP-2 TEMPERATURE MONITORING PROBE WITH AVERAGE TEMPERATURES AT DEPTH BETWEEN 250 °F AND 300 °F

Volume

Base Surface	TOPO – SEPTEMBER 15, 2023		
Comparison Surface	TOPO – DECEMBER 20, 2023		
Cut Volume	42,164	Cu. Yd.	
Fill Volume	59	Cu. Yd.	
Net Cut	42,106	Cu. Yd.	

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-10.000	-5.000	🟥
2	-5.000	-1.000	🟧
3	-1.000	0.000	🟨
4	0.000	1.000	🟩
5	1.000	5.000	🟩
6	5.000	10.000	🟦

NOTES:

1. THE ELEVATION CHANGES ARE CALCULATED BETWEEN THE AERIAL TOPOGRAPHY DATA CAPTURED ON NOVEMBER 16, 2023 AND DECEMBER 20, 2023 BY SCS ENGINEERS. POSITIVE VALUES (+) INDICATE AREAS OF FILL AND NEGATIVE VALUES (-) INDICATE AREAS OF CUT (SETTLEMENT). VALUES ARE ROUNDED TO THE NEAREST FOOT.
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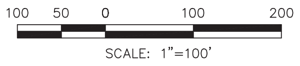
4. THE VERTICAL DATUM IS BASED UPON NAVD-88.



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SHEET TITLE
DECEMBER VOLUME CHANGE
SEPTEMBER 2023 TO DECEMBER 2023

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID
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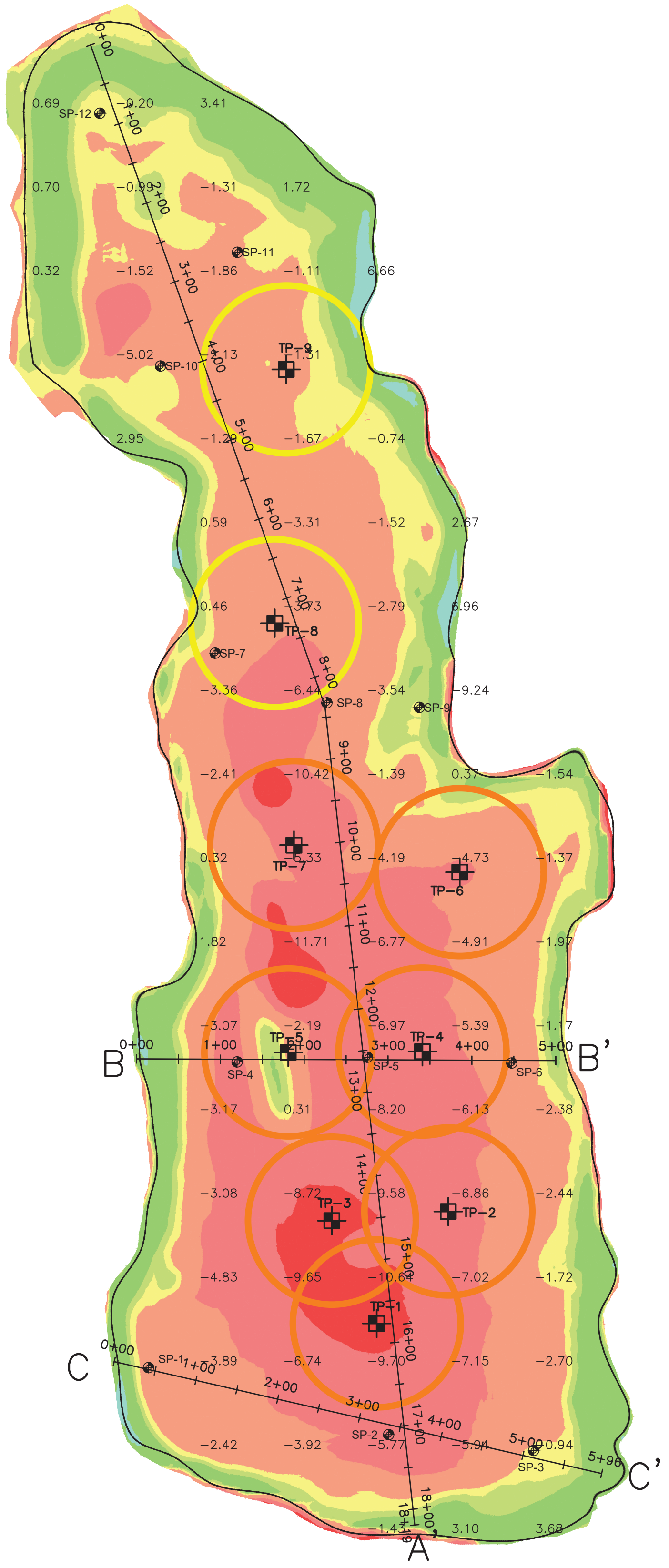
SCALE:

DRAWING NO.
6 of **8**



LEGEND

MAJOR CONTOURS (EVERY 10')

MINOR CONTOURS (EVERY 2')

APPROXIMATE WASTE BOUNDARY

SP-9 SETTLEMENT PLATE

-0.39 SPOT ELEVATION ON 100' GRID

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TP-2 TEMPERATURE MONITORING PROBE WITH AVERAGE TEMPERATURES AT DEPTH BETWEEN 250 °F AND 300 °F

Volume

Base Surface	TOPO – DECEMBER 2, 2022	
Comparison Surface	TOPO – DECEMBER 20, 2023	
Cut Volume	92,753	Cu. Yd.
Fill Volume	11,922	Cu. Yd.
Net Cut	80,832	Cu. Yd.

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-16.000	-10.000	🟥
2	-10.000	-5.000	🟥
3	-5.000	-1.000	🟧
4	-1.000	0.000	🟨
5	0.000	1.000	🟩
6	1.000	5.000	🟩
7	5.000	10.000	🟦

NOTES:

1. THE ELEVATION CHANGES ARE CALCULATED BETWEEN THE AERIAL TOPOGRAPHY DATA CAPTURED ON DECEMBER 2, 2023 AND DECEMBER 20, 2023 BY SCS ENGINEERS. POSITIVE VALUES (+) INDICATE AREAS OF FILL AND NEGATIVE VALUES (–) INDICATE AREAS OF CUT (SETTLEMENT). VALUES ARE ROUNDED TO THE NEAREST FOOT
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4. THE VERTICAL DATUM(S) IS BASED UPON NAVD–88.

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SCALE: 1"=100'

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SHEET TITLE

DECEMBER VOLUME CHANGE
DECEMBER 2022 TO DECEMBER 2023

PROJECT TITLE

MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT

CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VIRGINIA 24201

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APP. BY: CJW

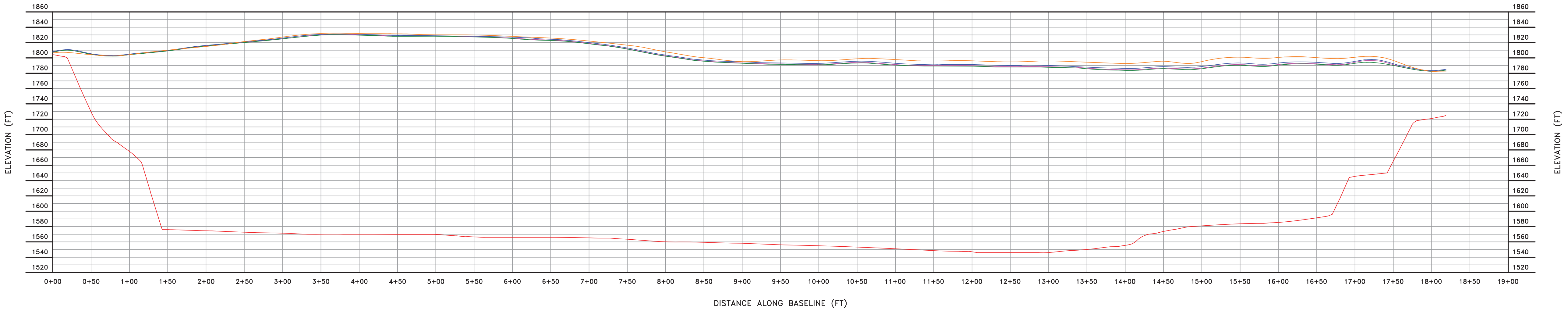
CADD FILE: SURF COMP

DATE: 1/5/2024

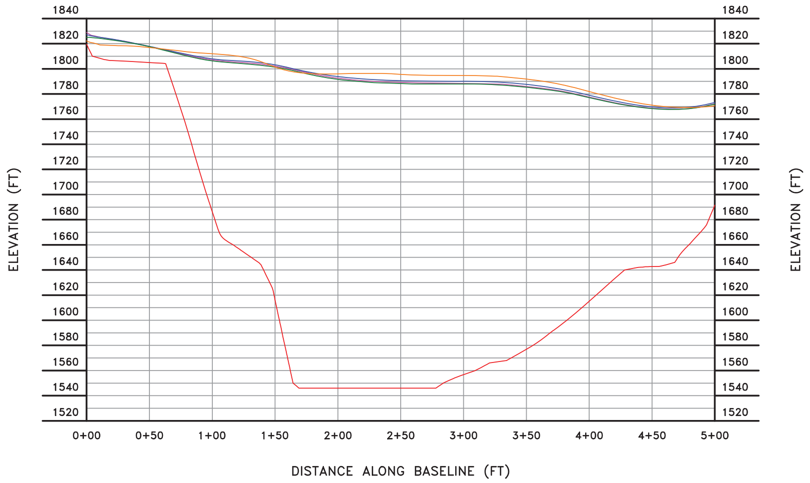
SCALE:

DRAWING NO. 7 of 8

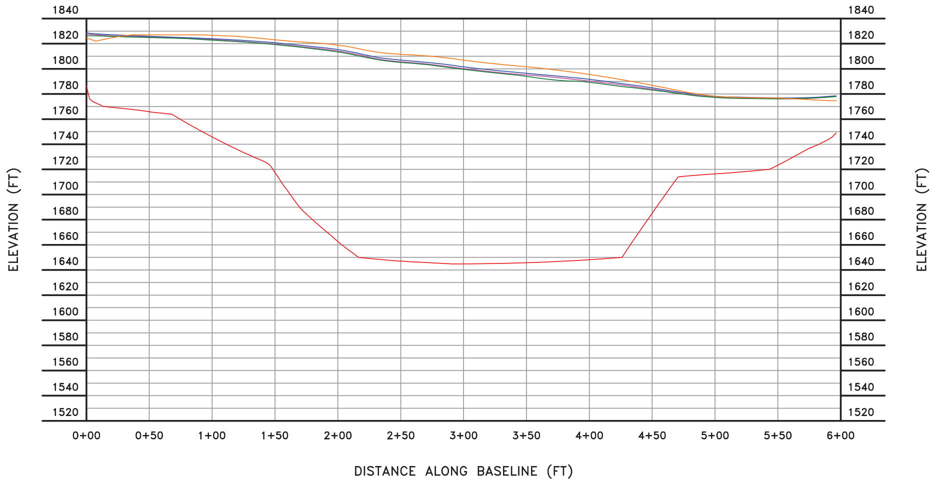
LONGITUDINAL PROFILE A ALIGN



LONGITUDINAL PROFILE B ALIGN



LONGITUDINAL PROFILE C ALIGN



LEGEND

— BOTTOM LINER ELEVATION
— NOVEMBER 2022 TOPO
— AUGUST 2023 TOPO
— OCTOBER 2023 TOPO
— NOVEMBER 2023 TOPO

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SHEET TITLE
PROFILES

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

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CADD FILE: SURF COMP
DATE: 1/5/2024
SCALE:
DRAWING NO. **8** of **8**

Appendix F

Field Logs

Lab Report

Historical LFG-EW Leachate Monitoring Results Summary

City of Bristol SWP 588 Landfill
Dual Phase LFG-EW Liquid Level Measurement Log

Date	12/11/23-12/15/2023											
Personnel	**L. Nelson, W. Fabrie**											
Location ID	**Date**	**Measured Well Casing Depth (ft)**	**Pump Installed**	**Pump Depth (ft)**	**Prior Cycle Count**	**Cycle Count**	**Prior Depth to Liquid (ft)**	**Depth to Liquid (ft)**	**Casing Sickup (ft)**	**Liquid Column Thickness (ft)**	**Sample Collected (Y/N)**	**Comments**
EW-33B	12/12/2023	185.00	Y		17	17	71.01	75.17	3.88	109.83	N	No discharge
EW-36A	12/12/2023	180.00	Y		731829	110426	124.5	Dry	4.68	0.00	N	No discharge
EW-49	12/12/2023	96.15	Y	90	777893	777893	61.46	65.78	6.50	30.37	N	No discharge
EW-50	12/11/2023	77.70	Y	83	1293455	1340298	54.8	43.1	4.52	34.60	N	
EW-51	12/11/2023	92.80	Y	95	---	---	43.19	43.5	3.15	49.30	---	No pump
EW-52	12/11/2023	98.70	Y	93	347462	379953	73.05	45.82	3.33	52.88	Y	
EW-53	12/11/2023	100.70	Y	---	2330728	230796	51.81	52.04	4.98	48.66	N	Air off-disconnected
EW-54	12/11/2023	82.70	Y	75	597295	597295	37.3	38.45	5.50	44.25	N	Air off
EW-55	12/11/2023	90.40	Y	90	691799	713759	53.66	44.85	6.39	45.55	N	Air off
EW-56	12/11/2023	58.50	N	58	---	---	10.8	44.04	5.10	14.46	---	
EW-57	12/11/2023	107.40	Y	71	43	44625	40.65	39.78	4.85	67.62	N	Air off
EW-58	12/11/2023	84.50	Y	82	2490483	2490486	31.19	32.48	5.55	52.02	N	No discharge/Air disconnected
EW-59	12/11/2023	73.40	Y	64	2485500	2496659	38.52	38.95	4.82	34.45	N	
EW-60	12/11/2023	81.80	Y	70	549649	616580	36.3	35.12	4.14	46.68	N	
EW-61	12/11/2023	87.80	Y	66	---	---	55.26	56.82	2.89	30.98	N	Not pumping
EW-62	12/12/2023	110.60	Y	80	201145	202203	66.02	96.11	4.72	14.49	N	not pumping
EW-63	12/12/2023	62.10	N	64	---	---	62.75	64.82	5.28	-2.72	---	
EW-64	12/12/2023	109.00	Y	113	177591	177601	81.34	83.54	4.40	25.46	N	
EW-65	12/12/2023	88.40	N	50	4814	4814	56.72	61.25	5.58	27.15	---	
EW-67	12/11/2023	107.75	Y	62.5	865001	865688	48.97	41.16	5.17	66.59	N	No discharge/Air disconnected
EW-68	12/11/2023	73.57	Y	68	2222470	2258582	38.32	4.24	1.10	69.33	Y	
EW-69	12/12/2023	98.00	N		9	9	97.39	94.41	4.29	3.59	---	
EW-70	12/12/2023	71.00	Y		12	---	21.31	---	---	---	N	Surrounded by water see photo
EW-71	12/12/2023	185.80	N		---	---	171.79	165.58	5.08	20.22	---	
EW-72	12/12/2023	141.21	Y		---	---	151.49	149.63	4.24	-8.42	N	No pump
EW-73	12/12/2023	116.00	Y		24	---	48.74	102.84	4.07	13.16	N	No pump
EW-74	12/12/2023	184.15	Y		17	19	92.03	169.38	5.97	14.77	N	No discharge
EW-75	12/12/2023	124.58	Y		11	11	106.39	110.8	5.00	13.78	N	No discharge
EW-76	12/12/2023	127.00	Y		23	23	38.31	35.52	4.19	91.48	N	
EW-77	12/12/2023	185.22	N		---	---	126.37	142.41	5.55	42.81	---	
EW-78	12/12/2023	57.00	Y		71480	75601	48.39	48.43	3.57	8.57	Y	
EW-79	12/12/2023	185.64	N		---	---	Dry	156.25	5.48	29.39	---	
EW-80	12/12/2023	149.00	N		---	---	Dry	137.78	4.34	11.22	---	

City of Bristol SWP 588 Landfill
Dual Phase LFG-EW Liquid Level Measurement Log

Date	12/11/23-12/15/2023
Personnel	**L. Nelson, W. Fabrie**

Location ID	Date	Measured Well Casing Depth (ft)	Pump Installed	Pump Depth (ft)	Prior Cycle Count	Cycle Count	Prior Depth to Liquid (ft)	Depth to Liquid (ft)	Casing Sickup (ft)	Liquid Column Thickness (ft)	Sample Collected (Y/N)	Comments
EW-81	12/12/2023	151.56	Y		60170	304902	120.68	Dry	5.31	0.00	N	No discharge
EW-82	12/12/2023	163.26	Y		816750	897860	121.02	Dry	5.82	0.00	N	No discharge
EW-83	12/12/2023	167.04	Y		44601	428888	131.3	110.19	4.04	56.85	N	No discharge
EW-84	12/12/2023	130.56	N		---	---	72.98	74.84	4.72	55.72	---	
EW-85	12/11/2023	91.00	Y		115595	124119	50.69	55.58	4.07	35.42	N	No sample port, Air disconnected
EW-86	12/11/2023	153.00	N		---	---	80.19	79.64	4.18	73.36	---	
EW-87	12/11/2023	149.57	Y		906359	940769	62.61	54.96	4.20	94.61	N	Blackhawk not pumping
EW-88	12/11/2023	100.00	Y		216240	367039	42.36	49.51	3.33	50.49	N	No sample port, Running
EW-89	12/11/2023	84.57	Y		---	---	39.79	41.55	3.08	43.02	N	No discharge
EW-90	12/11/2023	114.00	Y		170676	170678	91.43	93.08	2.58	20.92	N	No discharge
EW-91	12/11/2023	137.70	Y		207535	237486	59.85	51.72	4.91	85.98	N	No discharge
EW-92	12/11/2023	112.99	Y		32765	387714	56.7	46.93	6.15	66.06	N	Not pumping
EW-93	12/11/2023	111.00	N		---	---	32.85	30.25	3.67	80.75	---	
EW-94	12/11/2023	50.00	Y		519868	520385	25.7	26.34	3.92	23.66	N	Air disconnected
EW-95	12/12/2023	68.00	N		---	---	61.5	25.23	2.61	42.77	---	
EW-96	12/11/2023	164.35	Y		---	---	72.15	---	7.50	---	N	Too tall see photo
EW-97	12/11/2023	67.95	N		---	---	87.17	92.17	6.34	-24.22	---	No discharge, no air
EW-98	12/11/2023	51.00	Y		1348199	1631022	26.57	26.57	3.76	24.43	N	
EW-99	12/11/2023	65.00	N		---	---	61.35	60.4	3.51	4.60	---	
EW-100	12/11/2023	108.50	Y		299753	470127	71.01	76.51	3.82	31.99	N	No discharge

City of Bristol SWP 588 Landfill
Dual Phase LFG-EW Sample Collection Log

Location ID	Sample Date	Sample Time	Temperature (°C)	pH (s.u.)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Observations
EW-52	12/11/2023	14:00	66.5	5.46	43.63	0.14	-62.0	68.5	Black
EW-68	12/11/2023	14:15	60.7	7.47	27.78	0.16	-194.8	24.45	Black
EW-78	12/12/2023	13:00	41.6	8.08	20.7	0.41	-69.8	21.63	Brown

Sampler: L. Nelson, W. Fabrie

Log Checked By: J. Robb

Samples Shipped By: Courier

Laboratory: Enthalpy Analytical

TNI Accredited
VELAP ID 460021

ENTHALPY
ANALYTICAL

1941 Reymet Road ● Richmond, Virginia 23237 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 23L0563

Client Name:	SCS Engineers-Winchester 296 Victory Road Winchester, VA 22602
Submitted To:	Jennifer Robb
Client Site I.D.:	2023 City of Bristol Landfill Leachate

Date Received:	December 12, 2023 8:00
Date Issued:	January 9, 2024 14:11
Project Number:	02218208.15 Task 2
Purchase Order:	

Enclosed are the results of analyses for samples received by the laboratory on 12/12/2023 08:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Ted Soyars
Technical Director

End Notes:
The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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Enthalpy Analytical
1941 Reymet Road
Richmond, VA 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Analysis Detects Report

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site ID: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Laboratory Sample ID: 23L0563-01 **Client Sample ID: EW-52**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	01	SW6020B	400		2.5	5.0	5	ug/L
Barium	01	SW6020B	680		5.00	25.0	5	ug/L
Chromium	01	SW6020B	1340		2.00	5.00	5	ug/L
Copper	01	SW6020B	1.84		1.50	1.50	5	ug/L
Lead	01	SW6020B	160		1.5	1.5	5	ug/L
Mercury	01	SW6020B	4.84		1.00	1.00	5	ug/L
Nickel	01	SW6020B	609.1		5.000	5.000	5	ug/L
Selenium	01	SW6020B	7.85		1.50	1.50	5	ug/L
Zinc	01RE1	SW6020B	52700		250	500	100	ug/L
2-Butanone (MEK)	01	SW8260D	13700		150	500	50	ug/L
Acetone	01RE2	SW8260D	44300		1750	2500	250	ug/L
Benzene	01	SW8260D	1330		20.0	50.0	50	ug/L
Ethylbenzene	01RE1	SW8260D	69.5		20.0	50.0	50	ug/L
Tetrahydrofuran	01	SW8260D	2620		500	500	50	ug/L
Toluene	01RE1	SW8260D	83.5		25.0	50.0	50	ug/L
Xylenes, Total	01	SW8260D	224		50.0	150	50	ug/L
Ammonia as N	01	EPA350.1 R2.0	2900		146	200	2000	mg/L
BOD	01	SM5210B-2016	>44105		0.2	2.0	1	mg/L
COD	01	SM5220D-2011	94200		10000	10000	1000	mg/L
Cyanide	01	SW9012B	0.13	CI	0.05	0.05	5	mg/L
Nitrate+Nitrite as N	01RE1	SM4500-NO3F-2016	0.58		0.10	0.10	1	mg/L
TKN as N	01	EPA351.2 R2.0	3130		100	250	500	mg/L
Total Recoverable Phenolics	01	SW9065	34.2		1.50	2.50	50	mg/L

Analysis Detects Report

Date Issued: 1/9/2024 2:11:39PM

Client Name: SCS Engineers-Winchester
Client Site ID: 2023 City of Bristol Landfill Leachate
Submitted To: Jennifer Robb

Laboratory Sample ID: **23L0563-02** **Client Sample ID:** **EW-68**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	02	SW6020B	260		2.5	5.0	5	ug/L
Barium	02	SW6020B	1360		5.00	25.0	5	ug/L
Cadmium	02	SW6020B	0.604	J	0.500	1.50	5	ug/L
Chromium	02	SW6020B	259		2.00	5.00	5	ug/L
Lead	02	SW6020B	2.0		1.5	1.5	5	ug/L
Nickel	02	SW6020B	144.7		5.000	5.000	5	ug/L
Selenium	02	SW6020B	2.53		1.50	1.50	5	ug/L
Zinc	02RE1	SW6020B	46.2		25.0	25.0	10	ug/L
2-Butanone (MEK)	02RE2	SW8260D	7060		150	500	50	ug/L
Benzene	02	SW8260D	932		8.00	20.0	20	ug/L
Ethylbenzene	02RE1	SW8260D	46.0		8.00	20.0	20	ug/L
Tetrahydrofuran	02	SW8260D	4240		200	200	20	ug/L
Toluene	02RE1	SW8260D	73.2		10.0	20.0	20	ug/L
Xylenes, Total	02	SW8260D	167		20.0	60.0	20	ug/L
Ammonia as N	02	EPA350.1 R2.0	2200		146	200	2000	mg/L
BOD	02	SM5210B-2016	13700		0.2	2.0	1	mg/L
COD	02	SM5220D-2011	19900		5000	5000	500	mg/L
Cyanide	02	SW9012B	0.73	CI	0.05	0.05	5	mg/L
Nitrate+Nitrite as N	02RE1	SM4500-NO3F-2016	1.88		0.50	0.50	5	mg/L
TKN as N	02RE1	EPA351.2 R2.0	1880		80.0	200	400	mg/L
Total Recoverable Phenolics	02	SW9065	23.0		0.750	1.25	25	mg/L

Laboratory Sample ID: **23L0563-03** **Client Sample ID:** **Trip Blank**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Xylenes, Total	03	SW8260D	2.64	J	1.00	3.00	1	ug/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the " Certificate of Analysis".

Enthalpy Analytical
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EW-52	23L0563-01	Waste Water	12/11/2023 14:00	12/12/2023 08:00
EW-68	23L0563-02	Waste Water	12/11/2023 14:15	12/12/2023 08:00
Trip Blank	23L0563-03	Waste Water	08/09/2023 16:15	12/12/2023 08:00

Analysis for Volatile Fatty Acids was subcontracted to Pace. The subcontracted results are attached at the end of this Certificate of Analysis.

As requested by Jennifer Robb on January 9, 2024, the list of reported VOCs has been updated. This change is reflected in the following revised report.

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **EW-52**

Laboratory Sample ID: **23L0563-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Metals (Total) by EPA 6000/7000 Series Methods												
Silver	01	7440-22-4	SW6020B	12/13/2023 13:15	12/14/2023 13:23	BLOD		0.250	1.00	5	ug/L	AB
Arsenic	01	7440-38-2	SW6020B	12/13/2023 13:15	12/14/2023 13:23	400		2.5	5.0	5	ug/L	AB
Barium	01	7440-39-3	SW6020B	12/13/2023 13:15	12/14/2023 13:23	680		5.00	25.0	5	ug/L	AB
Cadmium	01	7440-43-9	SW6020B	12/13/2023 13:15	12/14/2023 13:23	BLOD		0.500	1.50	5	ug/L	AB
Chromium	01	7440-47-3	SW6020B	12/13/2023 13:15	12/14/2023 13:23	1340		2.00	5.00	5	ug/L	AB
Copper	01	7440-50-8	SW6020B	12/13/2023 13:15	12/14/2023 13:23	1.84		1.50	1.50	5	ug/L	AB
Mercury	01	7439-97-6	SW6020B	12/13/2023 13:15	12/14/2023 13:23	4.84		1.00	1.00	5	ug/L	AB
Nickel	01	7440-02-0	SW6020B	12/13/2023 13:15	12/14/2023 13:23	609.1		5.000	5.000	5	ug/L	AB
Lead	01	7439-92-1	SW6020B	12/13/2023 13:15	12/14/2023 13:23	160		1.5	1.5	5	ug/L	AB
Selenium	01	7782-49-2	SW6020B	12/13/2023 13:15	12/14/2023 13:23	7.85		1.50	1.50	5	ug/L	AB
Zinc	01RE1	7440-66-6	SW6020B	12/13/2023 13:15	12/21/2023 16:29	52700		250	500	100	ug/L	MDW
Volatile Organic Compounds by GCMS						**Sample Qualifier:**		**pH**				
2-Butanone (MEK)	01	78-93-3	SW8260D	12/12/2023 14:46	12/12/2023 14:46	13700		150	500	50	ug/L	RJB
Acetone	01RE2	67-64-1	SW8260D	12/13/2023 19:21	12/13/2023 19:21	44300		1750	2500	250	ug/L	RJB
Benzene	01	71-43-2	SW8260D	12/12/2023 14:46	12/12/2023 14:46	1330		20.0	50.0	50	ug/L	RJB
Ethylbenzene	01RE1	100-41-4	SW8260D	12/13/2023 18:57	12/13/2023 18:57	69.5		20.0	50.0	50	ug/L	RJB
Toluene	01RE1	108-88-3	SW8260D	12/13/2023 18:57	12/13/2023 18:57	83.5		25.0	50.0	50	ug/L	RJB
Xylenes, Total	01	1330-20-7	SW8260D	12/12/2023 14:46	12/12/2023 14:46	224		50.0	150	50	ug/L	RJB
Tetrahydrofuran	01	109-99-9	SW8260D	12/12/2023 14:46	12/12/2023 14:46	2620		500	500	50	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	*01*	*93.7 %*	*70-120*	*12/12/2023 14:46*	*12/12/2023 14:46*							
Surr: 4-Bromofluorobenzene (Surr)	*01*	*106 %*	*75-120*	*12/12/2023 14:46*	*12/12/2023 14:46*							
Surr: Dibromofluoromethane (Surr)	*01*	*94.4 %*	*70-130*	*12/12/2023 14:46*	*12/12/2023 14:46*							
Surr: Toluene-d8 (Surr)	*01*	*101 %*	*70-130*	*12/12/2023 14:46*	*12/12/2023 14:46*							
Surr: 1,2-Dichloroethane-d4 (Surr)	*01RE1*	*93.0 %*	*70-120*	*12/13/2023 18:57*	*12/13/2023 18:57*							
Surr: 4-Bromofluorobenzene (Surr)	*01RE1*	*97.6 %*	*75-120*	*12/13/2023 18:57*	*12/13/2023 18:57*							

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **EW-52**

Laboratory Sample ID: **23L0563-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Volatile Organic Compounds by GCMS												
Surr: Dibromofluoromethane (Surr)	*01RE1*	*96.1 %*	*70-130*	*12/13/2023 18:57*	*12/13/2023 18:57*							
Surr: Toluene-d8 (Surr)	*01RE1*	*97.2 %*	*70-130*	*12/13/2023 18:57*	*12/13/2023 18:57*							
Surr: 1,2-Dichloroethane-d4 (Surr)	*01RE2*	*90.4 %*	*70-120*	*12/13/2023 19:21*	*12/13/2023 19:21*							
Surr: 4-Bromofluorobenzene (Surr)	*01RE2*	*95.6 %*	*75-120*	*12/13/2023 19:21*	*12/13/2023 19:21*							
Surr: Dibromofluoromethane (Surr)	*01RE2*	*93.6 %*	*70-130*	*12/13/2023 19:21*	*12/13/2023 19:21*							
Surr: Toluene-d8 (Surr)	*01RE2*	*98.5 %*	*70-130*	*12/13/2023 19:21*	*12/13/2023 19:21*							
Semivolatile Organic Compounds by GCMS												
Anthracene	01	120-12-7	SW8270E	12/15/2023 09:40	12/18/2023 16:00	BLOD		200	400	10	ug/L	BMS
Surr: 2,4,6-Tribromophenol (Surr)	*01*	*71.0 %*	*5-136*	*12/15/2023 09:40*	*12/18/2023 16:00*							
Surr: 2-Fluorobiphenyl (Surr)	*01*	*52.8 %*	*9-117*	*12/15/2023 09:40*	*12/18/2023 16:00*							
Surr: 2-Fluorophenol (Surr)	*01*	*%*	*5-60*	*12/15/2023 09:40*	*12/18/2023 16:00*							*S*
Surr: Nitrobenzene-d5 (Surr)	*01*	*16.8 %*	*5-151*	*12/15/2023 09:40*	*12/18/2023 16:00*							
Surr: Phenol-d5 (Surr)	*01*	*6.00 %*	*5-60*	*12/15/2023 09:40*	*12/18/2023 16:00*							
Surr: p-Terphenyl-d14 (Surr)	*01*	*%*	*5-141*	*12/15/2023 09:40*	*12/18/2023 16:00*							*S*

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **EW-52**

Laboratory Sample ID: **23L0563-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Ammonia as N	01	7664-41-7	EPA350.1 R2.0	12/22/2023 14:59	12/22/2023 14:59	2900		146	200	2000	mg/L	SPH
BOD	01	E1640606	SM5210B-2016	12/13/2023 10:13	12/13/2023 10:13	>44105		0.2	2.0	1	mg/L	TEG
BOD	01	E1640606	SM5210B-2016	12/13/2023 10:13	12/13/2023 10:13	>44105		0.2	2.0	1	mg/L	TEG
Cyanide	01	57-12-5	SW9012B	12/13/2023 11:56	12/13/2023 11:56	0.13	CI	0.05	0.05	5	mg/L	MGC
COD	01	NA	SM5220D-2011	12/18/2023 13:42	12/18/2023 13:42	94200		10000	10000	1000	mg/L	MGC
Nitrate as N	01	14797-55-8	Calc.	12/26/2023 11:00	12/26/2023 14:35	BLOD		1.10	5.10	100	mg/L	TEG
Nitrate+Nitrite as N	01RE1	E701177	SM4500-NO3F-2016	12/26/2023 11:00	12/26/2023 14:35	0.58		0.10	0.10	1	mg/L	TEG
Nitrite as N	01	14797-65-0	SM4500-NO2B-2011	12/13/2023 10:25	12/13/2023 10:25	BLOD		1.00	5.00	100	mg/L	KJM
Total Recoverable Phenolics	01	NA	SW9065	12/26/2023 15:19	12/26/2023 15:19	34.2		1.50	2.50	50	mg/L	AAL
TKN as N	01	E17148461	EPA351.2 R2.0	12/20/2023 17:54	12/20/2023 17:54	3130		100	250	500	mg/L	MJRL

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: EW-68

Laboratory Sample ID: 23L0563-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Metals (Total) by EPA 6000/7000 Series Methods												
Silver	02	7440-22-4	SW6020B	12/13/2023 13:15	12/14/2023 13:28	BLOD		0.250	1.00	5	ug/L	AB
Arsenic	02	7440-38-2	SW6020B	12/13/2023 13:15	12/14/2023 13:28	260		2.5	5.0	5	ug/L	AB
Barium	02	7440-39-3	SW6020B	12/13/2023 13:15	12/14/2023 13:28	1360		5.00	25.0	5	ug/L	AB
Cadmium	02	7440-43-9	SW6020B	12/13/2023 13:15	12/14/2023 13:28	0.604	J	0.500	1.50	5	ug/L	AB
Chromium	02	7440-47-3	SW6020B	12/13/2023 13:15	12/14/2023 13:28	259		2.00	5.00	5	ug/L	AB
Copper	02	7440-50-8	SW6020B	12/13/2023 13:15	12/14/2023 13:28	BLOD		1.50	1.50	5	ug/L	AB
Mercury	02	7439-97-6	SW6020B	12/13/2023 13:15	12/14/2023 13:28	BLOD		1.00	1.00	5	ug/L	AB
Nickel	02	7440-02-0	SW6020B	12/13/2023 13:15	12/14/2023 13:28	144.7		5.000	5.000	5	ug/L	AB
Lead	02	7439-92-1	SW6020B	12/13/2023 13:15	12/14/2023 13:28	2.0		1.5	1.5	5	ug/L	AB
Selenium	02	7782-49-2	SW6020B	12/13/2023 13:15	12/14/2023 13:28	2.53		1.50	1.50	5	ug/L	AB
Zinc	02RE1	7440-66-6	SW6020B	12/13/2023 13:15	12/21/2023 16:32	46.2		25.0	25.0	10	ug/L	MDW
Volatile Organic Compounds by GCMS												
2-Butanone (MEK)	02RE2	78-93-3	SW8260D	12/14/2023 21:13	12/14/2023 21:13	7060		150	500	50	ug/L	RJB
Acetone	02	67-64-1	SW8260D	12/12/2023 14:23	12/12/2023 14:23	BLOD		140	200	20	ug/L	RJB
Benzene	02	71-43-2	SW8260D	12/12/2023 14:23	12/12/2023 14:23	932		8.00	20.0	20	ug/L	RJB
Ethylbenzene	02RE1	100-41-4	SW8260D	12/14/2023 20:51	12/14/2023 20:51	46.0		8.00	20.0	20	ug/L	RJB
Toluene	02RE1	108-88-3	SW8260D	12/14/2023 20:51	12/14/2023 20:51	73.2		10.0	20.0	20	ug/L	RJB
Xylenes, Total	02	1330-20-7	SW8260D	12/12/2023 14:23	12/12/2023 14:23	167		20.0	60.0	20	ug/L	RJB
Tetrahydrofuran	02	109-99-9	SW8260D	12/12/2023 14:23	12/12/2023 14:23	4240		200	200	20	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	*02*	*92.6 %*	*70-120*	*12/12/2023 14:23*	*12/12/2023 14:23*							
Surr: 4-Bromofluorobenzene (Surr)	*02*	*105 %*	*75-120*	*12/12/2023 14:23*	*12/12/2023 14:23*							
Surr: Dibromofluoromethane (Surr)	*02*	*93.2 %*	*70-130*	*12/12/2023 14:23*	*12/12/2023 14:23*							
Surr: Toluene-d8 (Surr)	*02*	*101 %*	*70-130*	*12/12/2023 14:23*	*12/12/2023 14:23*							
Surr: 1,2-Dichloroethane-d4 (Surr)	*02RE1*	*90.2 %*	*70-120*	*12/14/2023 20:51*	*12/14/2023 20:51*							
Surr: 4-Bromofluorobenzene (Surr)	*02RE1*	*96.6 %*	*75-120*	*12/14/2023 20:51*	*12/14/2023 20:51*							

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Date Issued: 1/9/2024 2:11:39PM
Client Site I.D.: 2023 City of Bristol Landfill Leachate
Submitted To: Jennifer Robb

Client Sample ID: EW-68
Laboratory Sample ID: 23L0563-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Volatile Organic Compounds by GCMS												
Surr: Dibromofluoromethane (Surr)	*02RE1*	*89.5 %*	*70-130*	*12/14/2023 20:51*	*12/14/2023 20:51*							
Surr: Toluene-d8 (Surr)	*02RE1*	*98.6 %*	*70-130*	*12/14/2023 20:51*	*12/14/2023 20:51*							
Surr: 1,2-Dichloroethane-d4 (Surr)	*02RE2*	*93.4 %*	*70-120*	*12/14/2023 21:13*	*12/14/2023 21:13*							
Surr: 4-Bromofluorobenzene (Surr)	*02RE2*	*98.3 %*	*75-120*	*12/14/2023 21:13*	*12/14/2023 21:13*							
Surr: Dibromofluoromethane (Surr)	*02RE2*	*87.7 %*	*70-130*	*12/14/2023 21:13*	*12/14/2023 21:13*							
Surr: Toluene-d8 (Surr)	*02RE2*	*98.7 %*	*70-130*	*12/14/2023 21:13*	*12/14/2023 21:13*							
Semivolatile Organic Compounds by GCMS												
Anthracene	02	120-12-7	SW8270E	12/15/2023 09:40	12/20/2023 04:42	BLOD		100	200	20	ug/L	BMS
Surr: 2,4,6-Tribromophenol (Surr)	*02*	*34.0 %*	*5-136*	*12/15/2023 09:40*	*12/20/2023 04:42*							
Surr: 2-Fluorobiphenyl (Surr)	*02*	*28.2 %*	*9-117*	*12/15/2023 09:40*	*12/20/2023 04:42*							
Surr: 2-Fluorophenol (Surr)	*02*	*20.7 %*	*5-60*	*12/15/2023 09:40*	*12/20/2023 04:42*							
Surr: Nitrobenzene-d5 (Surr)	*02*	*78.2 %*	*5-151*	*12/15/2023 09:40*	*12/20/2023 04:42*							
Surr: Phenol-d5 (Surr)	*02*	*0.800 %*	*5-60*	*12/15/2023 09:40*	*12/20/2023 04:42*							*S*
Surr: p-Terphenyl-d14 (Surr)	*02*	*%*	*5-141*	*12/15/2023 09:40*	*12/20/2023 04:42*							*S*

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **EW-68**

Laboratory Sample ID: **23L0563-02**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Ammonia as N	02	7664-41-7	EPA350.1 R2.0	12/22/2023 14:59	12/22/2023 14:59	2200		146	200	2000	mg/L	SPH
BOD	02	E1640606	SM5210B-2016	12/13/2023 10:07	12/13/2023 10:07	13700		0.2	2.0	1	mg/L	TEG
Cyanide	02	57-12-5	SW9012B	12/13/2023 11:56	12/13/2023 11:56	0.73	CI	0.05	0.05	5	mg/L	MGC
COD	02	NA	SM5220D-2011	12/18/2023 13:35	12/18/2023 13:35	19900		5000	5000	500	mg/L	MGC
Nitrate as N	02	14797-55-8	Calc.	12/26/2023 11:00	12/26/2023 17:09	BLOD		1.50	5.50	100	mg/L	TEG
Nitrate+Nitrite as N	02RE1	E701177	SM4500-NO3F-2016	12/26/2023 11:00	12/26/2023 17:09	1.88		0.50	0.50	5	mg/L	TEG
Nitrite as N	02	14797-65-0	SM4500-NO2B-2011	12/13/2023 10:25	12/13/2023 10:25	BLOD		1.00	5.00	100	mg/L	KJM
Total Recoverable Phenolics	02	NA	SW9065	12/26/2023 15:19	12/26/2023 15:19	23.0		0.750	1.25	25	mg/L	AAL
TKN as N	02RE1	E17148461	EPA351.2 R2.0	12/20/2023 17:54	12/20/2023 17:54	1880		80.0	200	400	mg/L	MJRL

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **Trip Blank**

Laboratory Sample ID: **23L0563-03**

Volatile Organic Compounds by GCMS

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
2-Butanone (MEK)	03	78-93-3	SW8260D	12/12/2023 12:26	12/12/2023 12:26	BLOD		3.00	10.0	1	ug/L	RJB
Acetone	03	67-64-1	SW8260D	12/12/2023 12:26	12/12/2023 12:26	BLOD		7.00	10.0	1	ug/L	RJB
Benzene	03RE1	71-43-2	SW8260D	12/13/2023 15:57	12/13/2023 15:57	BLOD		0.40	1.00	1	ug/L	RJB
Ethylbenzene	03	100-41-4	SW8260D	12/12/2023 12:26	12/12/2023 12:26	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	03RE1	108-88-3	SW8260D	12/13/2023 15:57	12/13/2023 15:57	BLOD		0.50	1.00	1	ug/L	RJB
Xylenes, Total	03	1330-20-7	SW8260D	12/12/2023 12:26	12/12/2023 12:26	2.64	J	1.00	3.00	1	ug/L	RJB
Tetrahydrofuran	03	109-99-9	SW8260D	12/12/2023 12:26	12/12/2023 12:26	BLOD		10.0	10.0	1	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	*03*	*94.8 %*	*70-120*	*12/12/2023 12:26*	*12/12/2023 12:26*							
Surr: 4-Bromofluorobenzene (Surr)	*03*	*107 %*	*75-120*	*12/12/2023 12:26*	*12/12/2023 12:26*							
Surr: Dibromofluoromethane (Surr)	*03*	*94.8 %*	*70-130*	*12/12/2023 12:26*	*12/12/2023 12:26*							
Surr: Toluene-d8 (Surr)	*03*	*101 %*	*70-130*	*12/12/2023 12:26*	*12/12/2023 12:26*							
Surr: 1,2-Dichloroethane-d4 (Surr)	*03RE1*	*91.5 %*	*70-120*	*12/13/2023 15:57*	*12/13/2023 15:57*							
Surr: 4-Bromofluorobenzene (Surr)	*03RE1*	*97.9 %*	*75-120*	*12/13/2023 15:57*	*12/13/2023 15:57*							
Surr: Dibromofluoromethane (Surr)	*03RE1*	*88.6 %*	*70-130*	*12/13/2023 15:57*	*12/13/2023 15:57*							
Surr: Toluene-d8 (Surr)	*03RE1*	*99.3 %*	*70-130*	*12/13/2023 15:57*	*12/13/2023 15:57*							

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0511 - EPA200.8 R5.4										
Blank (BGL0511-BLK1)				Prepared: 12/13/2023 Analyzed: 12/14/2023						
Mercury	ND	0.200	ug/L							
Arsenic	ND	1.0	ug/L							
Barium	ND	5.00	ug/L							
Cadmium	ND	1.00	ug/L							
Chromium	ND	1.00	ug/L							
Copper	ND	1.00	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	1.000	ug/L							
Selenium	ND	1.00	ug/L							
Silver	ND	1.00	ug/L							
Zinc	ND	5.00	ug/L							
LCS (BGL0511-BS1)				Prepared: 12/13/2023 Analyzed: 12/14/2023						
Mercury	0.970	0.200	ug/L	1.00		97.0	80-120			
Arsenic	51	1.0	ug/L	50.0		101	80-120			
Barium	50.3	5.00	ug/L	50.0		101	80-120			
Cadmium	50.4	1.00	ug/L	50.0		101	80-120			
Chromium	50.8	1.00	ug/L	50.0		102	80-120			
Copper	50.3	1.00	ug/L	50.0		101	80-120			
Lead	50	1.0	ug/L	50.0		101	80-120			
Nickel	50.47	1.000	ug/L	50.0		101	80-120			
Selenium	51.1	1.00	ug/L	50.0		102	80-120			
Silver	10.0	1.00	ug/L	10.0		100	80-120			
Zinc	50.8	5.00	ug/L	50.0		102	80-120			
Matrix Spike (BGL0511-MS1)	**Source: 23L0568-01**			Prepared: 12/13/2023 Analyzed: 12/14/2023						

Certificate of Analysis

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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0511 - EPA200.8 R5.4										
Matrix Spike (BGL0511-MS1)	**Source: 23L0568-01**		Prepared: 12/13/2023 Analyzed: 12/14/2023							
Mercury	0.938	0.200	ug/L	1.00	BLOD	93.8	70-130			
Arsenic	50	1.0	ug/L	50.0	BLOD	100	75-125			
Barium	50.8	5.00	ug/L	50.0	1.12	99.3	75-125			
Cadmium	49.7	1.00	ug/L	50.0	BLOD	99.4	75-125			
Chromium	51.2	1.00	ug/L	50.0	BLOD	102	75-125			
Copper	53.9	1.00	ug/L	50.0	3.81	100	75-125			
Lead	51	1.0	ug/L	50.0	BLOD	103	75-125			
Nickel	50.84	1.000	ug/L	50.0	BLOD	102	75-125			
Selenium	49.8	1.00	ug/L	50.0	BLOD	99.6	75-125			
Silver	10.0	1.00	ug/L	10.0	BLOD	100	75-125			
Zinc	55.5	5.00	ug/L	50.0	5.21	101	75-125			
Matrix Spike (BGL0511-MS2)	**Source: 23L0577-01**		Prepared: 12/13/2023 Analyzed: 12/14/2023							
Mercury	0.991	0.200	ug/L	1.00	BLOD	99.1	70-130			
Arsenic	51	1.0	ug/L	50.0	1.6	99.3	75-125			
Barium	67.0	5.00	ug/L	50.0	15.2	104	75-125			
Cadmium	50.9	1.00	ug/L	50.0	0.178	101	75-125			
Chromium	53.9	1.00	ug/L	50.0	1.77	104	75-125			
Copper	77.8	1.00	ug/L	50.0	25.7	104	75-125			
Lead	82	1.0	ug/L	50.0	29	106	75-125			
Nickel	53.22	1.000	ug/L	50.0	1.726	103	75-125			
Selenium	49.1	1.00	ug/L	50.0	BLOD	98.2	75-125			
Silver	10.2	1.00	ug/L	10.0	BLOD	102	75-125			
Zinc	119	5.00	ug/L	50.0	65.1	107	75-125			
Matrix Spike Dup (BGL0511-MSD1)	**Source: 23L0568-01**		Prepared: 12/13/2023 Analyzed: 12/14/2023							

Certificate of Analysis

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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0511 - EPA200.8 R5.4										
Matrix Spike Dup (BGL0511-MSD1)	**Source: 23L0568-01**			Prepared: 12/13/2023 Analyzed: 12/14/2023						
Mercury	0.969	0.200	ug/L	1.00	BLOD	96.9	70-130	3.23	20	
Arsenic	51	1.0	ug/L	50.0	BLOD	101	75-125	1.29	20	
Barium	50.9	5.00	ug/L	50.0	1.12	99.5	75-125	0.151	20	
Cadmium	50.6	1.00	ug/L	50.0	BLOD	101	75-125	1.74	20	
Chromium	52.1	1.00	ug/L	50.0	BLOD	104	75-125	1.63	20	
Copper	54.9	1.00	ug/L	50.0	3.81	102	75-125	1.80	20	
Lead	52	1.0	ug/L	50.0	BLOD	104	75-125	1.19	20	
Nickel	51.22	1.000	ug/L	50.0	BLOD	102	75-125	0.755	20	
Selenium	50.5	1.00	ug/L	50.0	BLOD	101	75-125	1.33	20	
Silver	10.1	1.00	ug/L	10.0	BLOD	101	75-125	0.272	20	
Zinc	56.4	5.00	ug/L	50.0	5.21	102	75-125	1.61	20	
Matrix Spike Dup (BGL0511-MSD2)	**Source: 23L0577-01**			Prepared: 12/13/2023 Analyzed: 12/14/2023						
Mercury	1.00	0.200	ug/L	1.00	BLOD	100	70-130	1.41	20	
Arsenic	51	1.0	ug/L	50.0	1.6	98.4	75-125	0.914	20	
Barium	66.1	5.00	ug/L	50.0	15.2	102	75-125	1.31	20	
Cadmium	51.1	1.00	ug/L	50.0	0.178	102	75-125	0.413	20	
Chromium	53.8	1.00	ug/L	50.0	1.77	104	75-125	0.156	20	
Copper	77.4	1.00	ug/L	50.0	25.7	103	75-125	0.534	20	
Lead	82	1.0	ug/L	50.0	29	106	75-125	0.0288	20	
Nickel	52.91	1.000	ug/L	50.0	1.726	102	75-125	0.588	20	
Selenium	48.7	1.00	ug/L	50.0	BLOD	97.3	75-125	0.918	20	
Silver	10.2	1.00	ug/L	10.0	BLOD	102	75-125	0.812	20	
Zinc	118	5.00	ug/L	50.0	65.1	107	75-125	0.0813	20	

Certificate of Analysis

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Client Site I.D.: 2023 City of Bristol Landfill Leachate
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
Blank (BGL0454-BLK1)				Prepared & Analyzed: 12/12/2023						
2-Butanone (MEK)	ND	10.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Tetrahydrofuran	ND	10.0	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*49.3*		ug/L	*50.0*		*98.6*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*53.5*		ug/L	*50.0*		*107*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*50.3*		ug/L	*50.0*		*101*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.6*		ug/L	*50.0*		*101*	*70-130*			
LCS (BGL0454-BS1)				Prepared & Analyzed: 12/12/2023						
1,1,1,2-Tetrachloroethane	51.3	0.4	ug/L	50.0		103	80-130			
1,1,1-Trichloroethane	50.6	1	ug/L	50.0		101	65-130			
1,1,2,2-Tetrachloroethane	52.1	0.4	ug/L	50.0		104	65-130			
1,1,2-Trichloroethane	53.3	1	ug/L	50.0		107	75-125			
1,1-Dichloroethane	52.4	1	ug/L	50.0		105	70-135			
1,1-Dichloroethylene	52.5	1	ug/L	50.0		105	70-130			
1,1-Dichloropropene	52.8	1	ug/L	50.0		106	75-135			
1,2,3-Trichlorobenzene	52.7	1	ug/L	50.0		105	55-140			
1,2,3-Trichloropropane	48.6	1	ug/L	50.0		97.2	75-125			
1,2,4-Trichlorobenzene	48.9	1	ug/L	50.0		97.7	65-135			
1,2,4-Trimethylbenzene	54.1	1	ug/L	50.0		108	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	41.3	1	ug/L	50.0		82.5	50-130			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
LCS (BGL0454-BS1)				Prepared & Analyzed: 12/12/2023						
1,2-Dibromoethane (EDB)	50.6	1	ug/L	50.0		101	80-120			
1,2-Dichlorobenzene	49.1	0.5	ug/L	50.0		98.1	70-120			
1,2-Dichloroethane	50.0	1	ug/L	50.0		100	70-130			
1,2-Dichloropropane	52.1	0.5	ug/L	50.0		104	75-125			
1,3,5-Trimethylbenzene	51.7	1	ug/L	50.0		103	75-125			
1,3-Dichlorobenzene	50.7	1	ug/L	50.0		101	75-125			
1,3-Dichloropropane	51.8	1	ug/L	50.0		104	75-125			
1,4-Dichlorobenzene	49.3	1	ug/L	50.0		98.6	75-125			
2,2-Dichloropropane	50.9	1	ug/L	50.0		102	70-135			
2-Butanone (MEK)	47.5	10	ug/L	50.0		94.9	30-150			
2-Chlorotoluene	51.1	1	ug/L	50.0		102	75-125			
2-Hexanone (MBK)	46.4	5	ug/L	50.0		92.8	55-130			
4-Chlorotoluene	52.0	1	ug/L	50.0		104	75-130			
4-Isopropyltoluene	52.3	1	ug/L	50.0		105	75-130			
4-Methyl-2-pentanone (MIBK)	51.6	5	ug/L	50.0		103	60-135			
Acetone	38.6	10	ug/L	50.0		77.3	40-140			
Benzene	52.7	1	ug/L	50.0		105	80-120			
Bromobenzene	52.9	1	ug/L	50.0		106	75-125			
Bromochloromethane	50.4	1	ug/L	50.0		101	65-130			
Bromodichloromethane	51.8	0.5	ug/L	50.0		104	75-120			
Bromoform	55.2	1	ug/L	50.0		110	70-130			
Bromomethane	41.5	1	ug/L	50.0		83.0	30-145			
Carbon disulfide	48.2	10	ug/L	50.0		96.4	35-160			
Carbon tetrachloride	49.1	1	ug/L	50.0		98.2	65-140			
Chlorobenzene	50.9	1	ug/L	50.0		102	80-120			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
LCS (BGL0454-BS1)				Prepared & Analyzed: 12/12/2023						
Chloroethane	50.1	1	ug/L	50.0		100	60-135			
Chloroform	50.4	0.5	ug/L	50.0		101	65-135			
Chloromethane	54.4	1	ug/L	50.0		109	40-125			
cis-1,2-Dichloroethylene	53.4	1	ug/L	50.0		107	70-125			
cis-1,3-Dichloropropene	52.3	1	ug/L	50.0		105	70-130			
Dibromochloromethane	53.8	0.5	ug/L	50.0		108	60-135			
Dibromomethane	50.0	1	ug/L	50.0		100	75-125			
Dichlorodifluoromethane	68.5	1	ug/L	50.0		137	30-155			
Ethylbenzene	53.0	1	ug/L	50.0		106	75-125			
Hexachlorobutadiene	43.5	0.8	ug/L	50.0		87.1	50-140			
Isopropylbenzene	50.0	1	ug/L	50.0		100	75-125			
m+p-Xylenes	105	2	ug/L	100		105	75-130			
Methylene chloride	55.9	4	ug/L	50.0		112	55-140			
Methyl-t-butyl ether (MTBE)	51.7	1	ug/L	50.0		103	65-125			
Naphthalene	50.9	1	ug/L	50.0		102	55-140			
n-Butylbenzene	51.5	1	ug/L	50.0		103	70-135			
n-Propylbenzene	52.1	1	ug/L	50.0		104	70-130			
o-Xylene	52.6	1	ug/L	50.0		105	80-120			
sec-Butylbenzene	54.2	1	ug/L	50.0		108	70-125			
Styrene	53.6	1	ug/L	50.0		107	65-135			
tert-Butylbenzene	51.3	1	ug/L	50.0		103	70-130			
Tetrachloroethylene (PCE)	43.8	1	ug/L	50.0		87.6	45-150			
Toluene	54.3	1	ug/L	50.0		109	75-120			
trans-1,2-Dichloroethylene	52.2	1	ug/L	50.0		104	60-140			
trans-1,3-Dichloropropene	56.3	1	ug/L	50.0		113	55-140			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
LCS (BGL0454-BS1)				Prepared & Analyzed: 12/12/2023						
Trichloroethylene	51.2	1	ug/L	50.0		102	70-125			
Trichlorofluoromethane	55.9	1	ug/L	50.0		112	60-145			
Vinyl chloride	51.6	0.5	ug/L	50.0		103	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*50.2*		ug/L	*50.0*		*100*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*51.8*		ug/L	*50.0*		*104*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*50.8*		ug/L	*50.0*		*102*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.9*		ug/L	*50.0*		*102*	*70-130*			
Matrix Spike (BGL0454-MS1)		**Source: 23L0507-06**		Prepared & Analyzed: 12/12/2023						
1,1,1,2-Tetrachloroethane	53.6	0.4	ug/L	50.0	BLOD	107	80-130			
1,1,1-Trichloroethane	49.8	1	ug/L	50.0	BLOD	99.6	65-130			
1,1,2,2-Tetrachloroethane	58.6	0.4	ug/L	50.0	BLOD	117	65-130			
1,1,2-Trichloroethane	58.5	1	ug/L	50.0	BLOD	117	75-125			
1,1-Dichloroethane	51.7	1	ug/L	50.0	BLOD	103	70-135			
1,1-Dichloroethylene	51.0	1	ug/L	50.0	BLOD	102	50-145			
1,1-Dichloropropene	51.2	1	ug/L	50.0	BLOD	102	75-135			
1,2,3-Trichlorobenzene	55.6	1	ug/L	50.0	BLOD	111	55-140			
1,2,3-Trichloropropane	55.4	1	ug/L	50.0	BLOD	111	75-125			
1,2,4-Trichlorobenzene	49.4	1	ug/L	50.0	BLOD	98.8	65-135			
1,2,4-Trimethylbenzene	53.0	1	ug/L	50.0	0.76	105	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	50.4	1	ug/L	50.0	BLOD	101	50-130			
1,2-Dibromoethane (EDB)	56.3	1	ug/L	50.0	BLOD	113	80-120			
1,2-Dichlorobenzene	50.6	0.5	ug/L	50.0	BLOD	101	70-120			
1,2-Dichloroethane	52.6	1	ug/L	50.0	BLOD	105	70-130			
1,2-Dichloropropane	54.0	0.5	ug/L	50.0	BLOD	108	75-125			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
Matrix Spike (BGL0454-MS1)		**Source: 23L0507-06**		Prepared & Analyzed: 12/12/2023						
1,3,5-Trimethylbenzene	51.0	1	ug/L	50.0	BLOD	102	75-124			
1,3-Dichlorobenzene	51.8	1	ug/L	50.0	BLOD	104	75-125			
1,3-Dichloropropane	56.2	1	ug/L	50.0	BLOD	112	75-125			
1,4-Dichlorobenzene	49.5	1	ug/L	50.0	BLOD	99.0	75-125			
2,2-Dichloropropane	48.8	1	ug/L	50.0	BLOD	97.5	70-135			
2-Butanone (MEK)	58.7	10	ug/L	50.0	BLOD	117	30-150			
2-Chlorotoluene	51.7	1	ug/L	50.0	BLOD	103	75-125			
2-Hexanone (MBK)	57.9	5	ug/L	50.0	BLOD	116	55-130			
4-Chlorotoluene	51.7	1	ug/L	50.0	BLOD	103	75-130			
4-Isopropyltoluene	51.6	1	ug/L	50.0	BLOD	103	75-130			
4-Methyl-2-pentanone (MIBK)	65.0	5	ug/L	50.0	BLOD	130	60-135			
Acetone	53.2	10	ug/L	50.0	BLOD	106	40-140			
Benzene	54.0	1	ug/L	50.0	0.82	106	80-120			
Bromobenzene	55.4	1	ug/L	50.0	BLOD	111	75-125			
Bromochloromethane	53.3	1	ug/L	50.0	BLOD	107	65-130			
Bromodichloromethane	54.8	0.5	ug/L	50.0	BLOD	110	75-136			
Bromoform	62.0	1	ug/L	50.0	BLOD	124	70-130			
Bromomethane	39.8	1	ug/L	50.0	BLOD	79.6	30-145			
Carbon disulfide	51.5	10	ug/L	50.0	BLOD	102	35-160			
Carbon tetrachloride	50.4	1	ug/L	50.0	BLOD	101	65-140			
Chlorobenzene	52.3	1	ug/L	50.0	0.44	104	80-120			
Chloroethane	48.4	1	ug/L	50.0	BLOD	96.9	60-135			
Chloroform	50.3	0.5	ug/L	50.0	BLOD	101	65-135			
Chloromethane	51.7	1	ug/L	50.0	BLOD	103	40-125			
cis-1,2-Dichloroethylene	53.6	1	ug/L	50.0	0.51	106	70-125			

Certificate of Analysis

Client Name: SCS Engineers-Winchester
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Client Site I.D.: 2023 City of Bristol Landfill Leachate
Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
Matrix Spike (BGL0454-MS1)	**Source: 23L0507-06**		Prepared & Analyzed: 12/12/2023							
cis-1,3-Dichloropropene	54.9	1	ug/L	50.0	BLOD	110	47-136			
Dibromochloromethane	58.4	0.5	ug/L	50.0	BLOD	117	60-135			
Dibromomethane	55.2	1	ug/L	50.0	BLOD	110	75-125			
Dichlorodifluoromethane	66.3	1	ug/L	50.0	BLOD	133	30-155			
Ethylbenzene	52.9	1	ug/L	50.0	1.04	104	75-125			
Hexachlorobutadiene	44.8	0.8	ug/L	50.0	BLOD	89.7	50-140			
Isopropylbenzene	50.1	1	ug/L	50.0	BLOD	100	75-125			
m+p-Xylenes	105	2	ug/L	100	3.92	101	75-130			
Methylene chloride	55.0	4	ug/L	50.0	BLOD	110	55-140			
Methyl-t-butyl ether (MTBE)	56.1	1	ug/L	50.0	BLOD	111	65-125			
Naphthalene	55.5	1	ug/L	50.0	BLOD	111	55-140			
n-Butylbenzene	49.2	1	ug/L	50.0	BLOD	98.3	70-135			
n-Propylbenzene	51.6	1	ug/L	50.0	BLOD	103	70-130			
o-Xylene	52.9	1	ug/L	50.0	1.14	103	80-120			
sec-Butylbenzene	53.5	1	ug/L	50.0	BLOD	107	70-125			
Styrene	54.2	1	ug/L	50.0	BLOD	108	65-135			
tert-Butylbenzene	51.7	1	ug/L	50.0	BLOD	103	70-130			
Tetrachloroethylene (PCE)	47.4	1	ug/L	50.0	5.36	84.1	51-231			
Toluene	55.5	1	ug/L	50.0	5.16	101	75-120			
trans-1,2-Dichloroethylene	51.1	1	ug/L	50.0	BLOD	102	60-140			
trans-1,3-Dichloropropene	60.4	1	ug/L	50.0	BLOD	121	55-140			
Trichloroethylene	52.4	1	ug/L	50.0	0.48	104	70-125			
Trichlorofluoromethane	55.3	1	ug/L	50.0	BLOD	111	60-145			
Vinyl chloride	42.9	0.5	ug/L	50.0	BLOD	85.9	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*48.5*		ug/L	*50.0*		*97.1*	*70-120*			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
Matrix Spike (BGL0454-MS1)	**Source: 23L0507-06**			Prepared & Analyzed: 12/12/2023						
Surr: 4-Bromofluorobenzene (Surr)	*51.5*		ug/L	*50.0*		*103*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*48.9*		ug/L	*50.0*		*97.8*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.4*		ug/L	*50.0*		*101*	*70-130*			
Matrix Spike Dup (BGL0454-MSD1)	**Source: 23L0507-06**			Prepared & Analyzed: 12/12/2023						
1,1,1,2-Tetrachloroethane	53.1	0.4	ug/L	50.0	BLOD	106	80-130	0.937	30	
1,1,1-Trichloroethane	50.2	1	ug/L	50.0	BLOD	100	65-130	0.760	30	
1,1,2,2-Tetrachloroethane	57.3	0.4	ug/L	50.0	BLOD	115	65-130	2.21	30	
1,1,2-Trichloroethane	56.6	1	ug/L	50.0	BLOD	113	75-125	3.32	30	
1,1-Dichloroethane	50.8	1	ug/L	50.0	BLOD	102	70-135	1.82	30	
1,1-Dichloroethylene	50.9	1	ug/L	50.0	BLOD	102	50-145	0.157	30	
1,1-Dichloropropene	51.0	1	ug/L	50.0	BLOD	102	75-135	0.391	30	
1,2,3-Trichlorobenzene	55.7	1	ug/L	50.0	BLOD	111	55-140	0.198	30	
1,2,3-Trichloropropane	54.3	1	ug/L	50.0	BLOD	109	75-125	2.02	30	
1,2,4-Trichlorobenzene	50.4	1	ug/L	50.0	BLOD	101	65-135	1.88	30	
1,2,4-Trimethylbenzene	53.9	1	ug/L	50.0	0.76	106	75-130	1.57	30	
1,2-Dibromo-3-chloropropane (DBCP)	50.4	1	ug/L	50.0	BLOD	101	50-130	0.0992	30	
1,2-Dibromoethane (EDB)	54.7	1	ug/L	50.0	BLOD	109	80-120	2.90	30	
1,2-Dichlorobenzene	51.3	0.5	ug/L	50.0	BLOD	103	70-120	1.26	30	
1,2-Dichloroethane	50.6	1	ug/L	50.0	BLOD	101	70-130	3.87	30	
1,2-Dichloropropane	53.2	0.5	ug/L	50.0	BLOD	106	75-125	1.44	30	
1,3,5-Trimethylbenzene	52.0	1	ug/L	50.0	BLOD	104	75-124	2.06	30	
1,3-Dichlorobenzene	53.0	1	ug/L	50.0	BLOD	106	75-125	2.39	30	
1,3-Dichloropropane	54.9	1	ug/L	50.0	BLOD	110	75-125	2.38	30	
1,4-Dichlorobenzene	50.5	1	ug/L	50.0	BLOD	101	75-125	1.96	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
Matrix Spike Dup (BGL0454-MSD1)	**Source: 23L0507-06**		Prepared & Analyzed: 12/12/2023							
2,2-Dichloropropane	48.6	1	ug/L	50.0	BLOD	97.2	70-135	0.308	30	
2-Butanone (MEK)	58.6	10	ug/L	50.0	BLOD	117	30-150	0.188	30	
2-Chlorotoluene	52.5	1	ug/L	50.0	BLOD	105	75-125	1.40	30	
2-Hexanone (MBK)	58.9	5	ug/L	50.0	BLOD	118	55-130	1.68	30	
4-Chlorotoluene	53.2	1	ug/L	50.0	BLOD	106	75-130	2.99	30	
4-Isopropyltoluene	53.5	1	ug/L	50.0	BLOD	107	75-130	3.60	30	
4-Methyl-2-pentanone (MIBK)	64.6	5	ug/L	50.0	BLOD	129	60-135	0.633	30	
Acetone	53.4	10	ug/L	50.0	BLOD	107	40-140	0.263	30	
Benzene	53.7	1	ug/L	50.0	0.82	106	80-120	0.576	30	
Bromobenzene	55.1	1	ug/L	50.0	BLOD	110	75-125	0.633	30	
Bromochloromethane	51.7	1	ug/L	50.0	BLOD	103	65-130	3.01	30	
Bromodichloromethane	54.4	0.5	ug/L	50.0	BLOD	109	75-136	0.843	30	
Bromoform	61.2	1	ug/L	50.0	BLOD	122	70-130	1.30	30	
Bromomethane	39.8	1	ug/L	50.0	BLOD	79.5	30-145	0.0754	30	
Carbon disulfide	51.5	10	ug/L	50.0	BLOD	102	35-160	0.0389	30	
Carbon tetrachloride	50.9	1	ug/L	50.0	BLOD	102	65-140	0.987	30	
Chlorobenzene	52.3	1	ug/L	50.0	0.44	104	80-120	0.0382	30	
Chloroethane	48.0	1	ug/L	50.0	BLOD	95.9	60-135	1.04	30	
Chloroform	49.5	0.5	ug/L	50.0	BLOD	99.1	65-135	1.50	30	
Chloromethane	50.8	1	ug/L	50.0	BLOD	102	40-125	1.74	30	
cis-1,2-Dichloroethylene	52.7	1	ug/L	50.0	0.51	104	70-125	1.62	30	
cis-1,3-Dichloropropene	53.5	1	ug/L	50.0	BLOD	107	47-136	2.49	30	
Dibromochloromethane	57.1	0.5	ug/L	50.0	BLOD	114	60-135	2.16	30	
Dibromomethane	53.7	1	ug/L	50.0	BLOD	107	75-125	2.86	30	
Dichlorodifluoromethane	65.2	1	ug/L	50.0	BLOD	130	30-155	1.81	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0454 - SW5030B-MS										
Matrix Spike Dup (BGL0454-MSD1)		**Source: 23L0507-06**		Prepared & Analyzed: 12/12/2023						
Ethylbenzene	53.7	1	ug/L	50.0	1.04	105	75-125	1.59	30	
Hexachlorobutadiene	46.8	0.8	ug/L	50.0	BLOD	93.7	50-140	4.38	30	
Isopropylbenzene	50.7	1	ug/L	50.0	BLOD	101	75-125	1.19	30	
m+p-Xylenes	107	2	ug/L	100	3.92	103	75-130	1.68	30	
Methylene chloride	53.7	4	ug/L	50.0	BLOD	107	55-140	2.39	30	
Methyl-t-butyl ether (MTBE)	53.1	1	ug/L	50.0	BLOD	105	65-125	5.42	30	
Naphthalene	55.4	1	ug/L	50.0	BLOD	111	55-140	0.307	30	
n-Butylbenzene	50.3	1	ug/L	50.0	BLOD	101	70-135	2.35	30	
n-Propylbenzene	52.6	1	ug/L	50.0	BLOD	105	70-130	1.75	30	
o-Xylene	53.5	1	ug/L	50.0	1.14	105	80-120	1.17	30	
sec-Butylbenzene	54.9	1	ug/L	50.0	BLOD	110	70-125	2.45	30	
Styrene	53.7	1	ug/L	50.0	BLOD	107	65-135	0.946	30	
tert-Butylbenzene	52.9	1	ug/L	50.0	BLOD	106	70-130	2.33	30	
Tetrachloroethylene (PCE)	48.1	1	ug/L	50.0	5.36	85.4	51-231	1.34	30	
Toluene	55.6	1	ug/L	50.0	5.16	101	75-120	0.234	30	
trans-1,2-Dichloroethylene	50.8	1	ug/L	50.0	BLOD	102	60-140	0.471	30	
trans-1,3-Dichloropropene	58.5	1	ug/L	50.0	BLOD	117	55-140	3.13	30	
Trichloroethylene	53.0	1	ug/L	50.0	0.48	105	70-125	1.21	30	
Trichlorofluoromethane	54.7	1	ug/L	50.0	BLOD	109	60-145	1.11	30	
Vinyl chloride	41.5	0.5	ug/L	50.0	BLOD	83.0	50-145	3.36	30	
Surr: 1,2-Dichloroethane-d4 (Surr)	*47.2*		ug/L	*50.0*		*94.5*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*51.2*		ug/L	*50.0*		*102*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.9*		ug/L	*50.0*		*95.8*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.3*		ug/L	*50.0*		*101*	*70-130*			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0524 - SW5030B-MS										
Blank (BGL0524-BLK1)				Prepared & Analyzed: 12/13/2023						
2-Butanone (MEK)	ND	10.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Tetrahydrofuran	ND	10.0	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*45.0*		ug/L	*50.0*		*90.0*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*50.0*		ug/L	*50.0*		*100*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*49.8*		ug/L	*50.0*		*99.5*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.7*		ug/L	*50.0*		*97.5*	*70-130*			
Blank (BGL0524-BLK2)				Prepared & Analyzed: 12/13/2023						
Tetrahydrofuran	ND	10.0	ug/L							
LCS (BGL0524-BS1)				Prepared & Analyzed: 12/13/2023						
1,1,1,2-Tetrachloroethane	46.4	0.4	ug/L	50.0		92.8	80-130			
1,1,1-Trichloroethane	48.1	1	ug/L	50.0		96.2	65-130			
1,1,2,2-Tetrachloroethane	45.9	0.4	ug/L	50.0		91.8	65-130			
1,1,2-Trichloroethane	46.3	1	ug/L	50.0		92.5	75-125			
1,1-Dichloroethane	43.6	1	ug/L	50.0		87.1	70-135			
1,1-Dichloroethylene	46.7	1	ug/L	50.0		93.4	70-130			
1,1-Dichloropropene	48.4	1	ug/L	50.0		96.8	75-135			
1,2,3-Trichlorobenzene	41.0	1	ug/L	50.0		81.9	55-140			
1,2,3-Trichloropropane	44.8	1	ug/L	50.0		89.5	75-125			
1,2,4-Trichlorobenzene	42.7	1	ug/L	50.0		85.5	65-135			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0524 - SW5030B-MS

LCS (BGL0524-BS1) Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	44.9	1	ug/L	50.0		89.8	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	42.6	1	ug/L	50.0		85.2	50-130			
1,2-Dibromoethane (EDB)	44.0	1	ug/L	50.0		88.1	80-120			
1,2-Dichlorobenzene	44.7	0.5	ug/L	50.0		89.3	70-120			
1,2-Dichloroethane	45.2	1	ug/L	50.0		90.4	70-130			
1,2-Dichloropropane	43.7	0.5	ug/L	50.0		87.4	75-125			
1,3,5-Trimethylbenzene	43.3	1	ug/L	50.0		86.6	75-125			
1,3-Dichlorobenzene	46.3	1	ug/L	50.0		92.6	75-125			
1,3-Dichloropropane	43.6	1	ug/L	50.0		87.2	75-125			
1,4-Dichlorobenzene	43.8	1	ug/L	50.0		87.6	75-125			
2,2-Dichloropropane	48.6	1	ug/L	50.0		97.1	70-135			
2-Butanone (MEK)	45.1	10	ug/L	50.0		90.1	30-150			
2-Chlorotoluene	46.2	1	ug/L	50.0		92.4	75-125			
2-Hexanone (MBK)	45.2	5	ug/L	50.0		90.4	55-130			
4-Chlorotoluene	44.1	1	ug/L	50.0		88.3	75-130			
4-Isopropyltoluene	46.0	1	ug/L	50.0		92.1	75-130			
4-Methyl-2-pentanone (MIBK)	45.2	5	ug/L	50.0		90.4	60-135			
Acetone	40.4	10	ug/L	50.0		80.9	40-140			
Benzene	42.2	1	ug/L	50.0		84.3	80-120			
Bromobenzene	46.8	1	ug/L	50.0		93.5	75-125			
Bromochloromethane	40.8	1	ug/L	50.0		81.7	65-130			
Bromodichloromethane	46.7	0.5	ug/L	50.0		93.4	75-120			
Bromoform	44.9	1	ug/L	50.0		89.9	70-130			
Bromomethane	25.8	1	ug/L	50.0		51.7	30-145			
Carbon disulfide	48.1	10	ug/L	50.0		96.3	35-160			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0524 - SW5030B-MS

LCS (BGL0524-BS1) Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Carbon tetrachloride	55.2	1	ug/L	50.0		110	65-140			
Chlorobenzene	47.3	1	ug/L	50.0		94.6	80-120			
Chloroethane	46.4	1	ug/L	50.0		92.8	60-135			
Chloroform	43.3	0.5	ug/L	50.0		86.6	65-135			
Chloromethane	41.4	1	ug/L	50.0		82.8	40-125			
cis-1,2-Dichloroethylene	41.9	1	ug/L	50.0		83.8	70-125			
cis-1,3-Dichloropropene	44.3	1	ug/L	50.0		88.6	70-130			
Dibromochloromethane	47.1	0.5	ug/L	50.0		94.2	60-135			
Dibromomethane	45.3	1	ug/L	50.0		90.7	75-125			
Dichlorodifluoromethane	52.7	1	ug/L	50.0		105	30-155			
Ethylbenzene	48.6	1	ug/L	50.0		97.1	75-125			
Hexachlorobutadiene	45.6	0.8	ug/L	50.0		91.3	50-140			
Isopropylbenzene	46.4	1	ug/L	50.0		92.7	75-125			
m+p-Xylenes	98.4	2	ug/L	100		98.4	75-130			
Methylene chloride	45.0	4	ug/L	50.0		90.1	55-140			
Methyl-t-butyl ether (MTBE)	39.8	1	ug/L	50.0		79.6	65-125			
Naphthalene	40.8	1	ug/L	50.0		81.7	55-140			
n-Butylbenzene	46.7	1	ug/L	50.0		93.4	70-135			
n-Propylbenzene	45.9	1	ug/L	50.0		91.7	70-130			
o-Xylene	48.7	1	ug/L	50.0		97.4	80-120			
sec-Butylbenzene	50.4	1	ug/L	50.0		101	70-125			
Styrene	45.0	1	ug/L	50.0		89.9	65-135			
tert-Butylbenzene	46.0	1	ug/L	50.0		92.1	70-130			
Tetrachloroethylene (PCE)	53.6	1	ug/L	50.0		107	45-150			
Toluene	46.0	1	ug/L	50.0		92.1	75-120			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0524 - SW5030B-MS										
LCS (BGL0524-BS1)				Prepared & Analyzed: 12/13/2023						
trans-1,2-Dichloroethylene	41.9	1	ug/L	50.0		83.9	60-140			
trans-1,3-Dichloropropene	47.1	1	ug/L	50.0		94.2	55-140			
Trichloroethylene	48.1	1	ug/L	50.0		96.1	70-125			
Trichlorofluoromethane	60.7	1	ug/L	50.0		121	60-145			
Vinyl chloride	54.4	0.5	ug/L	50.0		109	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*47.3*		ug/L	*50.0*		*94.5*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*50.4*		ug/L	*50.0*		*101*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*49.4*		ug/L	*50.0*		*98.7*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.6*		ug/L	*50.0*		*99.1*	*70-130*			
Duplicate (BGL0524-DUP1)	**Source: 23L0444-01**			Prepared & Analyzed: 12/13/2023						
1,1,1,2-Tetrachloroethane	ND	8.00	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	20.0	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	8.00	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	20.0	ug/L		BLOD			NA	30	
1,1-Dichloroethane	ND	20.0	ug/L		BLOD			NA	30	
1,1-Dichloroethylene	ND	20.0	ug/L		BLOD			NA	30	
1,1-Dichloropropene	ND	20.0	ug/L		BLOD			NA	30	
1,2,3-Trichlorobenzene	ND	20.0	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	20.0	ug/L		BLOD			NA	30	
1,2,4-Trichlorobenzene	ND	20.0	ug/L		BLOD			NA	30	
1,2,4-Trimethylbenzene	ND	20.0	ug/L		BLOD			NA	30	
1,2-Dibromo-3-chloropropane (DBCP)	ND	20.0	ug/L		BLOD			NA	30	
1,2-Dibromoethane (EDB)	ND	20.0	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	10.0	ug/L		BLOD			NA	30	

Certificate of Analysis

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0524 - SW5030B-MS

Duplicate (BGL0524-DUP1) **Source: 23L0444-01** Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
1,2-Dichloroethane	ND	20.0	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	10.0	ug/L		BLOD			NA	30	
1,3,5-Trimethylbenzene	ND	20.0	ug/L		BLOD			NA	30	
1,3-Dichlorobenzene	ND	20.0	ug/L		BLOD			NA	30	
1,3-Dichloropropane	ND	20.0	ug/L		BLOD			NA	30	
1,4-Dichlorobenzene	ND	20.0	ug/L		BLOD			NA	30	
2,2-Dichloropropane	ND	20.0	ug/L		BLOD			NA	30	
2-Butanone (MEK)	ND	200	ug/L		BLOD			NA	30	
2-Chlorotoluene	ND	20.0	ug/L		BLOD			NA	30	
2-Hexanone (MBK)	ND	100	ug/L		BLOD			NA	30	
4-Chlorotoluene	ND	20.0	ug/L		BLOD			NA	30	
4-Isopropyltoluene	ND	20.0	ug/L		BLOD			NA	30	
4-Methyl-2-pentanone (MIBK)	ND	100	ug/L		BLOD			NA	30	
Acetone	ND	200	ug/L		BLOD			NA	30	
Benzene	ND	20.0	ug/L		BLOD			NA	30	
Bromobenzene	ND	20.0	ug/L		BLOD			NA	30	
Bromochloromethane	ND	20.0	ug/L		BLOD			NA	30	
Bromodichloromethane	ND	10.0	ug/L		BLOD			NA	30	
Bromoform	ND	20.0	ug/L		BLOD			NA	30	
Bromomethane	ND	20.0	ug/L		BLOD			NA	30	
Carbon disulfide	ND	200	ug/L		BLOD			NA	30	
Carbon tetrachloride	ND	20.0	ug/L		BLOD			NA	30	
Chlorobenzene	ND	20.0	ug/L		BLOD			NA	30	
Chloroethane	ND	20.0	ug/L		BLOD			NA	30	
Chloroform	ND	10.0	ug/L		BLOD			NA	30	

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0524 - SW5030B-MS

Duplicate (BGL0524-DUP1) **Source: 23L0444-01** Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Chloromethane	ND	20.0	ug/L		BLOD			NA	30	
cis-1,2-Dichloroethylene	ND	20.0	ug/L		BLOD			NA	30	
cis-1,3-Dichloropropene	ND	20.0	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	10.0	ug/L		BLOD			NA	30	
Dibromomethane	ND	20.0	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	20.0	ug/L		BLOD			NA	30	
Di-isopropyl ether (DIPE)	ND	100	ug/L		BLOD			NA	30	
Ethylbenzene	ND	20.0	ug/L		BLOD			NA	30	
Hexachlorobutadiene	ND	16.0	ug/L		BLOD			NA	30	
Iodomethane	ND	200	ug/L		BLOD			NA	30	
Isopropylbenzene	ND	20.0	ug/L		BLOD			NA	30	
m+p-Xylenes	ND	40.0	ug/L		BLOD			NA	30	
Methylene chloride	ND	80.0	ug/L		BLOD			NA	30	
Methyl-t-butyl ether (MTBE)	ND	20.0	ug/L		BLOD			NA	30	
Naphthalene	ND	20.0	ug/L		BLOD			NA	30	
n-Butylbenzene	ND	20.0	ug/L		BLOD			NA	30	
n-Propylbenzene	ND	20.0	ug/L		BLOD			NA	30	
o-Xylene	ND	20.0	ug/L		BLOD			NA	30	
sec-Butylbenzene	ND	20.0	ug/L		BLOD			NA	30	
Styrene	ND	20.0	ug/L		BLOD			NA	30	
tert-Butylbenzene	ND	20.0	ug/L		BLOD			NA	30	
Tetrachloroethylene (PCE)	ND	20.0	ug/L		BLOD			NA	30	
Toluene	ND	20.0	ug/L		BLOD			NA	30	
trans-1,2-Dichloroethylene	ND	20.0	ug/L		BLOD			NA	30	
trans-1,3-Dichloropropene	ND	20.0	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0524 - SW5030B-MS										
Duplicate (BGL0524-DUP1)		**Source: 23L0444-01**		Prepared & Analyzed: 12/13/2023						
Trichloroethylene	ND	20.0	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	20.0	ug/L		BLOD			NA	30	
Vinyl acetate	ND	200	ug/L		BLOD			NA	30	
Vinyl chloride	ND	10.0	ug/L		BLOD			NA	30	
Xylenes, Total	ND	60.0	ug/L		BLOD			NA	30	
Tetrahydrofuran	ND	200	ug/L		BLOD			NA	30	
Surr: 1,2-Dichloroethane-d4 (Surr)	*47.1*		ug/L	*50.0*		*94.1*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*47.6*		ug/L	*50.0*		*95.2*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.9*		ug/L	*50.0*		*95.8*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.0*		ug/L	*50.0*		*98.0*	*70-130*			
Matrix Spike (BGL0524-MS1)		**Source: 23L0444-01**		Prepared & Analyzed: 12/13/2023						
1,1,1,2-Tetrachloroethane	48.1	0.4	ug/L	50.0	BLOD	96.2	80-130			
1,1,1-Trichloroethane	49.5	1	ug/L	50.0	BLOD	99.1	65-130			
1,1,2,2-Tetrachloroethane	47.3	0.4	ug/L	50.0	BLOD	94.6	65-130			
1,1,2-Trichloroethane	48.9	1	ug/L	50.0	BLOD	97.8	75-125			
1,1-Dichloroethane	46.9	1	ug/L	50.0	BLOD	93.7	70-135			
1,1-Dichloroethylene	50.8	1	ug/L	50.0	BLOD	102	50-145			
1,1-Dichloropropene	51.8	1	ug/L	50.0	BLOD	104	75-135			
1,2,3-Trichlorobenzene	48.2	1	ug/L	50.0	BLOD	96.5	55-140			
1,2,3-Trichloropropane	46.2	1	ug/L	50.0	BLOD	92.3	75-125			
1,2,4-Trichlorobenzene	49.7	1	ug/L	50.0	BLOD	99.3	65-135			
1,2,4-Trimethylbenzene	50.4	1	ug/L	50.0	BLOD	101	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	46.2	1	ug/L	50.0	BLOD	92.5	50-130			
1,2-Dibromoethane (EDB)	47.5	1	ug/L	50.0	BLOD	94.9	80-120			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0524 - SW5030B-MS

Matrix Spike (BGL0524-MS1) **Source: 23L0444-01** Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
1,2-Dichlorobenzene	49.9	0.5	ug/L	50.0	BLOD	99.9	70-120			
1,2-Dichloroethane	46.5	1	ug/L	50.0	BLOD	93.1	70-130			
1,2-Dichloropropane	46.7	0.5	ug/L	50.0	BLOD	93.4	75-125			
1,3,5-Trimethylbenzene	49.0	1	ug/L	50.0	BLOD	98.0	75-124			
1,3-Dichlorobenzene	50.6	1	ug/L	50.0	BLOD	101	75-125			
1,3-Dichloropropane	46.1	1	ug/L	50.0	BLOD	92.3	75-125			
1,4-Dichlorobenzene	49.2	1	ug/L	50.0	BLOD	98.5	75-125			
2,2-Dichloropropane	50.7	1	ug/L	50.0	BLOD	101	70-135			
2-Butanone (MEK)	40.2	10	ug/L	50.0	BLOD	77.3	30-150			
2-Chlorotoluene	51.0	1	ug/L	50.0	BLOD	102	75-125			
2-Hexanone (MBK)	45.3	5	ug/L	50.0	BLOD	90.6	55-130			
4-Chlorotoluene	49.9	1	ug/L	50.0	BLOD	99.8	75-130			
4-Isopropyltoluene	53.1	1	ug/L	50.0	BLOD	106	75-130			
4-Methyl-2-pentanone (MIBK)	45.2	5	ug/L	50.0	BLOD	90.4	60-135			
Acetone	40.9	10	ug/L	50.0	BLOD	81.8	40-140			
Benzene	46.2	1	ug/L	50.0	BLOD	92.5	80-120			
Bromobenzene	50.2	1	ug/L	50.0	BLOD	100	75-125			
Bromochloromethane	42.8	1	ug/L	50.0	BLOD	85.6	65-130			
Bromodichloromethane	50.6	0.5	ug/L	50.0	BLOD	101	75-136			
Bromoform	47.3	1	ug/L	50.0	BLOD	94.6	70-130			
Bromomethane	35.2	1	ug/L	50.0	BLOD	70.4	30-145			
Carbon disulfide	48.1	10	ug/L	50.0	BLOD	96.2	35-160			
Carbon tetrachloride	59.0	1	ug/L	50.0	BLOD	118	65-140			
Chlorobenzene	50.8	1	ug/L	50.0	BLOD	102	80-120			
Chloroethane	49.9	1	ug/L	50.0	BLOD	99.7	60-135			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0524 - SW5030B-MS

Matrix Spike (BGL0524-MS1) **Source: 23L0444-01** Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Chloroform	45.8	0.5	ug/L	50.0	BLOD	91.5	65-135			
Chloromethane	43.3	1	ug/L	50.0	BLOD	86.6	40-125			
cis-1,2-Dichloroethylene	44.8	1	ug/L	50.0	BLOD	89.5	70-125			
cis-1,3-Dichloropropene	47.5	1	ug/L	50.0	BLOD	95.0	47-136			
Dibromochloromethane	49.3	0.5	ug/L	50.0	BLOD	98.5	60-135			
Dibromomethane	47.9	1	ug/L	50.0	BLOD	95.7	75-125			
Dichlorodifluoromethane	53.4	1	ug/L	50.0	BLOD	107	30-155			
Ethylbenzene	52.2	1	ug/L	50.0	BLOD	104	75-125			
Hexachlorobutadiene	53.2	0.8	ug/L	50.0	BLOD	106	50-140			
Isopropylbenzene	50.0	1	ug/L	50.0	BLOD	100	75-125			
m+p-Xylenes	106	2	ug/L	100	BLOD	106	75-130			
Methylene chloride	48.5	4	ug/L	50.0	BLOD	95.5	55-140			
Methyl-t-butyl ether (MTBE)	42.5	1	ug/L	50.0	BLOD	85.0	65-125			
Naphthalene	47.4	1	ug/L	50.0	BLOD	94.7	55-140			
n-Butylbenzene	52.6	1	ug/L	50.0	BLOD	105	70-135			
n-Propylbenzene	52.0	1	ug/L	50.0	BLOD	104	70-130			
o-Xylene	51.2	1	ug/L	50.0	BLOD	102	80-120			
sec-Butylbenzene	56.6	1	ug/L	50.0	BLOD	113	70-125			
Styrene	47.2	1	ug/L	50.0	BLOD	94.3	65-135			
tert-Butylbenzene	51.9	1	ug/L	50.0	BLOD	104	70-130			
Tetrachloroethylene (PCE)	58.0	1	ug/L	50.0	BLOD	116	51-231			
Toluene	50.3	1	ug/L	50.0	BLOD	101	75-120			
trans-1,2-Dichloroethylene	45.4	1	ug/L	50.0	BLOD	90.9	60-140			
trans-1,3-Dichloropropene	50.2	1	ug/L	50.0	BLOD	100	55-140			
Trichloroethylene	52.1	1	ug/L	50.0	BLOD	104	70-125			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0524 - SW5030B-MS										
Matrix Spike (BGL0524-MS1)		**Source: 23L0444-01**		Prepared & Analyzed: 12/13/2023						
Trichlorofluoromethane	62.4	1	ug/L	50.0	BLOD	125	60-145			
Vinyl chloride	54.7	0.5	ug/L	50.0	BLOD	109	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*44.9*		ug/L	*50.0*		*89.7*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.0*		ug/L	*50.0*		*98.1*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.9*		ug/L	*50.0*		*95.9*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.0*		ug/L	*50.0*		*98.1*	*70-130*			
Batch BGL0544 - SW5030B-MS										
Blank (BGL0544-BLK1)				Prepared & Analyzed: 12/13/2023						
2-Butanone (MEK)	ND	10.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Tetrahydrofuran	ND	10.0	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*44.8*		ug/L	*50.0*		*89.6*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.4*		ug/L	*50.0*		*98.8*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*44.2*		ug/L	*50.0*		*88.4*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.8*		ug/L	*50.0*		*97.6*	*70-130*			
LCS (BGL0544-BS1)				Prepared & Analyzed: 12/13/2023						
1,1,1,2-Tetrachloroethane	48.7	0.4	ug/L	50.0		97.4	80-130			
1,1,1-Trichloroethane	48.3	1	ug/L	50.0		96.7	65-130			
1,1,2,2-Tetrachloroethane	41.1	0.4	ug/L	50.0		82.2	65-130			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0544 - SW5030B-MS

LCS (BGL0544-BS1) Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
1,1,2-Trichloroethane	45.3	1	ug/L	50.0		90.6	75-125			
1,1-Dichloroethane	46.6	1	ug/L	50.0		93.3	70-135			
1,1-Dichloroethylene	44.3	1	ug/L	50.0		88.6	70-130			
1,1-Dichloropropene	53.0	1	ug/L	50.0		106	75-135			
1,2,3-Trichlorobenzene	38.5	1	ug/L	50.0		77.0	55-140			
1,2,3-Trichloropropane	41.3	1	ug/L	50.0		82.7	75-125			
1,2,4-Trichlorobenzene	44.0	1	ug/L	50.0		87.9	65-135			
1,2,4-Trimethylbenzene	50.1	1	ug/L	50.0		100	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	35.0	1	ug/L	50.0		70.0	50-130			
1,2-Dibromoethane (EDB)	47.3	1	ug/L	50.0		94.6	80-120			
1,2-Dichlorobenzene	48.0	0.5	ug/L	50.0		95.9	70-120			
1,2-Dichloroethane	40.8	1	ug/L	50.0		81.5	70-130			
1,2-Dichloropropane	49.2	0.5	ug/L	50.0		98.3	75-125			
1,3,5-Trimethylbenzene	48.2	1	ug/L	50.0		96.4	75-125			
1,3-Dichlorobenzene	48.8	1	ug/L	50.0		97.5	75-125			
1,3-Dichloropropane	44.7	1	ug/L	50.0		89.4	75-125			
1,4-Dichlorobenzene	48.1	1	ug/L	50.0		96.3	75-125			
2,2-Dichloropropane	51.6	1	ug/L	50.0		103	70-135			
2-Butanone (MEK)	35.4	10	ug/L	50.0		70.7	30-150			
2-Chlorotoluene	49.0	1	ug/L	50.0		98.0	75-125			
2-Hexanone (MBK)	38.4	5	ug/L	50.0		76.9	55-130			
4-Chlorotoluene	49.8	1	ug/L	50.0		99.6	75-130			
4-Isopropyltoluene	53.9	1	ug/L	50.0		108	75-130			
4-Methyl-2-pentanone (MIBK)	37.2	5	ug/L	50.0		74.4	60-135			
Acetone	32.6	10	ug/L	50.0		65.2	40-140			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0544 - SW5030B-MS

LCS (BGL0544-BS1) Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Benzene	49.6	1	ug/L	50.0		99.2	80-120			
Bromobenzene	49.8	1	ug/L	50.0		99.5	75-125			
Bromochloromethane	43.9	1	ug/L	50.0		87.8	65-130			
Bromodichloromethane	46.5	0.5	ug/L	50.0		92.9	75-120			
Bromoform	43.7	1	ug/L	50.0		87.4	70-130			
Bromomethane	31.1	1	ug/L	50.0		62.2	30-145			
Carbon disulfide	43.1	10	ug/L	50.0		86.2	35-160			
Carbon tetrachloride	55.9	1	ug/L	50.0		112	65-140			
Chlorobenzene	50.7	1	ug/L	50.0		101	80-120			
Chloroethane	45.8	1	ug/L	50.0		91.6	60-135			
Chloroform	42.8	0.5	ug/L	50.0		85.5	65-135			
Chloromethane	36.3	1	ug/L	50.0		72.6	40-125			
cis-1,2-Dichloroethylene	45.3	1	ug/L	50.0		90.6	70-125			
cis-1,3-Dichloropropene	50.5	1	ug/L	50.0		101	70-130			
Dibromochloromethane	46.6	0.5	ug/L	50.0		93.3	60-135			
Dibromomethane	44.6	1	ug/L	50.0		89.1	75-125			
Dichlorodifluoromethane	42.3	1	ug/L	50.0		84.6	30-155			
Ethylbenzene	50.5	1	ug/L	50.0		101	75-125			
Hexachlorobutadiene	54.9	0.8	ug/L	50.0		110	50-140			
Isopropylbenzene	49.1	1	ug/L	50.0		98.2	75-125			
m+p-Xylenes	101	2	ug/L	100		101	75-130			
Methylene chloride	39.6	4	ug/L	50.0		79.2	55-140			
Methyl-t-butyl ether (MTBE)	41.8	1	ug/L	50.0		83.6	65-125			
Naphthalene	37.0	1	ug/L	50.0		73.9	55-140			
n-Butylbenzene	55.2	1	ug/L	50.0		110	70-135			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0544 - SW5030B-MS										
LCS (BGL0544-BS1)				Prepared & Analyzed: 12/13/2023						
n-Propylbenzene	51.6	1	ug/L	50.0		103	70-130			
o-Xylene	50.0	1	ug/L	50.0		100	80-120			
sec-Butylbenzene	58.7	1	ug/L	50.0		117	70-125			
Styrene	49.0	1	ug/L	50.0		98.1	65-135			
tert-Butylbenzene	53.0	1	ug/L	50.0		106	70-130			
Tetrachloroethylene (PCE)	57.2	1	ug/L	50.0		114	45-150			
Toluene	50.6	1	ug/L	50.0		101	75-120			
trans-1,2-Dichloroethylene	42.6	1	ug/L	50.0		85.2	60-140			
trans-1,3-Dichloropropene	53.8	1	ug/L	50.0		108	55-140			
Trichloroethylene	51.8	1	ug/L	50.0		104	70-125			
Trichlorofluoromethane	57.7	1	ug/L	50.0		115	60-145			
Vinyl chloride	45.6	0.5	ug/L	50.0		91.3	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*44.7*		ug/L	*50.0*		*89.5*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.4*		ug/L	*50.0*		*98.9*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*44.0*		ug/L	*50.0*		*87.9*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.0*		ug/L	*50.0*		*98.1*	*70-130*			
Duplicate (BGL0544-DUP1)	**Source: 23L0583-02**			Prepared & Analyzed: 12/13/2023						
1,1,1,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0544 - SW5030B-MS										
Duplicate (BGL0544-DUP1)		**Source: 23L0583-02**		Prepared & Analyzed: 12/13/2023						
1,2,3-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trimethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dibromo-3-chloropropane (DBCP)	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dibromoethane (EDB)	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	0.50	ug/L		BLOD			NA	30	
1,2-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	0.50	ug/L		BLOD			NA	30	
1,3,5-Trimethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
1,3-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,3-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,4-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
2,2-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
2-Butanone (MEK)	ND	10.0	ug/L		BLOD			NA	30	
2-Chlorotoluene	ND	1.00	ug/L		BLOD			NA	30	
2-Hexanone (MBK)	ND	5.00	ug/L		BLOD			NA	30	
4-Chlorotoluene	ND	1.00	ug/L		BLOD			NA	30	
4-Isopropyltoluene	ND	1.00	ug/L		BLOD			NA	30	
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L		BLOD			NA	30	
Acetone	ND	10.0	ug/L		BLOD			NA	30	
Benzene	ND	1.00	ug/L		BLOD			NA	30	
Bromobenzene	ND	1.00	ug/L		BLOD			NA	30	
Bromochloromethane	ND	1.00	ug/L		BLOD			NA	30	
Bromodichloromethane	ND	0.50	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0544 - SW5030B-MS

Duplicate (BGL0544-DUP1) **Source: 23L0583-02** Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Bromoform	ND	1.00	ug/L		BLOD			NA	30	
Bromomethane	ND	1.00	ug/L		BLOD			NA	30	
Carbon disulfide	ND	10.0	ug/L		BLOD			NA	30	
Carbon tetrachloride	ND	1.00	ug/L		BLOD			NA	30	
Chlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
Chloroethane	ND	1.00	ug/L		BLOD			NA	30	
Chloroform	ND	0.50	ug/L		BLOD			NA	30	
Chloromethane	ND	1.00	ug/L		BLOD			NA	30	
cis-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
cis-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	0.50	ug/L		BLOD			NA	30	
Dibromomethane	ND	1.00	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Di-isopropyl ether (DIPE)	ND	5.00	ug/L		BLOD			NA	30	
Ethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Hexachlorobutadiene	ND	0.80	ug/L		BLOD			NA	30	
Iodomethane	ND	10.0	ug/L		BLOD			NA	30	
Isopropylbenzene	ND	1.00	ug/L		BLOD			NA	30	
m+p-Xylenes	ND	2.00	ug/L		BLOD			NA	30	
Methylene chloride	ND	4.00	ug/L		BLOD			NA	30	
Methyl-t-butyl ether (MTBE)	ND	1.00	ug/L		BLOD			NA	30	
Naphthalene	ND	1.00	ug/L		BLOD			NA	30	
n-Butylbenzene	ND	1.00	ug/L		BLOD			NA	30	
n-Propylbenzene	ND	1.00	ug/L		BLOD			NA	30	
o-Xylene	ND	1.00	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0544 - SW5030B-MS										
Duplicate (BGL0544-DUP1)		**Source: 23L0583-02**		Prepared & Analyzed: 12/13/2023						
sec-Butylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Styrene	ND	1.00	ug/L		BLOD			NA	30	
tert-Butylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Tetrachloroethylene (PCE)	ND	1.00	ug/L		BLOD			NA	30	
Toluene	3.54	1.00	ug/L		3.01			16.2	30	
trans-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Trichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Vinyl acetate	ND	10.0	ug/L		BLOD			NA	30	
Vinyl chloride	ND	0.50	ug/L		BLOD			NA	30	
Xylenes, Total	ND	3.00	ug/L		BLOD			NA	30	
Tetrahydrofuran	ND	10.0	ug/L		BLOD			NA	30	
Surr: 1,2-Dichloroethane-d4 (Surr)	*46.4*		ug/L	*50.0*		*92.9*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.2*		ug/L	*50.0*		*98.3*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*43.5*		ug/L	*50.0*		*87.0*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.5*		ug/L	*50.0*		*99.0*	*70-130*			
Matrix Spike (BGL0544-MS1)		**Source: 23L0497-01**		Prepared & Analyzed: 12/13/2023						
1,1,1,2-Tetrachloroethane	48.5	0.4	ug/L	50.0	BLOD	97.0	80-130			
1,1,1-Trichloroethane	48.9	1	ug/L	50.0	BLOD	97.8	65-130			
1,1,2,2-Tetrachloroethane	42.6	0.4	ug/L	50.0	BLOD	85.1	65-130			
1,1,2-Trichloroethane	45.3	1	ug/L	50.0	BLOD	90.6	75-125			
1,1-Dichloroethane	46.9	1	ug/L	50.0	BLOD	93.8	70-135			
1,1-Dichloroethylene	44.9	1	ug/L	50.0	BLOD	89.9	50-145			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0544 - SW5030B-MS										
Matrix Spike (BGL0544-MS1)		**Source: 23L0497-01**		Prepared & Analyzed: 12/13/2023						
1,1-Dichloropropene	54.2	1	ug/L	50.0	BLOD	108	75-135			
1,2,3-Trichlorobenzene	42.3	1	ug/L	50.0	BLOD	84.5	55-140			
1,2,3-Trichloropropane	42.6	1	ug/L	50.0	BLOD	85.2	75-125			
1,2,4-Trichlorobenzene	48.0	1	ug/L	50.0	BLOD	96.0	65-135			
1,2,4-Trimethylbenzene	52.3	1	ug/L	50.0	BLOD	105	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	37.4	1	ug/L	50.0	BLOD	74.9	50-130			
1,2-Dibromoethane (EDB)	47.0	1	ug/L	50.0	BLOD	94.0	80-120			
1,2-Dichlorobenzene	48.8	0.5	ug/L	50.0	BLOD	97.5	70-120			
1,2-Dichloroethane	41.3	1	ug/L	50.0	BLOD	82.7	70-130			
1,2-Dichloropropane	49.2	0.5	ug/L	50.0	BLOD	98.3	75-125			
1,3,5-Trimethylbenzene	50.5	1	ug/L	50.0	BLOD	101	75-124			
1,3-Dichlorobenzene	50.2	1	ug/L	50.0	BLOD	100	75-125			
1,3-Dichloropropane	45.9	1	ug/L	50.0	BLOD	91.8	75-125			
1,4-Dichlorobenzene	50.3	1	ug/L	50.0	BLOD	101	75-125			
2,2-Dichloropropane	53.3	1	ug/L	50.0	BLOD	107	70-135			
2-Butanone (MEK)	33.8	10	ug/L	50.0	BLOD	67.6	30-150			
2-Chlorotoluene	50.0	1	ug/L	50.0	BLOD	100	75-125			
2-Hexanone (MBK)	41.5	5	ug/L	50.0	BLOD	83.0	55-130			
4-Chlorotoluene	52.5	1	ug/L	50.0	BLOD	105	75-130			
4-Isopropyltoluene	57.4	1	ug/L	50.0	BLOD	115	75-130			
4-Methyl-2-pentanone (MIBK)	39.6	5	ug/L	50.0	BLOD	79.3	60-135			
Acetone	33.3	10	ug/L	50.0	BLOD	66.5	40-140			
Benzene	49.7	1	ug/L	50.0	BLOD	99.4	80-120			
Bromobenzene	49.7	1	ug/L	50.0	BLOD	99.5	75-125			
Bromochloromethane	43.9	1	ug/L	50.0	BLOD	87.8	65-130			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0544 - SW5030B-MS

Matrix Spike (BGL0544-MS1) **Source: 23L0497-01** Prepared & Analyzed: 12/13/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Bromodichloromethane	46.3	0.5	ug/L	50.0	BLOD	92.6	75-136			
Bromoform	44.7	1	ug/L	50.0	BLOD	89.5	70-130			
Bromomethane	32.8	1	ug/L	50.0	BLOD	65.6	30-145			
Carbon disulfide	41.1	10	ug/L	50.0	BLOD	82.2	35-160			
Carbon tetrachloride	57.2	1	ug/L	50.0	BLOD	114	65-140			
Chlorobenzene	50.1	1	ug/L	50.0	BLOD	100	80-120			
Chloroethane	46.1	1	ug/L	50.0	BLOD	92.2	60-135			
Chloroform	42.9	0.5	ug/L	50.0	BLOD	85.8	65-135			
Chloromethane	37.0	1	ug/L	50.0	BLOD	74.0	40-125			
cis-1,2-Dichloroethylene	45.7	1	ug/L	50.0	BLOD	91.4	70-125			
cis-1,3-Dichloropropene	49.9	1	ug/L	50.0	BLOD	99.9	47-136			
Dibromochloromethane	46.7	0.5	ug/L	50.0	BLOD	93.5	60-135			
Dibromomethane	44.7	1	ug/L	50.0	BLOD	89.4	75-125			
Dichlorodifluoromethane	45.3	1	ug/L	50.0	BLOD	90.5	30-155			
Ethylbenzene	51.6	1	ug/L	50.0	BLOD	103	75-125			
Hexachlorobutadiene	57.6	0.8	ug/L	50.0	BLOD	115	50-140			
Isopropylbenzene	50.4	1	ug/L	50.0	BLOD	101	75-125			
m+p-Xylenes	104	2	ug/L	100	BLOD	104	75-130			
Methylene chloride	39.3	4	ug/L	50.0	BLOD	78.7	55-140			
Methyl-t-butyl ether (MTBE)	42.5	1	ug/L	50.0	BLOD	84.9	65-125			
Naphthalene	41.5	1	ug/L	50.0	BLOD	83.0	55-140			
n-Butylbenzene	58.1	1	ug/L	50.0	BLOD	116	70-135			
n-Propylbenzene	54.0	1	ug/L	50.0	BLOD	108	70-130			
o-Xylene	51.3	1	ug/L	50.0	BLOD	103	80-120			
sec-Butylbenzene	61.3	1	ug/L	50.0	BLOD	123	70-125			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0544 - SW5030B-MS										
Matrix Spike (BGL0544-MS1)		**Source: 23L0497-01**		Prepared & Analyzed: 12/13/2023						
Styrene	48.9	1	ug/L	50.0	BLOD	97.8	65-135			
tert-Butylbenzene	55.1	1	ug/L	50.0	BLOD	110	70-130			
Tetrachloroethylene (PCE)	58.4	1	ug/L	50.0	BLOD	117	51-231			
Toluene	51.5	1	ug/L	50.0	BLOD	103	75-120			
trans-1,2-Dichloroethylene	43.1	1	ug/L	50.0	BLOD	86.2	60-140			
trans-1,3-Dichloropropene	53.4	1	ug/L	50.0	BLOD	107	55-140			
Trichloroethylene	52.6	1	ug/L	50.0	BLOD	105	70-125			
Trichlorofluoromethane	59.5	1	ug/L	50.0	BLOD	119	60-145			
Vinyl chloride	46.4	0.5	ug/L	50.0	BLOD	92.8	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*45.2*		ug/L	*50.0*		*90.4*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.0*		ug/L	*50.0*		*97.9*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*45.1*		ug/L	*50.0*		*90.2*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.4*		ug/L	*50.0*		*96.7*	*70-130*			
Batch BGL0599 - SW5030B-MS										
Blank (BGL0599-BLK1)				Prepared & Analyzed: 12/14/2023						
2-Butanone (MEK)	ND	10.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Tetrahydrofuran	ND	10.0	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*45.7*		ug/L	*50.0*		*91.3*	*70-120*			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0599 - SW5030B-MS										
Blank (BGL0599-BLK1)				Prepared & Analyzed: 12/14/2023						
Surr: 4-Bromofluorobenzene (Surr)	*49.2*		ug/L	*50.0*		*98.3*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*44.2*		ug/L	*50.0*		*88.5*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.7*		ug/L	*50.0*		*97.4*	*70-130*			
LCS (BGL0599-BS1)				Prepared & Analyzed: 12/14/2023						
1,1,1,2-Tetrachloroethane	44.2	0.4	ug/L	50.0		88.3	80-130			
1,1,1-Trichloroethane	45.3	1	ug/L	50.0		90.6	65-130			
1,1,2,2-Tetrachloroethane	38.7	0.4	ug/L	50.0		77.3	65-130			
1,1,2-Trichloroethane	42.5	1	ug/L	50.0		85.0	75-125			
1,1-Dichloroethane	45.1	1	ug/L	50.0		90.3	70-135			
1,1-Dichloroethylene	40.0	1	ug/L	50.0		80.1	70-130			
1,1-Dichloropropene	47.9	1	ug/L	50.0		95.8	75-135			
1,2,3-Trichlorobenzene	34.6	1	ug/L	50.0		69.3	55-140			
1,2,3-Trichloropropane	38.5	1	ug/L	50.0		77.0	75-125			
1,2,4-Trichlorobenzene	39.4	1	ug/L	50.0		78.7	65-135			
1,2,4-Trimethylbenzene	44.6	1	ug/L	50.0		89.3	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	33.0	1	ug/L	50.0		66.0	50-130			
1,2-Dibromoethane (EDB)	43.6	1	ug/L	50.0		87.2	80-120			
1,2-Dichlorobenzene	43.2	0.5	ug/L	50.0		86.4	70-120			
1,2-Dichloroethane	40.9	1	ug/L	50.0		81.7	70-130			
1,2-Dichloropropane	45.1	0.5	ug/L	50.0		90.2	75-125			
1,3,5-Trimethylbenzene	42.8	1	ug/L	50.0		85.5	75-125			
1,3-Dichlorobenzene	44.0	1	ug/L	50.0		88.0	75-125			
1,3-Dichloropropane	42.7	1	ug/L	50.0		85.4	75-125			
1,4-Dichlorobenzene	43.8	1	ug/L	50.0		87.6	75-125			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0599 - SW5030B-MS										
LCS (BGL0599-BS1)				Prepared & Analyzed: 12/14/2023						
2,2-Dichloropropane	48.8	1	ug/L	50.0		97.7	70-135			
2-Butanone (MEK)	30.1	10	ug/L	50.0		60.2	30-150			
2-Chlorotoluene	43.2	1	ug/L	50.0		86.4	75-125			
2-Hexanone (MBK)	33.9	5	ug/L	50.0		67.8	55-130			
4-Chlorotoluene	45.0	1	ug/L	50.0		90.1	75-130			
4-Isopropyltoluene	47.2	1	ug/L	50.0		94.4	75-130			
4-Methyl-2-pentanone (MIBK)	34.1	5	ug/L	50.0		68.2	60-135			
Acetone	29.5	10	ug/L	50.0		59.0	40-140			
Benzene	44.9	1	ug/L	50.0		89.7	80-120			
Bromobenzene	43.7	1	ug/L	50.0		87.4	75-125			
Bromochloromethane	43.6	1	ug/L	50.0		87.3	65-130			
Bromodichloromethane	43.2	0.5	ug/L	50.0		86.3	75-120			
Bromoform	41.0	1	ug/L	50.0		82.1	70-130			
Bromomethane	31.3	1	ug/L	50.0		62.6	30-145			
Carbon disulfide	36.1	10	ug/L	50.0		72.2	35-160			
Carbon tetrachloride	48.2	1	ug/L	50.0		96.4	65-140			
Chlorobenzene	44.4	1	ug/L	50.0		88.8	80-120			
Chloroethane	45.2	1	ug/L	50.0		90.5	60-135			
Chloroform	41.3	0.5	ug/L	50.0		82.7	65-135			
Chloromethane	33.8	1	ug/L	50.0		67.6	40-125			
cis-1,2-Dichloroethylene	43.2	1	ug/L	50.0		86.5	70-125			
cis-1,3-Dichloropropene	47.2	1	ug/L	50.0		94.3	70-130			
Dibromochloromethane	43.6	0.5	ug/L	50.0		87.2	60-135			
Dibromomethane	42.8	1	ug/L	50.0		85.5	75-125			
Dichlorodifluoromethane	38.0	1	ug/L	50.0		76.0	30-155			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

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Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0599 - SW5030B-MS										
LCS (BGL0599-BS1)				Prepared & Analyzed: 12/14/2023						
Ethylbenzene	43.8	1	ug/L	50.0		87.6	75-125			
Hexachlorobutadiene	47.6	0.8	ug/L	50.0		95.1	50-140			
Isopropylbenzene	41.9	1	ug/L	50.0		83.8	75-125			
m+p-Xylenes	88.4	2	ug/L	100		88.4	75-130			
Methylene chloride	38.7	4	ug/L	50.0		77.4	55-140			
Methyl-t-butyl ether (MTBE)	42.0	1	ug/L	50.0		83.9	65-125			
Naphthalene	34.1	1	ug/L	50.0		68.2	55-140			
n-Butylbenzene	47.7	1	ug/L	50.0		95.4	70-135			
n-Propylbenzene	44.8	1	ug/L	50.0		89.6	70-130			
o-Xylene	44.6	1	ug/L	50.0		89.2	80-120			
sec-Butylbenzene	51.2	1	ug/L	50.0		102	70-125			
Styrene	43.2	1	ug/L	50.0		86.4	65-135			
tert-Butylbenzene	45.4	1	ug/L	50.0		90.8	70-130			
Tetrachloroethylene (PCE)	48.4	1	ug/L	50.0		96.7	45-150			
Toluene	44.5	1	ug/L	50.0		88.9	75-120			
trans-1,2-Dichloroethylene	40.2	1	ug/L	50.0		80.3	60-140			
trans-1,3-Dichloropropene	49.8	1	ug/L	50.0		99.6	55-140			
Trichloroethylene	45.9	1	ug/L	50.0		91.9	70-125			
Trichlorofluoromethane	49.8	1	ug/L	50.0		99.6	60-145			
Vinyl chloride	40.5	0.5	ug/L	50.0		81.1	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*47.9*		ug/L	*50.0*		*95.8*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*48.6*		ug/L	*50.0*		*97.2*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*48.2*		ug/L	*50.0*		*96.3*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.0*		ug/L	*50.0*		*98.0*	*70-130*			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0599 - SW5030B-MS										
Duplicate (BGL0599-DUP1)			**Source: 23L0565-06RE1**	Prepared & Analyzed: 12/14/2023						
1,1,1,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trimethylbenzene	3.70	1.00	ug/L		3.82			3.19	30	
1,2-Dibromo-3-chloropropane (DBCP)	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dibromoethane (EDB)	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	0.50	ug/L		BLOD			NA	30	
1,2-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	0.50	ug/L		BLOD			NA	30	
1,3,5-Trimethylbenzene	1.08	1.00	ug/L		1.05			2.82	30	
1,3-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,3-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,4-Dichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
2,2-Dichloropropane	ND	1.00	ug/L		BLOD			NA	30	
2-Butanone (MEK)	ND	10.0	ug/L		BLOD			NA	30	
2-Chlorotoluene	ND	1.00	ug/L		BLOD			NA	30	
2-Hexanone (MBK)	ND	5.00	ug/L		BLOD			NA	30	
4-Chlorotoluene	ND	1.00	ug/L		BLOD			NA	30	

Certificate of Analysis

Client Name: SCS Engineers-Winchester

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0599 - SW5030B-MS

Duplicate (BGL0599-DUP1) **Source: 23L0565-06RE1** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
4-Isopropyltoluene	ND	1.00	ug/L		BLOD			NA	30	
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L		BLOD			NA	30	
Acetone	ND	10.0	ug/L		BLOD			NA	30	
Benzene	3.05	1.00	ug/L		3.10			1.63	30	
Bromobenzene	ND	1.00	ug/L		BLOD			NA	30	
Bromochloromethane	ND	1.00	ug/L		BLOD			NA	30	
Bromodichloromethane	ND	0.50	ug/L		BLOD			NA	30	
Bromoform	ND	1.00	ug/L		BLOD			NA	30	
Bromomethane	ND	1.00	ug/L		BLOD			NA	30	
Carbon disulfide	ND	10.0	ug/L		BLOD			NA	30	
Carbon tetrachloride	ND	1.00	ug/L		BLOD			NA	30	
Chlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
Chloroethane	ND	1.00	ug/L		BLOD			NA	30	
Chloroform	ND	0.50	ug/L		BLOD			NA	30	
Chloromethane	ND	1.00	ug/L		BLOD			NA	30	
cis-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
cis-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	0.50	ug/L		BLOD			NA	30	
Dibromomethane	ND	1.00	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Di-isopropyl ether (DIPE)	3.48	5.00	ug/L		3.40			NA	30	
Ethylbenzene	ND	1.00	ug/L		0.42			NA	30	
Hexachlorobutadiene	ND	0.80	ug/L		BLOD			NA	30	
Iodomethane	ND	10.0	ug/L		BLOD			NA	30	
Isopropylbenzene	0.60	1.00	ug/L		0.59			NA	30	

Certificate of Analysis

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0599 - SW5030B-MS										
Duplicate (BGL0599-DUP1)		**Source: 23L0565-06RE1**		Prepared & Analyzed: 12/14/2023						
m+p-Xylenes	1.75	2.00	ug/L		1.77			NA	30	
Methylene chloride	ND	4.00	ug/L		BLOD			NA	30	
Methyl-t-butyl ether (MTBE)	ND	1.00	ug/L		BLOD			NA	30	
Naphthalene	ND	1.00	ug/L		1.47			NA	30	
n-Butylbenzene	0.86	1.00	ug/L		0.91			NA	30	
n-Propylbenzene	1.03	1.00	ug/L		1.17			12.7	30	
o-Xylene	0.60	1.00	ug/L		0.64			NA	30	
sec-Butylbenzene	1.11	1.00	ug/L		1.20			7.79	30	
Styrene	ND	1.00	ug/L		BLOD			NA	30	
tert-Butylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Tetrachloroethylene (PCE)	ND	1.00	ug/L		BLOD			NA	30	
Toluene	0.64	1.00	ug/L		0.63			NA	30	
trans-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
trans-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Trichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Vinyl acetate	ND	10.0	ug/L		BLOD			NA	30	
Vinyl chloride	ND	0.50	ug/L		BLOD			NA	30	
Xylenes, Total	2.35	3.00	ug/L		2.41			NA	30	
Tetrahydrofuran	ND	10.0	ug/L		BLOD			NA	30	
Surr: 1,2-Dichloroethane-d4 (Surr)	*44.3*		ug/L	*50.0*		*88.6*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.1*		ug/L	*50.0*		*98.2*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*43.9*		ug/L	*50.0*		*87.8*	*70-130*			
Surr: Toluene-d8 (Surr)	*51.8*		ug/L	*50.0*		*104*	*70-130*			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

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Client Site I.D.: 2023 City of Bristol Landfill Leachate

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0599 - SW5030B-MS

Matrix Spike (BGL0599-MS1) **Source: 23L0565-05RE1** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.5	0.4	ug/L	50.0	BLOD	91.0	80-130			
1,1,1-Trichloroethane	45.9	1	ug/L	50.0	BLOD	91.7	65-130			
1,1,2,2-Tetrachloroethane	40.5	0.4	ug/L	50.0	BLOD	81.0	65-130			
1,1,2-Trichloroethane	41.8	1	ug/L	50.0	BLOD	83.5	75-125			
1,1-Dichloroethane	43.8	1	ug/L	50.0	BLOD	87.6	70-135			
1,1-Dichloroethylene	41.8	1	ug/L	50.0	BLOD	83.7	50-145			
1,1-Dichloropropene	50.4	1	ug/L	50.0	BLOD	101	75-135			
1,2,3-Trichlorobenzene	39.4	1	ug/L	50.0	BLOD	78.7	55-140			
1,2,3-Trichloropropane	40.6	1	ug/L	50.0	BLOD	81.2	75-125			
1,2,4-Trichlorobenzene	43.2	1	ug/L	50.0	BLOD	86.4	65-135			
1,2,4-Trimethylbenzene	46.4	1	ug/L	50.0	BLOD	92.8	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	36.2	1	ug/L	50.0	BLOD	72.4	50-130			
1,2-Dibromoethane (EDB)	45.2	1	ug/L	50.0	BLOD	90.4	80-120			
1,2-Dichlorobenzene	45.0	0.5	ug/L	50.0	BLOD	89.9	70-120			
1,2-Dichloroethane	38.8	1	ug/L	50.0	BLOD	77.6	70-130			
1,2-Dichloropropane	45.7	0.5	ug/L	50.0	BLOD	91.4	75-125			
1,3,5-Trimethylbenzene	45.6	1	ug/L	50.0	BLOD	89.6	75-124			
1,3-Dichlorobenzene	45.9	1	ug/L	50.0	BLOD	91.8	75-125			
1,3-Dichloropropane	42.8	1	ug/L	50.0	BLOD	85.7	75-125			
1,4-Dichlorobenzene	45.5	1	ug/L	50.0	BLOD	91.0	75-125			
2,2-Dichloropropane	49.5	1	ug/L	50.0	BLOD	99.1	70-135			
2-Butanone (MEK)	30.2	10	ug/L	50.0	BLOD	60.5	30-150			
2-Chlorotoluene	45.1	1	ug/L	50.0	BLOD	90.2	75-125			
2-Hexanone (MBK)	38.3	5	ug/L	50.0	BLOD	76.6	55-130			
4-Chlorotoluene	47.3	1	ug/L	50.0	BLOD	94.6	75-130			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0599 - SW5030B-MS

Matrix Spike (BGL0599-MS1) **Source: 23L0565-05RE1** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
4-Isopropyltoluene	50.0	1	ug/L	50.0	BLOD	100	75-130			
4-Methyl-2-pentanone (MIBK)	36.9	5	ug/L	50.0	BLOD	73.8	60-135			
Acetone	29.0	10	ug/L	50.0	BLOD	58.0	40-140			
Benzene	48.4	1	ug/L	50.0	1.59	93.6	80-120			
Bromobenzene	46.4	1	ug/L	50.0	BLOD	92.7	75-125			
Bromochloromethane	41.0	1	ug/L	50.0	BLOD	82.0	65-130			
Bromodichloromethane	42.6	0.5	ug/L	50.0	BLOD	85.3	75-136			
Bromoform	42.3	1	ug/L	50.0	BLOD	84.6	70-130			
Bromomethane	30.5	1	ug/L	50.0	BLOD	60.9	30-145			
Carbon disulfide	34.8	10	ug/L	50.0	BLOD	69.7	35-160			
Carbon tetrachloride	54.0	1	ug/L	50.0	BLOD	108	65-140			
Chlorobenzene	47.3	1	ug/L	50.0	BLOD	94.6	80-120			
Chloroethane	43.7	1	ug/L	50.0	BLOD	87.3	60-135			
Chloroform	39.9	0.5	ug/L	50.0	BLOD	79.8	65-135			
Chloromethane	33.4	1	ug/L	50.0	BLOD	66.9	40-125			
cis-1,2-Dichloroethylene	41.8	1	ug/L	50.0	BLOD	83.6	70-125			
cis-1,3-Dichloropropene	46.8	1	ug/L	50.0	BLOD	93.6	47-136			
Dibromochloromethane	43.9	0.5	ug/L	50.0	BLOD	87.7	60-135			
Dibromomethane	42.2	1	ug/L	50.0	BLOD	84.5	75-125			
Dichlorodifluoromethane	40.8	1	ug/L	50.0	BLOD	81.6	30-155			
Ethylbenzene	48.0	1	ug/L	50.0	BLOD	95.9	75-125			
Hexachlorobutadiene	53.7	0.8	ug/L	50.0	BLOD	107	50-140			
Isopropylbenzene	46.3	1	ug/L	50.0	BLOD	92.6	75-125			
m+p-Xylenes	95.1	2	ug/L	100	BLOD	95.1	75-130			
Methylene chloride	36.5	4	ug/L	50.0	BLOD	73.0	55-140			

Certificate of Analysis

Client Name: SCS Engineers-Winchester
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Client Site I.D.: 2023 City of Bristol Landfill Leachate
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0599 - SW5030B-MS										
Matrix Spike (BGL0599-MS1)		**Source: 23L0565-05RE1**		Prepared & Analyzed: 12/14/2023						
Methyl-t-butyl ether (MTBE)	41.6	1	ug/L	50.0	1.63	79.9	65-125			
Naphthalene	41.2	1	ug/L	50.0	1.27	79.9	55-140			
n-Butylbenzene	51.7	1	ug/L	50.0	0.52	102	70-135			
n-Propylbenzene	48.4	1	ug/L	50.0	BLOD	96.8	70-130			
o-Xylene	47.8	1	ug/L	50.0	BLOD	95.6	80-120			
sec-Butylbenzene	55.5	1	ug/L	50.0	1.06	109	70-125			
Styrene	45.9	1	ug/L	50.0	BLOD	91.7	65-135			
tert-Butylbenzene	48.8	1	ug/L	50.0	BLOD	97.5	70-130			
Tetrachloroethylene (PCE)	54.5	1	ug/L	50.0	BLOD	109	51-231			
Toluene	46.9	1	ug/L	50.0	BLOD	93.9	75-120			
trans-1,2-Dichloroethylene	39.8	1	ug/L	50.0	BLOD	79.6	60-140			
trans-1,3-Dichloropropene	49.6	1	ug/L	50.0	BLOD	99.2	55-140			
Trichloroethylene	49.2	1	ug/L	50.0	BLOD	98.3	70-125			
Trichlorofluoromethane	53.2	1	ug/L	50.0	BLOD	106	60-145			
Vinyl chloride	42.6	0.5	ug/L	50.0	BLOD	85.3	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*43.8*		ug/L	*50.0*		*87.6*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.4*		ug/L	*50.0*		*98.7*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*44.4*		ug/L	*50.0*		*88.9*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.4*		ug/L	*50.0*		*96.8*	*70-130*			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0636 - SW3510C/EPA600-MS										
Blank (BGL0636-BLK1)				Prepared: 12/15/2023 Analyzed: 12/16/2023						
Anthracene	ND	10.0	ug/L							
Surr: 2,4,6-Tribromophenol (Surr)	*71.1*		ug/L	*100*		*71.1*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*30.2*		ug/L	*50.0*		*60.4*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*38.9*		ug/L	*100*		*38.9*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*34.3*		ug/L	*50.0*		*68.6*	*5-151*			
Surr: Phenol-d5 (Surr)	*28.5*		ug/L	*100*		*28.5*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*30.3*		ug/L	*50.0*		*60.6*	*5-141*			
LCS (BGL0636-BS1)				Prepared: 12/15/2023 Analyzed: 12/16/2023						
1,2,4-Trichlorobenzene	28.1	10.0	ug/L	50.0		56.2	57-130			L
1,2-Dichlorobenzene	31.8	10.0	ug/L	50.0		63.6	22-115			
1,3-Dichlorobenzene	30.0	10.0	ug/L	50.0		60.0	22-112			
1,4-Dichlorobenzene	31.7	10.0	ug/L	50.0		63.4	13-112			
2,4,6-Trichlorophenol	36.5	10.0	ug/L	50.0		73.1	52-129			
2,4-Dichlorophenol	33.1	10.0	ug/L	50.0		66.2	53-122			
2,4-Dimethylphenol	33.0	5.00	ug/L	50.0		66.1	42-120			
2,4-Dinitrophenol	32.1	50.0	ug/L	50.0		64.3	48-127			
2,4-Dinitrotoluene	35.0	10.0	ug/L	50.0		70.1	10-173			
2,6-Dinitrotoluene	30.7	10.0	ug/L	50.0		61.5	68-137			L
2-Chloronaphthalene	32.5	10.0	ug/L	50.0		64.9	65-120			L
2-Chlorophenol	32.6	10.0	ug/L	50.0		65.2	36-120			
2-Nitrophenol	34.3	10.0	ug/L	50.0		68.7	45-167			
3,3'-Dichlorobenzidine	27.5	10.0	ug/L	50.0		55.0	10-213			
4,6-Dinitro-2-methylphenol	29.4	50.0	ug/L	50.0		58.8	53-130			
4-Bromophenyl phenyl ether	28.7	10.0	ug/L	50.0		57.5	65-120			L

Certificate of Analysis

Client Name: SCS Engineers-Winchester
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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0636 - SW3510C/EPA600-MS

LCS (BGL0636-BS1) Prepared: 12/15/2023 Analyzed: 12/16/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
4-Chlorophenyl phenyl ether	28.2	10.0	ug/L	50.0		56.4	38-145			
4-Nitrophenol	14.0	50.0	ug/L	50.0		28.1	13-129			
Acenaphthene	33.3	10.0	ug/L	50.0		66.5	60-132			
Acenaphthylene	35.8	10.0	ug/L	50.0		71.6	54-126			
Acetophenone	32.8	20.0	ug/L	50.0		65.7	0-200			
Anthracene	33.2	10.0	ug/L	50.0		66.4	43-120			
Benzo (a) anthracene	34.5	10.0	ug/L	50.0		69.0	42-133			
Benzo (a) pyrene	38.3	10.0	ug/L	50.0		76.6	32-148			
Benzo (b) fluoranthene	41.8	10.0	ug/L	50.0		83.5	42-140			
Benzo (g,h,i) perylene	30.8	10.0	ug/L	50.0		61.7	10-195			
Benzo (k) fluoranthene	34.0	10.0	ug/L	50.0		68.1	25-146			
bis (2-Chloroethoxy) methane	31.2	10.0	ug/L	50.0		62.4	49-165			
bis (2-Chloroethyl) ether	29.9	10.0	ug/L	50.0		59.9	43-126			
2,2'-Oxybis (1-chloropropane)	33.8	10.0	ug/L	50.0		67.5	63-139			
bis (2-Ethylhexyl) phthalate	29.4	10.0	ug/L	50.0		58.8	29-137			
Butyl benzyl phthalate	33.8	10.0	ug/L	50.0		67.5	10-140			
Chrysene	37.6	10.0	ug/L	50.0		75.1	44-140			
Dibenz (a,h) anthracene	32.6	10.0	ug/L	50.0		65.2	10-200			
Diethyl phthalate	33.4	10.0	ug/L	50.0		66.9	10-120			
Dimethyl phthalate	29.8	10.0	ug/L	50.0		59.7	10-120			
Di-n-butyl phthalate	40.2	10.0	ug/L	50.0		80.3	10-120			
Di-n-octyl phthalate	46.9	10.0	ug/L	50.0		93.8	19-132			
Fluoranthene	42.2	10.0	ug/L	50.0		84.4	43-121			
Fluorene	33.4	10.0	ug/L	50.0		66.7	70-120			L
Hexachlorobenzene	23.8	1.00	ug/L	50.0		47.6	10-142			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0636 - SW3510C/EPA600-MS										
LCS (BGL0636-BS1)				Prepared: 12/15/2023 Analyzed: 12/16/2023						
Hexachlorobutadiene	30.7	10.0	ug/L	50.0		61.4	38-120			
Hexachlorocyclopentadiene	15.8	10.0	ug/L	50.0		31.5	10-76			
Hexachloroethane	33.9	10.0	ug/L	50.0		67.8	55-120			
Indeno (1,2,3-cd) pyrene	30.8	10.0	ug/L	50.0		61.6	10-151			
Isophorone	21.7	10.0	ug/L	50.0		43.5	47-180			L
Naphthalene	34.3	5.00	ug/L	50.0		68.6	36-120			
Nitrobenzene	36.0	10.0	ug/L	50.0		71.9	54-158			
n-Nitrosodimethylamine	23.7	10.0	ug/L	50.0		47.4	10-85			
n-Nitrosodi-n-propylamine	32.0	10.0	ug/L	50.0		63.9	14-198			
n-Nitrosodiphenylamine	26.7	10.0	ug/L	50.0		53.5	12-97			
p-Chloro-m-cresol	33.0	10.0	ug/L	50.0		66.1	10-142			
Pentachlorophenol	30.7	20.0	ug/L	50.0		61.4	38-152			
Phenanthrene	37.3	10.0	ug/L	50.0		74.6	65-120			
Phenol	19.4	10.0	ug/L	50.5		38.4	17-120			
Pyrene	35.1	10.0	ug/L	50.0		70.2	70-120			
Pyridine	390	10.0	ug/L	50.0		781	10-103			L
Surr: 2,4,6-Tribromophenol (Surr)	*75.1*		ug/L	*100*		*75.1*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*31.4*		ug/L	*50.0*		*62.9*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*42.4*		ug/L	*100*		*42.4*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*36.1*		ug/L	*50.0*		*72.2*	*5-151*			
Surr: Phenol-d5 (Surr)	*30.5*		ug/L	*100*		*30.5*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*33.0*		ug/L	*50.0*		*65.9*	*5-141*			

Certificate of Analysis

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0502 - No Prep Wet Chem										
Blank (BGL0502-BLK1)				Prepared & Analyzed: 12/13/2023						
Nitrite as N	ND	0.05	mg/L							
LCS (BGL0502-BS1)				Prepared & Analyzed: 12/13/2023						
Nitrite as N	0.11	0.05	mg/L	0.100		114	80-120			
Matrix Spike (BGL0502-MS1)	**Source: 23L0671-04**			Prepared & Analyzed: 12/13/2023						
Nitrite as N	0.10	0.05	mg/L	0.100	BLOD	104	80-120			
Matrix Spike Dup (BGL0502-MSD1)	**Source: 23L0671-04**			Prepared & Analyzed: 12/13/2023						
Nitrite as N	0.10	0.05	mg/L	0.100	BLOD	102	80-120	1.94	20	
Batch BGL0505 - No Prep Wet Chem										
Blank (BGL0505-BLK1)				Prepared & Analyzed: 12/13/2023						
BOD	ND	2.0	mg/L							
LCS (BGL0505-BS1)				Prepared & Analyzed: 12/13/2023						
BOD	223	2	mg/L	198		113	84.6-115.4			
Duplicate (BGL0505-DUP1)	**Source: 23L0605-05**			Prepared & Analyzed: 12/13/2023						
BOD	ND	2.0	mg/L		2.0			NA	20	
Batch BGL0512 - No Prep Wet Chem										
Blank (BGL0512-BLK1)				Prepared & Analyzed: 12/13/2023						
Cyanide	ND	0.01	mg/L							

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0512 - No Prep Wet Chem										
LCS (BGL0512-BS1)				Prepared & Analyzed: 12/13/2023						
Cyanide	0.22	0.01	mg/L	0.250		86.0	80-120			
Matrix Spike (BGL0512-MS1)		**Source: 23L0334-05**		Prepared & Analyzed: 12/13/2023						
Cyanide	0.25	0.01	mg/L	0.250	BLOD	98.5	80-120			
Matrix Spike (BGL0512-MS2)		**Source: 23L0422-08**		Prepared & Analyzed: 12/13/2023						
Cyanide	0.26	0.01	mg/L	0.250	BLOD	103	80-120			
Matrix Spike Dup (BGL0512-MSD1)		**Source: 23L0334-05**		Prepared & Analyzed: 12/13/2023						
Cyanide	0.26	0.01	mg/L	0.250	BLOD	102	80-120	3.61	20	
Matrix Spike Dup (BGL0512-MSD2)		**Source: 23L0422-08**		Prepared & Analyzed: 12/13/2023						
Cyanide	0.25	0.01	mg/L	0.250	BLOD	99.8	80-120	2.99	20	
Batch BGL0723 - No Prep Wet Chem										
Blank (BGL0723-BLK1)				Prepared & Analyzed: 12/18/2023						
COD	ND	10.0	mg/L							
LCS (BGL0723-BS1)				Prepared & Analyzed: 12/18/2023						
COD	46.5	10.0	mg/L	50.0		93.0	88-119			
Matrix Spike (BGL0723-MS1)		**Source: 23L0699-01**		Prepared & Analyzed: 12/18/2023						
COD	55.2	10.0	mg/L	50.0	BLOD	110	72.4-130			
Matrix Spike Dup (BGL0723-MSD1)		**Source: 23L0699-01**		Prepared & Analyzed: 12/18/2023						
COD	54.9	10.0	mg/L	50.0	BLOD	110	72.4-130	0.600	20	

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0889 - No Prep Wet Chem										
Blank (BGL0889-BLK1)				Prepared & Analyzed: 12/20/2023						
TKN as N	ND	0.50	mg/L							
LCS (BGL0889-BS1)				Prepared & Analyzed: 12/20/2023						
TKN as N	4.91	0.50	mg/L	5.00		98.1	90-110			
Matrix Spike (BGL0889-MS1)	**Source: 23L0508-03**			Prepared & Analyzed: 12/20/2023						
TKN as N	5.41	0.50	mg/L	5.00	0.60	96.2	90-110			
Matrix Spike (BGL0889-MS2)	**Source: 23L1082-04**			Prepared & Analyzed: 12/20/2023						
TKN as N	3.37	0.50	mg/L	5.00	BLOD	67.4	90-110			M
Matrix Spike Dup (BGL0889-MSD1)	**Source: 23L0508-03**			Prepared & Analyzed: 12/20/2023						
TKN as N	5.51	0.50	mg/L	5.00	0.60	98.3	90-110	1.85	20	
Matrix Spike Dup (BGL0889-MSD2)	**Source: 23L1082-04**			Prepared & Analyzed: 12/20/2023						
TKN as N	3.70	0.50	mg/L	5.00	BLOD	74.0	90-110	9.33	20	M
Batch BGL0983 - No Prep Wet Chem										
Blank (BGL0983-BLK1)				Prepared & Analyzed: 12/22/2023						
Ammonia as N	ND	0.10	mg/L							
LCS (BGL0983-BS1)				Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.03	0.1	mg/L	1.00		103	90-110			
Matrix Spike (BGL0983-MS1)	**Source: 23L1026-01**			Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.07	0.10	mg/L	1.00	BLOD	107	89.3-131			

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0983 - No Prep Wet Chem										
Matrix Spike (BGL0983-MS2)	**Source: 23L1074-01**			Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.04	0.10	mg/L	1.00	BLOD	104	89.3-131			
Matrix Spike Dup (BGL0983-MSD1)	**Source: 23L1026-01**			Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.08	0.10	mg/L	1.00	BLOD	108	89.3-131	1.02	20	
Matrix Spike Dup (BGL0983-MSD2)	**Source: 23L1074-01**			Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.08	0.10	mg/L	1.00	BLOD	108	89.3-131	4.35	20	
Batch BGL1033 - No Prep Wet Chem										
Blank (BGL1033-BLK1)				Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	ND	0.050	mg/L							
LCS (BGL1033-BS1)				Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	0.41	0.050	mg/L	0.505		82.0	80-120			
Matrix Spike (BGL1033-MS1)	**Source: 23L1149-03**			Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	0.48	0.050	mg/L	0.500	0.05	85.6	70-130			
Matrix Spike Dup (BGL1033-MSD1)	**Source: 23L1149-03**			Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	0.48	0.050	mg/L	0.500	0.05	86.4	70-130	0.830	20	
Batch BGL1035 - No Prep Wet Chem										
Blank (BGL1035-BLK1)				Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	ND	0.10	mg/L							

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL1035 - No Prep Wet Chem										
LCS (BGL1035-BS1)				Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	0.99	0.1	mg/L	1.00		98.6	90-110			
Matrix Spike (BGL1035-MS1)		**Source: 23L0612-01**		Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	1.20	0.1	mg/L	1.00	0.24	95.2	90-120			
Matrix Spike Dup (BGL1035-MSD1)		**Source: 23L0612-01**		Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	1.22	0.1	mg/L	1.00	0.24	97.5	90-120	1.91	20	

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Client Site I.D.: 2023 City of Bristol Landfill Leachate

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Analytical Summary

23L0563-01	Subcontract
23L0563-02	Subcontract

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**EPA200.8 R5.4**	
23L0563-01	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234
23L0563-01RE1	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0840	AL30284
23L0563-02	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234
23L0563-02RE1	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0840	AL30284

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
23L0563-01	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
23L0563-02	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
23L0563-01	300 mL / 300 mL	SM5210B-2016	BGL0505	SGL0663	
23L0563-02	300 mL / 300 mL	SM5210B-2016	BGL0505	SGL0663	
23L0563-01	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
23L0563-02	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
23L0563-01	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
23L0563-02	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
23L0563-01	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
23L0563-02	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
23L0563-02RE1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
23L0563-01	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
23L0563-02	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
23L0563-01	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
23L0563-02	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
23L0563-01	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302
23L0563-01RE1	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302
23L0563-02	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302
23L0563-02RE1	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Organic Compounds by GCMS			**Preparation Method:**	**SW3510C/EPA600-MS**	
23L0563-01	500 mL / 2.00 mL	SW8270E	BGL0636	SGL0715	AK30271
23L0563-02	500 mL / 0.500 mL	SW8270E	BGL0636	SGL0825	AL30202

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
23L0563-01	5.00 mL / 5.00 mL	SW8260D	BGL0454	SGL0452	AL30176
23L0563-02	5.00 mL / 5.00 mL	SW8260D	BGL0454	SGL0452	AL30176
23L0563-03	5.00 mL / 5.00 mL	SW8260D	BGL0454	SGL0452	AL30176
23L0563-01RE1	5.00 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
23L0563-01RE2	5.00 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
23L0563-03RE1	5.00 mL / 5.00 mL	SW8260D	BGL0544	SGL0521	AJ30322
23L0563-02RE1	5.00 mL / 5.00 mL	SW8260D	BGL0599	SGL0576	AJ30322
23L0563-02RE2	5.00 mL / 5.00 mL	SW8260D	BGL0599	SGL0576	AJ30322

Enthalpy Analytical
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QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**EPA200.8 R5.4**	
BGL0511-BLK1	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234
BGL0511-BS1	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234
BGL0511-MS1	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234
BGL0511-MS2	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234
BGL0511-MSD1	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234
BGL0511-MSD2	50.0 mL / 50.0 mL	SW6020B	BGL0511	SGL0544	AL30234

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
BGL0502-BLK1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-BS1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-MRL1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-MS1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-MSD1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0505-BLK1	300 mL / 300 mL	SM5210B-2016	BGL0505	SGL0663	
BGL0505-BS1	300 mL / 300 mL	SM5210B-2016	BGL0505	SGL0663	
BGL0505-DUP1	300 mL / 300 mL	SM5210B-2016	BGL0505	SGL0663	
BGL0512-BLK1	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
BGL0512-BS1	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
BGL0512-MRL1	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
BGL0512-MS1	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
BGL0512-MS2	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
BGL0512-MSD1	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
BGL0512-MSD2	6.00 mL / 6.00 mL	SW9012B	BGL0512	SGL0489	AL30224
BGL0723-BLK1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0723-BS1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0723-MRL1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0723-MS1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0723-MSD1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0889-BLK1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
BGL0889-BS1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
BGL0889-MS1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
BGL0889-MS2	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
BGL0889-MSD1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
BGL0889-MSD2	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0889	SGL0848	AL30283
BGL0983-BLK1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
BGL0983-BS1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
BGL0983-MS1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
BGL0983-MS2	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
BGL0983-MSD1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
BGL0983-MSD2	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0983	SGL0890	AL30291
BGL1033-BLK1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-BS1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-MRL1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-MS1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-MSD1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1035-BLK1	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302
BGL1035-BS1	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302
BGL1035-MRL1	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302
BGL1035-MS1	25.0 mL / 25.0 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302
BGL1035-MSD1	25.0 mL / 25.0 mL	SM4500-NO3F-2016	BGL1035	SGL0968	AL30302

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Organic Compounds by GCMS			**Preparation Method:**	**SW3510C/EPA600-MS**	
BGL0636-BLK1	1000 mL / 1.00 mL	SW8270E	BGL0636	SGL0652	AK30271
BGL0636-BS1	1000 mL / 1.00 mL	SW8270E	BGL0636	SGL0652	AK30271

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
BGL0454-BLK1	5.00 mL / 5.00 mL	SW8260D	BGL0454	SGL0452	AL30176
BGL0454-BS1	5.00 mL / 5.00 mL	SW8260D	BGL0454	SGL0452	AL30176
BGL0454-MS1	5.00 mL / 5.00 mL	SW8260D	BGL0454	SGL0452	AL30176
BGL0454-MSD1	5.00 mL / 5.00 mL	SW8260D	BGL0454	SGL0452	AL30176
BGL0524-BLK1	5.00 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
BGL0524-BLK2	5.00 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
BGL0524-BS1	5.00 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
BGL0524-BS2	5.00 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
BGL0524-DUP1	0.250 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
BGL0524-MS1	0.250 mL / 5.00 mL	SW8260D	BGL0524	SGL0484	AJ30373
BGL0544-BLK1	5.00 mL / 5.00 mL	SW8260D	BGL0544	SGL0521	AJ30322
BGL0544-BS1	5.00 mL / 5.00 mL	SW8260D	BGL0544	SGL0521	AJ30322
BGL0544-DUP1	5.00 mL / 5.00 mL	SW8260D	BGL0544	SGL0521	AJ30322
BGL0544-MS1	5.00 mL / 5.00 mL	SW8260D	BGL0544	SGL0521	AJ30322
BGL0599-BLK1	5.00 mL / 5.00 mL	SW8260D	BGL0599	SGL0576	AJ30322
BGL0599-BS1	5.00 mL / 5.00 mL	SW8260D	BGL0599	SGL0576	AJ30322
BGL0599-DUP1	5.00 mL / 5.00 mL	SW8260D	BGL0599	SGL0576	AJ30322
BGL0599-MS1	5.00 mL / 5.00 mL	SW8260D	BGL0599	SGL0576	AJ30322

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Date Issued: 1/9/2024 2:11:39PM
Client Site I.D.: 2023 City of Bristol Landfill Leachate
Submitted To: Jennifer Robb

Certified Analyses included in this Report

Analyte	Certifications
EPA350.1 R2.0 in Non-Potable Water	
Ammonia as N	VELAP,NCDEQ,PADEP,WVDEP
EPA351.2 R2.0 in Non-Potable Water	
TKN as N	VELAP,NCDEQ,WVDEP
SM4500-NO2B-2011 in Non-Potable Water	
Nitrite as N	VELAP,WVDEP,NCDEQ
SM4500-NO3F-2016 in Non-Potable Water	
Nitrate+Nitrite as N	VELAP,WVDEP
SM5210B-2016 in Non-Potable Water	
BOD	VELAP,NCDEQ,WVDEP
SM5220D-2011 in Non-Potable Water	
COD	VELAP,NCDEQ,PADEP,WVDEP
SW6020B in Non-Potable Water	
Mercury	VELAP
Arsenic	VELAP,WVDEP
Barium	VELAP,WVDEP
Cadmium	VELAP,WVDEP
Chromium	VELAP,WVDEP
Copper	VELAP,WVDEP
Lead	VELAP,WVDEP
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP
Silver	VELAP,WVDEP
Zinc	VELAP,WVDEP
SW8260D in Non-Potable Water	

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Certified Analyses included in this Report

Analyte	Certifications
2-Butanone (MEK)	VELAP,NCDEQ,PADEP,WVDEP
Acetone	VELAP,NCDEQ,PADEP,WVDEP
Benzene	VELAP,NCDEQ,PADEP,WVDEP
Ethylbenzene	VELAP,NCDEQ,PADEP,WVDEP
Toluene	VELAP,NCDEQ,PADEP,WVDEP
Xylenes, Total	VELAP,NCDEQ,PADEP,WVDEP
Tetrahydrofuran	VELAP,PADEP
SW8270E in Non-Potable Water	
Anthracene	NCDEQ,WVDEP,VELAP,PADEP
SW9012B in Non-Potable Water	
Cyanide	VELAP,WVDEP
SW9065 in Non-Potable Water	
Total Recoverable Phenolics	VELAP,WVDEP

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2024
NCDEQ	North Carolina DEQ	495	12/31/2024
NCDOH	North Carolina Department of Health	51714	07/31/2024
NYDOH	New York DOH Drinking Water	12069	04/01/2024
PADEP	NELAP-Pennsylvania Certificate #009	68-03503	10/31/2024
SCDHEC	South Carolina Dept of Health and Environmental Control Certificate 93016001	93016	06/14/2024
TXCEQ	Texas Comm on Environmental Quality #T104704576-23-1	T104704576	05/31/2024
VELAP	NELAP-Virginia Certificate #12617	460021	06/14/2024
WVDEP	West Virginia DEP	350	11/30/2024

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Qualifiers and Definitions

CI	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
pH	The container used to analyze this sample had a pH measurement of greater than 2 s.u.
S	Surrogate recovery was outside acceptance criteria
RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

ENTHALPY ANALYTICAL

1941 REYMET ROAD
RICHMOND, VIRGINIA 23237
(804) 358-8295 PHONE
(804)358-8297 FAX

CHAIN OF CUSTODY

PAGE 1 OF 1

COMPANY NAME: SCS Engineers
CONTACT: Jennifer Robb
ADDRESS: 296 Victory Road
Winchester, VA 22602
PHONE #: 703-471-6150
EMAIL: jrobb@scsengineers.com

INVOICE TO: SAME
INVOICE CONTACT:
INVOICE ADDRESS:
INVOICE PHONE #:

PROJECT NAME/Quote #: LFG-EW Monthly Monitoring
SITE NAME: 2023 City of Bristol Landfill Leachate
PROJECT NUMBER: 02218208.15 Task 2
P.O. #:
Pretreatment Program:

Is sample for compliance reporting? [✓ YES] NO
Regulatory State: VA
Is sample from a chlorinated supply? YES [✓ NO]
PWS I.D. #:
SAMPLER NAME (PRINT): L. Nelson ~~A. Minnick~~ W. Fabrie
SAMPLER SIGNATURE: Leeyln Nelson / Wim Fbri
Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	Ammonia - EPA 350.1	BOD - SM22 5210B-2021	COD - SM22 5220D-2011	Cyanide - EPA 335.2	Nitrate SM22 450-NO3F-2011 (report seperatly from Nitrite)	Nitrite SM22 450-NO3F-2011	SVOC (Anthracene) 8270	Total Metals (As, Ba, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn) 6020	TKN - EPA 351.2 R2.0	Mercury - 6020	Total Recoverable Phenolics - 9065	V. Fatty Acids (See List) 8015	VOCs (See List) 8260	COMMENTS Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol Note VOC 8260 no HCl PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)
1) EW-52	X					12/11/23	1400		~~GW~~ WW	13	X	X	X	X	X	X	X	X	X	X	X	X	X	
2) EW-68	X					12/11/23	1415		~~GW~~ WW	12	X	X	X	X	X	X	X	X	X	X	X	X	X	
3)									~~GW~~															
4)									~~GW~~															
5)									~~GW~~															
6)									~~GW~~															
7)									~~GW~~															
8)									~~GW~~															
9)									~~GW~~															
10) Trip Blank						8/9/23	1615		DI														X	

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
Leeyln Nelson	12/11/23/1500	LCW	
LCW			12/12/23 0800

QC Data Package
Level III ☐
Level IV ☐

LAB USE ONLY Therm ID: 271 COOLER TEMP 0.4 °C
Custody Seals used and intact? ([✓ Y] N)
Received on ice? ([✓ Y] N)

SCS-W 23L0563
Bristol LF Leachate
Recd: 12/12/2023 Due: 12/27/2023
v130325002

Sample Preservation Log
Form #: F1301
Rev # 15.0
Effective: July 13, 2023
Page 1 of 1

ENTHALPY ANALYTICAL

Sample Preservation Log

Order ID 23L0563

Date Performed: 12/12/23

Analyst Performing Check: HEG

Sample ID	Container ID	Metals			Cyanide			Sulfide			Ammonia			TKN			Phos, Tot			NO3+NO2			DRO			Pesticide (8081/608/508) PCB DW only			SVOC (525/8270/625)			CrVI * **		Pest/PCB (508) / SVOC(525)			phenolic					
		pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH	Received Res. Cl		final + or -	Received Res. Cl		final + or -	Received pH	Final pH	pH as Received		Final pH	pH as Received		Final pH	pH as Received		Final pH
		< 2	Other		> 12	Other		> 9	Other		< 2	Other		< 2	Other		< 2	Other		< 2	Other		< 2	Other		+	-		+	-				< 2	Other		<2	Other			Other	
01	A		7	<2																																						
01	B											7	<2		7	<2					7	<2																				
01	D					7	>12																																			
01	F																																				7	<2			
01	G																													-												
02	A		6	<2																																						
02	B											7	<2		7	<2					7	<2																				
02	D					10	>12																																			
02	F																																				7	<2			
02	G																													-												

NaOH ID: 2H00468

HNO3 ID: 3K02234

CrVI preserved date/time: ______

Analyst Initials: ______

*** pH must be adjusted between 9.3 - 9.7**

H2SO4 ID: 3K02567

Na2S2O3 ID: ______

Ammonia Buffer Sol'n ID: ______

HCL ID: ______

Na2SO3 ID: ______

5N NaOH ID: ______

Metals were received with pH = 6,7. HNO3 was added at 1040 on 12th December 2023 by RCJ in the Log-In room to bring pH= <2.

**W.Va only certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:11:39PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Laboratory Order ID: 23L0563

Sample Conditions Checklist

Samples Received at:	**0.40°C**
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	No
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis. In addition, field parameters are always received outside holding time and will be marked accordingly.	No

*H2SO4-preserved bottles for all samples were received with a pH greater than 2, and H2SO4 was added to bring the pH to less than 2.
*CN was logged by 9012 per project history, which differs from the chain of custody (EPA 335.2).

Certificate of Analysis

Client Name:	SCS Engineers-Winchester	Date Issued:	1/9/2024 2:11:39PM
Client Site I.D.:	2023 City of Bristol Landfill Leachate		
Submitted To:	Jennifer Robb		

Jennifer Robb notified via email. MRS 12/13/23 0911

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

December 26, 2023

Virginia Thrasher
Enthalpy
1941 Reymet Road
Richmond, VA 23237

RE: Project: 23L0563
Pace Project No.: 20300390

Dear Virginia Thrasher:

Enclosed are the analytical results for sample(s) received by the laboratory on December 13, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Baton Rouge

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh

Ruth Welsh
ruth.welsh@pacelabs.com
(225) 769-4900
Project Manager

Enclosures

cc: Andrew Bruner, Enthalpy
Daniel Elliott, Enthalpy
Meghan Meyer, Enthalpy

CERTIFICATIONS

Project:	23L0563
Pace Project No.:	20300390

Pace Analytical Services Baton Rouge

7979 Innovation Park Drive Ste A, Baton Rouge, LA 70820-7402
Louisiana Dept of Enviromental Quality (NELAC/LELAP): 01979
Florida Dept of Health (NELAC/FELAP): E87854
DoD ELAP (A2LA) #: 6429.01
Alabama DEM #: 41900
Alaska DEC-DW #: LA00024
Alaska DEC CS-LAP #: 21-001
Arkansas DEQ #: 88-0655
California ELAP #: 3063
Georgia DPD #: C050
Hawaii DOH State Laboratories Division
Illinois EPA #: 200048
Kansas DoHE #: E-10354
Kentucky DEP UST Branch #: 123054
Louisiana DOH #: LA036
Minnesota DOH #: 2233799
Mississippi State Dept of Health
Montana Department of Environmental Quality
Nebraska DHHS #: NE-OS-35.21
Nevada DCNR DEP #: LA00024
New York DOH #: 12149
North Carolina DEQ - WW & GW #: 618
North Dakota DEQ #: R195
Ohio EPA #: 87782
Oklahoma Dept of Environmental Quality #: 9403
Oregon ELAP #: 4168
Pennsylvania Dept of Environmental Protection #: 68-05973
South Carolina DHEC #: 73006001
Texas CEQ #: T104704178-23-15
Utah DOH #: LA00024
Virginia DCLS #: 6460215
Washington Dept of Ecology #: C929
Wisconsin DNR #: 399139510

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SAMPLE SUMMARY

Project: 23L0563
Pace Project No.: 20300390

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20300390001	**23L0563-01: EW-52**	Water	12/11/23 14:00	12/13/23 09:58
20300390002	**23L0563-02: EW-68**	Water	12/11/23 14:15	12/13/23 09:58

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SAMPLE ANALYTE COUNT

Project: 23L0563
Pace Project No.: 20300390

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20300390001	**23L0563-01: EW-52**	Pace ENV-SOP-BTRO-0042	LHM	10
20300390002	**23L0563-02: EW-68**	Pace ENV-SOP-BTRO-0042	LHM	10

PASI-BR = Pace Analytical Services - Baton Rouge

PROJECT NARRATIVE

Project:	23L0563
Pace Project No.:	20300390

Method: **Pace ENV-SOP-BTRO-0042**
Description: BR AM23G Low Level VFA
Client: BR-Enthalpy
Date: December 26, 2023

General Information:
2 samples were analyzed for Pace ENV-SOP-BTRO-0042 by Pace Analytical Services Baton Rouge. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 312682

D4: Sample was diluted due to the presence of high levels of target analytes.
- 23L0563-01: EW-52 (Lab ID: 20300390001)
  - Lactic Acid
- 23L0563-02: EW-68 (Lab ID: 20300390002)
  - Lactic Acid

N2: The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
- 23L0563-01: EW-52 (Lab ID: 20300390001)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid

PROJECT NARRATIVE

Project: 23L0563
Pace Project No.: 20300390

Method: **Pace ENV-SOP-BTRO-0042**
Description: BR AM23G Low Level VFA
Client: BR-Enthalpy
Date: December 26, 2023

Analyte Comments:

QC Batch: 312682

N2: The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

- 23L0563-01: EW-52 (Lab ID: 20300390001)
  - Pentanoic Acid
- 23L0563-02: EW-68 (Lab ID: 20300390002)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid
- BLANK (Lab ID: 1497487)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid
- LCS (Lab ID: 1497488)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid
- MS (Lab ID: 1497326)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid
- MSD (Lab ID: 1497327)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid

This data package has been reviewed for quality and completeness and is approved for release.

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without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 23L0563
Pace Project No.: 20300390

Sample: 23L0563-01: EW-52 **Lab ID: 20300390001** Collected: 12/11/23 14:00 Received: 12/13/23 09:58 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
BR AM23G Low Level VFA	Analytical Method: Pace ENV-SOP-BTRO-0042 Pace Analytical Services - Baton Rouge							
Pentanoic Acid	ND	mg/L	1000	2000		12/22/23 15:29	109-52-4	N2
Acetic Acid	**11200**	mg/L	1000	2000		12/22/23 15:29	64-19-7	
Butyric Acid	**3390**	mg/L	1000	2000		12/22/23 15:29	107-92-6	
Formic acid	**3290**	mg/L	1000	2000		12/22/23 15:29	64-18-6	
Hexanoic Acid	ND	mg/L	1000	2000		12/22/23 15:29	142-62-1	N2
i-Hexanoic Acid	ND	mg/L	1000	2000		12/22/23 15:29	646-07-1	N2
Lactic Acid	**9050**	mg/L	1000	2000		12/22/23 15:29	50-21-5	D4
i-Pentanoic Acid	ND	mg/L	1000	2000		12/22/23 15:29	503-74-2	N2
Propionic Acid	**2280**	mg/L	1000	2000		12/22/23 15:29	79-09-4	
Pyruvic Acid	ND	mg/L	1000	2000		12/22/23 15:29	127-17-3	

Sample: 23L0563-02: EW-68 **Lab ID: 20300390002** Collected: 12/11/23 14:15 Received: 12/13/23 09:58 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
BR AM23G Low Level VFA	Analytical Method: Pace ENV-SOP-BTRO-0042 Pace Analytical Services - Baton Rouge							
Pentanoic Acid	ND	mg/L	100	200		12/22/23 15:53	109-52-4	N2
Acetic Acid	**660**	mg/L	100	200		12/22/23 15:53	64-19-7	
Butyric Acid	**336**	mg/L	100	200		12/22/23 15:53	107-92-6	
Formic acid	ND	mg/L	100	200		12/22/23 15:53	64-18-6	
Hexanoic Acid	ND	mg/L	100	200		12/22/23 15:53	142-62-1	N2
i-Hexanoic Acid	ND	mg/L	100	200		12/22/23 15:53	646-07-1	N2
Lactic Acid	ND	mg/L	100	200		12/22/23 15:53	50-21-5	D4
i-Pentanoic Acid	**131**	mg/L	100	200		12/22/23 15:53	503-74-2	N2
Propionic Acid	**996**	mg/L	100	200		12/22/23 15:53	79-09-4	
Pyruvic Acid	ND	mg/L	100	200		12/22/23 15:53	127-17-3	

QUALITY CONTROL DATA

Project: 23L0563
Pace Project No.: 20300390

QC Batch: 312682
QC Batch Method: Pace ENV-SOP-BTRO-0042
Analysis Method: Pace ENV-SOP-BTRO-0042
Analysis Description: BR AM23G Low Level VFA
Laboratory: Pace Analytical Services - Baton Rouge
Associated Lab Samples: 20300390001, 20300390002

METHOD BLANK: 1497487 Matrix: Water
Associated Lab Samples: 20300390001, 20300390002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acetic Acid	mg/L	ND	0.50	12/22/23 13:00	
Butyric Acid	mg/L	ND	0.50	12/22/23 13:00	
Formic acid	mg/L	ND	0.50	12/22/23 13:00	
Hexanoic Acid	mg/L	ND	0.50	12/22/23 13:00	N2
i-Hexanoic Acid	mg/L	ND	0.50	12/22/23 13:00	N2
i-Pentanoic Acid	mg/L	ND	0.50	12/22/23 13:00	N2
Lactic Acid	mg/L	ND	0.50	12/22/23 13:00	
Pentanoic Acid	mg/L	ND	0.50	12/22/23 13:00	N2
Propionic Acid	mg/L	ND	0.50	12/22/23 13:00	
Pyruvic Acid	mg/L	ND	0.50	12/22/23 13:00	

LABORATORY CONTROL SAMPLE: 1497488

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acetic Acid	mg/L	2	2.1	106	70-130	
Butyric Acid	mg/L	2	2.0	102	70-130	
Formic acid	mg/L	2	2.0	101	70-130	
Hexanoic Acid	mg/L	2	2.0	98	39-114	N2
i-Hexanoic Acid	mg/L	2	2.3	114	39-114	N2
i-Pentanoic Acid	mg/L	2	1.9	94	59-121	N2
Lactic Acid	mg/L	2	2.2	110	70-130	
Pentanoic Acid	mg/L	2	2.0	102	59-121	N2
Propionic Acid	mg/L	2	2.1	103	70-130	
Pyruvic Acid	mg/L	2	2.1	105	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1497326 1497327

Parameter	Units	20300537015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acetic Acid	mg/L	67.8	100	100	161	161	93	93	70-130	0	30	
Butyric Acid	mg/L	2.9U	100	100	92.1	93.9	91	93	70-130	2	30	
Formic acid	mg/L	4.2J	100	100	99.8	101	96	96	70-130	1	30	
Hexanoic Acid	mg/L	2.9U	100	100	49.5	49.5	49	48	39-114	0	30	N2
i-Hexanoic Acid	mg/L	2.8U	100	100	75.7	75.1	76	75	39-114	1	30	N2
i-Pentanoic Acid	mg/L	4.6J	100	100	88.4	86.3	84	82	59-121	2	30	N2
Lactic Acid	mg/L	2.7J	100	100	101	103	98	100	70-130	2	30	
Pentanoic Acid	mg/L	2.8U	100	100	71.2	71.2	71	71	59-121	0	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

QUALITY CONTROL DATA

Project:	23L0563
Pace Project No.:	20300390

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1497326 1497327

Parameter	Units	20300537015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Propionic Acid	mg/L	292	100	100	373	375	81	83	70-130	1	30	
Pyruvic Acid	mg/L	5.2J	100	100	97.4	101	92	96	70-130	3	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

QUALIFIERS

Project: 23L0563
Pace Project No.: 20300390

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

ANALYTE QUALIFIERS

D4	Sample was diluted due to the presence of high levels of target analytes.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 23L0563
Pace Project No.: 20300390

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20300390001	**23L0563-01: EW-52**	Pace ENV-SOP-BTRO-0042	312682		
20300390002	**23L0563-02: EW-68**	Pace ENV-SOP-BTRO-0042	312682		

ENTHALPY ANALYTICAL

Pace - Gulf Coast
7979 Innovation Park Dr
Baton Rouge, LA 70820

1941 RE
RICHMOND, VIR
(804) 358-
(804)3

WO# : 20300390

20300390

CHAIN OF CUSTODY

COMPANY NAME: Enthalpy
INVOICE TO: Enthalpy
PROJECT NAME/Quote #: 23L0563
CONTACT: Dan Elliott
INVOICE CONTACT:
SITE NAME: 23L0563
ADDRESS: 1941 Reymet Rd Richmond VA 23237
INVOICE ADDRESS: 1941 Reymet Rd Richmond VA 23237
PROJECT NUMBER: 23L0563
PHONE #: (804) 358-8295
INVOICE PHONE #: (804) 358-8295
P.O. #: PO-057191
FAX #:
EMAIL:
Pretreatment Program:
Is sample for compliance reporting? YES NO
Is sample from a chlorinated supply? YES NO
PWS I.D. #:
SAMPLER NAME (PRINT):
SAMPLER SIGNATURE:
Turn Around Time: 10

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other____________

Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol

PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE) **Volatile Fatty Acid Low Level**								COMMENTS
1) 23L0563-01: EW-52	x					12/11/23	1400		WW	3	X								1
2) 23L0563-02: EW-68	X					12/11/23	1415		WW	3	X								2
3)																			
4)																			
5)																			
6)																			
7)																			
8)																			
9)																			
10)																			

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
	12/12/23 1616	FedEx Express	12/12/23 1616
Fedex	12-13-23 9:58	Doaie McCune	12-13-23 9:58

QC Data Package
Level I ☐
Level II ☐
Level III ☐
Level IV ☐

LAB USE ONLY

COOLER TEMP ________ °C

Pace

Sample Condition Upon Reciep

Workorde

WO# : 20300390

PM: RW Due Date: 12/28/23

CLIENT: BR-Enthalpy

7979 Innovation Park Dr. Baton Rouge, LA 70806

Cooler Inspected by/date: PJM / 12/13/23

Means of receipt: ☑ Pace ☐ Client ☐ UPS ☐ FedEx ☐ Other: ____________

☑ Yes	☐ No		Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	If custody seals were present, were they intact and unbroken?

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: E43 IR Gun Correction Factor: +0 °C

Cooler #1	Cooler Temp °C: 4.5 (Actual/True)	Samples on ice ☑ Yes ☐ No	pH Strip Lot #
Cooler #2	Cooler Temp °C: ________ (Actual/True)		
Cooler #3	Cooler Temp °C: ________ (Actual/True)	Method of coolant: ☑ Wet ☐ Ice Packs ☐ Dry Ice ☐ None	
Cooler #4	Cooler Temp °C: ________ (Actual/True)		

Tracking #: 7744 5364 7743

☑ Yes	☐ No	☐ NA	Is a temperature blank present?	
☑ Yes	☐ No	☐ NA	Was a chain of custody (COC) recieved?	
☐ Yes	☑ No	☐ NA	Was the line and profile number listed on the COC?	
☑ Yes	☐ No	☐ NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.	
☑ Yes	☐ No		Were proper custody procedures (relinquished/received) followed?	
☐ Yes	☑ No	☐ NA	Is the sampler name and signature on the COC?	
☑ Yes	☐ No		Were sample IDs listed on the COC and all sample containers?	
☑ Yes	☐ No		Was collection date & time listed on the COC and all sample containers?	
☑ Yes	☐ No		Did all container label information (ID, date, time) agree with the COC?	
☑ Yes	☐ No		Were tests to be performed listed on the COC?	
☑ Yes	☐ No		Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?	
☑ Yes	☐ No		Was adequate sample volume available?	
☑ Yes	☐ No		Were all samples received within ½ the holding time or 48 hours, whichever comes first?	
☑ Yes	☐ No		Were all samples containers accounted for? (No missing / excess)	
☐ Yes	☐ No	☑ NA	Were VOA, 8015C (GRO/VPH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?	
☐ Yes	☐ No	☑ NA	Trip blank present?	
☐ Yes	☐ No	☑ NA	Filtered volume received for dissolved tests? *If no, list affected sample(s) in comments below.*	
☐ Yes	☐ No	☑ NA	Were all metals/nutrient samples received at a pH of < 2?	If No, was preservative added? ☐ Yes ☐ No If added, record lots. Dispenser/pipette lot #: __________
☐ Yes	☐ No	☑ NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?	HNO_3 __________ H_2SO_4 __________ NaOH __________ Date: ____________ Time: __________

Comments:

TNI Accredited
VELAP ID 460021

ENTHALPY ANALYTICAL

1941 Reymet Road ● Richmond, Virginia 23237 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 23L0673

Client Name: SCS Engineers-Winchester
296 Victory Road
Winchester, VA 22602

Submitted To: Jennifer Robb

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Date Received: December 13, 2023 8:00
Date Issued: January 9, 2024 14:14
Project Number: 02218208.15 Task 2
Purchase Order:

Enclosed are the results of analyses for samples received by the laboratory on 12/13/2023 08:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Ted Soyars
Technical Director

End Notes:
The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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Analysis Detects Report

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site ID: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Laboratory Sample ID: **23L0673-01** **Client Sample ID:** **EW-78**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	01	SW6020B	240		1.0	2.0	2	ug/L
Barium	01	SW6020B	672		2.00	10.0	2	ug/L
Chromium	01	SW6020B	219		0.800	2.00	2	ug/L
Copper	01	SW6020B	3.40		0.600	2.00	2	ug/L
Lead	01	SW6020B	4.3		2.0	2.0	2	ug/L
Nickel	01	SW6020B	212.7		2.000	2.000	2	ug/L
Selenium	01	SW6020B	2.15		1.70	2.00	2	ug/L
Zinc	01	SW6020B	61.0		5.00	10.0	2	ug/L
Benzene	01	SW8260D	463		20.0	50.0	50	ug/L
Ethylbenzene	01	SW8260D	44.0	J	20.0	50.0	50	ug/L
Tetrahydrofuran	01	SW8260D	502		500	500	50	ug/L
Toluene	01	SW8260D	74.5		25.0	50.0	50	ug/L
Ammonia as N	01	EPA350.1 R2.0	1540		73.1	100	1000	mg/L
BOD	01	SM5210B-2016	681		0.2	2.0	1	mg/L
COD	01	SM5220D-2011	4870		1000	1000	100	mg/L
Cyanide	01	SW9012B	0.55		0.05	0.05	5	mg/L
Nitrate+Nitrite as N	01	SM4500-NO3F-2016	0.38		0.10	0.10	1	mg/L
TKN as N	01	EPA351.2 R2.0	1890		100	250	500	mg/L
Total Recoverable Phenolics	01	SW9065	3.72		0.060	0.100	1	mg/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the " Certificate of Analysis".

Enthalpy Analytical
1941 Reymet Road
Richmond, Virginia 23237
(804)-358-8295 - Telephone
(804)-358-8297 - Fax

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EW-78	23L0673-01	Ground Water	12/12/2023 13:00	12/13/2023 08:00
Trip Blank	23L0673-02	Ground Water	12/12/2023 13:00	12/13/2023 08:00

As requested by Jennifer Robb on January 9, 2024, the list of reported VOCs has been updated. This change is reflected in the following revised report.

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **EW-78**

Laboratory Sample ID: **23L0673-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Metals (Total) by EPA 6000/7000 Series Methods												
Silver	01	7440-22-4	SW6020B	12/14/2023 16:00	12/20/2023 15:52	BLOD		0.120	2.00	2	ug/L	MDW
Arsenic	01	7440-38-2	SW6020B	12/14/2023 16:00	12/20/2023 15:52	240		1.0	2.0	2	ug/L	MDW
Barium	01	7440-39-3	SW6020B	12/14/2023 16:00	12/20/2023 15:52	672		2.00	10.0	2	ug/L	MDW
Cadmium	01	7440-43-9	SW6020B	12/14/2023 16:00	12/20/2023 15:52	BLOD		0.200	2.00	2	ug/L	MDW
Chromium	01	7440-47-3	SW6020B	12/14/2023 16:00	12/20/2023 15:52	219		0.800	2.00	2	ug/L	MDW
Copper	01	7440-50-8	SW6020B	12/14/2023 16:00	12/20/2023 15:52	3.40		0.600	2.00	2	ug/L	MDW
Mercury	01	7439-97-6	SW6020B	12/14/2023 16:00	12/20/2023 15:52	BLOD		0.400	0.400	2	ug/L	MDW
Nickel	01	7440-02-0	SW6020B	12/14/2023 16:00	12/20/2023 15:52	212.7		2.000	2.000	2	ug/L	MDW
Lead	01	7439-92-1	SW6020B	12/14/2023 16:00	12/20/2023 15:52	4.3		2.0	2.0	2	ug/L	MDW
Selenium	01	7782-49-2	SW6020B	12/14/2023 16:00	12/20/2023 15:52	2.15		1.70	2.00	2	ug/L	MDW
Zinc	01	7440-66-6	SW6020B	12/14/2023 16:00	12/20/2023 15:52	61.0		5.00	10.0	2	ug/L	MDW
Volatile Organic Compounds by GCMS												
2-Butanone (MEK)	01	78-93-3	SW8260D	12/14/2023 18:17	12/14/2023 18:17	BLOD		150	500	50	ug/L	CGN
Acetone	01	67-64-1	SW8260D	12/14/2023 18:17	12/14/2023 18:17	BLOD		350	500	50	ug/L	CGN
Benzene	01	71-43-2	SW8260D	12/14/2023 18:17	12/14/2023 18:17	463		20.0	50.0	50	ug/L	CGN
Ethylbenzene	01	100-41-4	SW8260D	12/14/2023 18:17	12/14/2023 18:17	44.0	J	20.0	50.0	50	ug/L	CGN
Toluene	01	108-88-3	SW8260D	12/14/2023 18:17	12/14/2023 18:17	74.5		25.0	50.0	50	ug/L	CGN
Xylenes, Total	01	1330-20-7	SW8260D	12/14/2023 18:17	12/14/2023 18:17	BLOD		50.0	150	50	ug/L	CGN
Tetrahydrofuran	01	109-99-9	SW8260D	12/14/2023 18:17	12/14/2023 18:17	502		500	500	50	ug/L	CGN
Surr: 1,2-Dichloroethane-d4 (Surr)	*01*	*94.4 %*	*70-120*	*12/14/2023 18:17*	*12/14/2023 18:17*							
Surr: 4-Bromofluorobenzene (Surr)	*01*	*98.8 %*	*75-120*	*12/14/2023 18:17*	*12/14/2023 18:17*							
Surr: Dibromofluoromethane (Surr)	*01*	*99.2 %*	*70-130*	*12/14/2023 18:17*	*12/14/2023 18:17*							
Surr: Toluene-d8 (Surr)	*01*	*99.5 %*	*70-130*	*12/14/2023 18:17*	*12/14/2023 18:17*							

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **EW-78**

Laboratory Sample ID: **23L0673-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Semivolatile Organic Compounds by GCMS												
Anthracene	01	120-12-7	SW8270E	12/14/2023 09:00	12/15/2023 01:51	BLOD		50.0	100	10	ug/L	BMS
Surr: 2,4,6-Tribromophenol (Surr)	*01*	*63.2 %*	*5-136*	*12/14/2023 09:00*	*12/15/2023 01:51*							
Surr: 2-Fluorobiphenyl (Surr)	*01*	*40.2 %*	*9-117*	*12/14/2023 09:00*	*12/15/2023 01:51*							
Surr: 2-Fluorophenol (Surr)	*01*	*40.4 %*	*5-60*	*12/14/2023 09:00*	*12/15/2023 01:51*							
Surr: Nitrobenzene-d5 (Surr)	*01*	*49.6 %*	*5-151*	*12/14/2023 09:00*	*12/15/2023 01:51*							
Surr: Phenol-d5 (Surr)	*01*	*21.4 %*	*5-60*	*12/14/2023 09:00*	*12/15/2023 01:51*							
Surr: p-Terphenyl-d14 (Surr)	*01*	*%*	*5-141*	*12/14/2023 09:00*	*12/15/2023 01:51*							*DS*

Certificate of Analysis

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Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **EW-78**

Laboratory Sample ID: **23L0673-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Ammonia as N	01	7664-41-7	EPA350.1 R2.0	12/22/2023 15:02	12/22/2023 15:02	1540		73.1	100	1000	mg/L	SPH
BOD	01	E1640606	SM5210B-2016	12/14/2023 09:21	12/14/2023 09:21	681		0.2	2.0	1	mg/L	NBT
Cyanide	01	57-12-5	SW9012B	12/14/2023 10:56	12/14/2023 10:56	0.55		0.05	0.05	5	mg/L	MGC
COD	01	NA	SM5220D-2011	12/18/2023 13:35	12/18/2023 13:35	4870		1000	1000	100	mg/L	MGC
Nitrate as N	01	14797-55-8	Calc.	12/26/2023 11:00	12/26/2023 15:32	BLOD		1.10	5.10	100	mg/L	KJM
Nitrate+Nitrite as N	01	E701177	SM4500-NO3F-2016	12/26/2023 11:00	12/26/2023 15:32	0.38		0.10	0.10	1	mg/L	TEG
Nitrite as N	01	14797-65-0	SM4500-NO2B-2011	12/13/2023 10:25	12/13/2023 10:25	BLOD		1.00	5.00	100	mg/L	KJM
Total Recoverable Phenolics	01	NA	SW9065	12/26/2023 15:19	12/26/2023 15:19	3.72		0.060	0.100	1	mg/L	AAL
TKN as N	01	E17148461	EPA351.2 R2.0	12/22/2023 14:52	12/22/2023 14:52	1890		100	250	500	mg/L	MJRL

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Client Sample ID: **Trip Blank**

Laboratory Sample ID: **23L0673-02**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Volatile Organic Compounds by GCMS												
2-Butanone (MEK)	02	78-93-3	SW8260D	12/14/2023 12:28	12/14/2023 12:28	BLOD		3.00	10.0	1	ug/L	RJB
Acetone	02	67-64-1	SW8260D	12/14/2023 12:28	12/14/2023 12:28	BLOD		7.00	10.0	1	ug/L	RJB
Benzene	02	71-43-2	SW8260D	12/14/2023 12:28	12/14/2023 12:28	BLOD		0.40	1.00	1	ug/L	RJB
Ethylbenzene	02	100-41-4	SW8260D	12/14/2023 12:28	12/14/2023 12:28	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	02	108-88-3	SW8260D	12/14/2023 12:28	12/14/2023 12:28	BLOD		0.50	1.00	1	ug/L	RJB
Xylenes, Total	02	1330-20-7	SW8260D	12/14/2023 12:28	12/14/2023 12:28	BLOD		1.00	3.00	1	ug/L	RJB
Tetrahydrofuran	02	109-99-9	SW8260D	12/14/2023 12:28	12/14/2023 12:28	BLOD		10.0	10.0	1	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	*02*	*98.5 %*	*70-120*	*12/14/2023 12:28*	*12/14/2023 12:28*							
Surr: 4-Bromofluorobenzene (Surr)	*02*	*108 %*	*75-120*	*12/14/2023 12:28*	*12/14/2023 12:28*							
Surr: Dibromofluoromethane (Surr)	*02*	*98.4 %*	*70-130*	*12/14/2023 12:28*	*12/14/2023 12:28*							
Surr: Toluene-d8 (Surr)	*02*	*101 %*	*70-130*	*12/14/2023 12:28*	*12/14/2023 12:28*							

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 2023 City of Bristol Landfill Leachate
Submitted To: Jennifer Robb
Date Issued: 1/9/2024 2:14:16PM

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0589 - EPA200.8 R5.4										
Blank (BGL0589-BLK1)				Prepared: 12/14/2023 Analyzed: 12/19/2023						
Mercury	ND	0.200	ug/L							
Arsenic	ND	1.0	ug/L							
Barium	ND	5.00	ug/L							
Cadmium	ND	1.00	ug/L							
Chromium	ND	1.00	ug/L							
Copper	ND	1.00	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	1.000	ug/L							
Selenium	ND	1.00	ug/L							
Silver	ND	1.00	ug/L							
Zinc	ND	5.00	ug/L							
LCS (BGL0589-BS1)				Prepared: 12/14/2023 Analyzed: 12/19/2023						
Mercury	0.936	0.200	ug/L				80-120			
Arsenic	48	1.0	ug/L	50.0		96.0	80-120			
Barium	47.5	5.00	ug/L	50.0		95.1	80-120			
Cadmium	49.6	1.00	ug/L	50.0		99.2	80-120			
Chromium	49.7	1.00	ug/L	50.0		99.4	80-120			
Copper	48.8	1.00	ug/L	50.0		97.5	80-120			
Lead	52	1.0	ug/L	50.0		103	80-120			
Nickel	49.66	1.000	ug/L	50.0		99.3	80-120			
Selenium	49.7	1.00	ug/L	50.0		99.5	80-120			
Silver	9.79	1.00	ug/L	10.0		97.9	80-120			
Zinc	49.0	5.00	ug/L	50.0		98.0	80-120			
Matrix Spike (BGL0589-MS1)		**Source: 23L0787-05**		Prepared: 12/14/2023 Analyzed: 12/19/2023						

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Date Issued: 1/9/2024 2:14:16PM
Client Site I.D.: 2023 City of Bristol Landfill Leachate
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Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0589 - EPA200.8 R5.4										
Matrix Spike (BGL0589-MS1)	**Source: 23L0787-05**			Prepared: 12/14/2023 Analyzed: 12/19/2023						
Mercury	0.951	0.200	ug/L		BLOD		70-130			
Arsenic	47	1.0	ug/L	50.0	BLOD	94.8	75-125			
Barium	47.5	5.00	ug/L	50.0	BLOD	94.9	75-125			
Cadmium	49.6	1.00	ug/L	50.0	BLOD	99.2	75-125			
Chromium	49.8	1.00	ug/L	50.0	BLOD	99.6	75-125			
Copper	49.1	1.00	ug/L	50.0	0.438	97.3	75-125			
Lead	53	1.0	ug/L	50.0	BLOD	106	75-125			
Nickel	49.19	1.000	ug/L	50.0	BLOD	98.4	75-125			
Selenium	48.5	1.00	ug/L	50.0	BLOD	96.9	75-125			
Silver	9.85	1.00	ug/L	10.0	BLOD	98.5	75-125			
Zinc	49.1	5.00	ug/L	50.0	BLOD	98.1	75-125			
Matrix Spike (BGL0589-MS2)	**Source: 23L0836-02**			Prepared: 12/14/2023 Analyzed: 12/19/2023						
Mercury	0.993	0.200	ug/L		BLOD		70-130			
Arsenic	48	1.0	ug/L	50.0	BLOD	96.3	75-125			
Barium	54.8	5.00	ug/L	50.0	8.14	93.4	75-125			
Cadmium	49.9	1.00	ug/L	50.0	BLOD	99.8	75-125			
Chromium	49.0	1.00	ug/L	50.0	BLOD	98.0	75-125			
Copper	52.1	1.00	ug/L	50.0	4.54	95.1	75-125			
Lead	51	1.0	ug/L	50.0	BLOD	101	75-125			
Nickel	48.60	1.000	ug/L	50.0	BLOD	97.2	75-125			
Selenium	47.4	1.00	ug/L	50.0	BLOD	94.8	75-125			
Silver	9.88	1.00	ug/L	10.0	BLOD	98.8	75-125			
Zinc	78.5	5.00	ug/L	50.0	32.4	92.1	75-125			
Matrix Spike Dup (BGL0589-MSD1)	**Source: 23L0787-05**			Prepared: 12/14/2023 Analyzed: 12/19/2023						

Certificate of Analysis

Client Name:	SCS Engineers-Winchester	Date Issued:	1/9/2024 2:14:16PM
Client Site I.D.:	2023 City of Bristol Landfill Leachate		
Submitted To:	Jennifer Robb		

Metals (Total) by EPA 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0589 - EPA200.8 R5.4										
Matrix Spike Dup (BGL0589-MSD1)	**Source: 23L0787-05**			Prepared: 12/14/2023 Analyzed: 12/19/2023						
Mercury	0.958	0.200	ug/L		BLOD		70-130	0.656	20	
Arsenic	48	1.0	ug/L	50.0	BLOD	95.5	75-125	0.758	20	
Barium	48.5	5.00	ug/L	50.0	BLOD	96.9	75-125	2.10	20	
Cadmium	50.2	1.00	ug/L	50.0	BLOD	100	75-125	1.15	20	
Chromium	49.8	1.00	ug/L	50.0	BLOD	99.7	75-125	0.0540	20	
Copper	50.1	1.00	ug/L	50.0	0.438	99.3	75-125	2.05	20	
Lead	52	1.0	ug/L	50.0	BLOD	105	75-125	1.14	20	
Nickel	50.63	1.000	ug/L	50.0	BLOD	101	75-125	2.89	20	
Selenium	48.6	1.00	ug/L	50.0	BLOD	97.2	75-125	0.269	20	
Silver	10.0	1.00	ug/L	10.0	BLOD	100	75-125	1.64	20	
Zinc	50.0	5.00	ug/L	50.0	BLOD	100	75-125	1.99	20	
Matrix Spike Dup (BGL0589-MSD2)	**Source: 23L0836-02**			Prepared: 12/14/2023 Analyzed: 12/19/2023						
Mercury	0.992	0.200	ug/L		BLOD		70-130	0.188	20	
Arsenic	48	1.0	ug/L	50.0	BLOD	96.2	75-125	0.107	20	
Barium	55.5	5.00	ug/L	50.0	8.14	94.7	75-125	1.25	20	
Cadmium	50.2	1.00	ug/L	50.0	BLOD	100	75-125	0.510	20	
Chromium	50.0	1.00	ug/L	50.0	BLOD	99.9	75-125	1.94	20	
Copper	51.8	1.00	ug/L	50.0	4.54	94.5	75-125	0.597	20	
Lead	51	1.0	ug/L	50.0	BLOD	102	75-125	0.973	20	
Nickel	49.31	1.000	ug/L	50.0	BLOD	98.6	75-125	1.45	20	
Selenium	46.9	1.00	ug/L	50.0	BLOD	93.7	75-125	1.17	20	
Silver	9.96	1.00	ug/L	10.0	BLOD	99.6	75-125	0.842	20	
Zinc	79.8	5.00	ug/L	50.0	32.4	94.8	75-125	1.73	20	

Certificate of Analysis

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Date Issued: 1/9/2024 2:14:16PM
Client Site I.D.: 2023 City of Bristol Landfill Leachate
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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0600 - SW5030B-MS										
Blank (BGL0600-BLK1)				Prepared & Analyzed: 12/14/2023						
2-Butanone (MEK)	ND	10.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*48.6*		ug/L	*50.0*		*97.2*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*53.2*		ug/L	*50.0*		*106*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*48.3*		ug/L	*50.0*		*96.6*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.9*		ug/L	*50.0*		*102*	*70-130*			
LCS (BGL0600-BS1)				Prepared & Analyzed: 12/14/2023						
1,1,1,2-Tetrachloroethane	52.1	0.4	ug/L	50.0		104	80-130			
1,1,1-Trichloroethane	50.6	1	ug/L	50.0		101	65-130			
1,1,2,2-Tetrachloroethane	52.2	0.4	ug/L	50.0		104	65-130			
1,1,2-Trichloroethane	54.7	1	ug/L	50.0		109	75-125			
1,1-Dichloroethane	52.0	1	ug/L	50.0		104	70-135			
1,1-Dichloroethylene	51.8	1	ug/L	50.0		104	70-130			
1,1-Dichloropropene	51.9	1	ug/L	50.0		104	75-135			
1,2,3-Trichlorobenzene	55.7	1	ug/L	50.0		111	55-140			
1,2,3-Trichloropropane	48.2	1	ug/L	50.0		96.4	75-125			
1,2,4-Trichlorobenzene	51.0	1	ug/L	50.0		102	65-135			
1,2,4-Trimethylbenzene	54.3	1	ug/L	50.0		109	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	42.7	1	ug/L	50.0		85.5	50-130			
1,2-Dibromoethane (EDB)	51.1	1	ug/L	50.0		102	80-120			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0600 - SW5030B-MS										
LCS (BGL0600-BS1)				Prepared & Analyzed: 12/14/2023						
1,2-Dichlorobenzene	50.0	0.5	ug/L	50.0		100	70-120			
1,2-Dichloroethane	49.3	1	ug/L	50.0		98.7	70-130			
1,2-Dichloropropane	53.2	0.5	ug/L	50.0		106	75-125			
1,3,5-Trimethylbenzene	53.1	1	ug/L	50.0		106	75-125			
1,3-Dichlorobenzene	52.2	1	ug/L	50.0		104	75-125			
1,3-Dichloropropane	52.9	1	ug/L	50.0		106	75-125			
1,4-Dichlorobenzene	50.4	1	ug/L	50.0		101	75-125			
2,2-Dichloropropane	50.7	1	ug/L	50.0		101	70-135			
2-Butanone (MEK)	46.7	10	ug/L	50.0		93.4	30-150			
2-Chlorotoluene	52.7	1	ug/L	50.0		105	75-125			
2-Hexanone (MBK)	45.1	5	ug/L	50.0		90.2	55-130			
4-Chlorotoluene	53.8	1	ug/L	50.0		108	75-130			
4-Isopropyltoluene	53.4	1	ug/L	50.0		107	75-130			
4-Methyl-2-pentanone (MIBK)	50.6	5	ug/L	50.0		101	60-135			
Acetone	37.1	10	ug/L	50.0		74.2	40-140			
Benzene	53.8	1	ug/L	50.0		108	80-120			
Bromobenzene	53.2	1	ug/L	50.0		106	75-125			
Bromochloromethane	50.7	1	ug/L	50.0		101	65-130			
Bromodichloromethane	53.1	0.5	ug/L	50.0		106	75-120			
Bromoform	56.9	1	ug/L	50.0		114	70-130			
Bromomethane	38.1	1	ug/L	50.0		76.1	30-145			
Carbon disulfide	41.3	10	ug/L	50.0		82.5	35-160			
Carbon tetrachloride	50.8	1	ug/L	50.0		102	65-140			
Chlorobenzene	51.6	1	ug/L	50.0		103	80-120			
Chloroethane	47.2	1	ug/L	50.0		94.4	60-135			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0600 - SW5030B-MS										
LCS (BGL0600-BS1)				Prepared & Analyzed: 12/14/2023						
Chloroform	49.8	0.5	ug/L	50.0		99.6	65-135			
Chloromethane	47.8	1	ug/L	50.0		95.6	40-125			
cis-1,2-Dichloroethylene	53.1	1	ug/L	50.0		106	70-125			
cis-1,3-Dichloropropene	53.4	1	ug/L	50.0		107	70-130			
Dibromochloromethane	55.6	0.5	ug/L	50.0		111	60-135			
Dibromomethane	51.1	1	ug/L	50.0		102	75-125			
Dichlorodifluoromethane	64.7	1	ug/L	50.0		129	30-155			
Ethylbenzene	53.4	1	ug/L	50.0		107	75-125			
Hexachlorobutadiene	44.9	0.8	ug/L	50.0		89.8	50-140			
Isopropylbenzene	50.2	1	ug/L	50.0		100	75-125			
m+p-Xylenes	105	2	ug/L	100		105	75-130			
Methylene chloride	52.9	4	ug/L	50.0		106	55-140			
Methyl-t-butyl ether (MTBE)	51.8	1	ug/L	50.0		104	65-125			
Naphthalene	53.0	1	ug/L	50.0		106	55-140			
n-Butylbenzene	51.3	1	ug/L	50.0		103	70-135			
n-Propylbenzene	53.5	1	ug/L	50.0		107	70-130			
o-Xylene	53.1	1	ug/L	50.0		106	80-120			
sec-Butylbenzene	54.8	1	ug/L	50.0		110	70-125			
Styrene	54.0	1	ug/L	50.0		108	65-135			
tert-Butylbenzene	52.9	1	ug/L	50.0		106	70-130			
Tetrachloroethylene (PCE)	42.8	1	ug/L	50.0		85.5	45-150			
Toluene	53.7	1	ug/L	50.0		107	75-120			
trans-1,2-Dichloroethylene	51.4	1	ug/L	50.0		103	60-140			
trans-1,3-Dichloropropene	57.0	1	ug/L	50.0		114	55-140			
Trichloroethylene	52.3	1	ug/L	50.0		105	70-125			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0600 - SW5030B-MS										
LCS (BGL0600-BS1)				Prepared & Analyzed: 12/14/2023						
Trichlorofluoromethane	50.4	1	ug/L	50.0		101	60-145			
Vinyl chloride	47.8	0.5	ug/L	50.0		95.6	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*47.5*		ug/L	*50.0*		*95.1*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*51.7*		ug/L	*50.0*		*103*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*48.4*		ug/L	*50.0*		*96.9*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.4*		ug/L	*50.0*		*101*	*70-130*			
Matrix Spike (BGL0600-MS1)		**Source: 23L0740-01**		Prepared & Analyzed: 12/14/2023						
1,1,1,2-Tetrachloroethane	51.0	0.4	ug/L	50.0	BLOD	102	80-130			
1,1,1-Trichloroethane	50.1	1	ug/L	50.0	BLOD	100	65-130			
1,1,2,2-Tetrachloroethane	52.9	0.4	ug/L	50.0	BLOD	106	65-130			
1,1,2-Trichloroethane	54.8	1	ug/L	50.0	BLOD	110	75-125			
1,1-Dichloroethane	50.6	1	ug/L	50.0	BLOD	101	70-135			
1,1-Dichloroethylene	50.6	1	ug/L	50.0	BLOD	101	50-145			
1,1-Dichloropropene	51.2	1	ug/L	50.0	BLOD	102	75-135			
1,2,3-Trichlorobenzene	53.8	1	ug/L	50.0	BLOD	108	55-140			
1,2,3-Trichloropropane	49.7	1	ug/L	50.0	BLOD	99.5	75-125			
1,2,4-Trichlorobenzene	50.3	1	ug/L	50.0	BLOD	101	65-135			
1,2,4-Trimethylbenzene	53.8	1	ug/L	50.0	BLOD	108	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	44.2	1	ug/L	50.0	BLOD	88.4	50-130			
1,2-Dibromoethane (EDB)	51.4	1	ug/L	50.0	BLOD	103	80-120			
1,2-Dichlorobenzene	50.1	0.5	ug/L	50.0	BLOD	100	70-120			
1,2-Dichloroethane	49.1	1	ug/L	50.0	BLOD	98.2	70-130			
1,2-Dichloropropane	52.2	0.5	ug/L	50.0	BLOD	104	75-125			
1,3,5-Trimethylbenzene	52.0	1	ug/L	50.0	BLOD	104	75-124			

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Date Issued: 1/9/2024 2:14:16PM
Client Site I.D.: 2023 City of Bristol Landfill Leachate
Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0600 - SW5030B-MS										
Matrix Spike (BGL0600-MS1)	**Source: 23L0740-01**			Prepared & Analyzed: 12/14/2023						
1,3-Dichlorobenzene	51.0	1	ug/L	50.0	BLOD	102	75-125			
1,3-Dichloropropane	52.5	1	ug/L	50.0	BLOD	105	75-125			
1,4-Dichlorobenzene	49.4	1	ug/L	50.0	BLOD	98.9	75-125			
2,2-Dichloropropane	49.8	1	ug/L	50.0	BLOD	99.6	70-135			
2-Butanone (MEK)	50.3	10	ug/L	50.0	BLOD	101	30-150			
2-Chlorotoluene	51.7	1	ug/L	50.0	BLOD	103	75-125			
2-Hexanone (MBK)	48.6	5	ug/L	50.0	BLOD	97.2	55-130			
4-Chlorotoluene	52.7	1	ug/L	50.0	BLOD	105	75-130			
4-Isopropyltoluene	53.3	1	ug/L	50.0	BLOD	107	75-130			
4-Methyl-2-pentanone (MIBK)	54.9	5	ug/L	50.0	BLOD	110	60-135			
Acetone	40.5	10	ug/L	50.0	37.1	6.84	40-140			M
Benzene	52.5	1	ug/L	50.0	BLOD	105	80-120			
Bromobenzene	52.9	1	ug/L	50.0	BLOD	106	75-125			
Bromochloromethane	50.0	1	ug/L	50.0	BLOD	99.9	65-130			
Bromodichloromethane	52.2	0.5	ug/L	50.0	BLOD	104	75-136			
Bromoform	56.6	1	ug/L	50.0	BLOD	113	70-130			
Bromomethane	38.2	1	ug/L	50.0	BLOD	76.4	30-145			
Carbon disulfide	43.9	10	ug/L	50.0	BLOD	86.8	35-160			
Carbon tetrachloride	50.2	1	ug/L	50.0	BLOD	100	65-140			
Chlorobenzene	50.6	1	ug/L	50.0	BLOD	101	80-120			
Chloroethane	46.0	1	ug/L	50.0	BLOD	92.0	60-135			
Chloroform	49.0	0.5	ug/L	50.0	BLOD	98.1	65-135			
Chloromethane	47.9	1	ug/L	50.0	BLOD	95.8	40-125			
cis-1,2-Dichloroethylene	51.8	1	ug/L	50.0	BLOD	104	70-125			
cis-1,3-Dichloropropene	52.3	1	ug/L	50.0	BLOD	105	47-136			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0600 - SW5030B-MS

Matrix Spike (BGL0600-MS1) **Source: 23L0740-01** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Dibromochloromethane	54.8	0.5	ug/L	50.0	BLOD	110	60-135			
Dibromomethane	50.6	1	ug/L	50.0	BLOD	101	75-125			
Dichlorodifluoromethane	62.2	1	ug/L	50.0	BLOD	124	30-155			
Ethylbenzene	52.3	1	ug/L	50.0	BLOD	105	75-125			
Hexachlorobutadiene	44.8	0.8	ug/L	50.0	BLOD	89.7	50-140			
Isopropylbenzene	49.6	1	ug/L	50.0	BLOD	99.2	75-125			
m+p-Xylenes	103	2	ug/L	100	BLOD	103	75-130			
Methylene chloride	52.1	4	ug/L	50.0	BLOD	104	55-140			
Methyl-t-butyl ether (MTBE)	51.2	1	ug/L	50.0	BLOD	102	65-125			
Naphthalene	52.9	1	ug/L	50.0	BLOD	106	55-140			
n-Butylbenzene	50.6	1	ug/L	50.0	BLOD	101	70-135			
n-Propylbenzene	52.5	1	ug/L	50.0	BLOD	105	70-130			
o-Xylene	51.9	1	ug/L	50.0	BLOD	104	80-120			
sec-Butylbenzene	54.3	1	ug/L	50.0	BLOD	109	70-125			
Styrene	53.0	1	ug/L	50.0	BLOD	106	65-135			
tert-Butylbenzene	51.7	1	ug/L	50.0	BLOD	103	70-130			
Tetrachloroethylene (PCE)	42.0	1	ug/L	50.0	BLOD	84.1	51-231			
Toluene	53.1	1	ug/L	50.0	BLOD	106	75-120			
trans-1,2-Dichloroethylene	50.6	1	ug/L	50.0	BLOD	101	60-140			
trans-1,3-Dichloropropene	56.9	1	ug/L	50.0	BLOD	114	55-140			
Trichloroethylene	51.3	1	ug/L	50.0	BLOD	103	70-125			
Trichlorofluoromethane	54.1	1	ug/L	50.0	BLOD	108	60-145			
Vinyl chloride	44.7	0.5	ug/L	50.0	BLOD	89.3	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*48.4*		ug/L	*50.0*		*96.8*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*51.6*		ug/L	*50.0*		*103*	*75-120*			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0600 - SW5030B-MS										
Matrix Spike (BGL0600-MS1)	**Source: 23L0740-01**		Prepared & Analyzed: 12/14/2023							
Surr: Dibromofluoromethane (Surr)	*49.0*		ug/L	*50.0*		*98.0*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.6*		ug/L	*50.0*		*101*	*70-130*			
Matrix Spike Dup (BGL0600-MSD1)	**Source: 23L0740-01**		Prepared & Analyzed: 12/14/2023							
1,1,1,2-Tetrachloroethane	50.6	0.4	ug/L	50.0	BLOD	101	80-130	0.886	30	
1,1,1-Trichloroethane	49.4	1	ug/L	50.0	BLOD	98.8	65-130	1.47	30	
1,1,2,2-Tetrachloroethane	52.9	0.4	ug/L	50.0	BLOD	106	65-130	0.0756	30	
1,1,2-Trichloroethane	54.5	1	ug/L	50.0	BLOD	109	75-125	0.494	30	
1,1-Dichloroethane	49.7	1	ug/L	50.0	BLOD	99.4	70-135	1.73	30	
1,1-Dichloroethylene	49.6	1	ug/L	50.0	BLOD	99.3	50-145	2.01	30	
1,1-Dichloropropene	50.6	1	ug/L	50.0	BLOD	101	75-135	1.14	30	
1,2,3-Trichlorobenzene	53.9	1	ug/L	50.0	BLOD	108	55-140	0.242	30	
1,2,3-Trichloropropane	49.6	1	ug/L	50.0	BLOD	99.2	75-125	0.262	30	
1,2,4-Trichlorobenzene	49.8	1	ug/L	50.0	BLOD	99.5	65-135	1.08	30	
1,2,4-Trimethylbenzene	52.7	1	ug/L	50.0	BLOD	105	75-130	2.18	30	
1,2-Dibromo-3-chloropropane (DBCP)	43.9	1	ug/L	50.0	BLOD	87.8	50-130	0.590	30	
1,2-Dibromoethane (EDB)	50.7	1	ug/L	50.0	BLOD	101	80-120	1.43	30	
1,2-Dichlorobenzene	48.9	0.5	ug/L	50.0	BLOD	97.7	70-120	2.53	30	
1,2-Dichloroethane	48.4	1	ug/L	50.0	BLOD	96.7	70-130	1.54	30	
1,2-Dichloropropane	52.0	0.5	ug/L	50.0	BLOD	104	75-125	0.480	30	
1,3,5-Trimethylbenzene	50.9	1	ug/L	50.0	BLOD	102	75-124	2.06	30	
1,3-Dichlorobenzene	50.9	1	ug/L	50.0	BLOD	102	75-125	0.275	30	
1,3-Dichloropropane	52.7	1	ug/L	50.0	BLOD	105	75-125	0.266	30	
1,4-Dichlorobenzene	49.2	1	ug/L	50.0	BLOD	98.4	75-125	0.507	30	
2,2-Dichloropropane	48.6	1	ug/L	50.0	BLOD	97.3	70-135	2.40	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0600 - SW5030B-MS										
Matrix Spike Dup (BGL0600-MSD1)	**Source: 23L0740-01**			Prepared & Analyzed: 12/14/2023						
2-Butanone (MEK)	49.1	10	ug/L	50.0	BLOD	98.2	30-150	2.45	30	
2-Chlorotoluene	50.7	1	ug/L	50.0	BLOD	101	75-125	1.95	30	
2-Hexanone (MBK)	49.3	5	ug/L	50.0	BLOD	98.6	55-130	1.43	30	
4-Chlorotoluene	51.6	1	ug/L	50.0	BLOD	103	75-130	2.13	30	
4-Isopropyltoluene	52.1	1	ug/L	50.0	BLOD	104	75-130	2.26	30	
4-Methyl-2-pentanone (MIBK)	55.7	5	ug/L	50.0	BLOD	111	60-135	1.41	30	
Acetone	39.7	10	ug/L	50.0	37.1	5.12	40-140	2.15	30	M
Benzene	52.5	1	ug/L	50.0	BLOD	105	80-120	0.0572	30	
Bromobenzene	53.0	1	ug/L	50.0	BLOD	106	75-125	0.113	30	
Bromochloromethane	49.4	1	ug/L	50.0	BLOD	98.7	65-130	1.21	30	
Bromodichloromethane	52.9	0.5	ug/L	50.0	BLOD	106	75-136	1.37	30	
Bromoform	56.5	1	ug/L	50.0	BLOD	113	70-130	0.159	30	
Bromomethane	36.7	1	ug/L	50.0	BLOD	73.4	30-145	3.90	30	
Carbon disulfide	43.6	10	ug/L	50.0	BLOD	86.1	35-160	0.869	30	
Carbon tetrachloride	49.7	1	ug/L	50.0	BLOD	99.4	65-140	1.14	30	
Chlorobenzene	50.0	1	ug/L	50.0	BLOD	100	80-120	0.994	30	
Chloroethane	44.4	1	ug/L	50.0	BLOD	88.8	60-135	3.58	30	
Chloroform	48.2	0.5	ug/L	50.0	BLOD	96.4	65-135	1.73	30	
Chloromethane	44.3	1	ug/L	50.0	BLOD	88.5	40-125	7.90	30	
cis-1,2-Dichloroethylene	51.6	1	ug/L	50.0	BLOD	103	70-125	0.290	30	
cis-1,3-Dichloropropene	52.6	1	ug/L	50.0	BLOD	105	47-136	0.439	30	
Dibromochloromethane	54.8	0.5	ug/L	50.0	BLOD	110	60-135	0.0912	30	
Dibromomethane	51.1	1	ug/L	50.0	BLOD	102	75-125	0.944	30	
Dichlorodifluoromethane	59.0	1	ug/L	50.0	BLOD	118	30-155	5.28	30	
Ethylbenzene	51.9	1	ug/L	50.0	BLOD	104	75-125	0.825	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0600 - SW5030B-MS

Matrix Spike Dup (BGL0600-MSD1) **Source: 23L0740-01** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Hexachlorobutadiene	44.9	0.8	ug/L	50.0	BLOD	89.9	50-140	0.200	30	
Isopropylbenzene	49.3	1	ug/L	50.0	BLOD	98.5	75-125	0.648	30	
m+p-Xylenes	102	2	ug/L	100	BLOD	102	75-130	0.895	30	
Methylene chloride	50.8	4	ug/L	50.0	BLOD	102	55-140	2.49	30	
Methyl-t-butyl ether (MTBE)	50.3	1	ug/L	50.0	BLOD	101	65-125	1.70	30	
Naphthalene	52.6	1	ug/L	50.0	BLOD	105	55-140	0.588	30	
n-Butylbenzene	50.1	1	ug/L	50.0	BLOD	100	70-135	1.01	30	
n-Propylbenzene	51.4	1	ug/L	50.0	BLOD	103	70-130	2.12	30	
o-Xylene	51.2	1	ug/L	50.0	BLOD	102	80-120	1.40	30	
sec-Butylbenzene	53.5	1	ug/L	50.0	BLOD	107	70-125	1.50	30	
Styrene	52.7	1	ug/L	50.0	BLOD	105	65-135	0.605	30	
tert-Butylbenzene	51.4	1	ug/L	50.0	BLOD	103	70-130	0.602	30	
Tetrachloroethylene (PCE)	41.1	1	ug/L	50.0	BLOD	82.2	51-231	2.33	30	
Toluene	53.1	1	ug/L	50.0	BLOD	106	75-120	0.0377	30	
trans-1,2-Dichloroethylene	49.6	1	ug/L	50.0	BLOD	99.2	60-140	1.94	30	
trans-1,3-Dichloropropene	56.8	1	ug/L	50.0	BLOD	114	55-140	0.141	30	
Trichloroethylene	51.2	1	ug/L	50.0	BLOD	102	70-125	0.195	30	
Trichlorofluoromethane	52.8	1	ug/L	50.0	BLOD	106	60-145	2.45	30	
Vinyl chloride	42.2	0.5	ug/L	50.0	BLOD	84.5	50-145	5.62	30	
Surr: 1,2-Dichloroethane-d4 (Surr)	*47.8*		ug/L	*50.0*		*95.7*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*51.7*		ug/L	*50.0*		*103*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*48.3*		ug/L	*50.0*		*96.7*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.8*		ug/L	*50.0*		*102*	*70-130*			

Batch BGL0601 - SW5030B-MS

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0601 - SW5030B-MS										
Blank (BGL0601-BLK1)				Prepared & Analyzed: 12/14/2023						
2-Butanone (MEK)	ND	10.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*47.4*		ug/L	*50.0*		*94.9*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.3*		ug/L	*50.0*		*98.6*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*48.7*		ug/L	*50.0*		*97.3*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.4*		ug/L	*50.0*		*96.7*	*70-130*			
LCS (BGL0601-BS1)				Prepared & Analyzed: 12/14/2023						
1,1,1,2-Tetrachloroethane	45.0	0.4	ug/L	50.0		90.0	80-130			
1,1,1-Trichloroethane	43.8	1	ug/L	50.0		87.7	65-130			
1,1,2,2-Tetrachloroethane	47.1	0.4	ug/L	50.0		94.2	65-130			
1,1,2-Trichloroethane	44.8	1	ug/L	50.0		89.6	75-125			
1,1-Dichloroethane	42.1	1	ug/L	50.0		84.2	70-135			
1,1-Dichloroethylene	43.5	1	ug/L	50.0		86.9	70-130			
1,1-Dichloropropene	45.1	1	ug/L	50.0		90.2	75-135			
1,2,3-Trichlorobenzene	41.3	1	ug/L	50.0		82.6	55-140			
1,2,3-Trichloropropane	46.0	1	ug/L	50.0		91.9	75-125			
1,2,4-Trichlorobenzene	43.2	1	ug/L	50.0		86.5	65-135			
1,2,4-Trimethylbenzene	44.8	1	ug/L	50.0		89.7	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	43.6	1	ug/L	50.0		87.2	50-130			
1,2-Dibromoethane (EDB)	44.9	1	ug/L	50.0		89.8	80-120			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0601 - SW5030B-MS										
LCS (BGL0601-BS1)				Prepared & Analyzed: 12/14/2023						
1,2-Dichlorobenzene	45.4	0.5	ug/L	50.0		90.9	70-120			
1,2-Dichloroethane	41.4	1	ug/L	50.0		82.8	70-130			
1,2-Dichloropropane	42.7	0.5	ug/L	50.0		85.4	75-125			
1,3,5-Trimethylbenzene	43.6	1	ug/L	50.0		87.2	75-125			
1,3-Dichlorobenzene	45.4	1	ug/L	50.0		90.7	75-125			
1,3-Dichloropropane	41.9	1	ug/L	50.0		83.9	75-125			
1,4-Dichlorobenzene	44.0	1	ug/L	50.0		88.0	75-125			
2,2-Dichloropropane	45.4	1	ug/L	50.0		90.7	70-135			
2-Butanone (MEK)	47.7	10	ug/L	50.0		95.4	30-150			
2-Chlorotoluene	45.9	1	ug/L	50.0		91.8	75-125			
2-Hexanone (MBK)	47.6	5	ug/L	50.0		95.2	55-130			
4-Chlorotoluene	44.8	1	ug/L	50.0		89.5	75-130			
4-Isopropyltoluene	45.5	1	ug/L	50.0		91.0	75-130			
4-Methyl-2-pentanone (MIBK)	45.6	5	ug/L	50.0		91.1	60-135			
Acetone	41.8	10	ug/L	50.0		83.6	40-140			
Benzene	41.2	1	ug/L	50.0		82.5	80-120			
Bromobenzene	47.2	1	ug/L	50.0		94.3	75-125			
Bromochloromethane	39.1	1	ug/L	50.0		78.2	65-130			
Bromodichloromethane	45.0	0.5	ug/L	50.0		90.1	75-120			
Bromoform	45.0	1	ug/L	50.0		89.9	70-130			
Bromomethane	31.8	1	ug/L	50.0		63.6	30-145			
Carbon disulfide	42.1	10	ug/L	50.0		84.3	35-160			
Carbon tetrachloride	51.0	1	ug/L	50.0		102	65-140			
Chlorobenzene	46.4	1	ug/L	50.0		92.8	80-120			
Chloroethane	41.8	1	ug/L	50.0		83.7	60-135			

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Date Issued: 1/9/2024 2:14:16PM
Client Site I.D.: 2023 City of Bristol Landfill Leachate
Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0601 - SW5030B-MS										
LCS (BGL0601-BS1)					Prepared & Analyzed: 12/14/2023					
Chloroform	41.1	0.5	ug/L	50.0		82.2	65-135			
Chloromethane	36.3	1	ug/L	50.0		72.5	40-125			
cis-1,2-Dichloroethylene	40.0	1	ug/L	50.0		80.0	70-125			
cis-1,3-Dichloropropene	43.2	1	ug/L	50.0		86.3	70-130			
Dibromochloromethane	44.8	0.5	ug/L	50.0		89.6	60-135			
Dibromomethane	43.8	1	ug/L	50.0		87.5	75-125			
Dichlorodifluoromethane	44.0	1	ug/L	50.0		88.1	30-155			
Ethylbenzene	47.1	1	ug/L	50.0		94.3	75-125			
Hexachlorobutadiene	45.4	0.8	ug/L	50.0		90.8	50-140			
Isopropylbenzene	44.8	1	ug/L	50.0		89.5	75-125			
m+p-Xylenes	94.5	2	ug/L	100		94.5	75-130			
Methylene chloride	42.9	4	ug/L	50.0		85.8	55-140			
Methyl-t-butyl ether (MTBE)	38.5	1	ug/L	50.0		76.9	65-125			
Naphthalene	41.3	1	ug/L	50.0		82.6	55-140			
n-Butylbenzene	45.8	1	ug/L	50.0		91.6	70-135			
n-Propylbenzene	45.7	1	ug/L	50.0		91.5	70-130			
o-Xylene	46.7	1	ug/L	50.0		93.4	80-120			
sec-Butylbenzene	49.5	1	ug/L	50.0		98.9	70-125			
Styrene	43.8	1	ug/L	50.0		87.6	65-135			
tert-Butylbenzene	44.9	1	ug/L	50.0		89.8	70-130			
Tetrachloroethylene (PCE)	51.4	1	ug/L	50.0		103	45-150			
Toluene	44.5	1	ug/L	50.0		88.9	75-120			
trans-1,2-Dichloroethylene	39.9	1	ug/L	50.0		79.8	60-140			
trans-1,3-Dichloropropene	45.7	1	ug/L	50.0		91.4	55-140			
Trichloroethylene	46.2	1	ug/L	50.0		92.3	70-125			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0601 - SW5030B-MS										
LCS (BGL0601-BS1)				Prepared & Analyzed: 12/14/2023						
Trichlorofluoromethane	52.2	1	ug/L	50.0		104	60-145			
Vinyl chloride	44.9	0.5	ug/L	50.0		89.7	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*42.9*		ug/L	*50.0*		*85.8*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*50.6*		ug/L	*50.0*		*101*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.0*		ug/L	*50.0*		*94.1*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.8*		ug/L	*50.0*		*97.6*	*70-130*			
Matrix Spike (BGL0601-MS1)		**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023						
1,1,1,2-Tetrachloroethane	49.4	0.4	ug/L	50.0	BLOD	98.8	80-130			
1,1,1-Trichloroethane	48.3	1	ug/L	50.0	BLOD	96.7	65-130			
1,1,2,2-Tetrachloroethane	49.5	0.4	ug/L	50.0	BLOD	99.1	65-130			
1,1,2-Trichloroethane	49.8	1	ug/L	50.0	BLOD	99.7	75-125			
1,1-Dichloroethane	51.0	1	ug/L	50.0	4.69	92.6	70-135			
1,1-Dichloroethylene	48.4	1	ug/L	50.0	BLOD	96.8	50-145			
1,1-Dichloropropene	49.5	1	ug/L	50.0	BLOD	98.9	75-135			
1,2,3-Trichlorobenzene	45.9	1	ug/L	50.0	BLOD	91.9	55-140			
1,2,3-Trichloropropane	47.7	1	ug/L	50.0	BLOD	95.4	75-125			
1,2,4-Trichlorobenzene	45.8	1	ug/L	50.0	BLOD	91.7	65-135			
1,2,4-Trimethylbenzene	48.3	1	ug/L	50.0	BLOD	96.6	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	48.8	1	ug/L	50.0	BLOD	97.6	50-130			
1,2-Dibromoethane (EDB)	49.0	1	ug/L	50.0	BLOD	98.0	80-120			
1,2-Dichlorobenzene	49.8	0.5	ug/L	50.0	BLOD	99.5	70-120			
1,2-Dichloroethane	45.0	1	ug/L	50.0	BLOD	89.9	70-130			
1,2-Dichloropropane	48.2	0.5	ug/L	50.0	BLOD	96.5	75-125			
1,3,5-Trimethylbenzene	46.6	1	ug/L	50.0	BLOD	93.3	75-124			

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0601 - SW5030B-MS

Matrix Spike (BGL0601-MS1) **Source: 23L0718-03** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
1,3-Dichlorobenzene	49.4	1	ug/L	50.0	BLOD	98.9	75-125			
1,3-Dichloropropane	47.3	1	ug/L	50.0	BLOD	94.6	75-125			
1,4-Dichlorobenzene	50.0	1	ug/L	50.0	1.65	96.8	75-125			
2,2-Dichloropropane	50.3	1	ug/L	50.0	BLOD	101	70-135			
2-Butanone (MEK)	38.5	10	ug/L	50.0	BLOD	77.1	30-150			
2-Chlorotoluene	50.0	1	ug/L	50.0	BLOD	100	75-125			
2-Hexanone (MBK)	48.1	5	ug/L	50.0	BLOD	96.2	55-130			
4-Chlorotoluene	48.1	1	ug/L	50.0	BLOD	96.2	75-130			
4-Isopropyltoluene	48.1	1	ug/L	50.0	BLOD	96.2	75-130			
4-Methyl-2-pentanone (MIBK)	47.9	5	ug/L	50.0	BLOD	95.7	60-135			
Acetone	42.5	10	ug/L	50.0	BLOD	85.1	40-140			
Benzene	49.1	1	ug/L	50.0	3.18	91.9	80-120			
Bromobenzene	51.2	1	ug/L	50.0	BLOD	102	75-125			
Bromochloromethane	42.8	1	ug/L	50.0	BLOD	85.6	65-130			
Bromodichloromethane	49.8	0.5	ug/L	50.0	BLOD	99.6	75-136			
Bromoform	47.7	1	ug/L	50.0	BLOD	95.4	70-130			
Bromomethane	34.5	1	ug/L	50.0	BLOD	69.0	30-145			
Carbon disulfide	45.6	10	ug/L	50.0	BLOD	91.3	35-160			
Carbon tetrachloride	56.7	1	ug/L	50.0	BLOD	113	65-140			
Chlorobenzene	52.1	1	ug/L	50.0	1.24	102	80-120			
Chloroethane	47.3	1	ug/L	50.0	0.90	92.7	60-135			
Chloroform	45.1	0.5	ug/L	50.0	BLOD	90.1	65-135			
Chloromethane	40.0	1	ug/L	50.0	BLOD	80.0	40-125			
cis-1,2-Dichloroethylene	85.6	1	ug/L	50.0	41.4	88.5	70-125			
cis-1,3-Dichloropropene	48.3	1	ug/L	50.0	BLOD	96.5	47-136			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

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Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0601 - SW5030B-MS

Matrix Spike (BGL0601-MS1) **Source: 23L0718-03** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Dibromochloromethane	50.1	0.5	ug/L	50.0	BLOD	100	60-135			
Dibromomethane	48.5	1	ug/L	50.0	BLOD	97.1	75-125			
Dichlorodifluoromethane	45.4	1	ug/L	50.0	BLOD	90.8	30-155			
Ethylbenzene	51.2	1	ug/L	50.0	BLOD	102	75-125			
Hexachlorobutadiene	50.8	0.8	ug/L	50.0	BLOD	102	50-140			
Isopropylbenzene	47.9	1	ug/L	50.0	BLOD	95.8	75-125			
m+p-Xylenes	102	2	ug/L	100	BLOD	102	75-130			
Methylene chloride	47.1	4	ug/L	50.0	BLOD	94.1	55-140			
Methyl-t-butyl ether (MTBE)	42.8	1	ug/L	50.0	0.75	84.2	65-125			
Naphthalene	46.3	1	ug/L	50.0	BLOD	92.6	55-140			
n-Butylbenzene	48.1	1	ug/L	50.0	BLOD	96.2	70-135			
n-Propylbenzene	49.6	1	ug/L	50.0	BLOD	99.2	70-130			
o-Xylene	51.7	1	ug/L	50.0	BLOD	103	80-120			
sec-Butylbenzene	51.4	1	ug/L	50.0	BLOD	103	70-125			
Styrene	47.9	1	ug/L	50.0	BLOD	95.7	65-135			
tert-Butylbenzene	48.0	1	ug/L	50.0	BLOD	95.9	70-130			
Tetrachloroethylene (PCE)	55.8	1	ug/L	50.0	BLOD	112	51-231			
Toluene	50.6	1	ug/L	50.0	BLOD	101	75-120			
trans-1,2-Dichloroethylene	44.8	1	ug/L	50.0	BLOD	89.6	60-140			
trans-1,3-Dichloropropene	51.1	1	ug/L	50.0	BLOD	102	55-140			
Trichloroethylene	52.1	1	ug/L	50.0	BLOD	104	70-125			
Trichlorofluoromethane	56.5	1	ug/L	50.0	BLOD	113	60-145			
Vinyl chloride	56.9	0.5	ug/L	50.0	8.59	96.6	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*44.7*		ug/L	*50.0*		*89.5*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.7*		ug/L	*50.0*		*99.4*	*75-120*			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0601 - SW5030B-MS										
Matrix Spike (BGL0601-MS1)	**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023							
Surr: Dibromofluoromethane (Surr)	*47.1*		ug/L	*50.0*		*94.2*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.2*		ug/L	*50.0*		*98.4*	*70-130*			
Matrix Spike Dup (BGL0601-MSD1)	**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023							
1,1,1,2-Tetrachloroethane	48.9	0.4	ug/L	50.0	BLOD	97.9	80-130	0.976	30	
1,1,1-Trichloroethane	47.2	1	ug/L	50.0	BLOD	94.3	65-130	2.49	30	
1,1,2,2-Tetrachloroethane	51.1	0.4	ug/L	50.0	BLOD	102	65-130	3.10	30	
1,1,2-Trichloroethane	49.6	1	ug/L	50.0	BLOD	99.1	75-125	0.563	30	
1,1-Dichloroethane	49.2	1	ug/L	50.0	4.69	89.0	70-135	3.55	30	
1,1-Dichloroethylene	47.4	1	ug/L	50.0	BLOD	94.8	50-145	2.07	30	
1,1-Dichloropropene	48.9	1	ug/L	50.0	BLOD	97.9	75-135	1.08	30	
1,2,3-Trichlorobenzene	47.6	1	ug/L	50.0	BLOD	95.1	55-140	3.47	30	
1,2,3-Trichloropropane	49.0	1	ug/L	50.0	BLOD	98.0	75-125	2.69	30	
1,2,4-Trichlorobenzene	49.4	1	ug/L	50.0	BLOD	98.9	65-135	7.60	30	
1,2,4-Trimethylbenzene	48.4	1	ug/L	50.0	BLOD	96.9	75-130	0.289	30	
1,2-Dibromo-3-chloropropane (DBCP)	47.0	1	ug/L	50.0	BLOD	94.0	50-130	3.82	30	
1,2-Dibromoethane (EDB)	49.3	1	ug/L	50.0	BLOD	98.6	80-120	0.631	30	
1,2-Dichlorobenzene	49.8	0.5	ug/L	50.0	BLOD	99.5	70-120	0.0201	30	
1,2-Dichloroethane	44.8	1	ug/L	50.0	BLOD	89.6	70-130	0.290	30	
1,2-Dichloropropane	46.6	0.5	ug/L	50.0	BLOD	93.2	75-125	3.44	30	
1,3,5-Trimethylbenzene	46.8	1	ug/L	50.0	BLOD	93.7	75-124	0.449	30	
1,3-Dichlorobenzene	49.5	1	ug/L	50.0	BLOD	99.0	75-125	0.121	30	
1,3-Dichloropropane	46.5	1	ug/L	50.0	BLOD	92.9	75-125	1.75	30	
1,4-Dichlorobenzene	49.6	1	ug/L	50.0	1.65	95.9	75-125	0.883	30	
2,2-Dichloropropane	48.0	1	ug/L	50.0	BLOD	96.0	70-135	4.60	30	

Certificate of Analysis

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0601 - SW5030B-MS

Matrix Spike Dup (BGL0601-MSD1) **Source: 23L0718-03** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
2-Butanone (MEK)	39.1	10	ug/L	50.0	BLOD	78.2	30-150	1.49	30	
2-Chlorotoluene	49.0	1	ug/L	50.0	BLOD	97.9	75-125	2.14	30	
2-Hexanone (MBK)	50.7	5	ug/L	50.0	BLOD	101	55-130	5.26	30	
4-Chlorotoluene	48.2	1	ug/L	50.0	BLOD	96.4	75-130	0.145	30	
4-Isopropyltoluene	50.3	1	ug/L	50.0	BLOD	101	75-130	4.43	30	
4-Methyl-2-pentanone (MIBK)	50.6	5	ug/L	50.0	BLOD	101	60-135	5.66	30	
Acetone	43.0	10	ug/L	50.0	BLOD	86.1	40-140	1.15	30	
Benzene	48.8	1	ug/L	50.0	3.18	91.2	80-120	0.735	30	
Bromobenzene	52.1	1	ug/L	50.0	BLOD	104	75-125	1.74	30	
Bromochloromethane	41.2	1	ug/L	50.0	BLOD	82.4	65-130	3.76	30	
Bromodichloromethane	50.2	0.5	ug/L	50.0	BLOD	100	75-136	0.800	30	
Bromoform	48.6	1	ug/L	50.0	BLOD	97.2	70-130	1.83	30	
Bromomethane	34.8	1	ug/L	50.0	BLOD	69.5	30-145	0.809	30	
Carbon disulfide	49.9	10	ug/L	50.0	BLOD	99.9	35-160	9.02	30	
Carbon tetrachloride	55.8	1	ug/L	50.0	BLOD	112	65-140	1.60	30	
Chlorobenzene	51.9	1	ug/L	50.0	1.24	101	80-120	0.346	30	
Chloroethane	45.9	1	ug/L	50.0	0.90	89.9	60-135	3.01	30	
Chloroform	44.2	0.5	ug/L	50.0	BLOD	88.4	65-135	1.88	30	
Chloromethane	39.1	1	ug/L	50.0	BLOD	78.1	40-125	2.35	30	
cis-1,2-Dichloroethylene	85.5	1	ug/L	50.0	41.4	88.2	70-125	0.199	30	
cis-1,3-Dichloropropene	47.7	1	ug/L	50.0	BLOD	95.5	47-136	1.08	30	
Dibromochloromethane	49.5	0.5	ug/L	50.0	BLOD	99.0	60-135	1.27	30	
Dibromomethane	47.8	1	ug/L	50.0	BLOD	95.6	75-125	1.49	30	
Dichlorodifluoromethane	45.7	1	ug/L	50.0	BLOD	91.3	30-155	0.549	30	
Ethylbenzene	52.3	1	ug/L	50.0	BLOD	105	75-125	1.97	30	

Certificate of Analysis

Client Name:	SCS Engineers-Winchester	Date Issued:	1/9/2024 2:14:16PM
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Submitted To:	Jennifer Robb		

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0601 - SW5030B-MS										
Matrix Spike Dup (BGL0601-MSD1)	**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023							
Hexachlorobutadiene	52.0	0.8	ug/L	50.0	BLOD	104	50-140	2.24	30	
Isopropylbenzene	50.3	1	ug/L	50.0	BLOD	101	75-125	4.97	30	
m+p-Xylenes	105	2	ug/L	100	BLOD	105	75-130	2.98	30	
Methylene chloride	46.0	4	ug/L	50.0	BLOD	92.0	55-140	2.34	30	
Methyl-t-butyl ether (MTBE)	42.6	1	ug/L	50.0	0.75	83.6	65-125	0.609	30	
Naphthalene	47.9	1	ug/L	50.0	BLOD	95.7	55-140	3.31	30	
n-Butylbenzene	49.9	1	ug/L	50.0	BLOD	99.8	70-135	3.69	30	
n-Propylbenzene	48.6	1	ug/L	50.0	BLOD	97.2	70-130	2.06	30	
o-Xylene	52.4	1	ug/L	50.0	BLOD	105	80-120	1.29	30	
sec-Butylbenzene	54.5	1	ug/L	50.0	BLOD	109	70-125	5.91	30	
Styrene	48.6	1	ug/L	50.0	BLOD	97.1	65-135	1.45	30	
tert-Butylbenzene	49.4	1	ug/L	50.0	BLOD	98.9	70-130	3.02	30	
Tetrachloroethylene (PCE)	57.5	1	ug/L	50.0	BLOD	115	51-231	3.00	30	
Toluene	49.5	1	ug/L	50.0	BLOD	98.9	75-120	2.32	30	
trans-1,2-Dichloroethylene	43.1	1	ug/L	50.0	BLOD	86.2	60-140	3.80	30	
trans-1,3-Dichloropropene	50.7	1	ug/L	50.0	BLOD	101	55-140	0.806	30	
Trichloroethylene	50.5	1	ug/L	50.0	BLOD	101	70-125	3.06	30	
Trichlorofluoromethane	55.7	1	ug/L	50.0	BLOD	111	60-145	1.48	30	
Vinyl chloride	56.1	0.5	ug/L	50.0	8.59	94.9	50-145	1.49	30	
Surr: 1,2-Dichloroethane-d4 (Surr)	*45.1*		ug/L	*50.0*		*90.3*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*51.2*		ug/L	*50.0*		*102*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.0*		ug/L	*50.0*		*93.9*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.9*		ug/L	*50.0*		*97.8*	*70-130*			

Certificate of Analysis

Client Name: SCS Engineers-Winchester
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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0580 - SW3510C/EPA600-MS										
Blank (BGL0580-BLK1)				Prepared & Analyzed: 12/14/2023						
Anthracene	ND	10.0	ug/L							
Surr: 2,4,6-Tribromophenol (Surr)	*50.8*		ug/L	*100*		*50.8*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*27.5*		ug/L	*50.0*		*55.0*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*34.0*		ug/L	*100*		*34.0*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*30.1*		ug/L	*50.0*		*60.2*	*5-151*			
Surr: Phenol-d5 (Surr)	*25.8*		ug/L	*100*		*25.8*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*30.6*		ug/L	*50.0*		*61.3*	*5-141*			
LCS (BGL0580-BS1)				Prepared & Analyzed: 12/14/2023						
1,2,4-Trichlorobenzene	28.6	10.0	ug/L	50.0		57.3	57-130			
1,2-Dichlorobenzene	30.5	10.0	ug/L	50.0		61.0	22-115			
1,3-Dichlorobenzene	28.8	10.0	ug/L	50.0		57.6	22-112			
1,4-Dichlorobenzene	30.0	10.0	ug/L	50.0		60.1	13-112			
2,4,6-Trichlorophenol	34.3	10.0	ug/L	50.0		68.7	52-129			
2,4-Dichlorophenol	34.5	10.0	ug/L	50.0		69.0	53-122			
2,4-Dimethylphenol	34.3	5.00	ug/L	50.0		68.6	42-120			
2,4-Dinitrophenol	33.0	50.0	ug/L	50.0		66.0	48-127			
2,4-Dinitrotoluene	37.2	10.0	ug/L	50.0		74.5	10-173			
2,6-Dinitrotoluene	31.9	10.0	ug/L	50.0		63.8	68-137			L
2-Chloronaphthalene	32.3	10.0	ug/L	50.0		64.5	65-120			L
2-Chlorophenol	31.9	10.0	ug/L	50.0		63.9	36-120			
2-Nitrophenol	33.8	10.0	ug/L	50.0		67.6	45-167			
3,3'-Dichlorobenzidine	34.3	10.0	ug/L	50.0		68.7	10-213			
4,6-Dinitro-2-methylphenol	32.1	50.0	ug/L	50.0		64.2	53-130			
4-Bromophenyl phenyl ether	29.4	10.0	ug/L	50.0		58.8	65-120			L

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0580 - SW3510C/EPA600-MS

LCS (BGL0580-BS1) Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
4-Chlorophenyl phenyl ether	28.6	10.0	ug/L	50.0		57.2	38-145			
4-Nitrophenol	12.1	50.0	ug/L	50.0		24.3	13-129			
Acenaphthene	33.2	10.0	ug/L	50.0		66.4	60-132			
Acenaphthylene	35.5	10.0	ug/L	50.0		71.0	54-126			
Acetophenone	31.9	20.0	ug/L	50.0		63.8	0-200			
Anthracene	33.3	10.0	ug/L	50.0		66.6	43-120			
Benzo (a) anthracene	37.4	10.0	ug/L	50.0		74.7	42-133			
Benzo (a) pyrene	40.6	10.0	ug/L	50.0		81.2	32-148			
Benzo (b) fluoranthene	35.8	10.0	ug/L	50.0		71.7	42-140			
Benzo (g,h,i) perylene	43.6	10.0	ug/L	50.0		87.2	10-195			
Benzo (k) fluoranthene	38.1	10.0	ug/L	50.0		76.2	25-146			
bis (2-Chloroethoxy) methane	32.4	10.0	ug/L	50.0		64.9	49-165			
bis (2-Chloroethyl) ether	30.2	10.0	ug/L	50.0		60.3	43-126			
2,2'-Oxybis (1-chloropropane)	33.1	10.0	ug/L	50.0		66.2	63-139			
bis (2-Ethylhexyl) phthalate	31.5	10.0	ug/L	50.0		63.0	29-137			
Butyl benzyl phthalate	37.3	10.0	ug/L	50.0		74.7	10-140			
Chrysene	40.4	10.0	ug/L	50.0		80.7	44-140			
Dibenz (a,h) anthracene	43.2	10.0	ug/L	50.0		86.5	10-200			
Diethyl phthalate	33.1	10.0	ug/L	50.0		66.2	10-120			
Dimethyl phthalate	30.6	10.0	ug/L	50.0		61.1	10-120			
Di-n-butyl phthalate	33.8	10.0	ug/L	50.0		67.5	10-120			
Di-n-octyl phthalate	34.1	10.0	ug/L	50.0		68.1	19-132			
Fluoranthene	36.4	10.0	ug/L	50.0		72.7	43-121			
Fluorene	33.9	10.0	ug/L	50.0		67.9	70-120			L
Hexachlorobenzene	24.4	1.00	ug/L	50.0		48.7	10-142			

Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0580 - SW3510C/EPA600-MS										
LCS (BGL0580-BS1)				Prepared & Analyzed: 12/14/2023						
Hexachlorobutadiene	30.2	10.0	ug/L	50.0		60.3	38-120			
Hexachlorocyclopentadiene	22.6	10.0	ug/L	50.0		45.1	10-76			
Hexachloroethane	32.5	10.0	ug/L	50.0		64.9	55-120			
Indeno (1,2,3-cd) pyrene	41.1	10.0	ug/L	50.0		82.2	10-151			
Isophorone	23.1	10.0	ug/L	50.0		46.3	47-180			L
Naphthalene	34.0	5.00	ug/L	50.0		67.9	36-120			
Nitrobenzene	35.0	10.0	ug/L	50.0		69.9	54-158			
n-Nitrosodimethylamine	24.2	10.0	ug/L	50.0		48.5	10-85			
n-Nitrosodi-n-propylamine	31.0	10.0	ug/L	50.0		62.0	14-198			
n-Nitrosodiphenylamine	27.7	10.0	ug/L	50.0		55.4	12-97			
p-Chloro-m-cresol	34.6	10.0	ug/L	50.0		69.2	10-142			
Pentachlorophenol	24.8	20.0	ug/L	50.0		49.6	38-152			
Phenanthrene	37.7	10.0	ug/L	50.0		75.4	65-120			
Phenol	14.5	10.0	ug/L	50.5		28.7	17-120			
Pyrene	36.0	10.0	ug/L	50.0		72.0	70-120			
Pyridine	32.4	10.0	ug/L	50.0		64.8	10-103			
Surr: 2,4,6-Tribromophenol (Surr)	*66.0*		ug/L	*100*		*66.0*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*30.8*		ug/L	*50.0*		*61.7*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*41.5*		ug/L	*100*		*41.5*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*34.1*		ug/L	*50.0*		*68.1*	*5-151*			
Surr: Phenol-d5 (Surr)	*30.2*		ug/L	*100*		*30.2*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*35.2*		ug/L	*50.0*		*70.4*	*5-141*			
Matrix Spike (BGL0580-MS1)	**Source: 23L0718-03**			Prepared & Analyzed: 12/14/2023						
1,2,4-Trichlorobenzene	22.3	10.0	ug/L	46.7	BLOD	47.6	44-142			

Certificate of Analysis

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0580 - SW3510C/EPA600-MS										
Matrix Spike (BGL0580-MS1)	**Source: 23L0718-03**			Prepared & Analyzed: 12/14/2023						
1,2-Dichlorobenzene	23.2	10.0	ug/L	46.7	BLOD	49.6	22-115			
1,3-Dichlorobenzene	21.9	10.0	ug/L	46.7	BLOD	47.0	22-112			
1,4-Dichlorobenzene	23.5	10.0	ug/L	46.7	BLOD	50.4	13-112			
2,4,6-Trichlorophenol	28.5	10.0	ug/L	46.7	BLOD	61.0	37-144			
2,4-Dichlorophenol	26.6	10.0	ug/L	46.7	BLOD	56.9	39-135			
2,4-Dimethylphenol	27.2	5.00	ug/L	46.7	BLOD	58.1	32-120			
2,4-Dinitrophenol	29.4	50.0	ug/L	46.7	BLOD	63.0	39-139			
2,4-Dinitrotoluene	29.6	10.0	ug/L	46.7	BLOD	63.4	10-191			
2,6-Dinitrotoluene	26.1	10.0	ug/L	46.7	BLOD	55.8	50-158			
2-Chloronaphthalene	25.6	10.0	ug/L	46.7	BLOD	54.8	60-120			M
2-Chlorophenol	24.3	10.0	ug/L	46.7	BLOD	51.9	23-134			
2-Nitrophenol	26.2	10.0	ug/L	46.7	BLOD	56.1	29-182			
3,3'-Dichlorobenzidine	16.0	10.0	ug/L	46.7	BLOD	34.2	10-262			
4,6-Dinitro-2-methylphenol	26.3	50.0	ug/L	46.7	BLOD	56.3	10-181			
4-Bromophenyl phenyl ether	24.0	10.0	ug/L	46.7	BLOD	51.3	53-127			M
4-Chlorophenyl phenyl ether	23.1	10.0	ug/L	46.7	BLOD	49.4	25-158			
4-Nitrophenol	10.5	50.0	ug/L	46.7	BLOD	22.4	10-132			
Acenaphthene	26.8	10.0	ug/L	46.7	BLOD	57.3	47-145			
Acenaphthylene	28.8	10.0	ug/L	46.7	BLOD	61.6	33-145			
Acetophenone	24.8	20.0	ug/L	46.7	BLOD	53.0	0-200			
Anthracene	26.6	10.0	ug/L	46.7	BLOD	56.9	27-133			
Benzo (a) anthracene	28.7	10.0	ug/L	46.7	BLOD	61.5	33-143			
Benzo (a) pyrene	32.1	10.0	ug/L	46.7	BLOD	68.7	17-163			
Benzo (b) fluoranthene	30.1	10.0	ug/L	46.7	BLOD	64.4	24-159			
Benzo (g,h,i) perylene	32.5	10.0	ug/L	46.7	BLOD	69.5	10-219			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0580 - SW3510C/EPA600-MS										
Matrix Spike (BGL0580-MS1)	**Source: 23L0718-03**			Prepared & Analyzed: 12/14/2023						
Benzo (k) fluoranthene	30.5	10.0	ug/L	46.7	BLOD	65.3	11-162			
bis (2-Chloroethoxy) methane	25.9	10.0	ug/L	46.7	BLOD	55.4	33-184			
bis (2-Chloroethyl) ether	23.2	10.0	ug/L	46.7	BLOD	49.7	12-158			
2,2'-Oxybis (1-chloropropane)	25.1	10.0	ug/L	46.7	BLOD	53.7	36-166			
bis (2-Ethylhexyl) phthalate	26.4	10.0	ug/L	46.7	BLOD	56.5	10-158			
Butyl benzyl phthalate	29.8	10.0	ug/L	46.7	BLOD	63.8	10-152			
Chrysene	31.6	10.0	ug/L	46.7	BLOD	67.7	17-169			
Dibenz (a,h) anthracene	32.9	10.0	ug/L	46.7	BLOD	70.3	10-227			
Diethyl phthalate	26.9	10.0	ug/L	46.7	BLOD	57.6	10-120			
Dimethyl phthalate	24.8	10.0	ug/L	46.7	BLOD	53.1	10-120			
Di-n-butyl phthalate	29.1	10.0	ug/L	46.7	BLOD	62.3	10-120			
Di-n-octyl phthalate	28.9	10.0	ug/L	46.7	BLOD	61.9	10-146			
Fluoranthene	30.9	10.0	ug/L	46.7	BLOD	66.2	26-137			
Fluorene	27.4	10.0	ug/L	46.7	BLOD	58.6	59-121			M
Hexachlorobenzene	19.6	1.00	ug/L	46.7	BLOD	41.8	10-152			
Hexachlorobutadiene	23.1	10.0	ug/L	46.7	BLOD	49.5	24-120			
Hexachlorocyclopentadiene	13.7	10.0	ug/L	46.7	BLOD	29.4	10-90			
Hexachloroethane	24.7	10.0	ug/L	46.7	BLOD	52.9	40-120			
Indeno (1,2,3-cd) pyrene	31.0	10.0	ug/L	46.7	BLOD	66.3	10-171			
Isophorone	18.4	10.0	ug/L	46.7	BLOD	39.3	21-196			
Naphthalene	26.0	5.00	ug/L	46.7	BLOD	55.6	21-133			
Nitrobenzene	26.8	10.0	ug/L	46.7	BLOD	57.3	35-180			
n-Nitrosodimethylamine	17.5	10.0	ug/L	46.7	BLOD	37.4	10-85			
n-Nitrosodi-n-propylamine	24.6	10.0	ug/L	46.7	BLOD	52.6	10-230			
n-Nitrosodiphenylamine	22.5	10.0	ug/L	46.7	BLOD	48.1	12-111			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0580 - SW3510C/EPA600-MS										
Matrix Spike (BGL0580-MS1)	**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023							
p-Chloro-m-cresol	28.1	10.0	ug/L	46.7	BLOD	60.0	10-127			
Pentachlorophenol	24.9	20.0	ug/L	46.7	BLOD	53.3	14-176			
Phenanthrene	29.3	10.0	ug/L	46.7	BLOD	62.8	54-120			
Phenol	9.65	10.0	ug/L	47.2	BLOD	20.5	10-120			
Pyrene	29.1	10.0	ug/L	46.7	BLOD	62.2	52-120			
Pyridine	26.0	10.0	ug/L	46.7	BLOD	55.6	10-110			
Surr: 2,4,6-Tribromophenol (Surr)	*55.1*		ug/L	*93.5*		*59.0*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*24.1*		ug/L	*46.7*		*51.6*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*28.5*		ug/L	*93.5*		*30.5*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*26.1*		ug/L	*46.7*		*55.8*	*5-151*			
Surr: Phenol-d5 (Surr)	*20.1*		ug/L	*93.5*		*21.5*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*22.8*		ug/L	*46.7*		*48.8*	*5-141*			
Matrix Spike Dup (BGL0580-MSD1)	**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023							
1,2,4-Trichlorobenzene	26.1	10.0	ug/L	46.7	BLOD	55.8	44-142	15.8	20	
1,2-Dichlorobenzene	27.3	10.0	ug/L	46.7	BLOD	58.4	22-115	16.2	20	
1,3-Dichlorobenzene	25.9	10.0	ug/L	46.7	BLOD	55.4	22-112	16.6	20	
1,4-Dichlorobenzene	27.9	10.0	ug/L	46.7	BLOD	59.7	13-112	16.9	20	
2,4,6-Trichlorophenol	34.1	10.0	ug/L	46.7	BLOD	73.0	37-144	18.0	20	
2,4-Dichlorophenol	31.3	10.0	ug/L	46.7	BLOD	67.1	39-135	16.5	20	
2,4-Dimethylphenol	31.0	5.00	ug/L	46.7	BLOD	66.3	32-120	13.1	20	
2,4-Dinitrophenol	37.4	50.0	ug/L	46.7	BLOD	80.1	39-139	24.0	20	P
2,4-Dinitrotoluene	37.6	10.0	ug/L	46.7	BLOD	80.4	10-191	23.7	20	P
2,6-Dinitrotoluene	31.4	10.0	ug/L	46.7	BLOD	67.3	50-158	18.7	20	
2-Chloronaphthalene	29.9	10.0	ug/L	46.7	BLOD	64.0	60-120	15.6	20	

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Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0580 - SW3510C/EPA600-MS										
Matrix Spike Dup (BGL0580-MSD1)	**Source: 23L0718-03**			Prepared & Analyzed: 12/14/2023						
2-Chlorophenol	28.3	10.0	ug/L	46.7	BLOD	60.6	23-134	15.4	20	
2-Nitrophenol	31.4	10.0	ug/L	46.7	BLOD	67.2	29-182	17.9	20	
3,3'-Dichlorobenzidine	24.2	10.0	ug/L	46.7	BLOD	51.8	10-262	41.0	20	P
4,6-Dinitro-2-methylphenol	34.3	50.0	ug/L	46.7	BLOD	73.3	10-181	26.3	20	P
4-Bromophenyl phenyl ether	29.0	10.0	ug/L	46.7	BLOD	62.1	53-127	19.1	20	
4-Chlorophenyl phenyl ether	27.1	10.0	ug/L	46.7	BLOD	58.0	25-158	16.0	20	
4-Nitrophenol	13.7	50.0	ug/L	46.7	BLOD	29.4	10-132	26.7	20	P
Acenaphthene	31.0	10.0	ug/L	46.7	BLOD	66.4	47-145	14.8	20	
Acenaphthylene	32.9	10.0	ug/L	46.7	BLOD	70.4	33-145	13.4	20	
Acetophenone	29.1	20.0	ug/L	46.7	BLOD	62.4	0-200	16.3	20	
Anthracene	34.0	10.0	ug/L	46.7	BLOD	72.7	27-133	24.5	20	P
Benzo (a) anthracene	37.4	10.0	ug/L	46.7	BLOD	80.0	33-143	26.2	20	P
Benzo (a) pyrene	39.4	10.0	ug/L	46.7	BLOD	84.3	17-163	20.4	20	P
Benzo (b) fluoranthene	34.4	10.0	ug/L	46.7	BLOD	73.6	24-159	13.4	20	
Benzo (g,h,i) perylene	39.7	10.0	ug/L	46.7	BLOD	84.9	10-219	19.9	20	
Benzo (k) fluoranthene	30.1	10.0	ug/L	46.7	BLOD	64.5	11-162	1.20	20	
bis (2-Chloroethoxy) methane	30.6	10.0	ug/L	46.7	BLOD	65.5	33-184	16.7	20	
bis (2-Chloroethyl) ether	27.4	10.0	ug/L	46.7	BLOD	58.6	12-158	16.5	20	
2,2'-Oxybis (1-chloropropane)	29.8	10.0	ug/L	46.7	BLOD	63.7	36-166	17.0	20	
bis (2-Ethylhexyl) phthalate	33.1	10.0	ug/L	46.7	BLOD	70.9	10-158	22.7	20	P
Butyl benzyl phthalate	37.7	10.0	ug/L	46.7	BLOD	80.8	10-152	23.5	20	P
Chrysene	40.7	10.0	ug/L	46.7	BLOD	87.2	17-169	25.1	20	P
Dibenz (a,h) anthracene	40.2	10.0	ug/L	46.7	BLOD	86.0	10-227	20.1	20	P
Diethyl phthalate	33.1	10.0	ug/L	46.7	BLOD	70.8	10-120	20.6	20	P
Dimethyl phthalate	30.0	10.0	ug/L	46.7	BLOD	64.2	10-120	18.9	20	

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Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0580 - SW3510C/EPA600-MS										
Matrix Spike Dup (BGL0580-MSD1)	**Source: 23L0718-03**			Prepared & Analyzed: 12/14/2023						
Di-n-butyl phthalate	35.6	10.0	ug/L	46.7	BLOD	76.2	10-120	20.0	20	P
Di-n-octyl phthalate	33.4	10.0	ug/L	46.7	BLOD	71.5	10-146	14.4	20	
Fluoranthene	36.7	10.0	ug/L	46.7	BLOD	78.6	26-137	17.2	20	
Fluorene	32.1	10.0	ug/L	46.7	BLOD	68.6	59-121	15.7	20	
Hexachlorobenzene	23.9	1.00	ug/L	46.7	BLOD	51.1	10-152	20.0	20	
Hexachlorobutadiene	27.5	10.0	ug/L	46.7	BLOD	58.9	24-120	17.2	20	
Hexachlorocyclopentadiene	17.4	10.0	ug/L	46.7	BLOD	37.2	10-90	23.6	20	P
Hexachloroethane	29.2	10.0	ug/L	46.7	BLOD	62.4	40-120	16.5	20	
Indeno (1,2,3-cd) pyrene	38.2	10.0	ug/L	46.7	BLOD	81.7	10-171	20.8	20	P
Isophorone	21.4	10.0	ug/L	46.7	BLOD	45.7	21-196	15.0	20	
Naphthalene	31.2	5.00	ug/L	46.7	BLOD	66.7	21-133	18.2	20	
Nitrobenzene	31.8	10.0	ug/L	46.7	BLOD	68.1	35-180	17.1	20	
n-Nitrosodimethylamine	21.1	10.0	ug/L	46.7	BLOD	45.3	10-85	18.9	20	
n-Nitrosodi-n-propylamine	28.4	10.0	ug/L	46.7	BLOD	60.8	10-230	14.4	20	
n-Nitrosodiphenylamine	27.5	10.0	ug/L	46.7	BLOD	58.8	12-111	20.0	20	
p-Chloro-m-cresol	32.6	10.0	ug/L	46.7	BLOD	69.8	10-127	15.0	20	
Pentachlorophenol	34.1	20.0	ug/L	46.7	BLOD	73.0	14-176	31.1	20	P
Phenanthrene	37.8	10.0	ug/L	46.7	BLOD	80.8	54-120	25.1	20	P
Phenol	11.4	10.0	ug/L	47.2	BLOD	24.3	10-120	17.0	20	
Pyrene	36.4	10.0	ug/L	46.7	BLOD	77.8	52-120	22.3	20	P
Pyridine	36.4	10.0	ug/L	46.7	BLOD	78.0	10-110	33.5	20	P
Surr: 2,4,6-Tribromophenol (Surr)	*70.8*		ug/L	*93.5*		*75.8*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*28.1*		ug/L	*46.7*		*60.2*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*32.9*		ug/L	*93.5*		*35.2*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*30.6*		ug/L	*46.7*		*65.4*	*5-151*			

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Batch BGL0580 - SW3510C/EPA600-MS

Matrix Spike Dup (BGL0580-MSD1) **Source: 23L0718-03** Prepared & Analyzed: 12/14/2023

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Surr: Phenol-d5 (Surr)	*23.8*		ug/L	*93.5*		*25.4*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*31.2*		ug/L	*46.7*		*66.7*	*5-141*			

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0502 - No Prep Wet Chem										
Blank (BGL0502-BLK1)				Prepared & Analyzed: 12/13/2023						
Nitrite as N	ND	0.05	mg/L							
LCS (BGL0502-BS1)				Prepared & Analyzed: 12/13/2023						
Nitrite as N	0.11	0.05	mg/L	0.100		114	80-120			
Matrix Spike (BGL0502-MS1)		**Source: 23L0671-04**		Prepared & Analyzed: 12/13/2023						
Nitrite as N	0.10	0.05	mg/L	0.100	BLOD	104	80-120			
Matrix Spike Dup (BGL0502-MSD1)		**Source: 23L0671-04**		Prepared & Analyzed: 12/13/2023						
Nitrite as N	0.10	0.05	mg/L	0.100	BLOD	102	80-120	1.94	20	
Batch BGL0576 - No Prep Wet Chem										
Blank (BGL0576-BLK1)				Prepared & Analyzed: 12/14/2023						
BOD	ND	2.0	mg/L							
LCS (BGL0576-BS1)				Prepared & Analyzed: 12/14/2023						
BOD	223	2	mg/L	198		113	84.6-115.4			
Duplicate (BGL0576-DUP1)		**Source: 23L0597-01**		Prepared & Analyzed: 12/14/2023						
BOD	3.4	2.0	mg/L		2.7			23.6	20	P
Batch BGL0582 - No Prep Wet Chem										
Blank (BGL0582-BLK1)				Prepared & Analyzed: 12/14/2023						
Cyanide	ND	0.01	mg/L							

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0582 - No Prep Wet Chem										
LCS (BGL0582-BS1)				Prepared & Analyzed: 12/14/2023						
Cyanide	0.22	0.01	mg/L	0.250		86.2	80-120			
Matrix Spike (BGL0582-MS1)		**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023						
Cyanide	0.25	0.01	mg/L	0.250	BLOD	100	80-120			
Matrix Spike Dup (BGL0582-MSD1)		**Source: 23L0718-03**		Prepared & Analyzed: 12/14/2023						
Cyanide	0.25	0.01	mg/L	0.250	BLOD	101	80-120	1.03	20	
Batch BGL0723 - No Prep Wet Chem										
Blank (BGL0723-BLK1)				Prepared & Analyzed: 12/18/2023						
COD	ND	10.0	mg/L							
LCS (BGL0723-BS1)				Prepared & Analyzed: 12/18/2023						
COD	46.5	10.0	mg/L	50.0		93.0	88-119			
Matrix Spike (BGL0723-MS1)		**Source: 23L0699-01**		Prepared & Analyzed: 12/18/2023						
COD	55.2	10.0	mg/L	50.0	BLOD	110	72.4-130			
Matrix Spike Dup (BGL0723-MSD1)		**Source: 23L0699-01**		Prepared & Analyzed: 12/18/2023						
COD	54.9	10.0	mg/L	50.0	BLOD	110	72.4-130	0.600	20	
Batch BGL0979 - No Prep Wet Chem										
Blank (BGL0979-BLK1)				Prepared & Analyzed: 12/22/2023						
TKN as N	ND	0.50	mg/L							

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL0979 - No Prep Wet Chem										
LCS (BGL0979-BS1)				Prepared & Analyzed: 12/22/2023						
TKN as N	5.10	0.50	mg/L	5.00		102	90-110			
Matrix Spike (BGL0979-MS1)		**Source: 23L0729-01**		Prepared & Analyzed: 12/22/2023						
TKN as N	5.56	0.50	mg/L	5.00	0.78	95.8	90-110			
Matrix Spike (BGL0979-MS2)		**Source: 23L0729-02**		Prepared & Analyzed: 12/22/2023						
TKN as N	5.64	0.50	mg/L	5.00	0.88	95.1	90-110			
Matrix Spike Dup (BGL0979-MSD1)		**Source: 23L0729-01**		Prepared & Analyzed: 12/22/2023						
TKN as N	5.61	0.50	mg/L	5.00	0.78	96.8	90-110	0.859	20	
Matrix Spike Dup (BGL0979-MSD2)		**Source: 23L0729-02**		Prepared & Analyzed: 12/22/2023						
TKN as N	5.74	0.50	mg/L	5.00	0.88	97.2	90-110	1.81	20	
Batch BGL0985 - No Prep Wet Chem										
Blank (BGL0985-BLK1)				Prepared & Analyzed: 12/22/2023						
Ammonia as N	ND	0.10	mg/L							
LCS (BGL0985-BS1)				Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.02	0.1	mg/L	1.00		102	90-110			
Matrix Spike (BGL0985-MS1)		**Source: 23L1089-01**		Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.05	0.10	mg/L	1.00	BLOD	105	89.3-131			
Matrix Spike Dup (BGL0985-MSD1)		**Source: 23L1089-01**		Prepared & Analyzed: 12/22/2023						
Ammonia as N	1.08	0.10	mg/L	1.00	BLOD	108	89.3-131	2.44	20	

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGL1033 - No Prep Wet Chem										
Blank (BGL1033-BLK1)				Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	ND	0.050	mg/L							
LCS (BGL1033-BS1)				Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	0.41	0.050	mg/L	0.505		82.0	80-120			
Matrix Spike (BGL1033-MS1)		**Source: 23L1149-03**		Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	0.48	0.050	mg/L	0.500	0.05	85.6	70-130			
Matrix Spike Dup (BGL1033-MSD1)		**Source: 23L1149-03**		Prepared & Analyzed: 12/26/2023						
Total Recoverable Phenolics	0.48	0.050	mg/L	0.500	0.05	86.4	70-130	0.830	20	
Batch BGL1041 - No Prep Wet Chem										
Blank (BGL1041-BLK1)				Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	ND	0.10	mg/L							
LCS (BGL1041-BS1)				Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	0.97	0.1	mg/L	1.00		97.1	90-110			
Matrix Spike (BGL1041-MS1)		**Source: 23L0615-01**		Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	1.07	0.1	mg/L	1.00	BLOD	100	90-120			
Matrix Spike Dup (BGL1041-MSD1)		**Source: 23L0615-01**		Prepared & Analyzed: 12/26/2023						
Nitrate+Nitrite as N	1.02	0.1	mg/L	1.00	BLOD	94.6	90-120	5.56	20	

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Analytical Summary

23L0673-01	Subcontract

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**EPA200.8 R5.4**	
23L0673-01	50.0 mL / 50.0 mL	SW6020B	BGL0589	SGL0805	AL30277

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
23L0673-01	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
23L0673-01	300 mL / 300 mL	SM5210B-2016	BGL0576	SGL0721	
23L0673-01	6.00 mL / 6.00 mL	SW9012B	BGL0582	SGL0541	AL30233
23L0673-01	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
23L0673-01	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
23L0673-01	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0985	SGL0890	AL30291
23L0673-01	2.50 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
23L0673-01	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1041	SGL0968	AL30302

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Organic Compounds by GCMS			**Preparation Method:**	**SW3510C/EPA600-MS**	
23L0673-01	500 mL / 0.500 mL	SW8270E	BGL0580	SGL0589	AK30271

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
23L0673-02	5.00 mL / 5.00 mL	SW8260D	BGL0600	SGL0577	AL30176
23L0673-01	5.00 mL / 5.00 mL	SW8260D	BGL0601	SGL0580	AJ30373

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	

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QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**EPA200.8 R5.4**	
BGL0589-BLK1	50.0 mL / 50.0 mL	SW6020B	BGL0589	SGL0766	AL30266
BGL0589-BS1	50.0 mL / 50.0 mL	SW6020B	BGL0589	SGL0766	AL30266
BGL0589-MS1	50.0 mL / 50.0 mL	SW6020B	BGL0589	SGL0766	AL30266
BGL0589-MS2	50.0 mL / 50.0 mL	SW6020B	BGL0589	SGL0766	AL30266
BGL0589-MSD1	50.0 mL / 50.0 mL	SW6020B	BGL0589	SGL0766	AL30266
BGL0589-MSD2	50.0 mL / 50.0 mL	SW6020B	BGL0589	SGL0766	AL30266

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
BGL0502-BLK1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-BS1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-MRL1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-MS1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0502-MSD1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGL0502	SGL0470	AJ30297
BGL0576-BLK1	300 mL / 300 mL	SM5210B-2016	BGL0576	SGL0721	
BGL0576-BS1	300 mL / 300 mL	SM5210B-2016	BGL0576	SGL0721	
BGL0576-DUP1	300 mL / 300 mL	SM5210B-2016	BGL0576	SGL0721	
BGL0582-BLK1	6.00 mL / 6.00 mL	SW9012B	BGL0582	SGL0541	AL30233
BGL0582-BS1	6.00 mL / 6.00 mL	SW9012B	BGL0582	SGL0541	AL30233
BGL0582-MRL1	6.00 mL / 6.00 mL	SW9012B	BGL0582	SGL0541	AL30233
BGL0582-MS1	6.00 mL / 6.00 mL	SW9012B	BGL0582	SGL0541	AL30233
BGL0582-MSD1	6.00 mL / 6.00 mL	SW9012B	BGL0582	SGL0541	AL30233
BGL0723-BLK1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
BGL0723-BS1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0723-MRL1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0723-MS1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0723-MSD1	2.00 mL / 2.00 mL	SM5220D-2011	BGL0723	SGL0658	AJ30254
BGL0979-BLK1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
BGL0979-BS1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
BGL0979-MRL1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
BGL0979-MS1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
BGL0979-MS2	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
BGL0979-MSD1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
BGL0979-MSD2	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGL0979	SGL0908	AL30292
BGL0985-BLK1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0985	SGL0890	AL30291
BGL0985-BS1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0985	SGL0890	AL30291
BGL0985-MS1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0985	SGL0890	AL30291
BGL0985-MS2		EPA350.1 R2.0	BGL0985		
BGL0985-MSD1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGL0985	SGL0890	AL30291
BGL0985-MSD2		EPA350.1 R2.0	BGL0985		
BGL1033-BLK1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-BS1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-MRL1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-MS1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1033-MSD1	5.00 mL / 10.0 mL	SW9065	BGL1033	SGL0936	AL30294
BGL1041-BLK1	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1041	SGL0968	AL30302
BGL1041-BS1	5.00 mL / 5.00 mL	SM4500-NO3F-2016	BGL1041	SGL0968	AL30302
BGL1041-MS1	25.0 mL / 25.0 mL	SM4500-NO3F-2016	BGL1041	SGL0968	AL30302
BGL1041-MSD1	25.0 mL / 25.0 mL	SM4500-NO3F-2016	BGL1041	SGL0968	AL30302

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Organic Compounds by GCMS			**Preparation Method:**	**SW3510C/EPA600-MS**	
BGL0580-BLK1	1000 mL / 1.00 mL	SW8270E	BGL0580	SGL0589	AK30271
BGL0580-BS1	1000 mL / 1.00 mL	SW8270E	BGL0580	SGL0589	AK30271
BGL0580-MS1	1070 mL / 1.00 mL	SW8270E	BGL0580	SGL0589	AK30271
BGL0580-MSD1	1070 mL / 1.00 mL	SW8270E	BGL0580	SGL0589	AK30271

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
BGL0600-BLK1	5.00 mL / 5.00 mL	SW8260D	BGL0600	SGL0577	AL30176
BGL0600-BS1	5.00 mL / 5.00 mL	SW8260D	BGL0600	SGL0577	AL30176
BGL0600-MS1	5.00 mL / 5.00 mL	SW8260D	BGL0600	SGL0577	AL30176
BGL0600-MSD1	5.00 mL / 5.00 mL	SW8260D	BGL0600	SGL0577	AL30176
BGL0601-BLK1	5.00 mL / 5.00 mL	SW8260D	BGL0601	SGL0580	AJ30373
BGL0601-BS1	5.00 mL / 5.00 mL	SW8260D	BGL0601	SGL0580	AJ30373
BGL0601-MS1	5.00 mL / 5.00 mL	SW8260D	BGL0601	SGL0580	AJ30373
BGL0601-MSD1	5.00 mL / 5.00 mL	SW8260D	BGL0601	SGL0580	AJ30373

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Certified Analyses included in this Report

Analyte	Certifications
EPA350.1 R2.0 in Non-Potable Water	
Ammonia as N	VELAP,NCDEQ,PADEP,WVDEP
EPA351.2 R2.0 in Non-Potable Water	
TKN as N	VELAP,NCDEQ,WVDEP
SM4500-NO2B-2011 in Non-Potable Water	
Nitrite as N	VELAP,WVDEP,NCDEQ
SM4500-NO3F-2016 in Non-Potable Water	
Nitrate+Nitrite as N	VELAP,WVDEP
SM5210B-2016 in Non-Potable Water	
BOD	VELAP,NCDEQ,WVDEP
SM5220D-2011 in Non-Potable Water	
COD	VELAP,NCDEQ,PADEP,WVDEP
SW6020B in Non-Potable Water	
Mercury	VELAP
Arsenic	VELAP,WVDEP
Barium	VELAP,WVDEP
Cadmium	VELAP,WVDEP
Chromium	VELAP,WVDEP
Copper	VELAP,WVDEP
Lead	VELAP,WVDEP
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP
Silver	VELAP,WVDEP
Zinc	VELAP,WVDEP
SW8260D in Non-Potable Water	

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Certified Analyses included in this Report

Analyte	Certifications
2-Butanone (MEK)	VELAP,NCDEQ,PADEP,WVDEP
Acetone	VELAP,NCDEQ,PADEP,WVDEP
Benzene	VELAP,NCDEQ,PADEP,WVDEP
Ethylbenzene	VELAP,NCDEQ,PADEP,WVDEP
Toluene	VELAP,NCDEQ,PADEP,WVDEP
Xylenes, Total	VELAP,NCDEQ,PADEP,WVDEP
Tetrahydrofuran	VELAP,PADEP
SW8270E in Non-Potable Water	
Anthracene	NCDEQ,WVDEP,VELAP,PADEP
SW9012B in Non-Potable Water	
Cyanide	VELAP,WVDEP
SW9065 in Non-Potable Water	
Total Recoverable Phenolics	VELAP,WVDEP

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2024
NCDEQ	North Carolina DEQ	495	12/31/2024
NCDOH	North Carolina Department of Health	51714	07/31/2024
NYDOH	New York DOH Drinking Water	12069	04/01/2024
PADEP	NELAP-Pennsylvania Certificate #009	68-03503	10/31/2024
SCDHEC	South Carolina Dept of Health and Environmental Control Certificate 93016001	93016	06/14/2024
TXCEQ	Texas Comm on Environmental Quality #T104704576-23-1	T104704576	05/31/2024
VELAP	NELAP-Virginia Certificate #12617	460021	06/14/2024
WVDEP	West Virginia DEP	350	11/30/2024

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Qualifiers and Definitions

DS	Surrogate concentration reflects a dilution factor.
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
P	Duplicate analysis does not meet the acceptance criteria for precision
RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

Chain of Custody
Effective: Mar 10, 2021

ENTHALPY ANALYTICAL

1941 REYMET ROAD
RICHMOND, VIRGINIA 23237
(804) 358-8295 PHONE
(804)358-8297 FAX

CHAIN OF CUSTODY

PAGE 1 OF 1

COMPANY NAME: SCS Engineers	INVOICE TO: SAME	PROJECT NAME/Quote #: LFG-EW Monthly Monitoring
CONTACT: Jennifer Robb	INVOICE CONTACT:	SITE NAME: 2023 City of Bristol Landfill Leachate
ADDRESS: 296 Victory Road	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.15 Task 2
Winchester, VA 22602	INVOICE PHONE #:	P.O. #:
PHONE #: 703-471-6150	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? [✓ YES] NO Regulatory State: V A Is sample from a chlorinated supply? YES [✓ NO] PWS I.D. #:

SAMPLER NAME (PRINT): L. Nelson [redacted] W. Fabric SAMPLER SIGNATURE: Logan Nelson / Wm Fabric Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

											ANALYSIS / (PRESERVATIVE)													COMMENTS
CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	Ammonia - EPA 350.1	BOD - SM22 5210B-2021	COD - SM22 5220D-2011	Cyanide - EPA 335.2	Nitrate SM22 450-NO3F-2011 (report seperatly from Nitrite)	Nitrite SM22 450-NO3F-2011	SVOC (Anthracene) 8270	Total Metals (As, Ba, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn) 6020	TKN - EPA 351.2 R2.0	Mercury - 6020	Total Recoverable Phenolics - 9065	V. Fatty Acids (See List) 8015	VOCs (See List) 8260	Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol Note VOC 8260 no HCl PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)
1) EW-78	X					12/12/23	1300		[illegible]	13	X	X	X	X	X	X	X	X	X	X	X	X	X	
2)									GW															
3)									GW															
4)									GW															
5)									GW															
6)									GW															
7)									GW															
8)									GW															
9)									GW															
10) Trip Blank						3/11/23	1115		DI														X	

RELINQUISHED: Logan Nelson	DATE / TIME 12/12/23/1500	RECEIVED: LCW	DATE / TIME	QC Data Package	LAB USE ONLY Therm ID: 24 COOLER TEMP 1.8 °C
RELINQUISHED: LCW	DATE / TIME	RECEIVED:	DATE / TIME 12/13/23 0900	Level III ☐	Custody Seals used and intact? ([✓ Y] N) Received on ice? ([✓ Y] N)
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME	Level IV ☐	

SCS-W 23L0673
2023 City of Bristol Landfill Leach:
Recd: 12/13/2023 Due: 12/28/2023

v130325002

Sample Preservation Log
Form #: F1301
Rev # 15.0
Effective: July 13, 2023
Page 1 of 1

ENTHALPY
ANALYTICAL

Sample Preservation Log

Order ID 23L0673
Date Performed: 12-13-23
Analyst Performing Check: RCJ

Sample ID	Container ID	Metals			Cyanide			Sulfide			Ammonia			TKN			Phos, Tot			NO3+NO2			DRO			Pesticide (8081/608/508) PCB DW only			SVOC (525/8270/625)			CrVI * **		Pest/PCB (508) / SVOC(525)			Phenolic			COD		
		pH as Received < 2	pH as Received Other	Final pH	pH as Received > 12	pH as Received Other	Final pH	pH as Received > 9	pH as Received Other	Final pH	pH as Received < 2	pH as Received Other	Final pH	pH as Received < 2	pH as Received Other	Final pH	pH as Received < 2	pH as Received Other	Final pH	pH as Received < 2	pH as Received Other	Final pH	pH as Received < 2	pH as Received Other	Final pH	Received Res. Cl +	Received Res. Cl -	final + or -	Received Res. Cl +	Received Res. Cl -	final + or -	Received pH	Final pH	pH as Received < 2	pH as Received Other	Final pH	pH as Received <2	pH as Received Other	Final pH	pH as Received <2	pH as Received Other	Final pH
01	A		7	<2																																						
01	D																																					7	<2			
01	E																													-												
01	L											7	<2		7	<2		7	<2		7	<2																			7	<2
01	N					10	>12																																			

NaOH ID: 2H00468
HNO3 ID: 3K02234
H2SO4 ID: 3K02567
Na2S2O3 ID:
HCL ID:
Na2SO3 ID:

CrVI preserved date/time:
Analyst Initials:
pH must be adjusted between 9.3 - 9.7
Ammonia Buffer Sol'n ID:
5N NaOH ID:

Metals were received with pH = 7 HNO3 was added at 1220 on 13th December 2023 by RCJ in the Log-In room to bring pH= <2.

**W.V certifies DISS CrVI and not T CrVI as an approved analyte under 40CFR136

Certificate of Analysis

Client Name:	SCS Engineers-Winchester	Date Issued:	1/9/2024 2:14:16PM
Client Site I.D.:	2023 City of Bristol Landfill Leachate		
Submitted To:	Jennifer Robb		

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

Laboratory Order ID: 23L0673

Sample Conditions Checklist

Samples Received at:	**1.80°C**
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	No
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis. In addition, field parameters are always received outside holding time and will be marked accordingly.	No

Work Order Comments

Jennifer Robb notified via email for the chain of custody being received requesting "CN 335.2". We will use method SW9012 per project history. KRC 12/13/23 1037

Jennifer Robb notified via email for the P500mL and the GA250mL preserved with

Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 1/9/2024 2:14:16PM

Client Site I.D.: 2023 City of Bristol Landfill Leachate

Submitted To: Jennifer Robb

H2SO4 being recieved at a pH of 7, and the P250mL preserved with NaOH being recieved at a pH of 10. KRC 12/13/23 1249

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

January 04, 2024

Virginia Thrasher
Enthalpy
1941 Reymet Road
Richmond, VA 23237

RE: Project: 23L0673
Pace Project No.: 20300604

Dear Virginia Thrasher:

Enclosed are the analytical results for sample(s) received by the laboratory on December 14, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Baton Rouge

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh

Ruth Welsh
ruth.welsh@pacelabs.com
(225) 769-4900
Project Manager

Enclosures

cc: Andrew Bruner, Enthalpy
Daniel Elliott, Enthalpy
Meghan Meyer, Enthalpy

CERTIFICATIONS

Project:	23L0673
Pace Project No.:	20300604

Pace Analytical Services Baton Rouge

7979 Innovation Park Drive Ste A, Baton Rouge, LA 70820-7402
Louisiana Dept of Enviromental Quality (NELAC/LELAP): 01979
Florida Dept of Health (NELAC/FELAP): E87854
DoD ELAP (A2LA) #: 6429.01
Alabama DEM #: 41900
Alaska DEC-DW #: LA00024
Alaska DEC CS-LAP #: 21-001
Arkansas DEQ #: 88-0655
California ELAP #: 3063
Georgia DPD #: C050
Hawaii DOH State Laboratories Division
Illinois EPA #: 200048
Kansas DoHE #: E-10354
Kentucky DEP UST Branch #: 123054
Louisiana DOH #: LA036
Minnesota DOH #: 2233799
Mississippi State Dept of Health
Montana Department of Environmental Quality
Nebraska DHHS #: NE-OS-35.21
Nevada DCNR DEP #: LA00024
New York DOH #: 12149
North Carolina DEQ - WW & GW #: 618
North Dakota DEQ #: R195
Ohio EPA #: 87782
Oklahoma Dept of Environmental Quality #: 9403
Oregon ELAP #: 4168
Pennsylvania Dept of Environmental Protection #: 68-05973
South Carolina DHEC #: 73006001
Texas CEQ #: T104704178-23-15
Utah DOH #: LA00024
Virginia DCLS #: 6460215
Washington Dept of Ecology #: C929
Wisconsin DNR #: 399139510

SAMPLE SUMMARY

Project: 23L0673
Pace Project No.: 20300604

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20300604001	**23L0673-01: EW-78**	Water	12/12/23 13:00	12/14/23 09:51

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SAMPLE ANALYTE COUNT

Project: 23L0673
Pace Project No.: 20300604

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20300604001	**23L0673-01: EW-78**	Pace ENV-SOP-BTRO-0042	LHM	10

PASI-BR = Pace Analytical Services - Baton Rouge

PROJECT NARRATIVE

Project:	23L0673
Pace Project No.:	20300604

Method: **Pace ENV-SOP-BTRO-0042**
Description: BR AM23G Low Level VFA
Client: BR-Enthalpy
Date: January 04, 2024

General Information:
1 sample was analyzed for Pace ENV-SOP-BTRO-0042 by Pace Analytical Services Baton Rouge. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 312847

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
- 23L0673-01: EW-78 (Lab ID: 20300604001)
  - Lactic Acid

N2: The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
- 23L0673-01: EW-78 (Lab ID: 20300604001)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid

PROJECT NARRATIVE

Project:	23L0673
Pace Project No.:	20300604

Method: **Pace ENV-SOP-BTRO-0042**
Description: BR AM23G Low Level VFA
Client: BR-Enthalpy
Date: January 04, 2024

Analyte Comments:

QC Batch: 312847

N2: The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

- BLANK (Lab ID: 1498064)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid
- LCS (Lab ID: 1498065)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid
- MS (Lab ID: 1498226)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid
- MSD (Lab ID: 1498227)
  - Hexanoic Acid
  - i-Hexanoic Acid
  - i-Pentanoic Acid
  - Pentanoic Acid

This data package has been reviewed for quality and completeness and is approved for release.

ANALYTICAL RESULTS

Project: 23L0673
Pace Project No.: 20300604

Sample: 23L0673-01: EW-78 **Lab ID: 20300604001** Collected: 12/12/23 13:00 Received: 12/14/23 09:51 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
BR AM23G Low Level VFA	Analytical Method: Pace ENV-SOP-BTRO-0042 Pace Analytical Services - Baton Rouge							
Pentanoic Acid	ND	mg/L	250	500		01/03/24 15:36	109-52-4	N2
Acetic Acid	ND	mg/L	250	500		01/03/24 15:36	64-19-7	
Butyric Acid	ND	mg/L	250	500		01/03/24 15:36	107-92-6	
Formic acid	ND	mg/L	250	500		01/03/24 15:36	64-18-6	
Hexanoic Acid	ND	mg/L	250	500		01/03/24 15:36	142-62-1	N2
i-Hexanoic Acid	ND	mg/L	250	500		01/03/24 15:36	646-07-1	N2
Lactic Acid	ND	mg/L	250	500		01/03/24 15:36	50-21-5	D3
i-Pentanoic Acid	ND	mg/L	250	500		01/03/24 15:36	503-74-2	N2
Propionic Acid	ND	mg/L	250	500		01/03/24 15:36	79-09-4	
Pyruvic Acid	ND	mg/L	250	500		01/03/24 15:36	127-17-3	

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QUALITY CONTROL DATA

Project: 23L0673
Pace Project No.: 20300604

QC Batch: 312847
QC Batch Method: Pace ENV-SOP-BTRO-0042
Analysis Method: Pace ENV-SOP-BTRO-0042
Analysis Description: BR AM23G Low Level VFA
Laboratory: Pace Analytical Services - Baton Rouge
Associated Lab Samples: 20300604001

METHOD BLANK: 1498064
Matrix: Water
Associated Lab Samples: 20300604001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acetic Acid	mg/L	ND	0.50	01/03/24 09:50	
Butyric Acid	mg/L	ND	0.50	01/03/24 09:50	
Formic acid	mg/L	ND	0.50	01/03/24 09:50	
Hexanoic Acid	mg/L	ND	0.50	01/03/24 09:50	N2
i-Hexanoic Acid	mg/L	ND	0.50	01/03/24 09:50	N2
i-Pentanoic Acid	mg/L	ND	0.50	01/03/24 09:50	N2
Lactic Acid	mg/L	ND	0.50	01/03/24 09:50	
Pentanoic Acid	mg/L	ND	0.50	01/03/24 09:50	N2
Propionic Acid	mg/L	ND	0.50	01/03/24 09:50	
Pyruvic Acid	mg/L	ND	0.50	01/03/24 09:50	

LABORATORY CONTROL SAMPLE: 1498065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acetic Acid	mg/L	2	2.0	102	70-130	
Butyric Acid	mg/L	2	1.9	94	70-130	
Formic acid	mg/L	2	2.0	98	70-130	
Hexanoic Acid	mg/L	2	1.1	56	39-114	N2
i-Hexanoic Acid	mg/L	2	1.6	80	39-114	N2
i-Pentanoic Acid	mg/L	2	1.7	83	59-121	N2
Lactic Acid	mg/L	2	2.2	111	70-130	
Pentanoic Acid	mg/L	2	1.5	77	59-121	N2
Propionic Acid	mg/L	2	2.0	100	70-130	
Pyruvic Acid	mg/L	2	2.0	100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1498226 1498227

Parameter	Units	50361866001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acetic Acid	mg/L	209	100	100	306	307	97	98	70-130	0	30	
Butyric Acid	mg/L	26.7	100	100	126	125	99	98	70-130	1	30	
Formic acid	mg/L	ND	100	100	110	110	107	107	70-130	0	30	
Hexanoic Acid	mg/L	ND	100	100	55.7	56.8	56	57	39-114	2	30	N2
i-Hexanoic Acid	mg/L	ND	100	100	81.4	81.7	81	82	39-114	0	30	N2
i-Pentanoic Acid	mg/L	ND	100	100	87.9	88.8	86	86	59-121	1	30	N2
Lactic Acid	mg/L	ND	100	100	112	112	108	108	70-130	0	30	
Pentanoic Acid	mg/L	ND	100	100	82.9	82.6	78	78	59-121	0	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

QUALITY CONTROL DATA

Project: 23L0673
Pace Project No.: 20300604

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1498226 1498227

Parameter	Units	50361866001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Propionic Acid	mg/L	43.8	100	100	150	150	106	107	70-130	0	30	
Pyruvic Acid	mg/L	ND	100	100	116	114	111	109	70-130	2	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project:	23L0673
Pace Project No.:	20300604

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 23L0673
Pace Project No.: 20300604

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20300604001	**23L0673-01: EW-78**	Pace ENV-SOP-BTRO-0042	312847		

ENTHALPY
ANALYTICAL

Pace - Gulf Coast
7979 Innovation Park Dr
Baton Rouge, LA 70820

1941 REYMET ROAD
RICHMOND, VIF
(804) 358-
(804)3

WO# : 20300604
20300604

CHAIN OF CUSTODY

COMPANY NAME: Enthalpy
INVOICE TO: Enthalpy
PROJECT NAME/Quote #: 23L0673
CONTACT: Dan Elliot
INVOICE CONTACT:
SITE NAME: 23L0673
ADDRESS: 1941 Reymet Rd Richmond VA 23237
INVOICE ADDRESS: 1941 Reymet Rd Richmond VA 23237
PROJECT NUMBER: 23L0673
PHONE #: (804) 358-8295
INVOICE PHONE #: (804) 358-8295
P.O. #: PO-057252
FAX #:
EMAIL:
Pretreatment Program:
Is sample for compliance reporting? YES NO
Is sample from a chlorinated supply? YES NO
PWS I.D. #:
SAMPLER NAME (PRINT):
SAMPLER SIGNATURE:
Turn Around Time: 10

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other____________

COMMENTS

Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE) Volatile Fatty Acid								PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)
1) 23L0673-01: EW-78	x					12/12/23	1300		WW	3	X								
2)																			
3)																			
4)																			
5)																			
6)																			
7)																			
8)																			
9)																			
10)																			

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
Elliott	12/13/23 1639	FedEx Express	12/13/23 1639
FedEx	12/14/23 9:51		12/14/23 951

QC Data Package
Level I ☐
Level II ☐
Level III ☐
Level IV ☐

LAB USE ONLY

COOLER TEMP ________°C

Pace

Sample Condition Upon Reciept (

WO#: 20300604

PM: RW Due Date: 12/29/23

Workorder # CLIENT: BR-Enthalpy

7979 Innovation Park Dr. Baton Rouge, LA 70806

Cooler Inspected by/date: OBK / 12/14/23

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: ____________

☐ Yes	☑ No		Were custody seals present on the cooler?
☐ Yes	☐ No	☐ NA	If custody seals were present, were they intact and unbroken?

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: IM04 IR Gun Correction Factor 0 °C

Cooler #1 Cooler Temp °C: 3.3 (Actual/True)
Cooler #2 Cooler Temp °C: ____________ (Actual/True)
Cooler #3 Cooler Temp °C: ____________ (Actual/True)
Cooler #4 Cooler Temp °C: ____________ (Actual/True)

Samples on ice ☑ Yes ☐ No

pH Strip Lot #

Method of coolant: ☑ Wet ☐ Ice Packs ☐ Dry Ice ☐ None

Tracking #: 7744 71 71 3173

☐ Yes	☑ No	☐ NA	Is a temperature blank present?	
☑ Yes	☐ No	☐ NA	Was a chain of custody (COC) recieved?	
☐ Yes	☑ No	☐ NA	Was the line and profile number listed on the COC?	
☑ Yes	☐ No	☐ NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.	
☑ Yes	☐ No		Were proper custody procedures (relinquished/received) followed?	
☑ Yes	☐ No	☐ NA	Is the sampler name and signature on the COC?	
☑ Yes	☐ No		Were sample IDs listed on the COC and all sample containers?	
☑ Yes	☐ No		Was collection date & time listed on the COC and all sample containers?	
☑ Yes	☐ No		Did all container label information (ID, date, time) agree with the COC?	
☑ Yes	☑ No		Were tests to be performed listed on the COC?	
☑ Yes	☐ No		Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?	
☑ Yes	☐ No		Was adequate sample volume available?	
☑ Yes	☐ No		Were all samples received within ½ the holding time or 48 hours, whichever comes first?	
☑ Yes	☐ No		Were all samples containers accounted for? (No missing / excess)	
☐ Yes	☐ No	☑ NA	Were VOA, 8015C (GRO/VPH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?	
☐ Yes	☐ No	☑ NA	Trip blank present?	
☐ Yes	☐ No	☑ NA	Filtered volume received for dissolved tests? *If no, list affected sample(s) in comments below.*	
☐ Yes	☐ No	☑ NA	Were all metals/nutrient samples received at a pH of < 2?	If No, was preservative added? ☐ Yes ☐ No If added, record lots. Dispenser/pipette lot #: ____________
☐ Yes	☐ No	☑ NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?	HNO_3 ____________ H_2SO_4 ____________ NaOH ____________ Date: ____________ Time: ____________

Comments:

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		**EW-50**	**EW-52**	**EW-53**	**EW-54**	**EW-55**	**EW-57**	**EW-58**	**EW-59**	**EW-60**	**EW-61**	**EW-62**	**EW-64**	**EW-65**	**EW-67**	**EW-68**	**EW-78**	**EW-87**	**EW-94**	**EW-98**	**LOD**	**LOQ**
Parameter	**Monitoring Event**	**Concentration**																				
Ammonia as N (mg/L)	November-2022	---	---	---	---	---	---	---	**1560**	---	**1400**	---	---	**1380**	---	---	---	---	---	---	50	50
	December-2022	**1700**	**2280**	---	---	---	**2110**	---	**1410**	**1310**	---	---	---	---	**1150**	**1780**	---	---	---	---	100	100
	January-2023	**1520**	---	---	---	---	---	**936**	---	---	---	---	---	**1330**	---	---	---	---	---	---	50	50
		---	---	---	---	---	---	---	**2440**	---	---	---	---	---	---	---	---	---	---	---	100	100
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1490**	---	---	---	---	100	100
	March-2023	---	---	---	---	---	---	**667**	**1480**	---	---	---	---	---	---	---	---	---	---	---	73.1	100
	April-2023	---	---	---	---	---	---	**1410**	---	**1220**	---	---	---	---	---	---	---	---	---	---	73.1	100
	May-2023	**1390**	---	---	---	---	---	**1860**	**2380**	---	---	---	---	---	---	---	---	---	---	---	146	200
	June-2023	---	---	---	---	---	---	---	**2740**	---	**2370**	---	**2170**	---	---	---	---	---	---	---	146	200
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1180**	---	---	---	73.1	100
		1570	---	---	---	---	**2260**	---	---	---	---	---	---	---	---	---	---	---	**2350**	**310**	146	200
	August-2023	---	---	---	**1600**	---	**1890**	---	---	---	---	---	---	---	---	---	---	---	**2140**	**222**	146	200
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1720**	---	---	---	73.1	100
		---	**1250**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	146	200
	October-2023	---	---	---	---	**1980**	---	---	---	---	---	---	---	---	---	---	**1730**	**2890**	---	---	146	200
	November-2023	**1260**	**2490**	**1830**	---	**2070**	---	---	---	---	---	---	---	---	---	---	**1800**	**2590**	---	---	146	200
		---	---	---	---	---	---	---	---	---	---	**1170**	---	---	---	---	---	---	---	**2080**	183	250
		---	---	---	---	---	---	---	**2440**	---	---	---	---	---	---	---	---	---	---	---	366	500
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1540**	---	---	---	73.1	100
		---	**2900**	---	---	---	---	---	---	---	---	---	---	---	---	**2200**	---	---	---	---	146	200
Biological Oxygen Demand (mg/L)	November-2022	---	---	---	---	---	---	---	**15700**	---	**5860**	---	---	**5140**	---	---	---	---	---	---	0.2	2
	December-2022	**6440**	**12500**	---	---	---	**11400**	---	**9240**	**3330**	---	---	---	---	**8360**	**6770**	---	---	---	---	0.2	2
	January-2023	**9920**	---	---	---	---	---	**999**	**28100**	---	---	---	---	**7060**	---	---	---	---	---	---	0.2	2
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**7230**	---	---	---	---	0.2	2
	March-2023	---	---	---	---	---	---	**1570**	**9190**	---	---	---	---	---	---	---	---	---	---	---	0.2	2
	April-2023	---	---	---	---	---	---	**8430**	---	**2860**	---	---	---	---	---	---	---	---	---	---	0.2	2
	May-2023	**7350**	---	---	---	---	---	**11900**	**35300**	---	---	---	---	---	---	---	---	---	---	---	0.2	2
	June-2023	---	---	---	---	---	---	---	**20000**	---	**27400**	---	**23100**	---	---	---	---	---	---	---	0.2	2
	July-2023	**6820**	---	---	---	---	**32900**	---	---	---	---	---	---	---	---	---	**330**	---	**31800**	**937**	0.2	2
	August-2023	---	---	---	**>33045**	---	**>33225**	---	---	---	---	---	---	---	---	---	---	---	**>32805**	**506**	0.2	2
	September-2023	---	**40185.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	**659**	---	---	---	0.2	2
	October-2023	---	---	---	---	**34600**	---	---	---	---	---	---	---	---	---	---	**690**	**37000**	---	---	0.2	2
	November-2023	**1910**	**30400**	**27500**	---	**32015**	---	---	**29600**	---	---	**3640**	---	---	---	---	**480**	**32135**	---	**21500**	0.2	2
	December-2023	---	**>44105**	---	---	---	---	---	---	---	---	---	---	---	---	**13700**	**681**	---	---	---	0.2	2

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
Chemical Oxygen Demand (mg/L)	November-2022	---	---	---	---	---	---	---	---	---	**9790**	---	---	**10800**	---	---	---	---	---	---	1000	1000
		---	---	---	---	---	---	---	**23500**	---	---	---	---	---	---	---	---	---	---	---	2000	2000
	December-2022	**7440**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000	1000
		---	---	---	---	---	---	---	**13200**	**8000**	---	---	---	---	**20300**	**14100**	---	---	---	---	2000	2000
		---	---	---	---	---	**22400**	---	---	---	---	---	---	---	---	---	---	---	---	---	5000	5000
		---	**86800**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10000	10000
	January-2023	---	---	---	---	---	---	**3630**	---	---	---	---	---	---	---	---	---	---	---	---	500	500
		14900	---	---	---	---	---	---	---	---	---	---	---	**8430**	---	---	---	---	---	---	2000	2000
		---	---	---	---	---	---	---	**47600**	---	---	---	---	---	---	---	---	---	---	---	5000	5000
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**9210**	---	---	---	---	1000	1000
	March-2023	---	---	---	---	---	---	**1690**	---	---	---	---	---	---	---	---	---	---	---	---	500	500
		---	---	---	---	---	---	---	**10600**	---	---	---	---	---	---	---	---	---	---	---	2000	2000
	April-2023	---	---	---	---	---	---	---	---	**7370**	---	---	---	---	---	---	---	---	---	---	1000	1000
		---	---	---	---	---	---	**16800**	---	---	---	---	---	---	---	---	---	---	---	---	2000	2000
	May-2023	**7590**	---	---	---	---	---	**18700**	---	---	---	---	---	---	---	---	---	---	---	---	2000	2000
		---	---	---	---	---	---	---	**44700**	---	---	---	---	---	---	---	---	---	---	---	4000	4000
	June-2023	---	---	---	---	---	---	---	---	---	**44800**	---	---	---	---	---	---	---	---	---	5000	5000
		---	---	---	---	---	---	---	**41300**	---	---	---	**55000**	---	---	---	---	---	---	---	10000	10000
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**2180**	500	500
		6480	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**2460**	---	---	---	1000	1000
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**41000**	---	5000	5000
		---	---	---	---	---	**50100**	---	---	---	---	---	---	---	---	---	---	---	---	---	10000	10000
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1750**	500	500
		---	---	---	**59000**	---	**58600**	---	---	---	---	---	---	---	---	---	---	---	**60600**	---	5000	5000
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**6260**	---	---	---	1000	1000
		---	**87400**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10000	10000
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5320**	---	---	---	500	500
		---	---	---	---	**51000**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5000	5000
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**63600**	---	---	10000	10000
	November-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**4710**	---	---	---	1000	1000
		6200	---	---	---	---	---	---	---	---	---	**5620**	---	---	---	---	---	---	---	---	2000	2000
		---	---	**48100**	---	**57900**	---	---	**43700**	---	---	---	---	---	---	---	---	---	---	**37600**	5000	5000
		---	**77100**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**63900**	---	---	10000	10000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**4870**	---	---	---	1000	1000
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	**19900**	---	---	---	---	5000	5000
		---	**94200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10000	10000
Nitrate+Nitrite as N (mg/L)	November-2022	---	---	---	---	---	---	---	**2.91**	---	**0.16**	---	---	**0.33**	---	---	---	---	---	---	0.1	0.1

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		**EW-50**	**EW-52**	**EW-53**	**EW-54**	**EW-55**	**EW-57**	**EW-58**	**EW-59**	**EW-60**	**EW-61**	**EW-62**	**EW-64**	**EW-65**	**EW-67**	**EW-68**	**EW-78**	**EW-87**	**EW-94**	**EW-98**	**LOD**	**LOQ**
Parameter	**Monitoring Event**	**Concentration**																				
Nitrate as N (mg/L)	December-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	0.2	0.2
		---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	0.2	0.6
		ND	ND	---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	---	1.1	5.1
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	1.5	5.5
	January-2023	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	0.35	1.35
		---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	1.1	1.1
		3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2.1	2.1
		---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	2.2	2.2
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	0.35	1.35
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	1.04	5.1
	April-2023	---	---	---	---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	0.6	2.6
	May-2023	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.1	5.1
		---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	1.2	5.2
	June-2023	---	---	---	---	---	---	---	ND	---	---	---	ND	---	---	---	---	---	---	---	1.1	5.1
		---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	1.2	5.2
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.355**	---	---	---	0.15	0.35
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.55	0.75
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	3
		---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	1.5	5.5
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.15	0.35
		---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	1.5	3.5
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.3	1.1
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.7	1.5
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.35	1.35
		---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	3
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	1.5	3.5
	November-2023	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.15	0.35
		---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	0.35	1.35
		---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.75	1.75
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.1	5.1
		---	---	ND	---	---	---	---	ND	---	---	---	---	---	---	---	---	ND	---	ND	1.5	5.5
	December-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	1.1	5.1
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	1.5	5.5

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
Nitrite as N (mg/L)	December-2022	---	---	---	---	---	---	---	---	**0.12 J**	---	---	---	---	---	---	---	---	---	---	0.1	0.5
		ND	ND	---	---	---	ND	---	ND	---	---	---	---	---	ND	ND	---	---	---	---	1	5
	January-2023	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	0.25	1.25
		---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	1	1
		ND	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	2	2
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.48 J**	---	---	---	---	0.25	1.25
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	1	5
	April-2023	---	---	---	---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	0.5	2.5
	May-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	1	5
	June-2023	---	---	---	---	---	---	---	**2 J**	---	ND	---	ND	---	---	---	---	---	---	---	1	5
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	ND	0.05	0.25
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.5	2.5
		---	---	---	---	---	**1.2 J**	---	---	---	---	---	---	---	---	---	---	---	ND	---	1	5
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.05	0.25
		---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	0.5	2.5
	September-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.2	1
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.25	1.25
		---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	0.5	2.5
	November-2023	**0.06 J**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.05	0.25
		---	---	---	---	ND	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	0.25	1.25
		---	ND	ND	---	---	---	---	ND	---	---	---	---	---	---	---	---	ND	---	ND	1	5
	December-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	ND	ND	---	---	---	1	5
Total Kjeldahl Nitrogen (mg/L)	November-2022	---	---	---	---	---	---	---	---	---	**1290**	---	---	**1470**	---	---	---	---	---	---	20	50
		---	---	---	---	---	---	---	**2110**	---	---	---	---	---	---	---	---	---	---	---	50	125
	December-2022	**1510**	**3570**	---	---	---	**1790**	---	**1830**	**1490**	---	---	---	---	**1340**	**1940**	---	---	---	---	200	500
	January-2023	**1840**	---	---	---	---	---	**881**	---	---	---	---	---	**1410**	---	---	---	---	---	---	20	50
		---	---	---	---	---	---	---	**2970**	---	---	---	---	---	---	---	---	---	---	---	40	100
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1870**	---	---	---	---	16.8	50
	March-2023	---	---	---	---	---	---	**879**	**1920**	---	---	---	---	---	---	---	---	---	---	---	33.6	100
	April-2023	---	---	---	---	---	---	**1820**	---	**1510**	---	---	---	---	---	---	---	---	---	---	16.8	50
	May-2023	**1590**	---	---	---	---	---	**1950**	**2910**	---	---	---	---	---	---	---	---	---	---	---	40	100
	June-2023	---	---	---	---	---	---	---	**3080**	---	---	---	**2750**	---	---	---	---	---	---	---	100	250
		---	---	---	---	---	---	---	---	---	**2650**	---	---	---	---	---	---	---	---	---	200	500
	July-2023	**1670**	---	---	---	---	**2960**	---	---	---	---	---	---	---	---	---	**1670**	---	**2720**	**285**	40	100
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**279**	10	25
		---	---	---	**2240**	---	**2820**	---	---	---	---	---	---	---	---	---	---	---	**2850**	---	100	250
	September-2023	---	**3340**	---	---	---	---	---	---	---	---	---	---	---	---	---	**2680**	---	---	---	100	250
	October-2023	---	---	---	---	**1050**	---	---	---	---	---	---	---	---	---	---	---	**1320**	---	---	40	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**4630**	---	---	---	100	250
	November-2023	---	---	---	---	**2240**	---	---	---	---	---	---	---	---	---	---	---	---	---	**2120**	80	200
		1440	**3290**	**2630**	---	---	---	---	**2530**	---	---	**1120**	---	---	---	---	**2270**	**3170**	---	---	100	250
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1880**	---	---	---	---	80	200
		---	**3130**	---	---	---	---	---	---	---	---	---	---	---	---	---	**1890**	---	---	---	100	250

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																				
Total Recoverable Phenolics (mg/L)	November-2022	---	---	---	---	---	---	---	---	---	**5.68**	---	---	**3**	---	---	---	---	---	---	0.3	0.5
		---	---	---	---	---	---	---	**28.8**	---	---	---	---	---	---	---	---	---	---	---	0.75	1.25
	December-2022	---	---	---	---	---	---	---	---	**8.94**	---	---	---	---	---	---	---	---	---	---	0.3	0.5
		24.9	**54.6**	---	---	---	**28.3**	---	**32**	---	---	---	---	---	**20.2**	**36**	---	---	---	---	1.5	2.5
	January-2023	**27.2**	---	---	---	---	---	**1.3**	---	---	---	---	---	**20.2**	---	---	---	---	---	---	0.75	1.25
		---	---	---	---	---	---	---	**56.5**	---	---	---	---	---	---	---	---	---	---	---	1.5	2.5
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**22.4**	---	---	---	---	1.5	2.5
	March-2023	---	---	---	---	---	---	**0.4**	---	---	---	---	---	---	---	---	---	---	---	---	0.03	0.05
		---	---	---	---	---	---	---	**13.9**	---	---	---	---	---	---	---	---	---	---	---	0.3	0.5
	April-2023	---	---	---	---	---	---	**18.7**	---	**5.1**	---	---	---	---	---	---	---	---	---	---	0.3	0.5
	May-2023	**18.6**	---	---	---	---	---	**20**	**50**	---	---	---	---	---	---	---	---	---	---	---	1.5	2.5
	June-2023	---	---	---	---	---	---	---	**39.1**	---	**45.6**	---	**80.6**	---	---	---	---	---	---	---	1.5	2.5
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.7**	---	---	---	0.15	0.25
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**2.92**	0.3	0.5
		11.6	---	---	---	---	**47.9**	---	---	---	---	---	---	---	---	---	---	---	**37.3**	---	1.5	2.5
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1.46**	0.15	0.25
		---	---	---	**28.6**	---	**31.4**	---	---	---	---	---	---	---	---	---	---	---	**40.4**	---	1.5	2.5
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**4.58**	---	---	---	0.3	0.5
		---	**38.2**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3	5
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**4.13**	---	---	---	0.15	0.25
		---	---	---	---	**37**	---	---	---	---	---	---	---	---	---	---	---	**38.7**	---	---	0.6	1
	November-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**3.65**	---	---	---	0.15	0.25
		7.88	---	**36.4**	---	---	---	---	---	---	---	**4.76**	---	---	---	---	---	---	---	---	0.6	1
		---	**38.8**	---	---	**47.4**	---	---	---	---	---	---	---	---	---	---	---	**47.1**	---	---	0.75	1.25
		---	---	---	---	---	---	---	**46.9**	---	---	---	---	---	---	---	---	---	---	**29.1**	1.5	2.5
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**3.72**	---	---	---	0.06	0.1
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	**23**	---	---	---	---	0.75	1.25
		---	**34.2**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.5	2.5

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
SEMI-VOLATILE ORGANIC COMPOUND (ug/L)																						
Anthracene	November-2022	---	---	---	---	---	---	---	---	---	ND	---	---	ND	---	---	---	---	---	---	46.7	93.5
		---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	93.5	187
	December-2022	---	---	---	---	---	---	---	ND	ND	---	---	---	---	---	ND	---	---	---	---	9.35	9.35
		---	---	---	---	---	ND	---	---	---	---	---	---	---	ND	---	---	---	---	---	11.7	11.7
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23.4	23.4
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	485	971
	January-2023	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	243	485
		---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	253	505
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	490	980
		---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	500	1000
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	187	374
	March-2023	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	51	102
		---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	117	234
	April-2023	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	37.4	74.8
		---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	38.8	77.7
	May-2023	ND	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	93.5	187
		---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	467	935
	June-2023	---	---	---	---	---	---	---	ND	---	---	---	ND	---	---	---	---	---	---	---	485	971
		---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	490	980
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	46.7	93.5
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	100	200
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	250	500
		---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	1000	2000
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	19.6	39.2
		---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	1000	2000
	September-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	40	80
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	40	80
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	50	100
		---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	500	1000
	November-2023	ND	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	20	40
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	50	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	100	200
		---	---	ND	---	ND	---	---	ND	---	---	---	---	---	---	---	---	ND	---	---	400	800
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000	2000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	50	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	100	200
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	200	400

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
TOTAL METALS (mg/L)																						
Arsenic	November-2022	---	---	---	---	---	---	---	**0.863**	---	**0.464**	---	---	**1.3**	---	---	---	---	---	---	0.02	0.04
	December-2022	**1.02**	**0.406**	---	---	---	**0.174**	---	**1.69**	**0.49**	---	---	---	---	**0.159**	**0.574**	---	---	---	---	0.02	0.04
	January-2023	**0.285**	---	---	---	---	---	**0.596**	**0.225**	---	---	---	---	**0.846**	---	---	---	---	---	---	0.01	0.02
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.29**	---	---	---	---	0.005	0.01
	March-2023	---	---	---	---	---	---	**1.07**	**1**	---	---	---	---	---	---	---	---	---	---	---	0.01	0.02
	April-2023	---	---	---	---	---	---	---	---	**0.11**	---	---	---	---	---	---	---	---	---	---	0.0005	0.001
		---	---	---	---	---	---	**0.36**	---	---	---	---	---	---	---	---	---	---	---	---	0.005	0.01
	May-2023	**0.26**	---	---	---	---	---	**0.3**	**0.27**	---	---	---	---	---	---	---	---	---	---	---	0.0025	0.005
	June-2023	---	---	---	---	---	---	---	**0.26**	---	**0.5**	---	**0.14**	---	---	---	---	---	---	---	0.0025	0.005
	July-2023	**0.23**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.24**	---	**0.19**	**0.06**	0.0005	0.001
		---	---	---	---	---	**0.7**	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0025	0.005
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.15**	0.0025	0.005
		---	---	---	**0.32**	---	**0.43**	---	---	---	---	---	---	---	---	---	---	---	**0.29**	---	0.005	0.01
	September-2023	---	**0.42**	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.25**	---	---	---	0.005	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.24**	**0.31**	---	---	0.0005	0.001
		---	---	---	---	**0.36**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.001	0.002
	November-2023	**0.23**	**0.33**	**0.53**	---	**0.43**	---	---	**0.35**	---	---	**0.78**	---	---	---	---	**0.34**	**0.27**	---	**0.2**	0.003	0.003
	December-2023	---	**0.4**	---	---	---	---	---	---	---	---	---	---	---	---	**0.26**	---	---	---	---	0.0025	0.005
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.24**	---	---	---	0.001	0.002
Barium	November-2022	---	---	---	---	---	---	---	**0.871**	---	**0.485**	---	---	**0.36**	---	---	---	---	---	---	0.01	0.02
	December-2022	**0.566**	**0.803**	---	---	---	**0.978**	---	**0.438**	**0.214**	---	---	---	---	**0.856**	**0.793**	---	---	---	---	0.01	0.02
	January-2023	**0.643**	---	---	---	---	---	**0.683**	**1.92**	---	---	---	---	**0.554**	---	---	---	---	---	---	0.005	0.01
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1.04**	---	---	---	---	0.01	0.05
	March-2023	---	---	---	---	---	---	**0.406**	**0.683**	---	---	---	---	---	---	---	---	---	---	---	0.005	0.01
	April-2023	---	---	---	---	---	---	**1.21**	---	**0.326**	---	---	---	---	---	---	---	---	---	---	0.01	0.05
	May-2023	**0.636**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.005	0.025
		---	---	---	---	---	---	**1.2**	**1.83**	---	---	---	---	---	---	---	---	---	---	---	0.01	0.05
	June-2023	---	---	---	---	---	---	---	**1.69**	---	---	---	**1.65**	---	---	---	---	---	---	---	0.005	0.025
		---	---	---	---	---	---	---	---	---	**3.01**	---	---	---	---	---	---	---	---	---	0.01	0.05
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.217**	0.001	0.005
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.558**	---	---	---	0.002	0.01
		0.542	---	---	---	---	**2.28**	---	---	---	---	---	---	---	---	---	---	---	**1.02**	---	0.005	0.025
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.218**	0.005	0.025
		---	---	---	**1.61**	---	**1.58**	---	---	---	---	---	---	---	---	---	---	---	**1.48**	---	0.01	0.05
	September-2023	---	**0.72**	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.649**	---	---	---	0.01	0.05
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.664**	---	---	---	0.002	0.01
		---	---	---	---	**2.56**	---	---	---	---	---	---	---	---	---	---	---	**1.93**	---	---	0.005	0.025
	November-2023	**0.572**	**0.81**	**2.28**	---	**2.51**	---	---	**1.96**	---	---	**0.418**	---	---	---	---	**0.67**	**2.06**	---	**2.84**	0.01	0.05
	December-2023	---	**0.68**	---	---	---	---	---	---	---	---	---	---	---	---	**1.36**	---	---	---	---	0.005	0.025
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.672**	---	---	---	0.002	0.01

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		**EW-50**	**EW-52**	**EW-53**	**EW-54**	**EW-55**	**EW-57**	**EW-58**	**EW-59**	**EW-60**	**EW-61**	**EW-62**	**EW-64**	**EW-65**	**EW-67**	**EW-68**	**EW-78**	**EW-87**	**EW-94**	**EW-98**	**LOD**	**LOQ**
Parameter	**Monitoring Event**	**Concentration**																				
Cadmium	November-2022	---	---	---	---	---	---	---	ND	---	ND	---	---	ND	---	---	---	---	---	---	0.004	0.008
	December-2022	ND	**0.0104**	---	---	---	ND	---	ND	ND	---	---	---	---	ND	ND	---	---	---	---	0.004	0.008
	January-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	ND	---	---	---	---	---	---	0.002	0.004
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.000297 J**	---	---	---	---	0.0001	0.001
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.002	0.004
	April-2023	---	---	---	---	---	---	**0.000158 J**	---	**0.000333 J**	---	---	---	---	---	---	---	---	---	---	0.0001	0.001
	May-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.0005	0.005
	June-2023	---	---	---	---	---	---	---	ND	---	ND	---	ND	---	---	---	---	---	---	---	0.0005	0.005
	July-2023	**0.000219 J**	---	---	---	---	**0.000156 J**	---	---	---	---	---	---	---	---	---	**0.000186 J**	---	ND	ND	0.0001	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.0005	0.005
		---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	0.001	0.01
	September-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.001	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.000171 J**	ND	---	---	0.0001	0.001
		---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0002	0.002
	November-2023	ND	ND	ND	---	ND	---	---	ND	---	---	ND	---	---	---	---	ND	ND	---	ND	0.001	0.003
	December-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	**0.000604 J**	---	---	---	---	0.0005	0.0015
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.0002	0.002
Chromium	November-2022	---	---	---	---	---	---	---	**0.208**	---	**0.112**	---	---	**0.354**	---	---	---	---	---	---	0.016	0.02
	December-2022	**0.503**	**1.08**	---	---	---	**1.76**	---	**0.274**	**0.319**	---	---	---	---	**0.499**	**0.822**	---	---	---	---	0.016	0.02
	January-2023	**0.31**	---	---	---	---	---	**0.488**	**0.178**	---	---	---	---	**0.155**	---	---	---	---	---	---	0.008	0.01
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.277**	---	---	---	---	0.004	0.01
	March-2023	---	---	---	---	---	---	**0.213**	**0.188**	---	---	---	---	---	---	---	---	---	---	---	0.008	0.01
	April-2023	---	---	---	---	---	---	---	---	**0.142**	---	---	---	---	---	---	---	---	---	---	0.0004	0.001
		---	---	---	---	---	---	**0.306**	---	---	---	---	---	---	---	---	---	---	---	---	0.004	0.01
	May-2023	**0.422**	---	---	---	---	---	**0.281**	**0.237**	---	---	---	---	---	---	---	---	---	---	---	0.002	0.005
	June-2023	---	---	---	---	---	---	---	**0.251**	---	**0.191**	---	**0.272**	---	---	---	---	---	---	---	0.002	0.005
	July-2023	**0.308**	---	---	---	---	**0.535**	---	---	---	---	---	---	---	---	---	**0.231**	---	**0.215**	**0.0265**	0.0004	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0276**	0.002	0.005
		---	---	---	**0.606**	---	**0.449**	---	---	---	---	---	---	---	---	---	---	---	**0.259**	---	0.004	0.01
	September-2023	---	**1.17**	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.234**	---	---	---	0.004	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.144**	**0.194**	---	---	0.0004	0.001
		---	---	---	---	**0.273**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0008	0.002
	November-2023	**0.391**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0	0.003
		---	---	**0.51**	---	---	---	---	---	---	---	---	---	---	---	---	**0.251**	**0.403**	---	---	0.003	0.003
		---	**1.04**	---	---	**0.402**	---	---	**0.246**	---	---	**0.343**	---	---	---	---	---	---	---	**0.222**	0.004	0.01
	December-2023	---	**1.34**	---	---	---	---	---	---	---	---	---	---	---	---	**0.259**	---	---	---	---	0.002	0.005
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.219**	---	---	---	0.0008	0.002

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																				
Copper	November-2022	---	---	---	---	---	---	---	ND	---	ND	---	---	ND	---	---	---	---	---	---	0.016	0.02
	December-2022	ND	ND	---	---	---	ND	---	ND	ND	---	---	---	---	ND	ND	---	---	---	---	0.016	0.02
	January-2023	ND	---	---	---	---	---	**0.0127**	**0.0256**	---	---	---	---	ND	---	---	---	---	---	---	0.008	0.01
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.00365**	---	---	---	---	0.0003	0.001
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.008	0.01
	April-2023	---	---	---	---	---	---	**0.00664**	---	**0.00767**	---	---	---	---	---	---	---	---	---	---	0.0003	0.001
	May-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.0015	0.005
	June-2023	---	---	---	---	---	---	---	**0.00154 J**	---	**0.00362 J**	---	**0.00269 J**	---	---	---	---	---	---	---	0.0015	0.005
	July-2023	**0.00124**	---	---	---	---	**0.00163**	---	---	---	---	---	---	---	---	---	**0.00811**	---	ND	**0.0027**	0.0003	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.0015	0.005
		---	---	---	**0.00343 J**	---	**0.0176**	---	---	---	---	---	---	---	---	---	---	---	ND	---	0.003	0.01
	September-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.00407 J**	---	---	---	0.003	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.00361**	**0.000609 J**	---	---	0.0003	0.001
		---	---	---	---	**0.00806**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0006	0.002
	November-2023	**0.00607**	**0.00352**	**0.0212**	---	**0.00756**	---	---	ND	---	---	**0.00341**	---	---	---	---	**0.00387**	ND	---	ND	0.003	0.003
	December-2023	---	**0.00184**	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	0.0015	0.0015
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0034**	---	---	---	0.0006	0.002
Lead	November-2022	---	---	---	---	---	---	---	ND	---	ND	---	---	**0.017 J**	---	---	---	---	---	---	0.012	0.02
	December-2022	ND	**0.0381**	---	---	---	ND	---	ND	ND	---	---	---	---	ND	ND	---	---	---	---	0.012	0.02
	January-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	ND	---	---	---	---	---	---	0.006	0.01
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.006**	---	---	---	---	0.001	0.001
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.006	0.01
	April-2023	---	---	---	---	---	---	**0.0022**	---	**0.0067**	---	---	---	---	---	---	---	---	---	---	0.001	0.001
	May-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.005	0.005
	June-2023	---	---	---	---	---	---	---	ND	---	ND	---	**0.0069**	---	---	---	---	---	---	---	0.005	0.005
	July-2023	**0.0014**	---	---	---	---	**0.019**	---	---	---	---	---	---	---	---	---	**0.0092**	---	ND	**0.0017**	0.001	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.005	0.005
		---	---	---	**0.014**	---	ND	---	---	---	---	---	---	---	---	---	---	---	**0.013**	---	0.01	0.01
	September-2023	---	**0.12**	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.01	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0036**	**0.0034**	---	---	0.001	0.001
		---	---	---	---	**0.0077**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.002	0.002
	November-2023	ND	**0.13**	**0.0046**	---	**0.014**	---	---	ND	---	---	ND	---	---	---	---	**0.0032**	**0.0043**	---	ND	0.003	0.003
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0043**	---	---	---	0.002	0.002
		---	**0.16**	---	---	---	---	---	---	---	---	---	---	---	---	**0.002**	---	---	---	---	0.0015	0.0015

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
Mercury	November-2022	---	---	---	---	---	---	---	---	---	**0.00169**	---	---	**0.00053**	---	---	---	---	---	---	0.0004	0.0004
		---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	0.0008	0.0008
	December-2022	**0.00051**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0004	0.0004
		---	---	---	---	---	**0.00118**	---	ND	**0.00588**	---	---	---	---	**0.0048**	ND	---	---	---	---	0.0008	0.0008
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.004	0.004
	January-2023	ND	---	---	---	---	---	ND	---	---	---	---	---	ND	---	---	---	---	---	---	0.0004	0.0004
		---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	0.004	0.004
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	0.0004	0.0004
	March-2023	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	0.0002	0.0002
		---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	0.0004	0.0004
	April-2023	---	---	---	---	---	---	---	---	**0.00128**	---	---	---	---	---	---	---	---	---	---	0.0002	0.0002
		---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	0.0004	0.0004
	May-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.0002	0.0002
	June-2023	---	---	---	---	---	---	---	ND	---	ND	---	ND	---	---	---	---	---	---	---	0.004	0.004
	July-2023	**0.000306**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	ND	0.0002	0.0002
		---	---	---	---	---	**0.0107**	---	---	---	---	---	---	---	---	---	---	---	ND	---	0.001	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.001	0.001
		---	---	---	**0.00312**	---	**0.00397**	---	---	---	---	---	---	---	---	---	---	---	ND	---	0.002	0.002
	September-2023	---	**0.00503**	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.002	0.002
	October-2023	---	---	---	---	**0.00165**	---	---	---	---	---	---	---	---	---	---	ND	**0.00055**	---	---	0.0004	0.0004
	November-2023	ND	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	0.0000002	0.0000002
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.0000004	0.0000004
		---	**0.00576**	**0.00606**	---	**0.00578**	---	---	ND	---	---	---	---	---	---	---	---	**0.00954**	---	ND	0.000004	0.000004
	December-2023	---	**0.00484**	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	0.001	0.001
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.0004	0.0004
Nickel	November-2022	---	---	---	---	---	---	---	**0.0866**	---	**0.1344**	---	---	**0.173**	---	---	---	---	---	---	0.014	0.02
	December-2022	**0.1722**	**0.5025**	---	---	---	**0.2989**	---	**0.1299**	**0.287**	---	---	---	---	**0.1853**	**0.346**	---	---	---	---	0.014	0.02
	January-2023	**0.1074**	---	---	---	---	---	**0.1442**	**0.0407**	---	---	---	---	**0.0769**	---	---	---	---	---	---	0.007	0.01
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.1726**	---	---	---	---	0.001	0.001
	March-2023	---	---	---	---	---	---	**0.1254**	**0.1033**	---	---	---	---	---	---	---	---	---	---	---	0.007	0.01
	April-2023	---	---	---	---	---	---	**0.1143**	---	**0.1732**	---	---	---	---	---	---	---	---	---	---	0.001	0.001
	May-2023	**0.113**	---	---	---	---	---	**0.09726**	**0.05657**	---	---	---	---	---	---	---	---	---	---	---	0.005	0.005
	June-2023	---	---	---	---	---	---	---	**0.05978**	---	**0.05892**	---	**0.07161**	---	---	---	---	---	---	---	0.005	0.005
	July-2023	**0.09872**	---	---	---	---	**0.08332**	---	---	---	---	---	---	---	---	---	**0.1576**	---	**0.03074**	**0.01403**	0.001	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.02029**	0.005	0.005
		---	---	---	**0.1457**	---	**0.09673**	---	---	---	---	---	---	---	---	---	---	---	**0.0513**	---	0.01	0.01
	September-2023	---	**0.5152**	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.2387**	---	---	---	0.01	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.2019**	**0.09206**	---	---	0.001	0.001
		---	---	---	---	**0.104**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.002	0.002
	November-2023	**0.1178**	**0.4227**	**0.1242**	---	**0.07791**	---	---	**0.05944**	---	---	**0.1493**	---	---	---	---	**0.2492**	**0.1332**	---	**0.05277**	0.01	0.01
	December-2023	---	**0.6091**	---	---	---	---	---	---	---	---	---	---	---	---	**0.1447**	---	---	---	---	0.005	0.005
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.2127**	---	---	---	0.002	0.002

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																				
Selenium	November-2022	---	---	---	---	---	---	---	ND	---	ND	---	---	ND	---	---	---	---	---	---	0.08	0.1
	December-2022	ND	ND	---	---	---	ND	---	ND	ND	---	---	---	---	ND	ND	---	---	---	---	0.08	0.1
	January-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	ND	---	---	---	---	---	---	0.04	0.05
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.00199**	---	---	---	---	0.00085	0.001
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.04	0.05
	April-2023	---	---	---	---	---	---	**0.00189**	---	**0.00185**	---	---	---	---	---	---	---	---	---	---	0.00085	0.001
	May-2023	ND	---	---	---	---	---	ND	**0.00569**	---	---	---	---	---	---	---	---	---	---	---	0.00425	0.005
	June-2023	---	---	---	---	---	---	---	ND	---	ND	---	ND	---	---	---	---	---	---	---	0.00425	0.005
	July-2023	**0.00101**	---	---	---	---	**0.00331**	---	---	---	---	---	---	---	---	---	**0.00116**	---	**0.00251**	ND	0.00085	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.00425	0.005
		---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	0.0085	0.01
	September-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.0085	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.00186**	**0.0044**	---	---	0.00085	0.001
		---	---	---	---	**0.00332**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0017	0.002
	November-2023	ND	**0.00425**	**0.00314**	---	**0.00315**	---	---	ND	---	---	ND	---	---	---	---	ND	**0.0032**	---	ND	0.003	0.003
	December-2023	---	**0.00785**	---	---	---	---	---	---	---	---	---	---	---	---	**0.00253**	---	---	---	---	0.0015	0.0015
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.00215**	---	---	---	0.0017	0.002
Silver	November-2022	---	---	---	---	---	---	---	ND	---	ND	---	---	ND	---	---	---	---	---	---	0.01	0.02
	December-2022	ND	**0.0187 J**	---	---	---	ND	---	ND	ND	---	---	---	---	ND	ND	---	---	---	---	0.01	0.02
	January-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	ND	---	---	---	---	---	---	0.005	0.01
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	0.00006	0.001
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.005	0.01
	April-2023	---	---	---	---	---	---	ND	---	**0.00011 J**	---	---	---	---	---	---	---	---	---	---	0.00006	0.001
	May-2023	ND	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	0.0003	0.005
	June-2023	---	---	---	---	---	---	---	ND	---	ND	---	ND	---	---	---	---	---	---	---	0.0003	0.005
	July-2023	ND	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	ND	---	ND	ND	0.00006	0.001
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	0.0003	0.005
		---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	0.0006	0.01
	September-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.0006	0.01
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	ND	---	---	0.00006	0.001
		---	---	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.00012	0.002
	November-2023	ND	ND	ND	---	ND	---	---	ND	---	---	ND	---	---	---	---	ND	ND	---	ND	0.0006	0.01
	December-2023	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	0.00025	0.001
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	0.00012	0.002

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		**EW-50**	**EW-52**	**EW-53**	**EW-54**	**EW-55**	**EW-57**	**EW-58**	**EW-59**	**EW-60**	**EW-61**	**EW-62**	**EW-64**	**EW-65**	**EW-67**	**EW-68**	**EW-78**	**EW-87**	**EW-94**	**EW-98**	**LOD**	**LOQ**
Parameter	**Monitoring Event**	**Concentration**																				
Zinc	November-2022	---	---	---	---	---	---	---	ND	---	**0.032**	---	---	**0.694**	---	---	---	---	---	---	0.02	0.02
	December-2022	**0.208**	**29.7**	---	---	---	**0.162**	---	**0.0686**	**0.75**	---	---	---	---	**0.364**	**0.286**	---	---	---	---	0.02	0.02
	January-2023	**0.133**	---	---	---	---	---	**0.15**	**0.074**	---	---	---	---	**0.0752**	---	---	---	---	---	---	0.01	0.01
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0851**	---	---	---	---	0.0025	0.005
	March-2023	---	---	---	---	---	---	**0.0689**	**0.0538**	---	---	---	---	---	---	---	---	---	---	---	0.01	0.01
	April-2023	---	---	---	---	---	---	**0.0539**	---	---	---	---	---	---	---	---	---	---	---	---	0.0025	0.005
		---	---	---	---	---	---	---	---	**0.414**	---	---	---	---	---	---	---	---	---	---	0.025	0.05
	May-2023	**0.079**	---	---	---	---	---	**0.0635**	**0.0519**	---	---	---	---	---	---	---	---	---	---	---	0.0125	0.025
	June-2023	---	---	---	---	---	---	---	**0.0538**	---	**0.0253**	---	**0.945**	---	---	---	---	---	---	---	0.0125	0.025
	July-2023	**0.0488**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0714**	---	**0.354**	**0.0782**	0.0025	0.005
		---	---	---	---	---	**2.03**	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0125	0.025
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.112**	0.0125	0.025
		---	---	---	---	---	**1.71**	---	---	---	---	---	---	---	---	---	---	---	**0.914**	---	0.025	0.05
		---	---	---	**5.92**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.05	0.1
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0788**	---	---	---	0.025	0.05
		---	**45**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.25	0.5
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0622**	---	---	---	0.0025	0.005
		---	---	---	---	**0.203**	---	---	---	---	---	---	---	---	---	---	---	**633**	---	---	0.005	0.01
	November-2023	**0.0471 J**	---	**0.0534**	---	**0.74**	---	---	**0.053**	---	---	**0.0618**	---	---	---	---	**0.0722**	**0.845**	---	**0.0313 J**	0.025	0.05
		---	**30.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.25	0.5
	December-2023	---	**52.7**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.25	0.5
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.061**	---	---	---	0.005	0.01
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	**0.0462**	---	---	---	---	0.025	0.025
VOLATILE FATTY ACIDS (ug/L)																						
Acetic Acid	November-2022	---	---	---	---	---	---	---	---	---	**1600**	---	---	---	---	---	---	---	---	---	25	100
		---	---	---	---	---	---	---	**3500**	---	---	---	---	**150 J**	---	---	---	---	---	---	62	250
	December-2022	**1800**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	62	250
	January-2023	ND	---	---	---	---	---	ND	**4400**	---	---	---	---	ND	---	---	---	---	---	---	---	500
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	500
	March-2023	---	---	---	---	---	---	ND	**640**	---	---	---	---	---	---	---	---	---	---	---	---	500
	April-2023	---	---	---	---	---	---	**1200**	---	**520**	---	---	---	---	---	---	---	---	---	---	370	500
	May-2023	**990**	---	---	---	---	---	**1800**	**3000**	---	---	---	---	---	---	---	---	---	---	---	370	500
	June-2023	---	---	---	---	---	---	---	**5900**	---	**4100**	---	**5000**	---	---	---	---	---	---	---	750	1000
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	150	200
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	370	500
		---	---	---	---	---	**6100**	---	---	---	---	---	---	---	---	---	---	---	**750**	---	750	1000
	August-2023	---	---	---	**3300**	---	**5300**	---	---	---	---	---	---	---	---	---	---	---	**4200**	ND	---	500
	September-2023	---	**7400**	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	370	500
	October-2023	---	---	---	---	**3200**	---	---	---	---	---	---	---	---	---	---	**720**	**4100**	---	---	370	500
	November-2023	ND	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	ND	---	---	**4160**	250	500
		---	---	**4950**	---	**6650**	---	---	**5350**	---	---	---	---	---	---	---	---	**7300**	---	---	500	1000
		---	**9900**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000	2000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**660**	---	---	---	---	---	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	250
		---	**11200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
Butyric Acid	November-2022	---	---	---	---	---	---	---	---	---	**430**	---	---	---	---	---	---	---	---	---	12	100
		---	---	---	---	---	---	---	**830**	---	---	---	---	ND	---	---	---	---	---	---	29	250
	December-2022	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	29	250
	January-2023	ND	---	---	---	---	---	ND	**1800**	---	---	---	---	ND	---	---	---	---	---	---	---	500
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	500
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	500
	April-2023	---	---	---	---	---	---	ND	---	ND	---	---	---	---	---	---	---	---	---	---	330	500
	May-2023	ND	---	---	---	---	---	ND	**1200**	---	---	---	---	---	---	---	---	---	---	---	330	500
	June-2023	---	---	---	---	---	---	---	**2500**	---	**1500**	---	**2900**	---	---	---	---	---	---	---	650	1000
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	130	200
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	330	500
		---	---	---	---	---	**2800**	---	---	---	---	---	---	---	---	---	---	---	**650**	---	650	1000
	August-2023	---	---	---	**1400**	---	**1700**	---	---	---	---	---	---	---	---	---	---	---	**1600**	ND	---	500
	September-2023	---	**3100**	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	330	500
	October-2023	---	---	---	---	**1200**	---	---	---	---	---	---	---	---	---	---	ND	**2000**	---	---	330	500
	November-2023	ND	---	**1670**	---	**1760**	---	---	**1370**	---	---	ND	---	---	---	---	ND	**2730**	---	**740**	250	500
		---	**3420**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	500	1000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**336**	---	---	---	---	---	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	250
		---	**3390**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000
Lactic Acid	November-2022	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	---	---	11	100
		---	---	---	---	---	---	---	ND	---	---	---	---	ND	---	---	---	---	---	---	27	250
	December-2022	**90 J**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	27	250
	November-2023	ND	---	**968**	---	**1800**	---	---	**969**	---	---	ND	---	---	---	---	ND	**1170**	---	**324**	250	500
		---	**6030**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	500	1000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	250
		---	**9050**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000
Propionic Acid	November-2022	---	---	---	---	---	---	---	---	---	**620**	---	---	---	---	---	---	---	---	---	11	100
		---	---	---	---	---	---	---	**1600**	---	---	---	---	**73 J**	---	---	---	---	---	---	27	250
	December-2022	**640**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	27	250
	January-2023	ND	---	---	---	---	---	ND	**2000**	---	---	---	---	ND	---	---	---	---	---	---	---	500
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	500
	March-2023	---	---	---	---	---	---	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	500
	April-2023	---	---	---	---	---	---	**600**	---	ND	---	---	---	---	---	---	---	---	---	---	340	500
	May-2023	**520**	---	---	---	---	---	**800**	**1400**	---	---	---	---	---	---	---	---	---	---	---	340	500
	June-2023	---	---	---	---	---	---	---	**2900**	---	**2000**	---	**2900**	---	---	---	---	---	---	---	680	1000
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	140	200
		ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	340	500
		---	---	---	---	---	**3100**	---	---	---	---	---	---	---	---	---	---	---	**680**	---	680	1000
	August-2023	---	---	---	**1200**	---	**2000**	---	---	---	---	---	---	---	---	---	---	---	**1900**	ND	---	500
	September-2023	---	**1800**	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	340	500
	October-2023	---	---	---	---	**1300**	---	---	---	---	---	---	---	---	---	---	ND	**2000**	---	---	340	500
	November-2023	ND	---	**2170**	---	**2310**	---	---	**2080**	---	---	**387**	---	---	---	---	ND	**3350**	---	**1420**	250	500
		---	**2580**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	500	1000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**996**	---	---	---	---	---	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	250
		---	**2280**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																				
Pyruvic Acid	November-2022	---	---	---	---	---	---	---	---	---	**46 J**	---	---	---	---	---	---	---	---	---	12	100
		---	---	---	---	---	---	---	**98 J**	---	---	---	---	ND	---	---	---	---	---	---	30	250
	December-2022	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	30	250
	November-2023	ND	---	ND	---	ND	---	---	ND	---	---	ND	---	---	---	---	ND	ND	---	ND	250	500
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	500	1000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	---	100
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	250
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1000
VOLATILE ORGANIC COMPOUNDS (ug/L)																						
2-Butanone (MEK)	November-2022	---	---	---	---	---	---	---	**3510**	---	---	---	---	**1140**	---	---	---	---	---	---	30	100
		---	---	---	---	---	---	---	---	---	**15600**	---	---	---	---	---	---	---	---	---	300	1000
	December-2022	**3140**	---	---	---	---	---	---	---	**3390**	---	---	---	---	---	---	---	---	---	---	30	100
		---	**26800**	---	---	---	**27700**	---	**5670**	---	---	---	---	---	**21700**	**7150**	---	---	---	---	300	1000
	January-2023	**3480**	---	---	---	---	---	**632**	---	---	---	---	---	---	---	---	---	---	---	---	30	100
		---	---	---	---	---	---	---	**7840**	---	---	---	---	**5470**	---	---	---	---	---	---	300	1000
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**14400**	---	---	---	---	600	2000
	March-2023	---	---	---	---	---	---	**257**	**2770**	---	---	---	---	---	---	---	---	---	---	---	30	100
	April-2023	---	---	---	---	---	---	**3420**	---	**5530**	---	---	---	---	---	---	---	---	---	---	750	2500
	May-2023	**5360**	---	---	---	---	---	**5970**	---	---	---	---	---	---	---	---	---	---	---	---	150	500
		---	---	---	---	---	---	---	**13600**	---	---	---	---	---	---	---	---	---	---	---	750	2500
	June-2023	---	---	---	---	---	---	---	**13800**	---	---	---	---	---	---	---	---	---	---	---	750	2500
		---	---	---	---	---	---	---	---	---	**20100**	---	**22600**	---	---	---	---	---	---	---	1500	5000
	July-2023	**5860**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	60	200
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**13500**	750	2500
		---	---	---	---	---	**38400**	---	---	---	---	---	---	---	---	---	---	---	**31600**	---	3000	10000
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5950**	60	200
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**7350**	---	150	500
		---	---	---	---	---	**3000**	---	---	---	---	---	---	---	---	---	---	---	---	---	750	2500
		---	---	---	**25600**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1500	5000
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**439**	---	---	---	60	200
		---	**17500**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	750	2500
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**211**	---	---	---	15	50
		---	---	---	---	**17800**	---	---	---	---	---	---	---	---	---	---	---	**33400**	---	---	1500	5000
	November-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**78.8 J**	---	---	---	30	100
		---	---	---	---	**17700**	---	---	**10600**	---	---	---	---	---	---	---	---	---	---	---	150	500
		3990	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	300	1000
		---	**25700**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	750	2500
		---	---	**22300**	---	---	---	---	---	---	---	**17600**	---	---	---	---	---	**26700**	---	**31200**	1500	5000
	December-2023	---	**13700**	---	---	---	---	---	---	---	---	---	---	---	---	**7060**	ND	---	---	---	150	500

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
Acetone	November-2022	---	---	---	---	---	---	---	---	---	---	---	---	**4420**	---	---	---	---	---	---	70	100
		---	---	---	---	---	---	---	**16100**	---	**38300**	---	---	---	---	---	---	---	---	---	700	1000
	December-2022	---	---	---	---	---	---	---	**15600**	**5170**	---	---	---	---	---	**9800**	---	---	---	---	700	1000
		8500	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1750	2500
		---	**53100**	---	---	---	**49900**	---	---	---	---	---	---	---	**45600**	---	---	---	---	---	3500	5000
	January-2023	---	---	---	---	---	---	**1530**	---	---	---	---	---	---	---	---	---	---	---	---	70	100
		---	---	---	---	---	---	---	**22200**	---	---	---	---	**14000**	---	---	---	---	---	---	700	1000
		8130	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1750	2500
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**23900**	---	---	---	---	1400	2000
	March-2023	---	---	---	---	---	---	**375**	---	---	---	---	---	---	---	---	---	---	---	---	70	100
		---	---	---	---	---	---	---	**6810**	---	---	---	---	---	---	---	---	---	---	---	700	1000
	April-2023	---	---	---	---	---	---	**8290**	---	**7560**	---	---	---	---	---	---	---	---	---	---	1750	2500
	May-2023	**10700**	---	---	---	---	---	**11700**	---	---	---	---	---	---	---	---	---	---	---	---	350	500
		---	---	---	---	---	---	---	**29600**	---	---	---	---	---	---	---	---	---	---	---	1750	2500
	June-2023	---	---	---	---	---	---	---	**29600**	---	---	---	---	---	---	---	---	---	---	---	1750	2500
		---	---	---	---	---	---	---	---	---	**61800**	---	**50800**	---	---	---	---	---	---	---	3500	5000
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1180**	---	---	---	140	200
		9780	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	700	1000
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**11600**	1750	2500
		---	---	---	---	---	**77200**	---	---	---	---	---	---	---	---	---	---	---	**69700**	---	7000	10000
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**20900**	700	1000
		---	---	---	---	---	**18700**	---	---	---	---	---	---	---	---	---	---	---	---	---	1750	2500
		---	---	---	**72500**	---	---	---	---	---	---	---	---	---	---	---	---	---	**87700**	---	3500	5000
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**188 J**	---	---	---	140	200
		---	**40100**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1750	2500
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**79**	---	---	---	35	50
		---	---	---	---	**66900**	---	---	---	---	---	---	---	---	---	---	---	**92900**	---	---	3500	5000
	November-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**104**	---	---	---	70	100
		5560	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	700	1000
		---	**64700**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1750	2500
		---	---	**43100**	---	**61100**	---	---	**36800**	---	---	**32800**	---	---	---	---	---	**53900**	---	**67800**	3500	5000
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	---	140	200
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	350	500
		---	**44300**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1750	2500

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
Benzene	November-2022	---	---	---	---	---	---	---	**7.4 J**	---	**2860**	---	---	**50.4**	---	---	---	---	---	---	4	10
	December-2022	**301**	**2960**	---	---	---	---	---	**6.3 J**	**622**	---	---	---	---	**1750**	**179**	---	---	---	---	4	10
		---	---	---	---	---	**6550**	---	---	---	---	---	---	---	---	---	---	---	---	---	40	100
	January-2023	**240**	---	---	---	---	---	**28.7**	**1620**	---	---	---	---	**167**	---	---	---	---	---	---	4	10
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1370**	---	---	---	---	4	10
	March-2023	---	---	---	---	---	---	**1540**	**727**	---	---	---	---	---	---	---	---	---	---	---	4	10
	April-2023	---	---	---	---	---	---	**3740**	---	**320**	---	---	---	---	---	---	---	---	---	---	4	10
	May-2023	**814**	---	---	---	---	---	**4890**	**3370**	---	---	---	---	---	---	---	---	---	---	---	20	50
	June-2023	---	---	---	---	---	---	---	**2630**	---	---	---	---	---	---	---	---	---	---	---	8	20
		---	---	---	---	---	---	---	---	---	**1400**	---	**1590**	---	---	---	---	---	---	---	20	50
	July-2023	**824**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**80.8**	---	---	---	8	20
		---	---	---	---	---	**4050**	---	---	---	---	---	---	---	---	---	---	---	**1420**	---	20	50
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**11800**	100	250
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**379**	8	20
		---	---	---	**2320**	---	**168**	---	---	---	---	---	---	---	---	---	---	---	ND	---	20	50
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**193**	---	---	---	8	20
		---	**468**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	100	250
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**399**	---	---	---	2	5
		---	---	---	---	**576**	---	---	---	---	---	---	---	---	---	---	---	**3100**	---	---	20	50
	November-2023	**80.8**	---	---	---	---	---	---	---	---	---	**31.3**	---	---	---	---	---	---	---	---	2	5
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**323**	---	---	---	4	10
		---	---	**1070**	---	**654**	---	---	**982**	---	---	---	---	---	---	---	---	**1960**	---	**1190**	20	50
		---	**870**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	100	250
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**932**	---	---	---	---	8	20
		---	**1330**	---	---	---	---	---	---	---	---	---	---	---	---	---	**463**	---	---	---	20	50
Ethylbenzene	December-2022	**67.3**	**172**	---	---	---	**287**	---	ND	**48.5**	---	---	---	---	**108**	**27.4**	---	---	---	---	4	10
	November-2022	---	---	---	---	---	---	---	ND	---	**194**	---	---	**16.2**	---	---	---	---	---	---	4	10
	January-2023	**65.1**	---	---	---	---	---	ND	**93.9**	---	---	---	---	**20.8**	---	---	---	---	---	---	4	10
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**151**	---	---	---	---	4	10
	March-2023	---	---	---	---	---	---	**131**	**71.5**	---	---	---	---	---	---	---	---	---	---	---	4	10
	April-2023	---	---	---	---	---	---	**186**	---	**43.4**	---	---	---	---	---	---	---	---	---	---	4	10
	May-2023	**124**	---	---	---	---	---	**276**	**144**	---	---	---	---	---	---	---	---	---	---	---	20	50
	June-2023	---	---	---	---	---	---	---	**104**	---	---	---	---	---	---	---	---	---	---	---	8	20
		---	---	---	---	---	---	---	---	---	**98**	---	**116**	---	---	---	---	---	---	---	20	50
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**666**	4	10
		128	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**82**	---	---	---	8	20
		---	---	---	---	---	**224**	---	---	---	---	---	---	---	---	---	---	---	**87.5**	---	20	50
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**16.8 J**	8	20
		---	---	---	**80**	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	20	50
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**22.8**	---	---	---	8	20
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	100	250
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**34.8**	---	---	---	2	5
		---	---	---	---	**42.5 J**	---	---	---	---	---	---	---	---	---	---	---	**247**	---	---	20	50
	November-2023	**26.3**	---	---	---	---	---	---	---	---	---	**45.4**	---	---	---	---	---	---	---	---	2	5
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**26.9**	---	---	---	4	10
		---	---	**62**	---	**54**	---	---	**76.5**	---	---	---	---	---	---	---	---	**224**	---	**60.5**	20	50
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	100	250
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**46**	---	---	---	---	8	20
		---	**69.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	**44 J**	---	---	---	20	50

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																				
Tetrahydrofuran	November-2022	---	---	---	---	---	---	---	**309**	---	---	---	---	**176**	---	---	---	---	---	---	100	100
		---	---	---	---	---	---	---	---	---	**8530**	---	---	---	---	---	---	---	---	---	1000	1000
	December-2022	**151**	---	---	---	---	---	---	**170**	**1120**	---	---	---	---	---	**663**	---	---	---	---	100	100
		---	**5210**	---	---	---	**19800**	---	---	---	---	---	---	---	**6130**	---	---	---	---	---	1000	1000
	January-2023	**183**	---	---	---	---	---	**566**	**1810**	---	---	---	---	**352**	---	---	---	---	---	---	100	100
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**3760**	---	---	---	---	2000	2000
	March-2023	---	---	---	---	---	---	**353**	**464**	---	---	---	---	---	---	---	---	---	---	---	100	100
	April-2023	---	---	---	---	---	---	**2410**	---	**4790**	---	---	---	---	---	---	---	---	---	---	100	100
	May-2023	ND	---	---	---	---	---	**2740**	**2380**	---	---	---	---	---	---	---	---	---	---	---	500	500
	June-2023	---	---	---	---	---	---	---	**2100**	---	---	---	---	---	---	---	---	---	---	---	200	200
		---	---	---	---	---	---	---	---	---	**7320**	---	**6670**	---	---	---	---	---	---	---	500	500
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**2960**	100	100
		411	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**616**	---	---	---	200	200
		---	---	---	---	---	**8380**	---	---	---	---	---	---	---	---	---	---	---	**5310**	---	500	500
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**2880**	200	200
		---	---	---	**7370**	---	**3210**	---	---	---	---	---	---	---	---	---	---	---	**1200**	---	500	500
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**343**	---	---	---	200	200
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2500	2500
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**606**	---	---	---	50	50
		---	---	---	---	**4870**	---	---	---	---	---	---	---	---	---	---	---	**9140**	---	---	500	500
	November-2023	**199**	---	---	---	---	---	---	---	---	---	**325**	---	---	---	---	---	---	---	---	50	50
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**358**	---	---	---	100	100
		---	---	**4780**	---	**3320**	---	---	**785**	---	---	---	---	---	---	---	---	**5370**	---	**4600**	500	500
		---	**4620**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2500	2500
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**4240**	---	---	---	---	200	200
		---	**2620**	---	---	---	---	---	---	---	---	---	---	---	---	---	**502**	---	---	---	500	500
Toluene	November-2022	---	---	---	---	---	---	---	ND	---	**214**	---	---	**32.8**	---	---	---	---	---	---	5	10
	December-2022	**122**	**175**	---	---	---	**195**	---	ND	**113**	---	---	---	---	**113**	**48.3**	---	---	---	---	5	10
	January-2023	**122**	---	---	---	---	---	**8 J**	**139**	---	---	---	---	**35.3**	---	---	---	---	---	---	5	10
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**224**	---	---	---	---	5	10
	March-2023	---	---	---	---	---	---	**182**	**98.1**	---	---	---	---	---	---	---	---	---	---	---	5	10
	April-2023	---	---	---	---	---	---	**303**	---	**94.4**	---	---	---	---	---	---	---	---	---	---	5	10
	May-2023	**258**	---	---	---	---	---	**371**	**239**	---	---	---	---	---	---	---	---	---	---	---	25	50
	June-2023	---	---	---	---	---	---	---	**165**	---	---	---	---	---	---	---	---	---	---	---	10	20
		---	---	---	---	---	---	---	---	---	**67**	---	**212**	---	---	---	---	---	---	---	25	50
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**965**	5	10
		248	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**107**	---	---	---	10	20
		---	---	---	---	---	**218**	---	---	---	---	---	---	---	---	---	---	---	**118**	---	25	50
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**36.6**	10	20
		---	---	---	**105**	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	25	50
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**40.6**	---	---	---	10	20
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	125	250
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**59.2**	---	---	---	2.5	5
		---	---	---	---	**37 J**	---	---	---	---	---	---	---	---	---	---	---	**235**	---	---	25	50
	November-2023	**47.3**	---	---	---	---	---	---	---	---	---	**50.4**	---	---	---	---	---	---	---	---	2.5	5
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**48.7**	---	---	---	5	10
		---	---	**62.5**	---	**51.5**	---	---	**114**	---	---	---	---	---	---	---	---	**167**	---	**114**	25	50
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	125	250
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**73.2**	---	---	---	---	10	20
		---	**83.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	**74.5**	---	---	---	25	50

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-53	EW-54	EW-55	EW-57	EW-58	EW-59	EW-60	EW-61	EW-62	EW-64	EW-65	EW-67	EW-68	EW-78	EW-87	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																				
Xylenes, Total	November-2022	---	---	---	---	---	---	---	ND	---	**185**	---	---	**37.8**	---	---	---	---	---	---	10	30
	December-2022	**161**	**222**	---	---	---	**186**	---	ND	**112**	---	---	---	---	**197**	**59.9**	---	---	---	---	10	30
	January-2023	**138**	---	---	---	---	---	ND	**134**	---	---	---	---	**38.1**	---	---	---	---	---	---	10	30
	February-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**240**	---	---	---	---	10	30
	March-2023	---	---	---	---	---	---	**240**	**111**	---	---	---	---	---	---	---	---	---	---	---	10	30
	April-2023	---	---	---	---	---	---	**329**	---	**97.4**	---	---	---	---	---	---	---	---	---	---	10	30
	May-2023	**274**	---	---	---	---	---	**441**	**230**	---	---	---	---	---	---	---	---	---	---	---	50	150
	June-2023	---	---	---	---	---	---	---	**177**	---	---	---	---	---	---	---	---	---	---	---	20	60
		---	---	---	---	---	---	---	---	---	**92 J**	---	**136 J**	---	---	---	---	---	---	---	50	150
	July-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1130**	10	30
		257	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**74.4**	---	---	---	20	60
		---	---	---	---	---	**230**	---	---	---	---	---	---	---	---	---	---	---	**174**	---	50	150
	August-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**48.4 J**	20	60
		---	---	---	**180**	---	ND	---	---	---	---	---	---	---	---	---	---	---	ND	---	50	150
	September-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	20	60
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	250	750
	October-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**30.6**	---	---	---	5	15
		---	---	---	---	**134 J**	---	---	---	---	---	---	---	---	---	---	---	**328**	---	---	50	150
	November-2023	**56**	---	---	---	---	---	---	---	---	---	**48**	---	---	---	---	---	---	---	---	5	15
		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**25.3 J**	---	---	---	10	30
		---	---	**116 J**	---	**104 J**	---	---	**132 J**	---	---	---	---	---	---	---	---	**306**	---	**138 J**	50	150
		---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	250	750
	December-2023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**167**	---	---	---	---	20	60
		---	**224**	---	---	---	---	---	---	---	---	---	---	---	---	---	ND	---	---	---	50	150

--- = not applicable/available

J = Parameter was detected at a concentration greater than the laboratory's LOD, but less than the laboratory's LOQ. Concentration is considered estimated.

LOD = laboratory's Limit of Detection

LOQ = laboratory's Limit of Quantitation

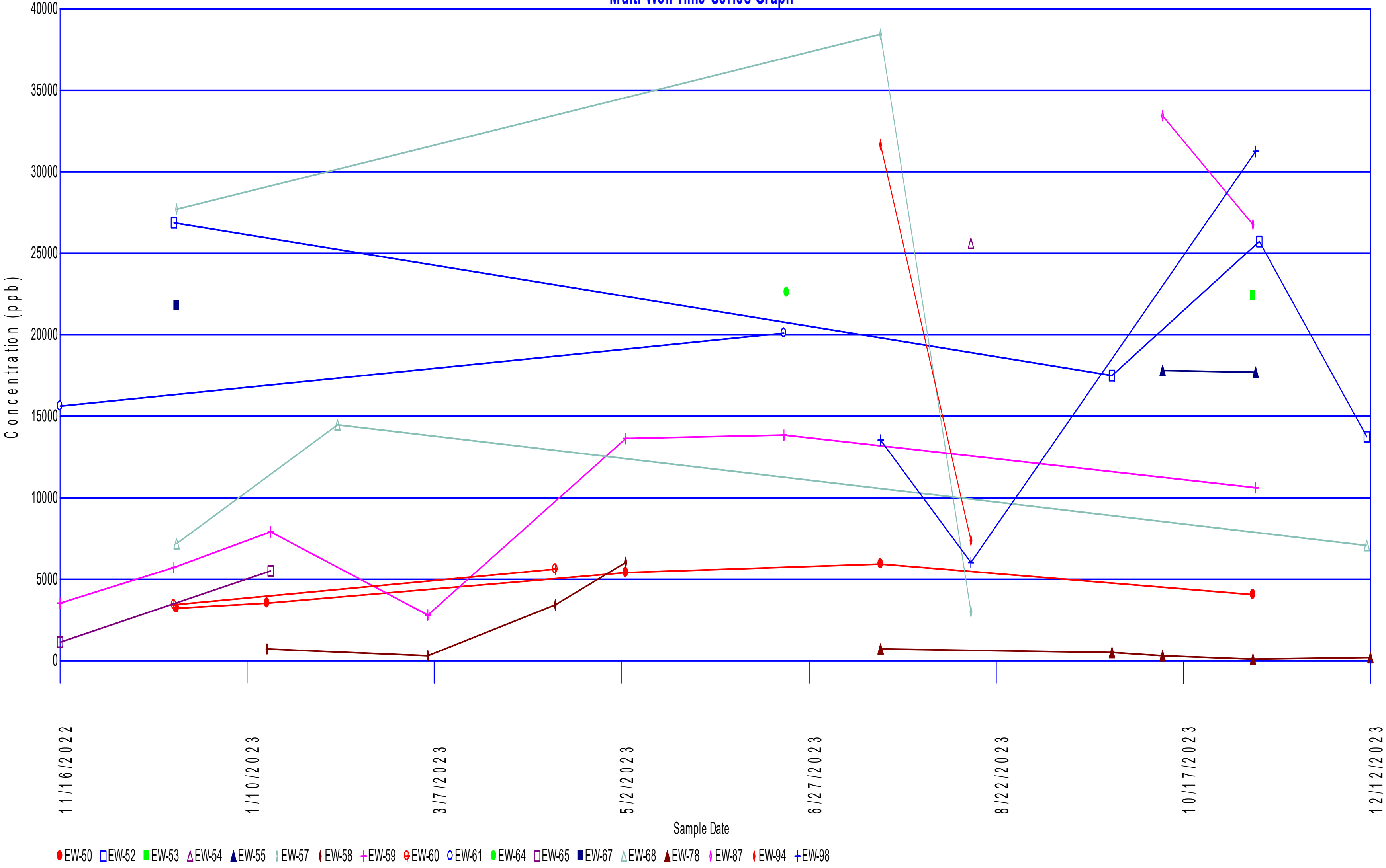
mg/L = milligrams per liter

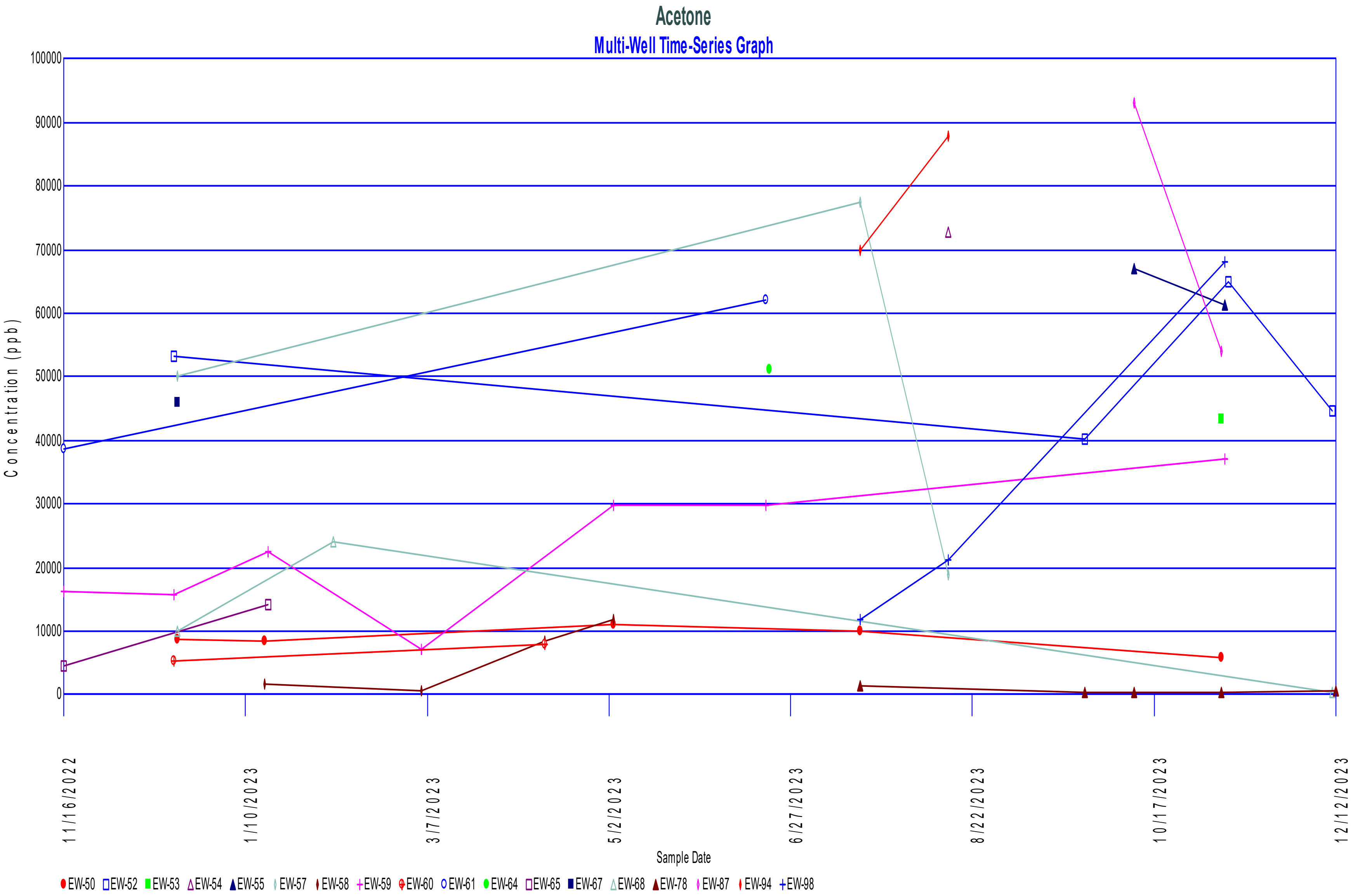
ND = Not Detected

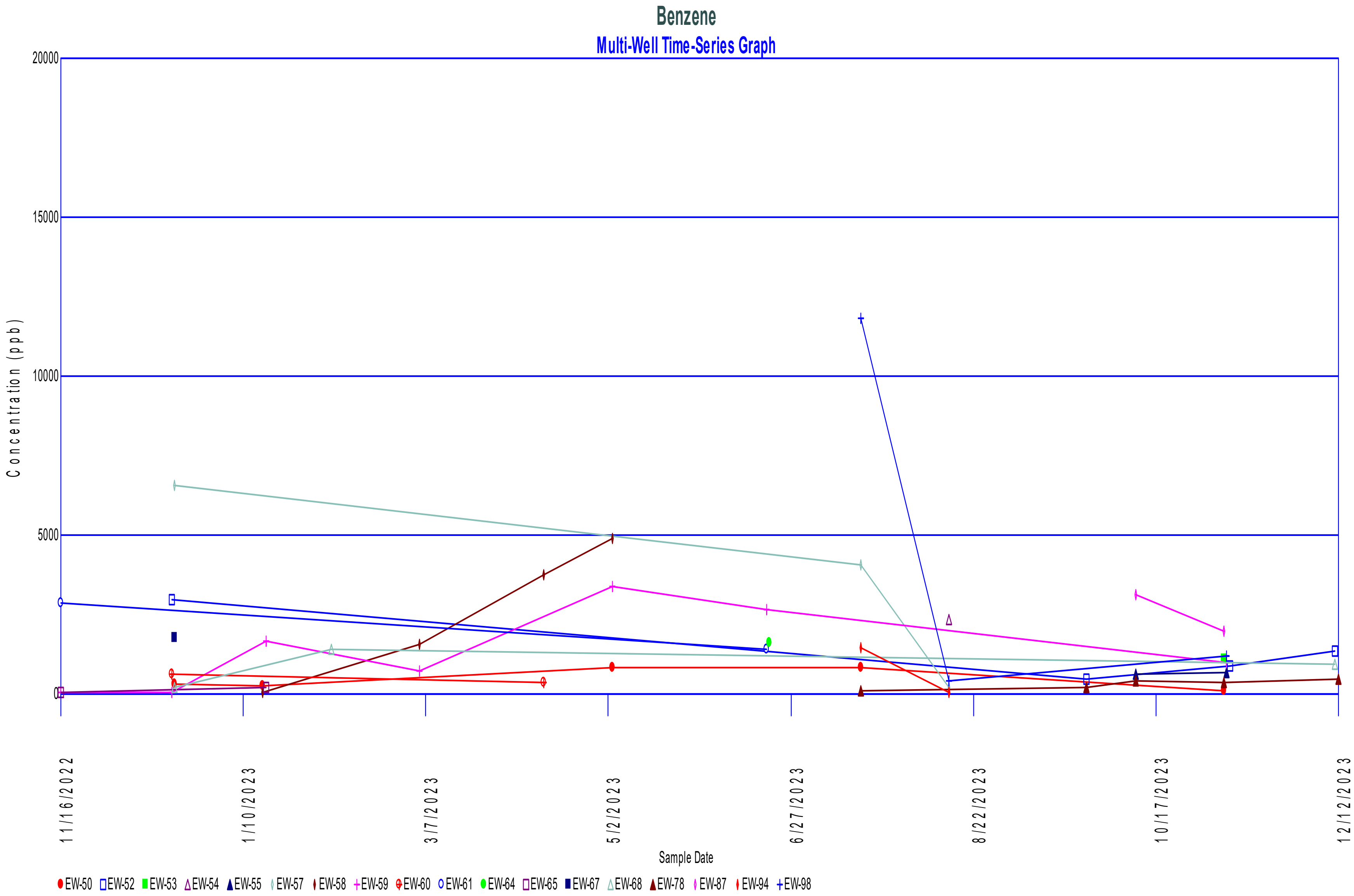
ug/L = micrograms per liter

2-Butanone

Multi-Well Time-Series Graph

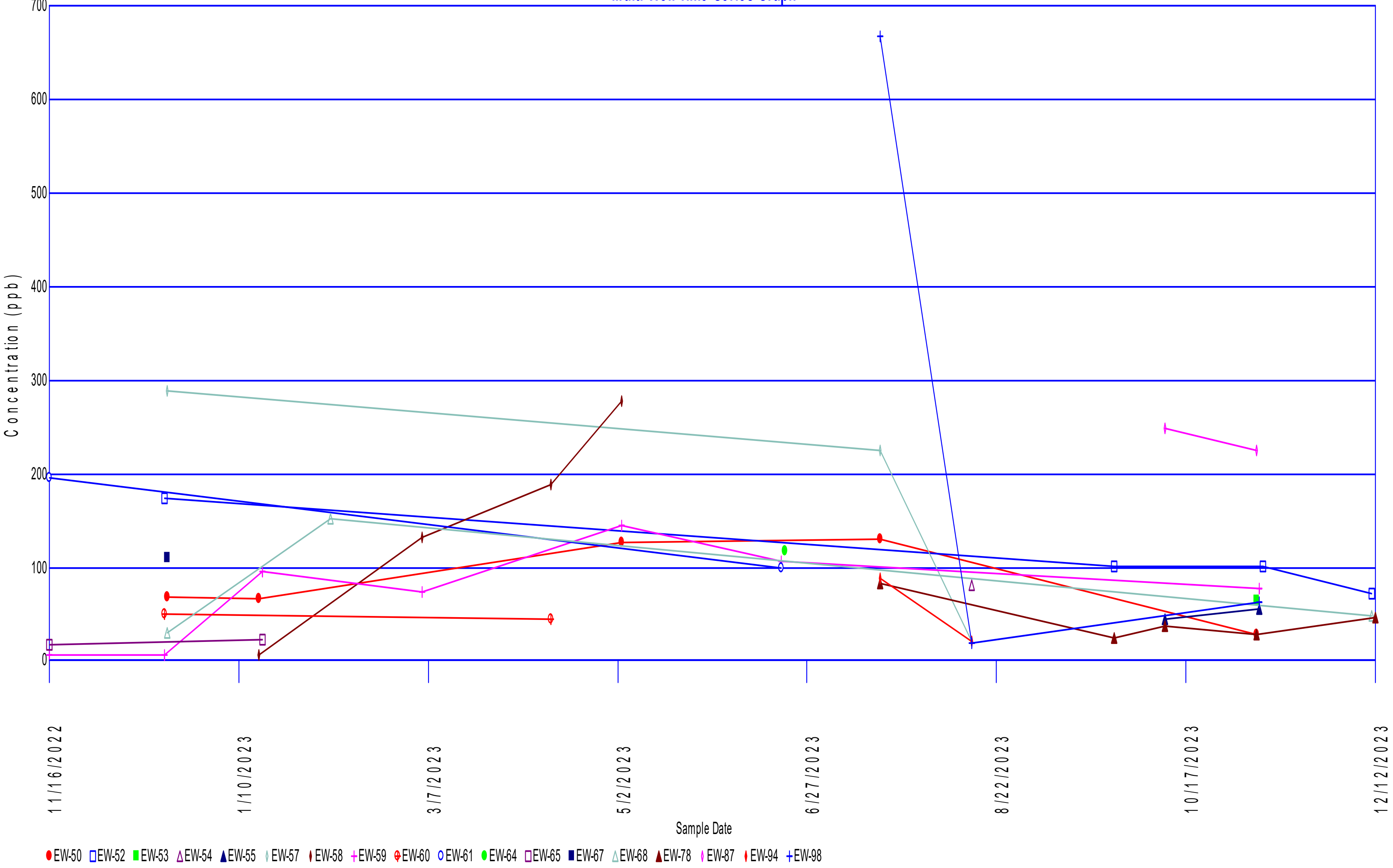


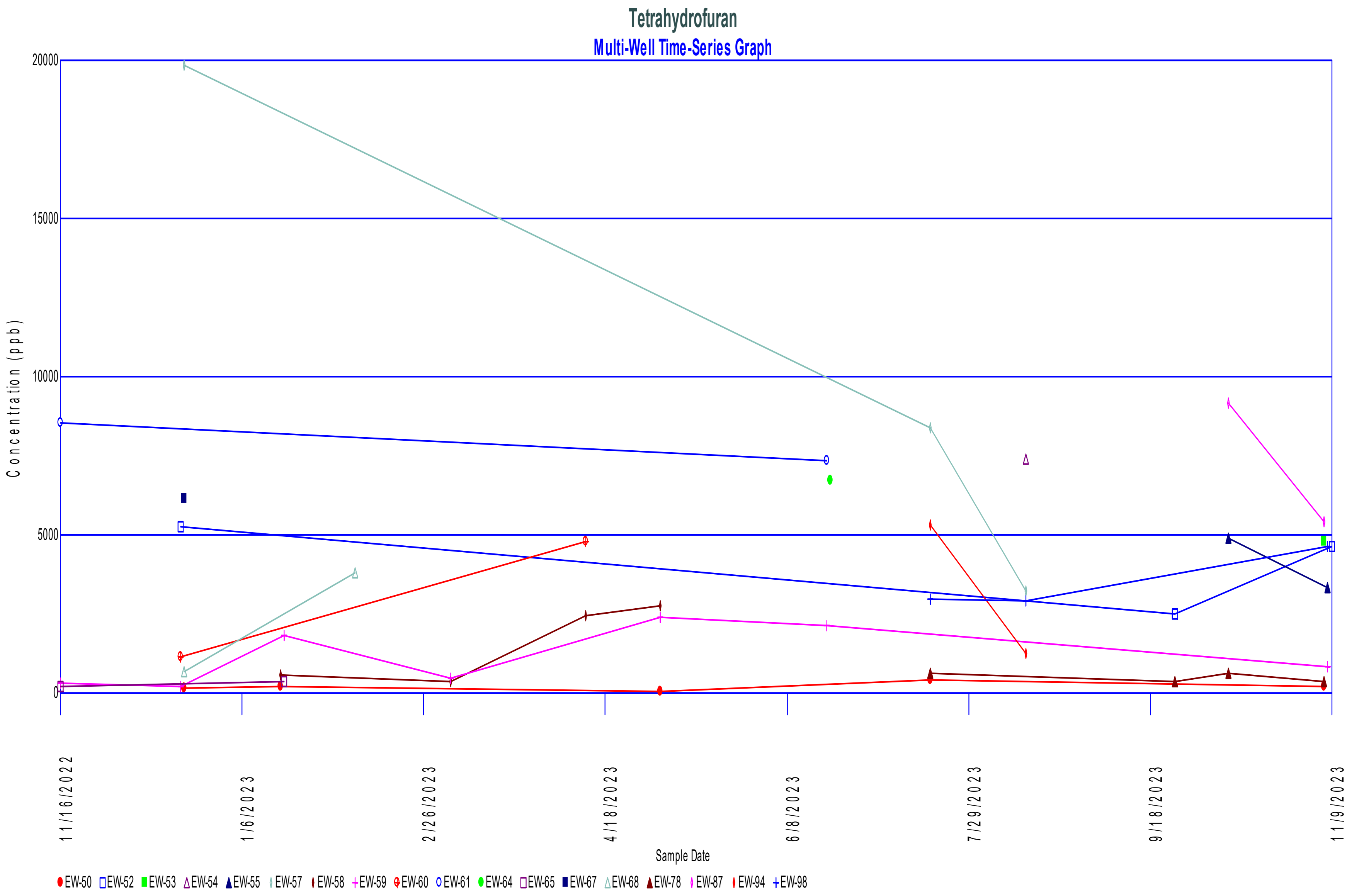

Acetone
Multi-Well Time-Series Graph
Concentration (ppb)
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
11/16/2022
1/10/2023
3/7/2023
5/2/2023
6/27/2023
8/22/2023
10/17/2023
12/12/2023
Sample Date
EW-50
EW-52
EW-53
EW-54
EW-55
EW-57
EW-58
EW-59
EW-60
EW-61
EW-64
EW-65
EW-67
EW-68
EW-78
EW-87
EW-94
EW-98


Benzene
Multi-Well Time-Series Graph
20000
15000
10000
5000
0
Concentration (ppb)
11/16/2022
1/10/2023
3/7/2023
5/2/2023
6/27/2023
8/22/2023
10/17/2023
12/12/2023
Sample Date
EW-50
EW-52
EW-53
EW-54
EW-55
EW-57
EW-58
EW-59
EW-60
EW-61
EW-64
EW-65
EW-67
EW-68
EW-78
EW-87
EW-94
EW-98

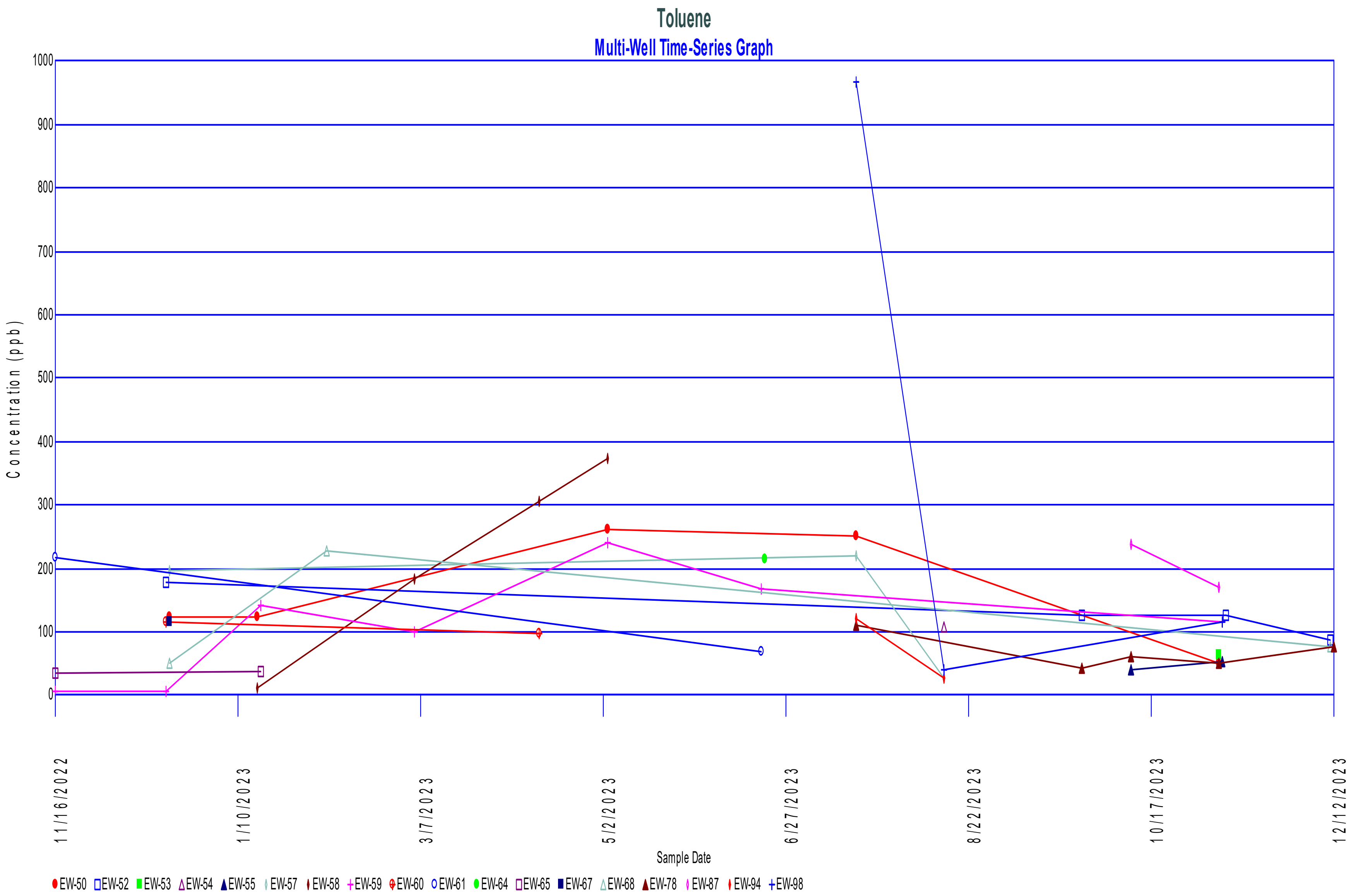
Ethylbenzene

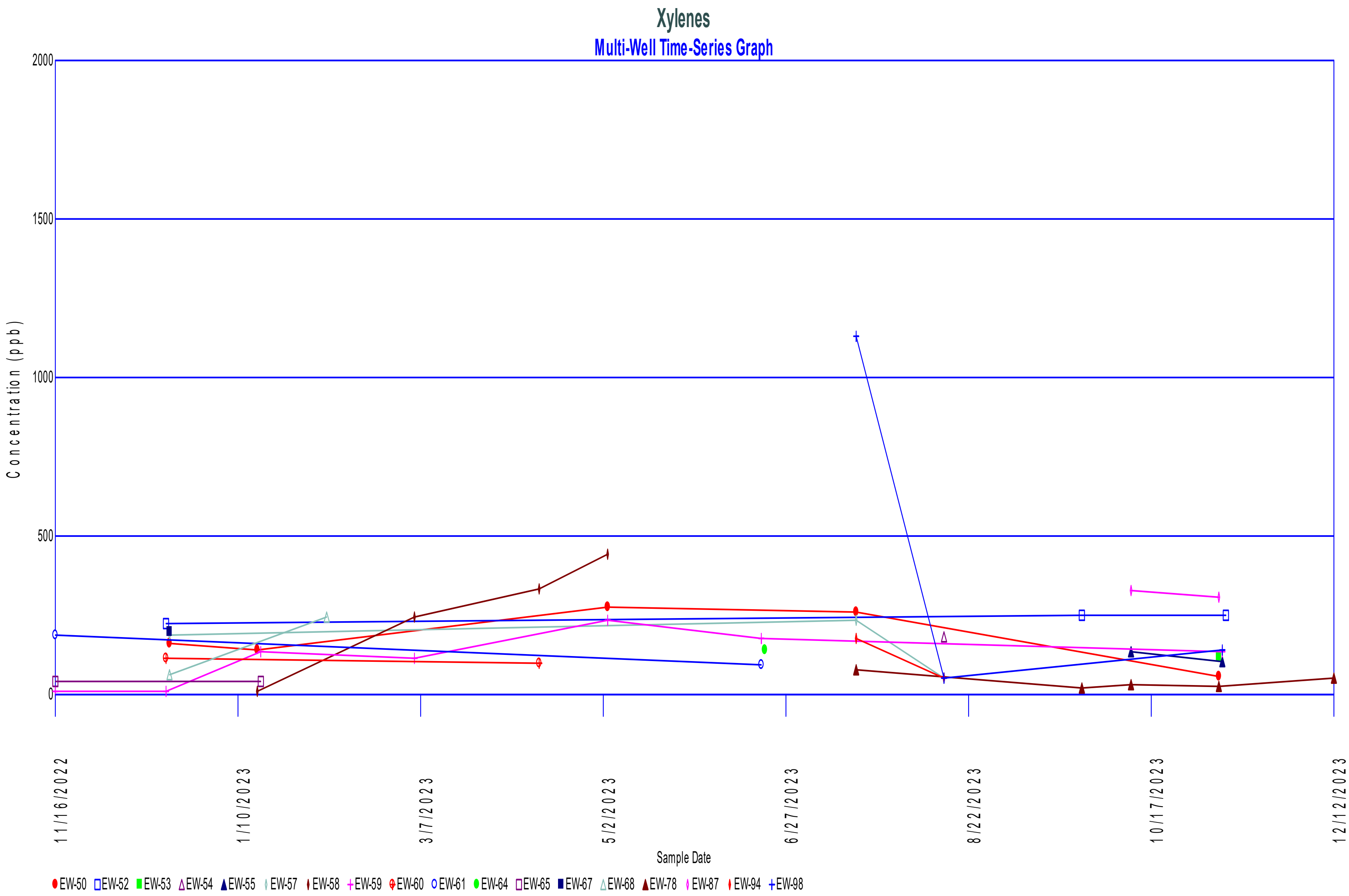
Multi-Well Time-Series Graph





Tetrahydrofuran
Multi-Well Time-Series Graph
Concentration (ppb)
20000
15000
10000
5000
0
11/16/2022
1/6/2023
2/26/2023
4/18/2023
6/8/2023
7/29/2023
9/18/2023
11/9/2023
Sample Date
EW-50
EW-52
EW-53
EW-54
EW-55
EW-57
EW-58
EW-59
EW-60
EW-61
EW-64
EW-65
EW-67
EW-68
EW-78
EW-87
EW-94
EW-98


Toluene
Multi-Well Time-Series Graph
Concentration (ppb)
1000
900
800
700
600
500
400
300
200
100
0
11/16/2022
1/10/2023
3/7/2023
5/2/2023
6/27/2023
8/22/2023
10/17/2023
12/12/2023
Sample Date
● EW-50
□ EW-52
■ EW-53
△ EW-54
▲ EW-55
EW-57
EW-58
+ EW-59
EW-60
○ EW-61
● EW-64
□ EW-65
■ EW-67
△ EW-68
▲ EW-78
EW-87
EW-94
+ EW-98


Xylenes
Multi-Well Time-Series Graph
Concentration (ppb)
2000
1500
1000
500
0
11/16/2022
1/10/2023
3/7/2023
5/2/2023
6/27/2023
8/22/2023
10/17/2023
12/12/2023
Sample Date
EW-50
EW-52
EW-53
EW-54
EW-55
EW-57
EW-58
EW-59
EW-60
EW-61
EW-64
EW-65
EW-67
EW-68
EW-78
EW-87
EW-94
EW-98