September 2023
Monthly Compliance Report

Solid Waste Permit No. 588
Bristol Integrated Solid Waste Management Facility
2655 Valley Drive
Bristol, VA 24201
(276) 645-7233

SCS ENGINEERS

02218208.05-30 | October 10, 2023

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

Table of Contents

Table of Contents

Figures

Table of Contents

Section Page

Tables

Appendices

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 September 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 Third Quarter surface emissions monitoring event on August 23, 2023. No exceedances were detected during this quarterly monitoring event on the serpentine route, but eight exceedances were detected at the surface cover pipe penetrations. A quarterly SEM report documenting corrective actions and additional monitoring 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 August 30, 2023.

1.1.1.2 Weekly SEM

In addition to the standard regulatory quarterly surface emissions monitoring, SCS performed additional surface emissions monitoring on September 7, 2023; September 15, 2023; September 19, 2023; and September 25, 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 September 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.

SCS submitted letters to VDEQ outlining the results of the September monitoring events on September 13, 2023; September 20, 2023; September 27, 2023, and October 4, 2023. Copies of

those submittals are included in Appendix A. Table 1 summarizes the results of the four monitoring events in September.

Table 1. Summary of September Surface Emissions Monitoring

Description	September 7, 2023	September 15, 2023	September 19, 2023	September 25, 2023
Number of Points Sampled	174	176	176	177
Number of Points in Serpentine Route	100	100	100	100
Number of Points at Surface Cover Penetrations	74	76	76	77
Number of Exceedances	2	2	4	2
Number of Serpentine Exceedances	0	1	1	0
Number of Pipe Penetration Exceedances	2	1	3	2

One new serpentine exceedance (Tag #94) was detected and ultimately resolved in September 2023. Corrective actions included addition and compaction of low-permeability soil and wellhead vacuum adjustments at nearby collectors.

New exceedances were detected at pipe penetrations of three vertical extraction wells (EW-67, EW-75, and EW-82). Exceedances at these locations can be attributed to a variety of factors. Ongoing construction activities and connection of a new temporary flare caused periods of vacuum loss as section of the GCCS were temporarily isolated. However, by the final weekly monitoring event of the month, these issues had been resolved with only two ongoing exceedances remaining (EW-55 and EW-90). Additional corrective actions at these locations may include additional soil, addition of a well-bore skirt addition, installation of a foam or bentonite seal, continued and improved dewatering activities, and well tuning to increase gas extraction. Corrective actions to address these exceedances are planned for the month of October 2023.

1.1.2 Leachate Collection Emissions

SCS Field Services (SCS-FS) visited the Bristol Landfill on September 8, 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.

Table 2. Leachate Cleanout Pipe Monitoring Results

Description	ID#	CH_4 (% by Vol)	CO_2 (% by Vol)	O_2 (% by Vol)	Balance Gas (% by Vol)	Initial Temp (°F)	Adj Temp (°F)	Initial Static Pressure (in H_2O)	Adj Static Pressure (in H_2O)	System Pressure (in H_2O)
Southern Cleanouts Gradient West	LC01	31.77	42.44	3.40	22.39	72.70	72.60	-12.74	-12.51	-13.14
Southern Cleanouts Gradient East	LC02	38.90	47.66	1.51	11.93	72.70	72.70	-13.06	-12.67	-13.27
Southern Cleanouts Leachate Center	LC03	14.51	13.78	14.22	57.49	72.90	72.90	-12.84	-12.84	-13.26
Southern Cleanouts Witness East	LC04	20.76	15.34	9.80	54.10	72.80	72.90	-12.89	-12.84	-13.02
Southern Cleanouts Leachate West	LC05	29.77	36.24	5.33	28.66	74.00	74.40	-12.84	-13.02	-13.15
Southern Cleanouts Gradient Center West	LC06	25.65	29.14	7.44	37.77	75.70	76.00	-12.81	-12.84	-13.47
Southern Cleanouts Leachate East	LC08	20.51	24.52	9.69	45.28	77.50	77.60	-12.93	-12.89	-13.19
Southern Cleanouts Gradient Center East	LC09	46.33	28.16	4.74	20.77	76.90	77.00	-12.84	-12.84	-13.20
Southern Cleanouts Leachate West	LC10	37.04	28.79	6.59	27.58	76.10	76.10	-12.84	-12.90	-14.03
Northern Cleanouts Leachate East	NC01	1.66	1.36	19.94	77.04	88.10	84.20	-0.04	-0.04	0.00
Northern Cleanouts Leachate Center	NC02	1.59	1.01	20.00	77.40	95.30	97.10	-0.12	-0.09	0.00
Northern Cleanouts Leachate West	NC03	1.95	1.30	19.71	77.04	87.60	86.90	-0.16	-0.11	0.00
Northern Cleanouts Witness East	NC04	14.77	12.81	15.10	57.32	96.40	97.30	-17.57	-17.57	0.00
Northern Cleanouts Witness Center	NC05	45.19	43.82	1.85	9.14	77.80	76.90	-17.57	-17.57	-0.01
Northern Cleanouts Witness West	NC06	0.19	0.46	20.41	78.94	79.30	78.40	-17.35	-17.25	0.00
Northern Cleanouts Gradient East	NC07	47.66	48.33	0.53	3.48	86.80	87.30	-13.86	-13.86	0.00
Northern Cleanouts Gradient Center East	NC08	52.46	47.54	0.00	0.00	92.20	93.20	-13.18	-13.18	0.00
Northern Cleanouts Gradient Center West	NC09	53.07	46.49	0.16	0.28	84.70	83.60	-13.04	-12.93	0.00
Northern Cleanouts Gradient West	NC10	0.32	0.78	20.27	78.63	78.10	78.00	-13.52	-13.29	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:

- Primary flare troubleshooting and ignition
- Troubleshooting air compressor
- Investigation of high oxygen levels
- Replacing a Kanaflex on sidewall odor mitigation system wellheads
- Modifications to lateral piping

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 e-mail. Average daily temperatures recorded by the remote monitoring system during the month of September 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 September 2023.

1.3.1 Automated Wellhead Temperature Measurements

During this monitoring period, an automated temperature sensor was removed from EW-79 and installed in EW-36A. Temperature data for EW-36A has been collected since its installation date.

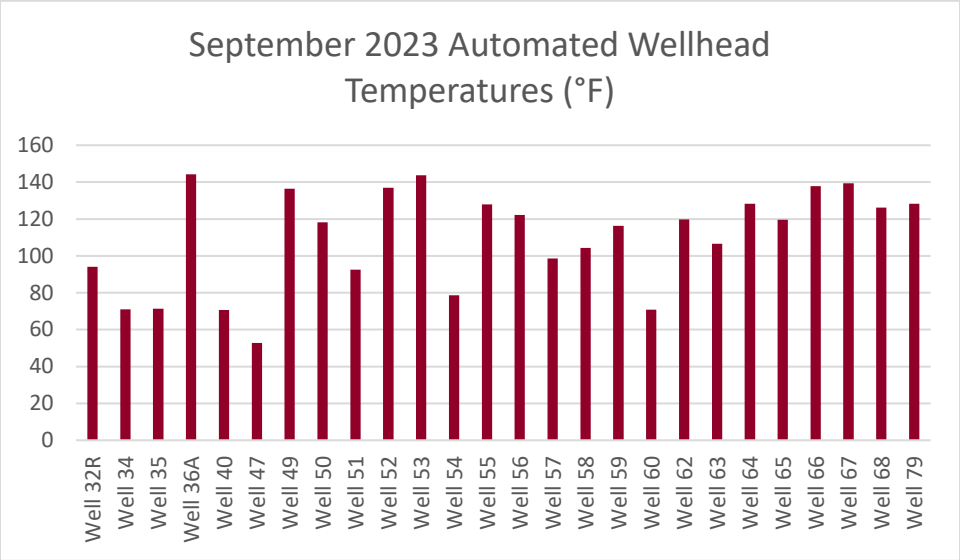
SCS reviewed the automated hourly temperature measurements from September 2023, and identified the following trends:

- **Temperatures over 145°F:** Temperatures over the NESHAP AAAA compliance threshold of 145°F were recorded consistently at EW-52, EW-53, EW-55 and EW-67 in September. Although temperatures fluctuate throughout the wellfield, SCS is continuing to see high temperatures at certain wells during these monitoring periods. The highest average temperatures were measured at EW-36A and EW-53 (see Figure 1). SCS believes that the increase in temperatures at select well heads suggests that, with the increase of pneumatic pump operations and increased liquids removal, the collection system is being more effectively dewatered. Removal of liquids from the well 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. Liquids removal in combination with the addition of new LFG collection infrastructure from the recent GCCS expansion is likely providing more pathways for extraction of the warmer landfill gas from deeper in the waste mass; thus the increased average temperatures.

- **Low temperatures at certain wells:** Average temperatures were significantly lower at EW-34, 35 and EW-40 relative to other wellheads. These wellheads also exhibited low LFG flow rates (less than 7 scfm), as measured during monthly and weekly wellfield monitoring events. These low temperatures are likely close to ambient because little to no LFG is passing through the wellhead where the sensors are placed.
- **Erroneous Readings:** At other wells, such as EW-47 and EW-60, average temperatures reported appeared more likely to be erroneous than a reflection of low LFG flow/ambient temperature, because temperatures of 0°F were measured intermittently throughout the monitoring period. See Figure 1. Field staff have identified battery die-out in various sensors the past two months and are working to replace the batteries.

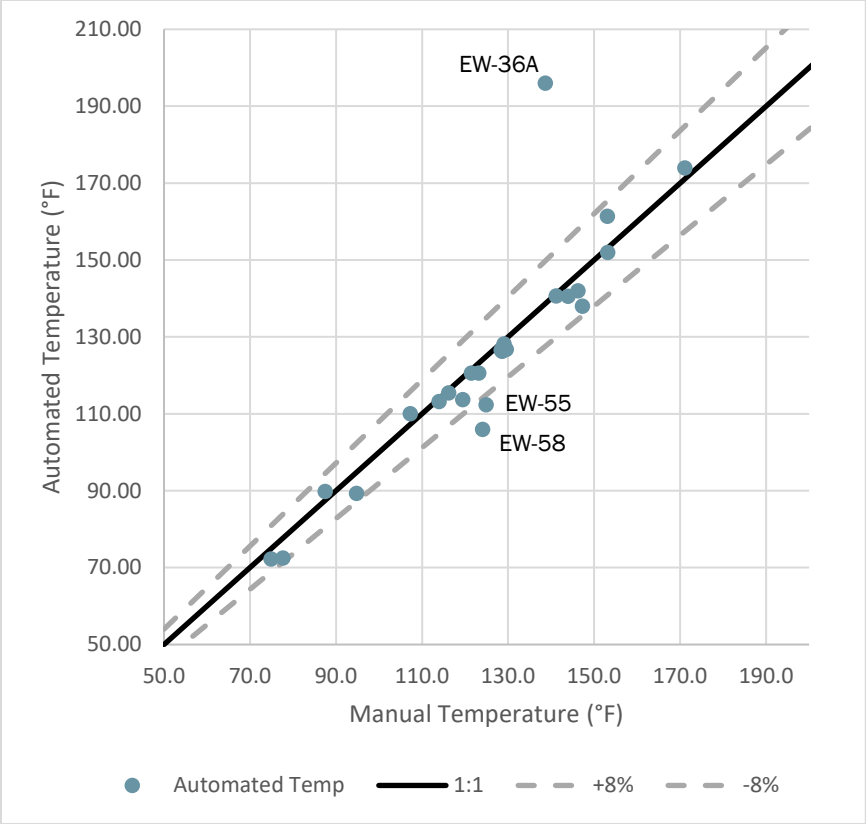
Figure 1. Average Automated Wellhead Temperatures



1.3.2 Comparison with 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 this comparison, 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.

Figure 2. Automated vs. Manual Temperature Measurements



Temperature comparisons outside the ±8% deviation goal lines were found for wells EW-36A, EW-55, and EW-58. At EW-36A, field technicians have reported that the temperature device used for manual measurements is too short to overcome the thickness of the stainless-steel well casing and measure the temperature in the gas stream. SCS is investigating alternatives to measure temperature more accurately with a portable instrument. The temperature disparities at EW-55 and EW-58 are still under investigation for a potential cause, but the LFG flow measured during the compliance monitoring events in September shows that low LFG flow (less than 10 cfm) may be causing the automated sensors to measure temperatures lower than temperatures measured manually.

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 September 11, 2023, with follow-up monitoring several days after. Additionally, SCS typically measures wellhead temperatures at the SWP No. 588 Landfill on a bimonthly basis. During this monitoring period, temperature exceedances were resolved at EW-51, EW-53, EW-54, EW-55, EW-61, EW-84, EW-86, EW-88, EW-89, EW-90, EW-97, EW-99 and EW-100. A HOV request was submitted for EW-53, EW-61, EW-84, EW-86, EW-89, EW-90, and EW-100 to VDEQ on August 8, 2023. SCS received approval for this HOV request on September 28, 2023. See Table 4 for the statuses of all exceedances recorded during this monitoring period.

Table 3. September Temperature Exceedance Summary

Well ID	Initial Exceedance Date	Last date/temperature measured	Duration of Exceedance	Status as of 9/25/23
EW-51	8/28/23	9/7/23 107.3°	10 days	Resolved, within 15-day timeline
EW-52	8/15/23	9/25/23 177.8°F	41 days	Ongoing, within 60-day timeline
EW-53	8/28/23	9/15/23 143.8°F	18 days	Resolved, HOV approved 9/28/23
EW-54	9/11/23	9/15/23 94.8°F	4 days	Resolved, within 15-day timeline
EW-55	9/14/23	9/15/23 124.9°F	1 day	Resolved, within 15-day timeline
EW-58	9/27/23	9/27/23 160.8°F	1 day	Ongoing, within 15-day timeline
EW-61	6/27/23	9/25/23 151.2°F	90 days	Resolved, HOV approved 9/28/23
EW-64	8/24/23	9/25/23 145.4°	32 days	Ongoing, within 60-day timeline
EW-74	9/25/23	9/25/23 146.2°F	1 day	Ongoing, within 15-day timeline
EW-81	9/25/23	9/25/23 161.3°F	1 day	Ongoing, within 15-day timeline
EW-84	4/27/23	9/25/23 159.9°F	151 days	Resolved, HOV approved 9/28/23
EW-86	9/11/23	9/25/23 154.1°F	14 days	Resolved, HOV approved 9/28/23
EW-88	8/28/23	9/7/23 136.5°F	10 days	Resolved, within 15-day timeline
EW-88	9/25/23	9/25/23 153.2°F	1 day	Ongoing, within 15-day timeline
EW-89	5/30/23	9/25/23 177.3°F	118 days	Resolved, HOV approved 9/28/23
EW-90	8/28/23	9/25/23 166.3°F	28 days	Resolved, HOV approved 9/28/23
EW-91	9/25/23	9/25/23 185.7°F	1 day	Ongoing, within 15-day timeline
EW-92	9/25/23	9/25/23 147.9°F	1 day	Ongoing, within 15-day timeline
EW-97	8/28/23	9/7/23 142.2°	10 days	Resolved, within 15-day timeline
EW-99	8/16/23	9/25/23 143.9°	40 days	Resolved, within 60-day timeline
EW-100	4/27/23	9/25/23 163.8°	151 days	Resolved, HOV approved 9/28/23

1.3.4 LFG Sampling

SCS collected LFG samples from wells with temperature exceedances lasting more than 7 days using 1.5-L Summa canisters on August 24, 2023; August 31, 2023; September 7; and September 15, 2023, to fulfill the requirement in 40 CFR 63.1961(a)(5). The samples were sent to Enthalpy Analytical for lab analysis of carbon monoxide (CO) and hydrogen (H_2) content. Lab results are summarized in Table 4.

Table 4. LFG Wellhead Sampling Summary

Sample Date		8/24/23	8/31/23	9/7/23	9/15/23
37	CO (ppmv)	--	616	327	--
	H2 (Vol. %)	--	17.8	13.9	--
51	CO (ppmv)	--	1330	--	--
	H2 (Vol. %)	--	23.3	--	--
52	CO (ppmv)	ND	ND	905	ND
	H2 (Vol. %)	1.47	1.86	24.4	2.48
53	CO (ppmv)	--	1120	679	--
	H2 (Vol. %)	--	14.0	9.43	--
58	CO (ppmv)	ND	--	--	--
	H2 (Vol. %)	0.22	--	--	--
61	CO (ppmv)	256	--	--	105
	H2 (Vol. %)	6.08	--	--	3.68
64	CO (ppmv)	ND	ND	ND	ND
	H2 (Vol. %)	0.87	0.62	0.67	1.31
84	CO (ppmv)	408	327	351	358
	H2 (Vol. %)	7.48	6.61	5.16	6.91
86	CO (ppmv)	--	--	--	110
	H2 (Vol. %)	--	--	--	1.55
88	CO (ppmv)	--	463	--	--
	H2 (Vol. %)	--	11.7	--	--
89	CO (ppmv)	1250	1230	1160	1090
	H2 (Vol. %)	33.3	33.8	31.4	29.6
90	CO (ppmv)	--	226	352	122
	H2 (Vol. %)	--	3.91	6.09	2.11
97	CO (ppmv)	--	152	--	--
	H2 (Vol. %)	--	4.74	--	--
99	CO (ppmv)	ND	ND	ND	ND
	H2 (Vol. %)	0.99	1.13	1.24	1.12
100	CO (ppmv)	ND	ND	ND	98.6
	H2 (Vol. %)	4.02	4.35	4.60	5.13

The presence of hydrogen in all the samples collected during this monitoring period indicates that combustion reactions are unlikely. A result of non-detect for three weeks in a row at EW-64 and EW-99 indicates that sampling may continue on a monthly basis for the remaining duration of the temperature exceedance.

The wells with corresponding charts in Figures 3, 4, 5, and 6 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. Well EW-32 experienced significant decreases in reported carbon monoxide and hydrogen concentrations in April and May that have stabilized since.

Figure 3. EW-32 Enhanced Monitoring Trends

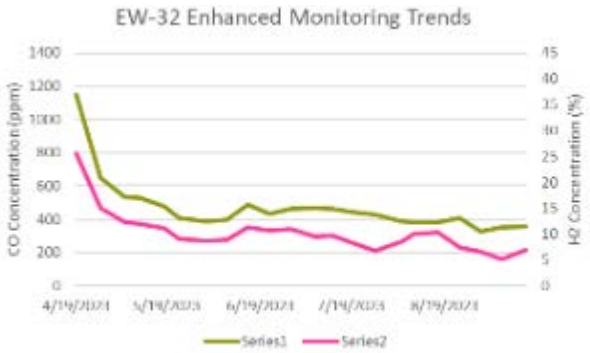


Figure 4. EW-64 Enhanced Monitoring Trends

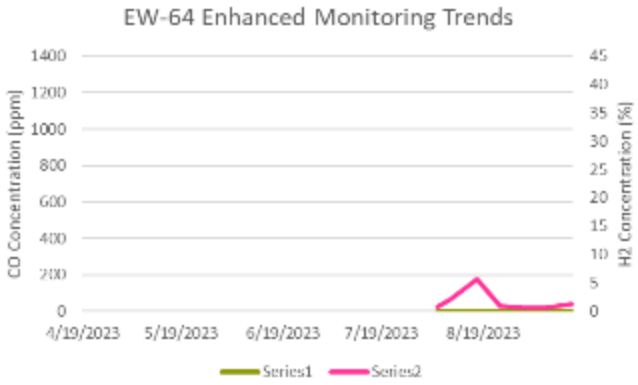


Figure 5. EW-89 Enhanced Monitoring Trends

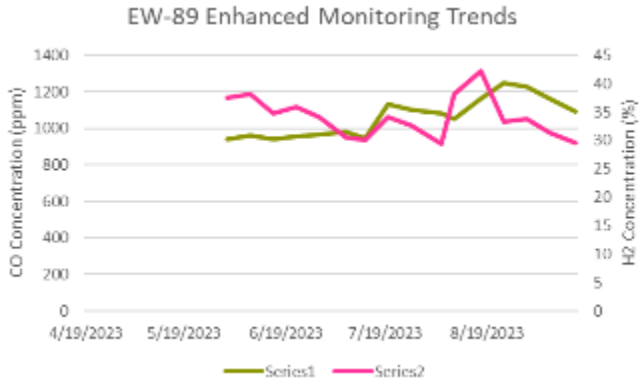
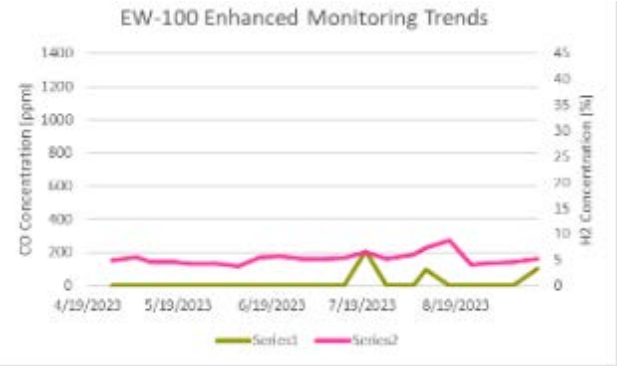


Figure 6. EW-100 Enhanced Monitoring Trends



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.

During the month of September, work on the expansion of the GCCS focused on the installation of Blackhawk pumps in 11 extraction wells (EW-36A, 51, 67, 81, 82, 83, 87, 91, 92, 94, 96), and connections of the new LFG lateral piping to the existing system. The first 5 liquids removal pumps were installed in June of 2023, satisfying item 1.iv of Appendix A of the Consent Decree between the Department and the City. The City and SCS-CONS have received the delivery of additional pumps, and installed them in the LFG extractions wells that SCS deemed as the best fit for the Blackhawk pumps. These pumps serve to supplement the initial 5 pumps that were installed in June of 2023. Based on field observations, the expanded GCCS and its newly connected wells and pumps continue to increase gas and liquids extraction for the landfill. A photo of a well after a new blackhawk pump was installed is shown in Figure 7.

Figure 7. Extraction Well Pump Installation at the SWP No. 588 Landfill

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 is constructing 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 will supplement the sidewall odor mitigation system described in Section 2.2. The City completed bidding and contracting of 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

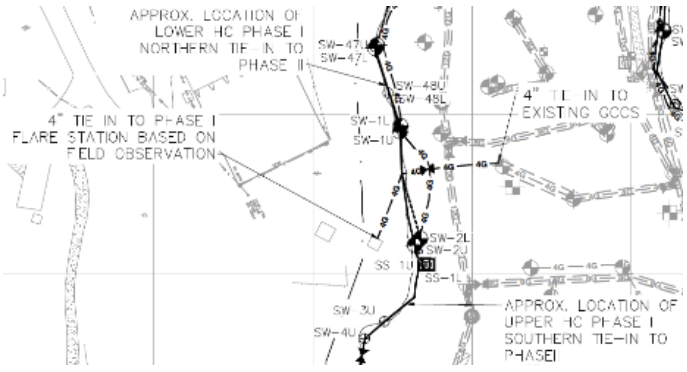
On behalf of the City and in an effort to capture emissions from the quarry sidewall, SCS designed a sidewall odor mitigation system (SOMS) during the month of October 2022. On October 20, 2022 SCS provided an overview of the proposed system to VDEQ staff. The design of this system was prepared and submitted 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]



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

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 throughout the month of September. Figure 9 shows SOMS Phase 2 wellhead installation and connections at HC wells SW-47U and SW-47L.

Figure 9. Phase 2 SOMS Wellhead Connections

During the month of September 2023, SCS-FS collected monitoring data at each wellhead under vacuum. A summary of those measurements is shown in Table 6.

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

Record Date	Average CH4 [%]	Average CO2 [%]	Average O2 [%]	Average Bal Gas [%]
9/5/2023	17.1	21.3	10.5	51.0
9/18/2023	7.4	15.1	13.9	63.6
9/27/2023	14.5	23.8	9.9	51.8

During the month of September, the sidewall system was connected to the GCCS in various locations along the main 12" and 8" LFG header. Isolation valves have been installed accordingly 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]. An additional drawing showing the completed portions of the SOMS is included as Appendix G.

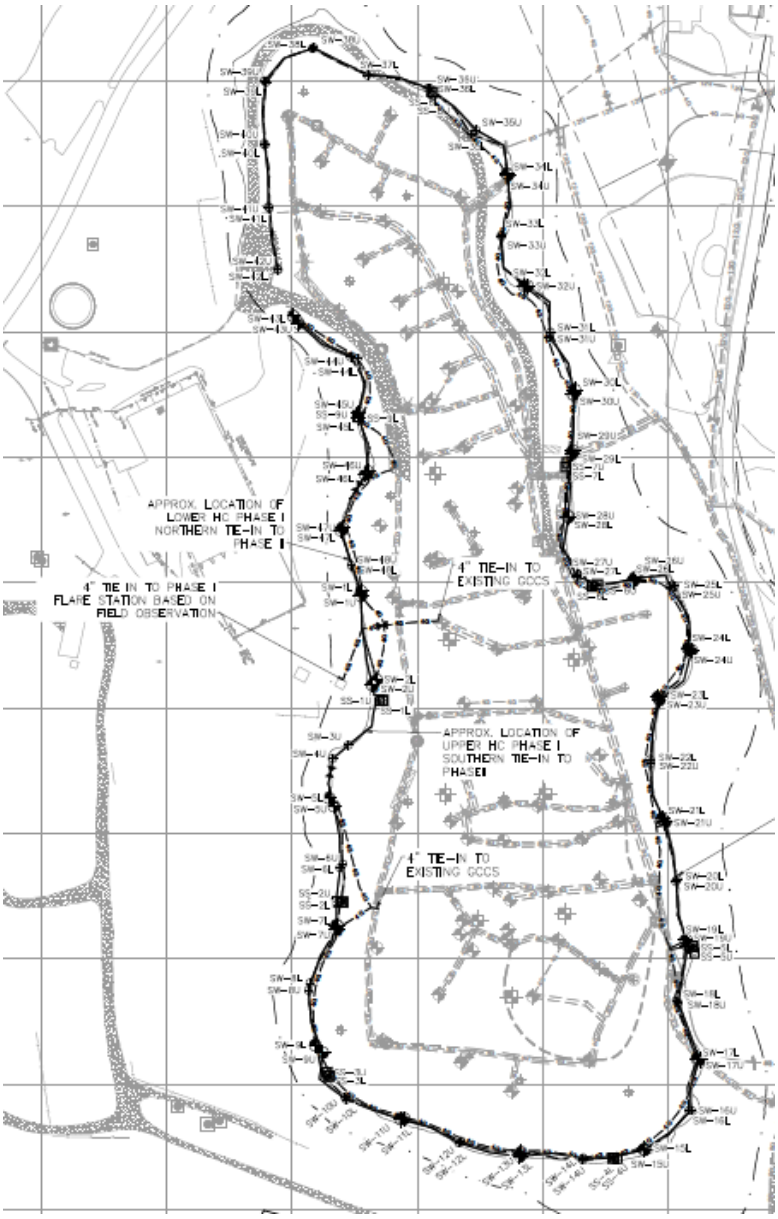
During the month of September, heavy rain events caused water to pool on the landfill surface and limited the effectiveness of some portions of the gas collection system. The decrease in methane concentrations can be to some extent attributed to the decrease in landfill gas extraction within areas experiencing high volumes of liquids. SCS-CONS deployed additional dewatering pumps to address stormwater within the landfill. Dewatering efforts appeared to be effective and standing water on the landfill surface had been substantially reduced.

During the month of September, pumps were also installed into the Sidewall Odor Mitigation System Sumps, which will increase vacuum supply within areas of the SOMS experiencing liquid blockages. Because the upper horizontal collector portion of the SOMS is predominantly dry, pumps were placed in the lower horizontal collector sumps, and the remaining pumps were kept on-site as spares. Sidewall Sumps SS-1L, SS-1U, SS-2U, SS-3U, SS-4U, SS-5U, SS-6U, SS-7L, SS-7U, SS-8L, and SS-8U did not receive pumps due to lack of liquids present. Risers at these locations were capped and will remain in place in the event that it becomes necessary to place pumps in the future.

During construction, some sections of the SOMS had to be temporarily taken offline during soil placement and header construction activities. Additionally, placement of dewatering pumps required risers to be open while pumps were connected. As a result of portions of the system being offline, visible sidewall emissions appeared for some periods during construction. SCS and the City will continue to monitor the sidewalls for visible emissions and will take action to address emissions identified.

[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 Progress 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. Clay and soil placement on top of the installed liner in the southeastern area of the landfill shown in Figure 11.

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

Figure 11. Phase 2 SOMS Lower and Upper Collector Construction

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.

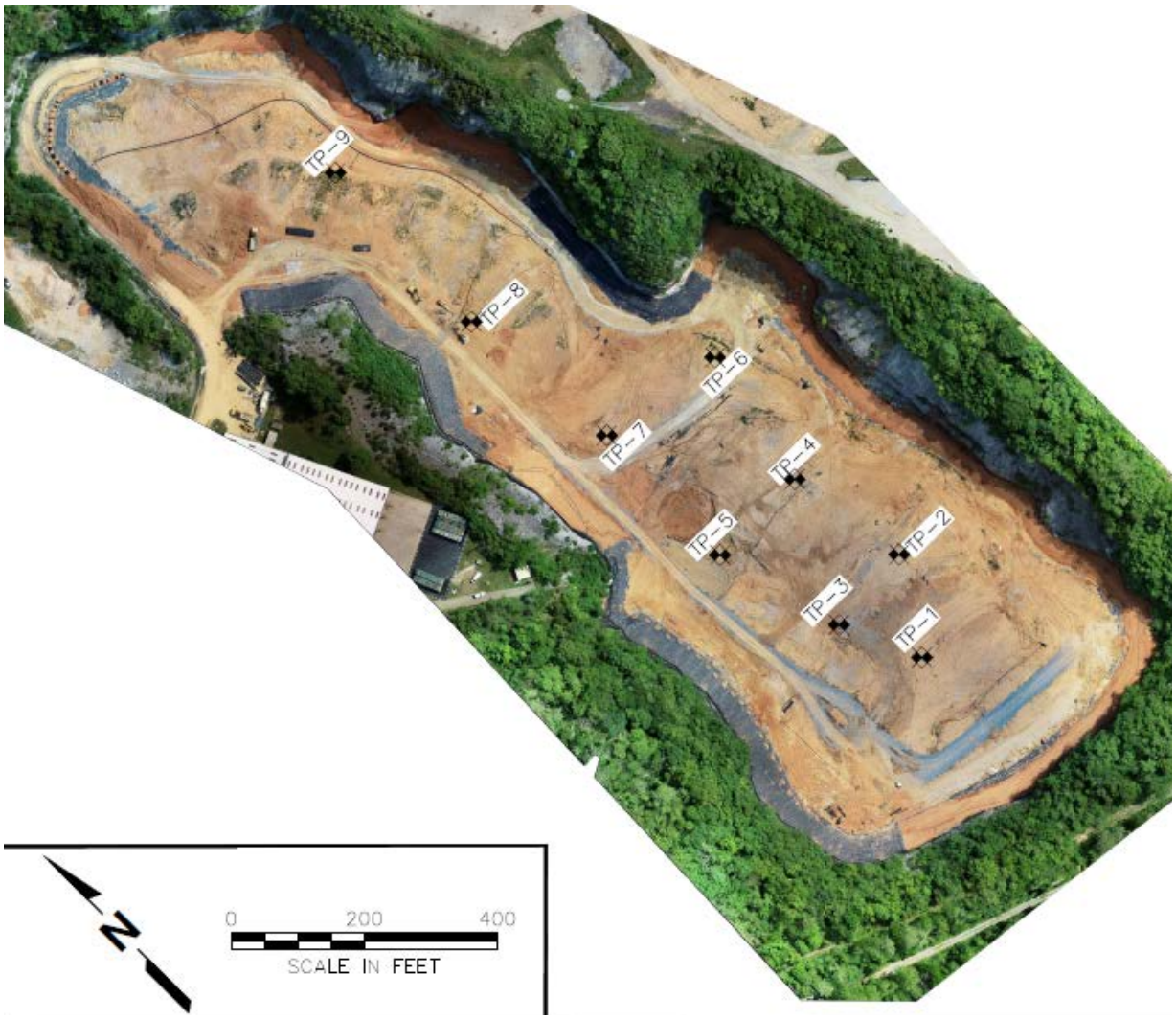
3.1 TEMPERATURE MONITORING SYSTEM DESIGN

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 8.

Figure 12. 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 September. Average daily temperatures recorded by the sensors for the Month of September 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 September are shown in Appendix B. The average temperatures recorded during the months of March through September are shown in Figures 13 through 21 on the following pages.

Figure 13 shows daily average temperatures in Temperature Probe 1 (TP-1) during the months of March through September. 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.

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 13. Average Temperatures within TP-1 During the Months of March through September

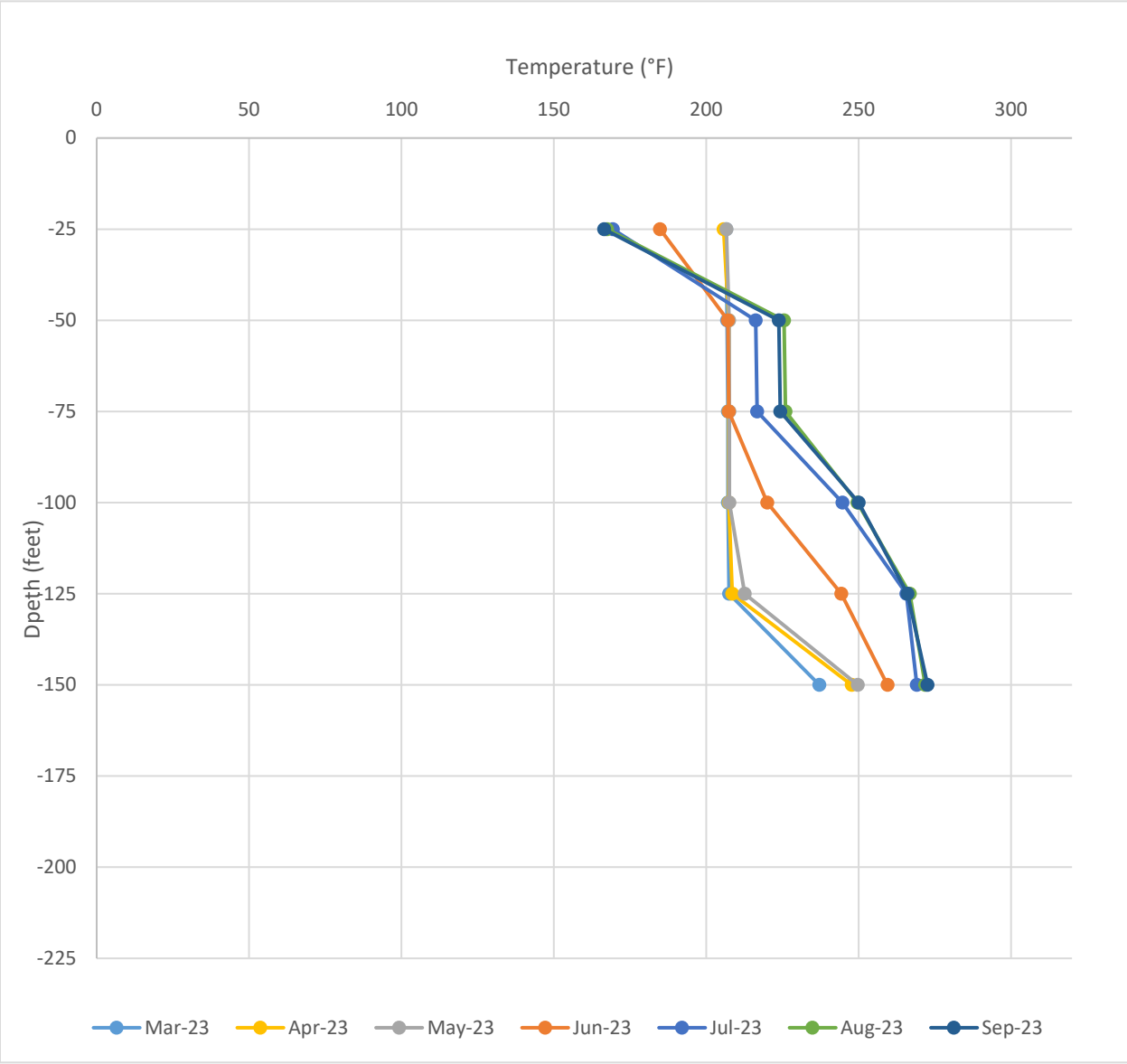


Figure 14 shows daily average temperatures in Temperature Probe 2 (TP-2) during the months of March through September. Based on the data, temperatures have been consistent during the last seven months.

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 14. Average Temperatures within TP-2 During the Months of March through September

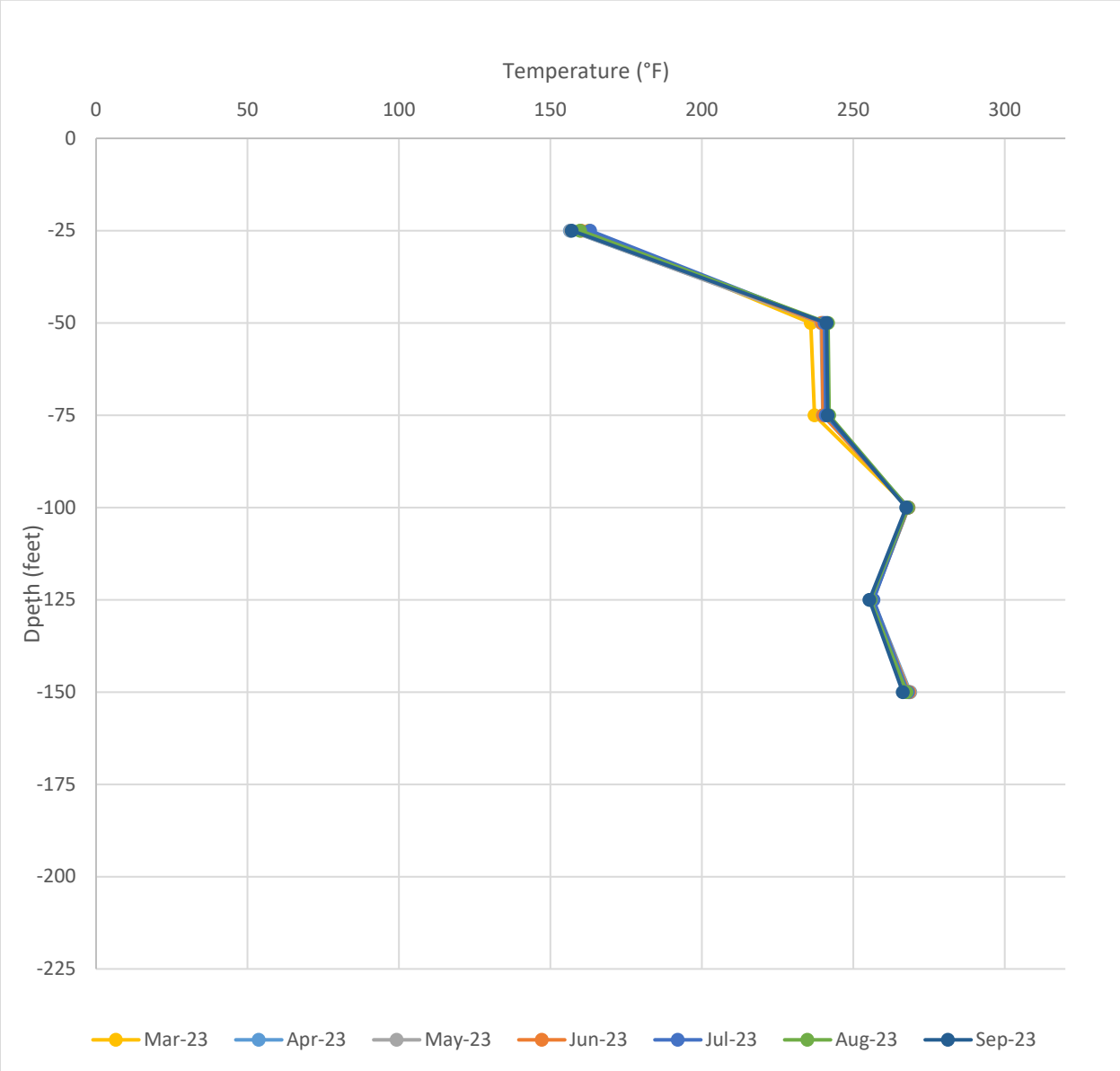


Figure 15 shows daily average temperatures in Temperature Probe 3 (TP-3) during the months of March through September. Based on the data, temperatures have been consistent during the last seven months.

Figure 15. Average Temperatures within TP-3 During the Months of March through September

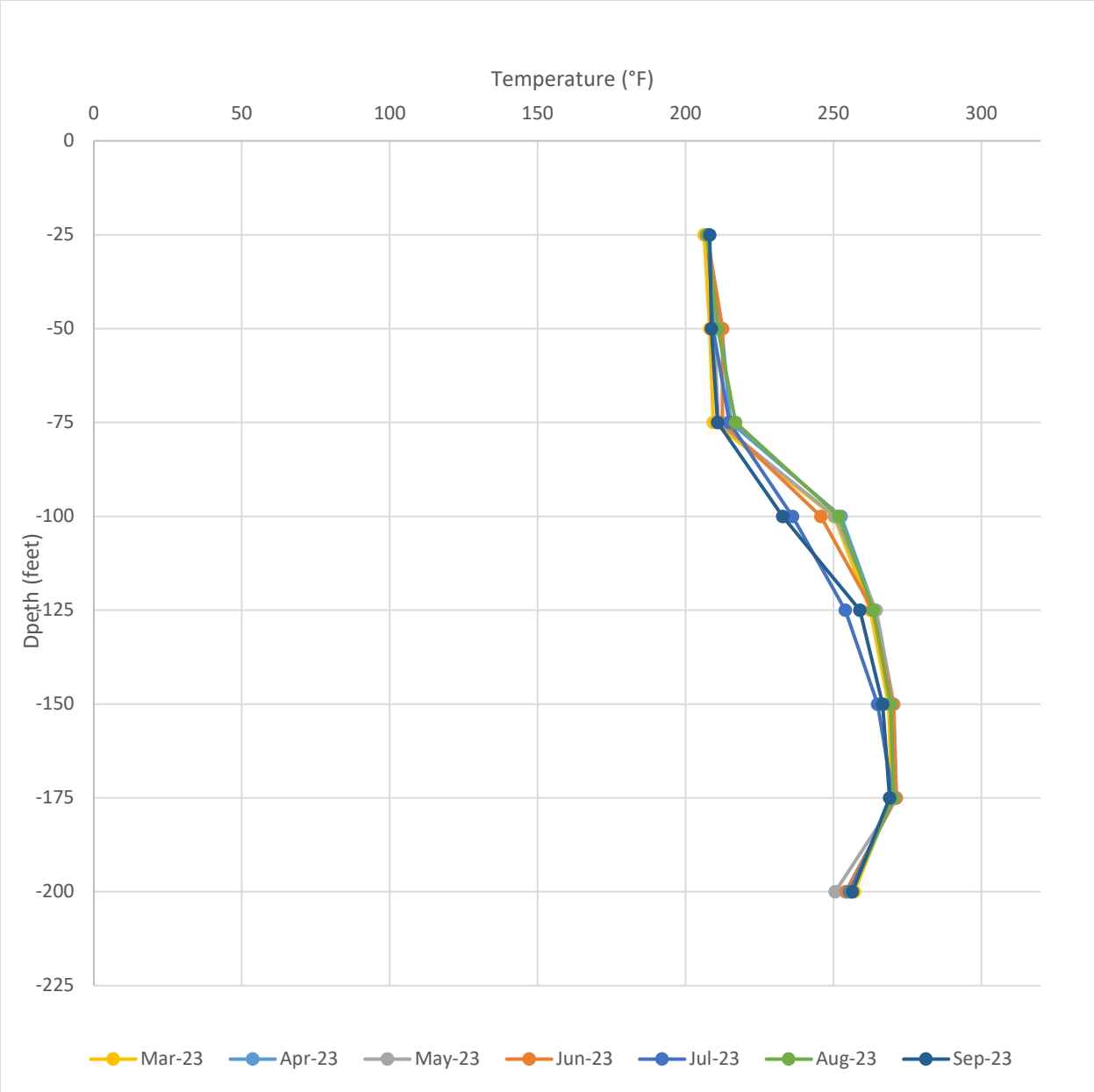


Figure 16 shows daily average temperatures in Temperature Probe 4 (TP-4) during the months of March through September. Based on the data, temperatures appeared to drop during the months of April and May, but returned to levels closer to baseline during the months of June, July, August, and September.

Figure 16. Average Temperatures within TP-4 During the Months of March through September

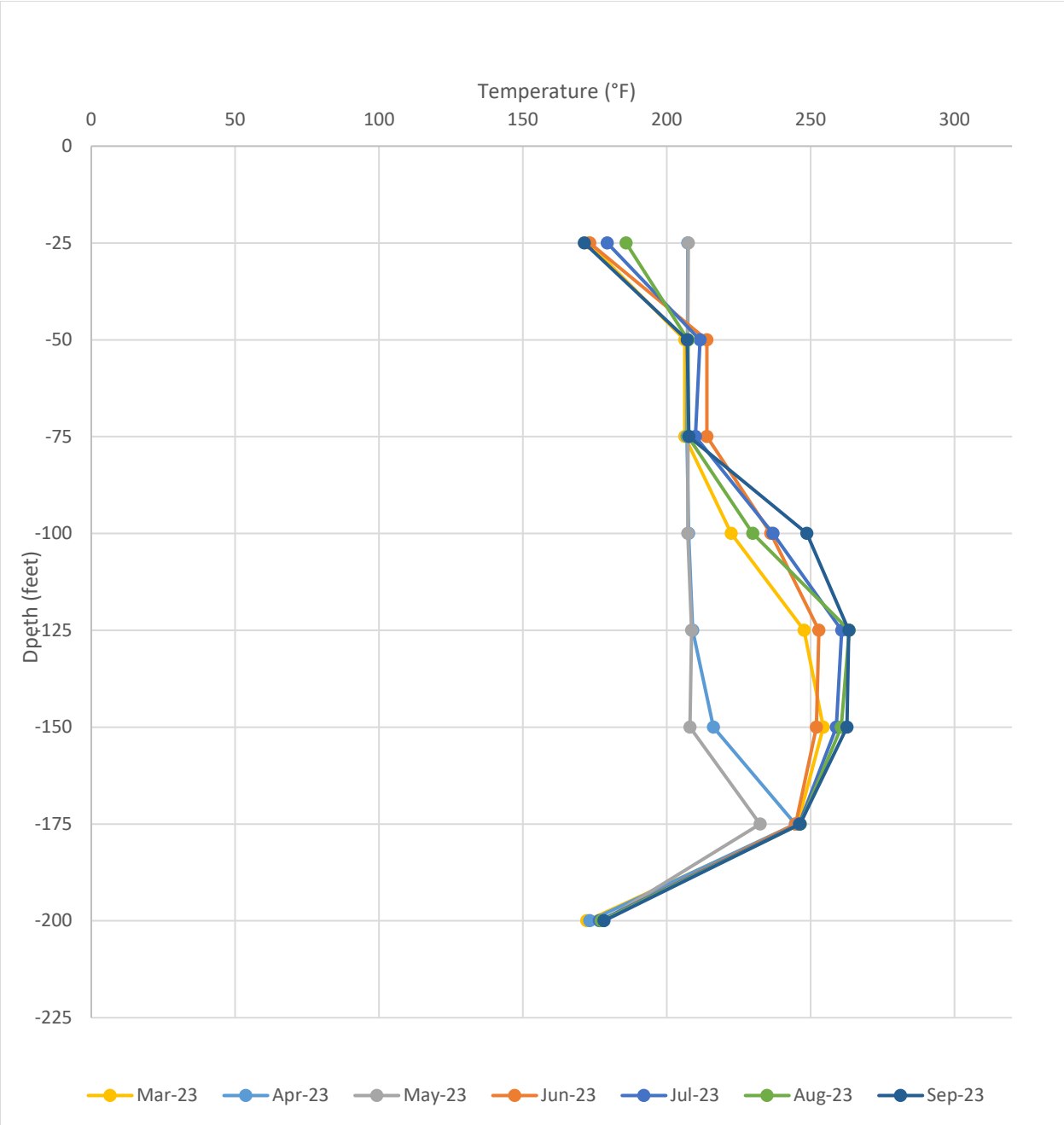


Figure 17 shows daily average temperatures in Temperature Probe 5 (TP-5) during the months of March through September. Based on the data, temperatures have been consistent during the last seven months.

Figure 17. Average Temperatures within TP-5 During the Months of March through September

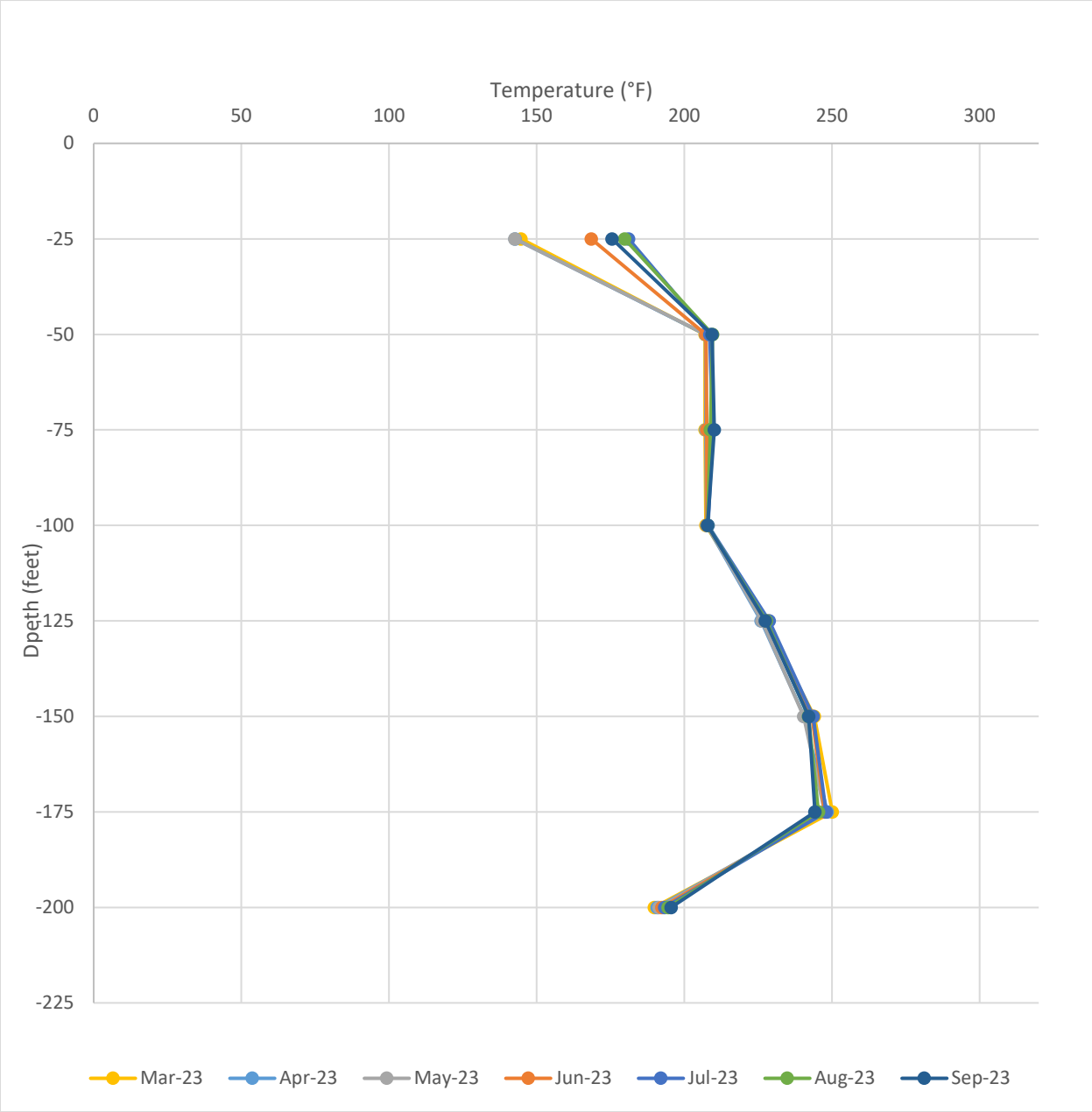


Figure 18 shows daily average temperatures in Temperature Probe 6 (TP-6) during the months of March through September. Based on the data, temperatures have been generally consistent during the last seven months. A decrease at the 25-foot level was observed during the month of June and September. Temperatures returned to baseline during the months of July and August. 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 18. Average Temperatures within TP-6 During the Months of March through September

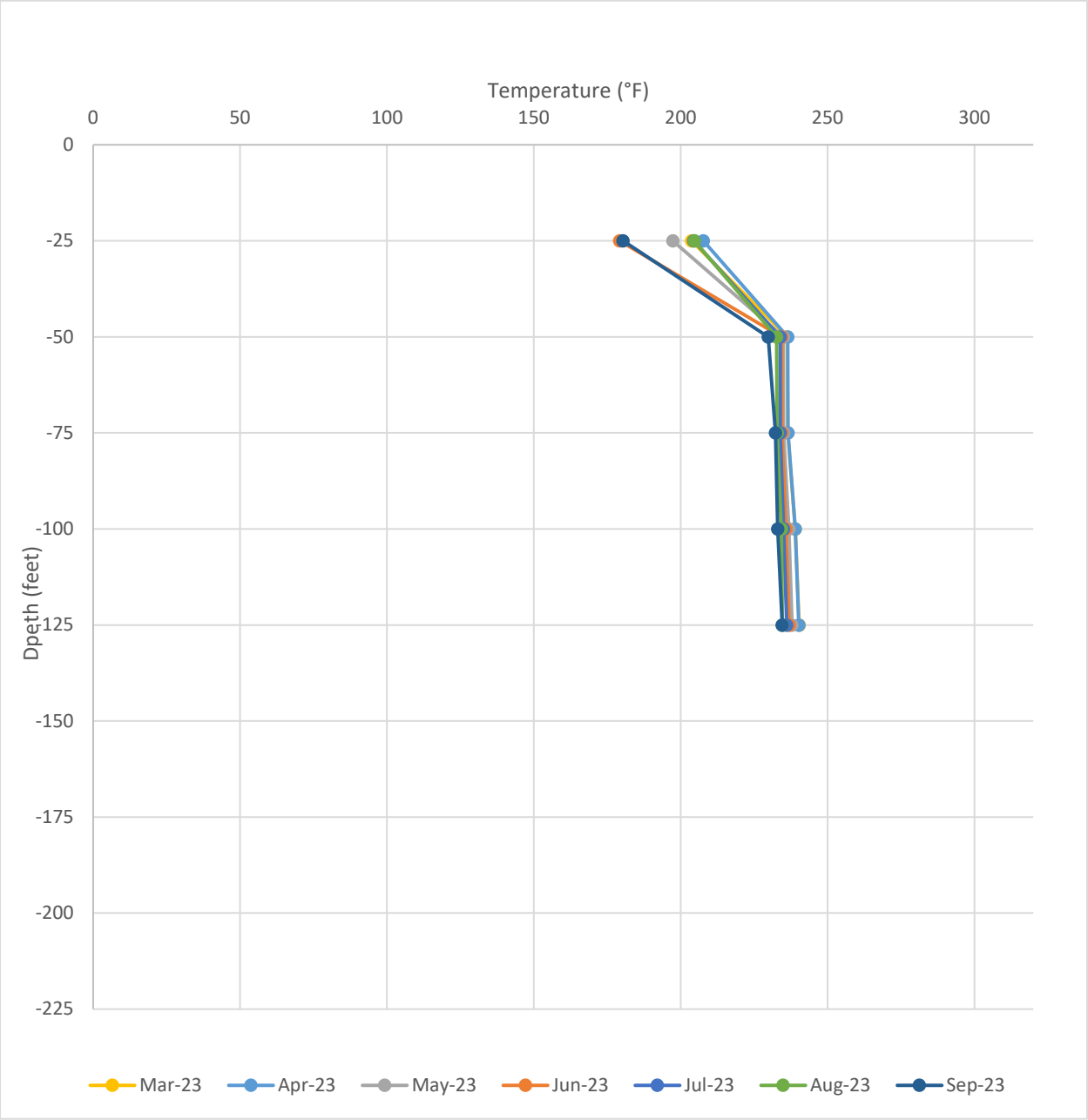


Figure 19 shows daily average temperatures in Temperature Probe 7 (TP-7) during the months of March through September. Based on the data, temperatures have been consistent during the last seven months with a general downward trend. TP-7 did not record temperatures between August 15, 2023 and September 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 19. Average Temperatures within TP-7 During the Months of March through September

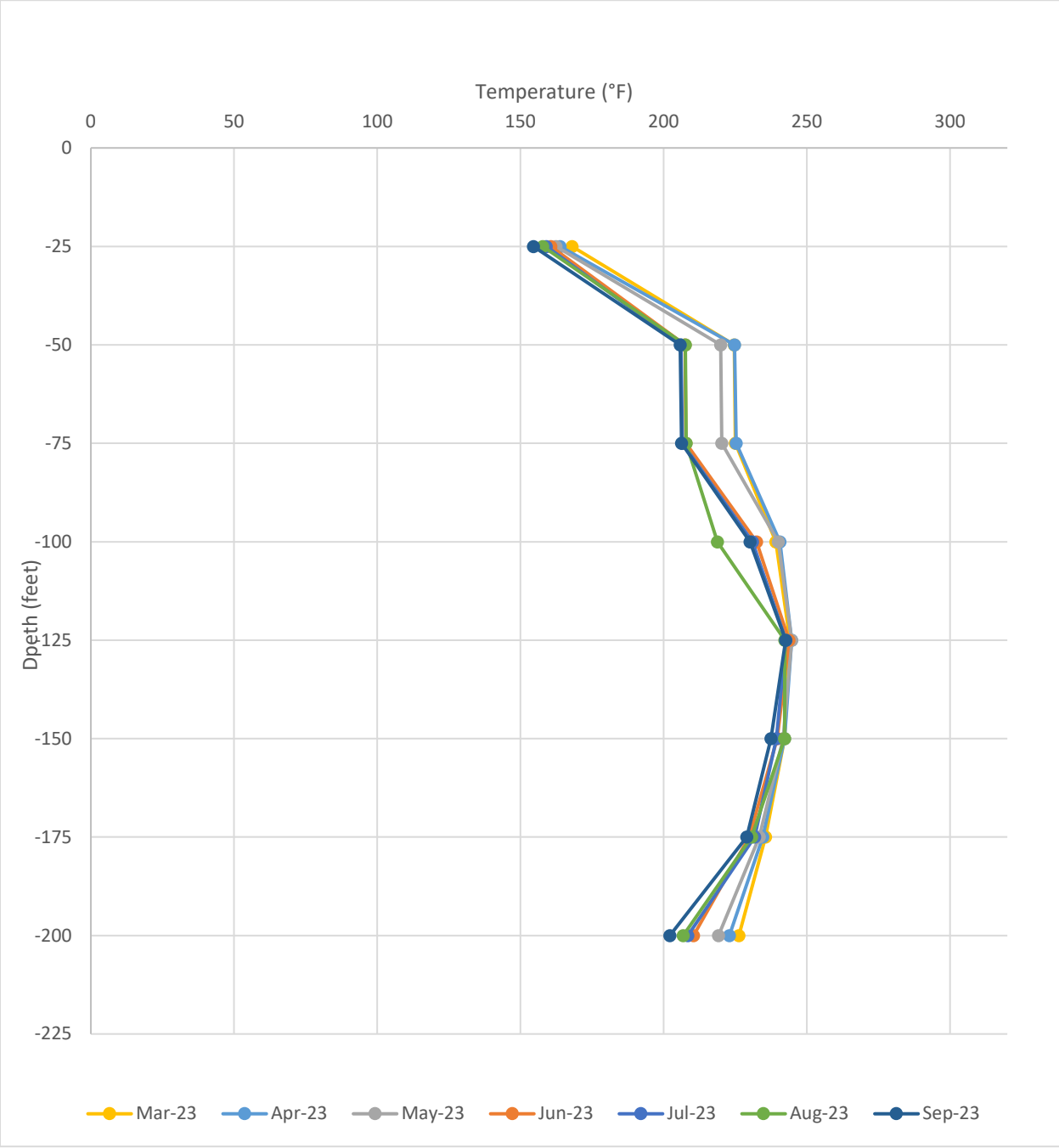


Figure 20 shows daily average temperatures in Temperature Probe 8 (TP-8) during the months of March through September. Based on the data, temperatures have increased during the last seven months.

Figure 20. Average Temperatures within TP-8 During the Months of March through September

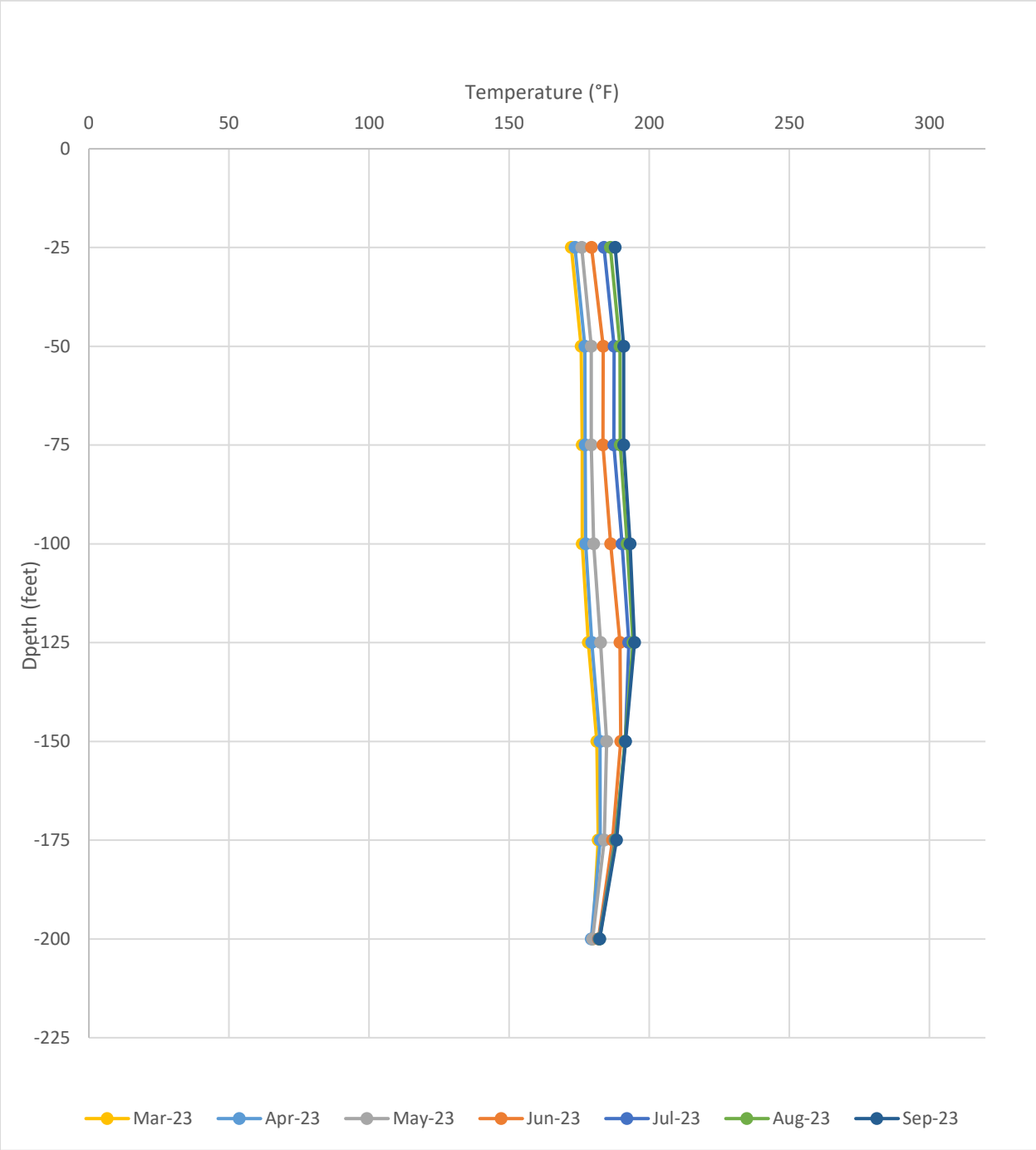
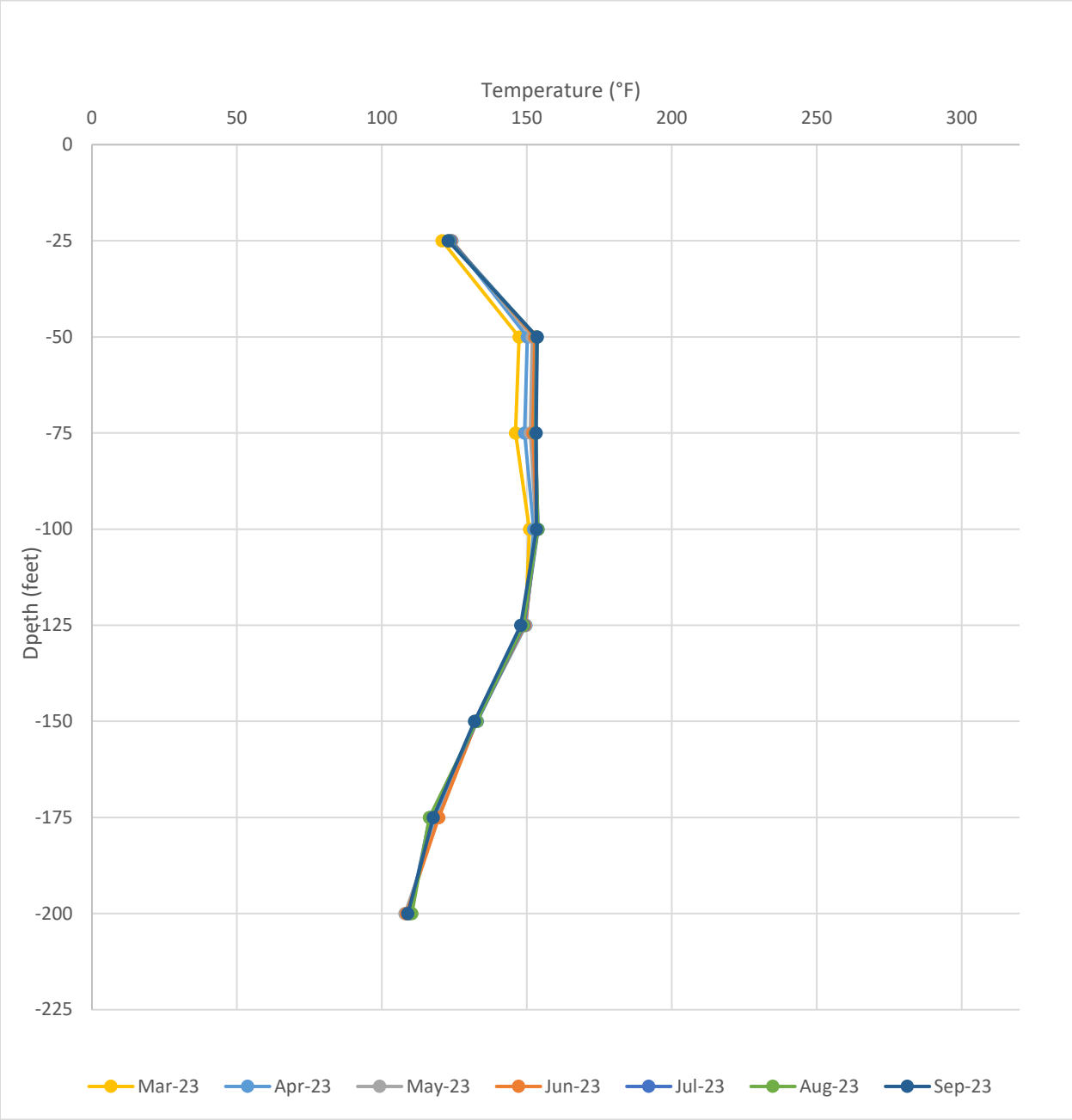


Figure 21 shows daily average temperatures in Temperature Probe 9 (TP-9) during the months of March through September. Based on the data, temperatures have been consistent during the last seven months.

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 21. Average Temperatures within TP-9 During the Months of March through September



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 29 wells on September 5, 2023, September 11, 2023, September 25, 2023, and September 28, 2023. The data collected is summarized in Table 7. 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	September 5, 2023	September 11, 2023	September 25, 2023	September 28, 2023
EW33B	13	13	13	13
EW49	777837	777837	777837	777837
EW50	1211149	1236490	1253481	1253483
EW51	121987	131072	131072	131072
EW52	208405	220032	244735	252874
EW53	2325332	2325332	2325886	2326030
EW54	584628	587111	597275	597278
EW55	479915	540529	539478	569788
EW57	669860	670957	670856	671207
EW58	2437320	2437348	2437320	2437762
EW59	2400418	2400418	2400418	2400418
EW60	484795	484810	484790	484821
EW61	244061	244061	244061	244061
EW62	188037	191554	193956	194800
EW64	175550	177579	177570	177570
EW67	998401	998525	998525	998525
EW68	2216292	2216354	2216373	2216390

Well	September 5, 2023	September 11, 2023	September 25, 2023	September 28, 2023
EW70	13	13	13	13
EW72	27	27	27	27
EW73	15	15	15	15
EW74	16	16	16	16
EW75	9	9	9	9
EW76	13	13	13	13
EW78	34818	40713	49089	50911
EW88	169435	169435	216227	216233
EW90	141562	141562	167820	168163
EW94	835496	835534	835496	835496
EW98	1055445	1056510	1201067	1230510
EW100	59168	98387	197002	208082

Based on this data and stroke counts taken on September 28, 2023, SCS can estimate the number of gallons of liquid pumped from each well. SCS assumed that each stroke correlates to approximately 0.3 gallons of liquid removed from the well. This data will then be used to repair or replace pumps or replace nonfunctional stroke counters. Estimates of the quantities of liquids removed between the reading dates are shown in Table 8.

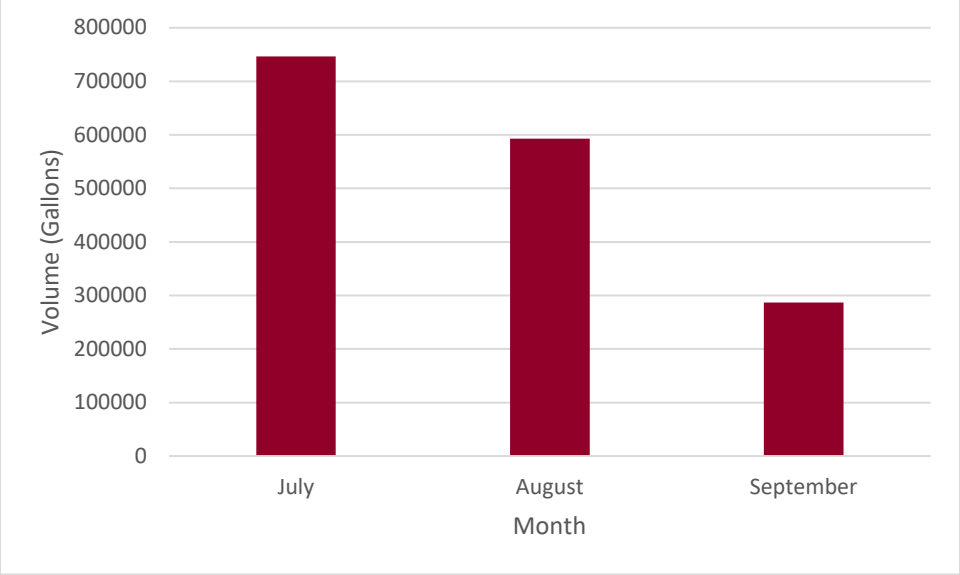
Table 7. Summary of Dual Extraction Well Pump Liquids Removal

Well	Liquids Removed (gal) August 31, 2023 to September 5, 2023	Liquids Removed (gal) September 5, 2023 to September 11, 2023	Liquids Removed (gal) September 11, 2023 to September 25, 2023	Liquids Removed (gal) September 25, 2023 to September 28, 2023
EW33B	0	0	0	0
EW49	0	0	2711.1	0
EW50	5156.1	7602.3	3393	0.6
EW51	290.1	2725.5	2.7	0
EW52	4111.5	3488.1	788.1	2441.7
EW53	168	11.4	5767.8	43.2
EW54	89.4	744.9	1223.4	0.9
EW55	10702.5	18184.2	572.7	9093
EW57	54.9	329.1	86.4	105.3
EW58	0	8.4	47718	132.6
EW59	71.1	17.1	19.2	0
EW60	1.5	4.5	14874.3	9.3
EW61	0	0	195.9	0
EW62	488.1	0	2776.8	253.2
EW64	390.3	608.7	810.6	0

Well	Liquids Removed (gal) August 31, 2023 to September 5, 2023	Liquids Removed (gal) September 5, 2023 to September 11, 2023	Liquids Removed (gal) September 11, 2023 to September 25, 2023	Liquids Removed (gal) September 25, 2023 to September 28, 2023
EW67	12376.2	37.2	4224	0
EW68	144.9	18.6	3084.6	5.1
EW70	0	0	0	0
EW72	0	2.4	0	0
EW73	0	0	0	0
EW74	0	0.3	0	0
EW75	0	3	0	0
EW76	0	1768.5	0	0
EW78	2192.7	0	152.7	546.6
EW88	3196.2	0	2.4	1.8
EW94	2385.3	0	27801.9	0
EW98	26869.8	0	25445.4	0
EW100	13742.7	319.5	0	102.9

SCS estimates that approximately 287,000 gallons of liquids were removed from the landfill gas collection and control system during the month of September. This figure also does not represent the amount of liquids that were removed by the Blackhawk pumps that were installed in September. SCS-FS continues to implement an aggressive maintenance schedule for landfill gas liquids removal pumps. EW-98 removed the largest amount of liquids at 79,000 gallons for September. The progress in landfill gas liquids removal over the last three months is depicted in Figure 22.

Figure 22. 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 September 2023, pump maintenance occurred on September 5, 2023; September 12, 2023; September 19, 2023; and September 26, 2023. Additionally, minor pump modifications and repairs were made throughout the month to extend pump runtimes before failure.

Five pneumatic, float-style pumps were sent back to the manufacturer for the month of September. Field staff were unable to swap downed pumps due to the lack of inventory. Instead, increased attention was paid to checking and "bumping" the pumps to increase their operation time and limit downtime in the extraction wells. The five pneumatic pumps were returned to the site from the manufacturer at the end of September. This will allow the field staff to maintain and repair pumps once they notice they are no longer operational. The lack of inventory also contributed to the lesser amount of liquids removed for the month.

Eleven additional dewatering pumps were installed during the month of September. These installations occurred at EW-36A, EW-51. EW-67, EW-81, EW-82, EW-83, EW-87, EW91, EW-92, EW-94 and EW-96. The eleven installs were Blackhawk, piston-style pneumatic pumps. Due to the style of function of the new Blackhawk pumps, an estimate to their performance and liquids removed will occur going forward.

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 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.

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 September 26, 2023, SCS collected leachate samples from four Dual Phase LFG-EWs (EW-52 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 was not able to collect samples from the following wells for the following reasons:

- Pumps were not running at the time of sample collection for the following wells: EW-33B, EW-49, EW-53, EW-54, EW-55, EW-62, EW-64, EW-65, EW-69, EW-70, EW-73, EW-74, EW-75, EW-76, EW-88, EW-98, and EW-100.

- Pump was disconnected for the following wells: EW-50, EW-57, EW-59, EW-60, EW-61, EW-68, and EW-97.

- There is no sample port and pumps were not running at the time of sample collection for the following wells: EW-36A, EW-51, EW-67, EW-81, EW-82, EW-83, EW-87, EW-91, EW-92, EW-94, EW-96, and EW-99. The City and SCS-FS are coordinating to get sample ports installed on these wells.

- There is no sample port and no pump installed in the following wells: EW-71, EW-72, EW-89, and EW-95.

- No pump was installed in the following wells: EW-40, EW-56, EW-63, EW-77, EW-79, EW-80, EW-84, EW-86, and EW-93.

The samples were delivered to Enthalpy Analytical (Enthalpy) in Richmond, Virginia and Weck Laboratories, Inc (Weck) in City of Industry, California for analysis. The Enthalpy'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.

At the time of preparation of this report laboratory analytical results were only available for the volatile organic compound (VOC) analysis. The remaining September 2023 analytical results will be provided in the October 2023 Monthly Compliance Report.

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.

No method or trip blank detects were identified for the September 2023 monitoring event VOC analysis. The draft laboratory analysis report for the September 2023 monitoring event trip blank is included in Appendix F. The September 2023 monitoring event draft laboratory QA/QC report, including the VOC method blank results, are included in the COA in Appendix F. The remaining September 2023 analytical results and QA/QC report will be provided in the October 2023 Monthly Compliance Report.

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 VOC leachate results were flagged with a "B" qualifier for the September 2023 monitoring event as no constituents were detected in the September 2023 method or trip blanks. The VOC detections flagged with a "J" qualifier are shown on Table 9.

4.2.4 Laboratory Analytical Results

The VOC analytical results for the September 2023 leachate samples collected from extraction wells EW-52 and EW-78 are summarized in Table 8. The associated draft COA is included in Appendix F. Parameter results from September 2023 and previous monitoring events (November 2022 – August

[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. January 2017.
United States Environmental Protection Agency. Office of Superfund Remediation and Technology Innovation. National Functional Guidelines for Organic Superfund Methods Data Review. January 2017.

2023) are presented on a table in **Appendix F**. The remaining September 2023 analytical results will be provided in the October 2023 Monthly Compliance Report.

Table 8. Monthly LFG-EW Leachate Monitoring Event Summary

Well ID	EW-52	EW-78	LOD	LOQ
Parameter	September 2023 Concentration			
VOLATILE ORGANIC COMPOUNDS (ug/L)				
2-Butanone (MEK)	---	**439**	60	200
	17500	---	750	2500
Acetone	---	**188 J**	140	200
	40100	---	1750	2500
Benzene	---	**193**	8	20
	468	---	100	250
Ethylbenzene	---	**22.8**	8	20
	ND	---	100	250
Tetrahydrofuran	---	**343**	200	200
	ND	---	2500	2500
Toluene	---	**40.6**	10	20
	ND	---	125	250
Xylenes, Total	---	ND	20	60
	ND	---	250	750

--- = 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
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 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 September 15, 2023,

the flight was completed and the topographic data collected. The topographic data collected is shown on Sheet 2 in Appendix E.

The topography within the landfill footprint was compared to topographic data collected by SCS using photogrammetric methods on August 2, 2023. A drawing depicting the August 2, 2023 topography is included as Sheet 1 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 3,200 cubic yards. During that same time period, approximately 8,500 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 increase of approximately 5,300 cubic yards.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 23. 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 3 in Appendix E.

Figure 23. 1-Month Elevation Change Color Map

The locations of in-waste temperature monitoring probes are also shown on Figure 23 and Figure 24. 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 degrees Fahrenheit. Probes with an orange circle around them, typically measure an average temperature across the full depth of the probe greater than 200 degrees Fahrenheit and less than 250 degrees Fahrenheit. 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 degrees Fahrenheit.

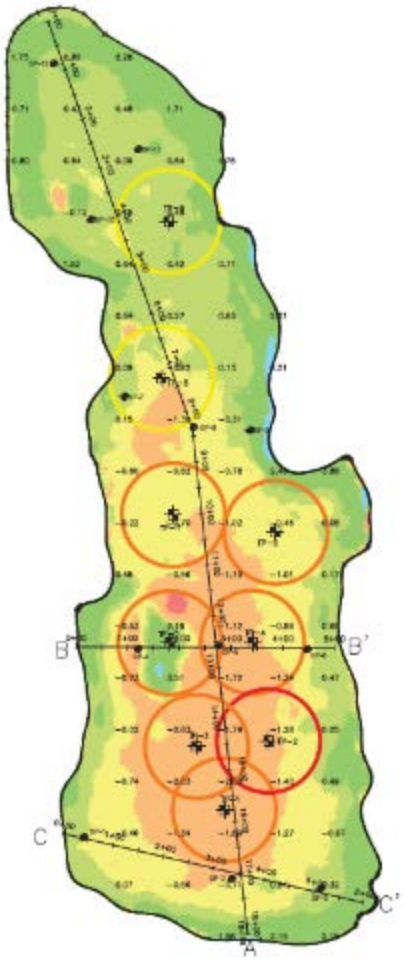
The largest settlement occurred primarily in the middle-southern end of the landfill where the waste settled by approximately 0.5 feet or more in some areas. The southern end of the landfill is the location of the gas wells and temperature probes exhibiting higher temperatures. These higher settlement values are typical of elevated temperature landfill conditions. Settlement in the northern portion of the landfill was likely offset by construction-related filling. The perimeter 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 increase was approximately 0.19 feet.

SCS also compared the topographic data collected in September to the topographic data collected on June 9, 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 14,000 cubic yards. During that same time period approximately 16,200 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 increase of approximately 2,200 cubic yards.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 20. 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 4 in Appendix E.

Figure 24. 3-Month Elevation Change Color Map



The largest settlement occurred primarily in the southern end of the landfill where the waste settled by approximately 2 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. These higher settlement values 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. The perimeter of the landfill exhibited an increase in elevation, likely due to sediment deposition during storm events and soil placement associated with construction of the Sidewall Odor Mitigation System. There were some large variations in elevation associated with soil stockpiling operations.

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

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 21 and on Sheet 1 in Appendix E.

Figure 25. 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; and September 11, 2023. The surveyed coordinates[5] and elevation changes of the settlement plates are shown in Table 9.

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

Table 9. Settlement Plate Locations

Settlement Plate	Northing	Easting	Elevation on September 11, 2023	Elevation Change Since August 17, 2023	Strain[6] Since August 17, 2023	Elevation Change Since Installation	Strain Since Installation
SP-1	3,397,886.9	10,412,078.9	1,831.4	0.0	0.0%	-3.0	-4.5%
SP-2	3,397,808.9	10,412,365.3	1,804.4	-0.3	-0.2%	-6.2	-3.8%
SP-3[7]	3,397,787.5	10,412,537.9	NA	NA	NA	NA	NA
SP-4[8]	3,398,248.4	10,412,187.5	1,810.1	-0.5	-0.3%	-7.4	-4.7%
SP-5	3,398,255.9	10,412,339.1	1,795.5	-0.3	-0.1%	-5.3	-2.1%
SP-6	3,398,249.1	10,412,510.5	1,776.0	-0.1	-0.1%	-1.7	-1.2%
SP-7[9]	3,398,735.5	10,412,157.6	1,826.7	0.0	0.0%	-1.9	-1.7%
SP-8	3,398,678.5	10,412,290.8	1,803.5	-0.1	-0.1%	-3.9	-1.6%
SP-9	3,398,673.7	10,412,400.9	1,783.4	-0.1	-0.1%	-2.5	-2.5%
SP-10	3,399,080.5	10,412,092.1	1,838.8	0.0	0.0%	-1.4	-0.5%
SP-11	3,399,216.2	10,412,183.6	1,815.7	0.1	0.0%	-0.6	-0.3%
SP-12	3,399,381.8	10,412,019.5	1,810.2	0.0	0.0%	-0.4	-0.4%

Settlement Plates 2 and 4 demonstrated larger settlements than at other locations. SCS believes that Settlement Plate 4 was disturbed by grading work on an adjacent roadway. Settlement Plate 2 is located in the southern end of the landfill. This area is where waste was most recently placed and is expected to show the most rapid settlement. This area is also 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 1, 7, 10, 11, and 12 was lower and more representative of typical settlement at municipal landfills or was not observed at all. The change in elevation at Settlement Plates 5, 6, 8, and 9 falls somewhere in between these two categories. Field observations indicate that Settlement Plates 3 and 7 may also have been damaged during construction operations. Settlement Plate 3 was damaged and unable to be measured during September of 2023.

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

[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.

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 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 is preparing a revised stormwater management plan to submit to VDEQ.

SCS continues to prepare specifications 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

Installation of the EVOH cover system will begin after the installation of other infrastructure is complete.

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 stormwater management plan was submitted to VDEQ on April 28, 2023. The plan addresses the stormwater volume calculations, assumptions, design, and control measures. 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. A follow-up discussion was held with VDEQ on August 31, 2023 to discuss modifications to the stormwater management plan. The new modifications include increasing the number of stormwater basins within the quarry and reducing required earthwork.

The revised plan will propose 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 collection basins in the quarry and the installation of pairs of mobile stormwater pumps. The stormwater will be conveyed by a force main pipe or 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 may affect some 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 an 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 has been 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 September, those actions include:

- **September – ongoing basis:** Six posts on the BristalVALandfill.org site and the existing City of Bristol Landfill Notifications and Information page covering several important updates including:
  - Progress updates related to remediation efforts at the quarry landfill
  - Shared news article about Bristol, TN and Bristol, VA about ongoing air monitoring and landfill remediation efforts
  - Released notice of no deficiencies from the Virginia Department of Environmental Quality following an August landfill inspection
- **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 nineteen weekly monitoring reports starting with May 15th, 2023 and running through September 24th 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, September 8th
- Friday, September 22nd

Appendix A

Surface Emissions Monitoring Summary Letters

September 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 – September 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 September 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	174
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	74
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.

The Facility has observed a decrease in exceedances over the past couple of events. Completion of various construction activities, activation of the new temporary flare, consistent dewatering, and an overall increase in available vacuum are all attributing to increased efficiencies within the gas collection system.

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

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	9/7/23 Event	9/7/23 Event Result	Comments
EW-55	7/12/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
Tag 69	7/12/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-58	7/21/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-52	8/4/23	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-90	8/11/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-54	8/11/23	30-Day Retest	Passed	Exceedance Resolved
EW-39	8/11/23	30-Day Retest	Passed	Exceedance Resolved
EW-95	8/11/23	30-Day Retest	Passed	Exceedance Resolved
EW-98	8/11/23	30-Day Retest	Passed	Exceedance Resolved
EW-53	8/17/2023	N/A	Passed	Requires 30-Day Retest
EW-30R	8/17/2023	N/A	Passed	Requires 30-Day Retest
EW-63	8/17/2023	N/A	Passed	Requires 30-Day Retest
EW-42	8/17/2023	N/A	Passed	Requires 30-Day Retest
EW-33R	8/17/2023	N/A	Passed	Requires 30-Day Retest
EW-62	8/17/2023	N/A	Passed	Requires 30-Day Retest
EW-64	8/23/2023	N/A	Passed	Requires 30-Day Retest
EW-74	8/31/2023	10-Day Retest	Passed	Requires 30-Day Retest

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

Sincerely,

Quinn F. Bernier, PE
Project Professional
SCS Engineers

Lucas S. Nachman
Senior Project Professional
SCS Engineers

LSN/QFB/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 - SEPTEMBER 7, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	45.0 PPM	OK			Start Serpentine Route
2	15.6 PPM	OK			
3	1.5 PPM	OK			
4	0.9 PPM	OK			
5	0.9 PPM	OK			
6	0.8 PPM	OK			
7	0.9 PPM	OK			
8	0.9 PPM	OK			
9	1.1 PPM	OK			
10	2.1 PPM	OK			
11	2.1 PPM	OK			
12	1.9 PPM	OK			
13	1.3 PPM	OK			
14	1.4 PPM	OK			
15	8.2 PPM	OK			
16	4.4 PPM	OK			
17	1.0 PPM	OK			
18	1.2 PPM	OK			
19	1.1 PPM	OK			
20	10.7 PPM	OK			
21	20.9 PPM	OK			
22	4.7 PPM	OK			
23	2.5 PPM	OK			
24	2.3 PPM	OK			
25	5.2 PPM	OK			
26	2.7 PPM	OK			
27	2.8 PPM	OK			
28	9.7 PPM	OK			
29	8.4 PPM	OK			
30	1.5 PPM	OK			
31	0.9 PPM	OK			
32	139.0 PPM	OK			
33	147.0 PPM	OK			
34	313.0 PPM	OK			
35	135.0 PPM	OK			
36	13.1 PPM	OK			
37	13.2 PPM	OK			
38	4.5 PPM	OK			
39	14.3 PPM	OK			
40	1.2 PPM	OK			
41	20.9 PPM	OK			
42	10.6 PPM	OK			

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
43	8.9 PPM	OK			
44	1.0 PPM	OK			
45	0.7 PPM	OK			
46	0.7 PPM	OK			
47	0.8 PPM	OK			
48	0.4 PPM	OK			
49	0.4 PPM	OK			
50	0.4 PPM	OK			
51	1.0 PPM	OK			
52	0.6 PPM	OK			
53	1.1 PPM	OK			
54	0.8 PPM	OK			
55	2.5 PPM	OK			
56	1.9 PPM	OK			
57	3.7 PPM	OK			
58	0.6 PPM	OK			
59	32.0 PPM	OK			
60	1.6 PPM	OK			
61	0.9 PPM	OK			
62	0.9 PPM	OK			
63	2.9 PPM	OK			
64	33.9 PPM	OK			
65	11.9 PPM	OK			
66	19.0 PPM	OK			
67	1.8 PPM	OK			
68	17.4 PPM	OK			
69	430.0 PPM	OK			
70	56.1 PPM	OK			
71	84.8 PPM	OK			
72	3.7 PPM	OK			
73	2.5 PPM	OK			
74	3.4 PPM	OK			
75	4.9 PPM	OK			
76	6.7 PPM	OK			
77	31.9 PPM	OK			
78	10.7 PPM	OK			
79	15.1 PPM	OK			
80	8.3 PPM	OK			
81	6.6 PPM	OK			
82	6.4 PPM	OK			
83	28.6 PPM	OK			
84	5.9 PPM	OK			

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
85	7.6 PPM	OK			
86	3.4 PPM	OK			
87	3.8 PPM	OK			
88	2.2 PPM	OK			
89	3.0 PPM	OK			
90	2.8 PPM	OK			
91	12.4 PPM	OK			
92	6.9 PPM	OK			
93	30.2 PPM	OK			
94	113.0 PPM	OK			
95	2.7 PPM	OK			
96	24.6 PPM	OK			
97	0.6 PPM	OK			
98	11.1 PPM	OK			
99	16.3 PPM	OK			
100	79.9 PPM	OK			End Serpentine Route
101	73.5 PPM	OK			EW-35
102	1446.0 PPM	HIGH_ALRM	36.59901	-82.14754	EW-52
103	55.9 PPM	OK			TP-4
104	176.0 PPM	OK			EW-60
105	120.0 PPM	OK			EW-48
106	0.8 PPM	OK			TP-6
107	1.0 PPM	OK			EW-61
108	2.1 PPM	OK			EW-34
109	6.3 PPM	OK			EW-50
110	29.0 PPM	OK			EW-91
111	99.6 PPM	OK			EW-67
112	35.6 PPM	OK			EW-47
113	119.0 PPM	OK			EW-54
114	107.0 PPM	OK			EW-92
115	172.0 PPM	OK			EW-55
116	4.8 PPM	OK			TP-2
117	20.0 PPM	OK			EW-96
118	20.8 PPM	OK			EW-66
119	5.9 PPM	OK			EW-58
120	124.0 PPM	OK			EW-57
121	27.0 PPM	OK			TP-1
122	13.7 PPM	OK			EW-59
123	33.1 PPM	OK			EW-56
124	2.5 PPM	OK			EW-97
125	10.3 PPM	OK			EW-41

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
126	25.3 PPM	OK			EW-53
127	25.3 PPM	OK			EW-40
128	4.0 PPM	OK			TP-3
129	16.1 PPM	OK			EW-51
130	157.0 PPM	OK			EW-39
131	22.7 PPM	OK			TP-5
132	9.0 PPM	OK			EW-68
133	79.0 PPM	OK			EW-87
134	97.7 PPM	OK			EW-38
135	106.0 PPM	OK			TP-7
136	0.4 PPM	OK			EW-49
137	0.1 PPM	OK			EW-31R
138	1.5 PPM	OK			EW-65
139	0.9 PPM	OK			EW-37
140	1.4 PPM	OK			TP-8
141	0.4 PPM	OK			EW-64
142	0.6 PPM	OK			EW-30R
143	0.1 PPM	OK			EW-63
144	0.3 PPM	OK			EW-42
145	2.7 PPM	OK			TP-9
146	0.0 PPM	OK			EW-33R
147	0.0 PPM	OK			EW-62
148	0.5 PPM	OK			EW-29R
149	0.3 PPM	OK			EW-74
150	0.7 PPM	OK			EW-32R
151	0.4 PPM	OK			EW-69
152	0.6 PPM	OK			EW-71
153	0.2 PPM	OK			EW-72
154	0.2 PPM	OK			EW-70
155	0.1 PPM	OK			EW-73
156	7.2 PPM	OK			EW-76
157	0.1 PPM	OK			EW-78
158	1092.0 PPM	HIGH_ALRM	36.60058	-82.14762	EW-82
159	0.3 PPM	OK			EW-85
160	11.9 PPM	OK			EW-88
161	376.0 PPM	OK			EW-89
162	2.8 PPM	OK			EW-93
163	0.2 PPM	OK			EW-94
164	0.0 PPM	OK			EW-98
165	37.7 PPM	OK			EW-100
166	6.5 PPM	OK			EW-99
167	305.0 PPM	OK			EW-95
168	76.0 PPM	OK			EW-90
169	31.2 PPM	OK			EW-86
170	1.6 PPM	OK			EW-84
171	1.4 PPM	OK			EW-80
172	0.1 PPM	OK			EW-79
173	3.6 PPM	OK			EW-33B
174	11.4 PPM	OK			EW-75

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments

Number of locations sampled:	174
Number of exceedance locations:	2

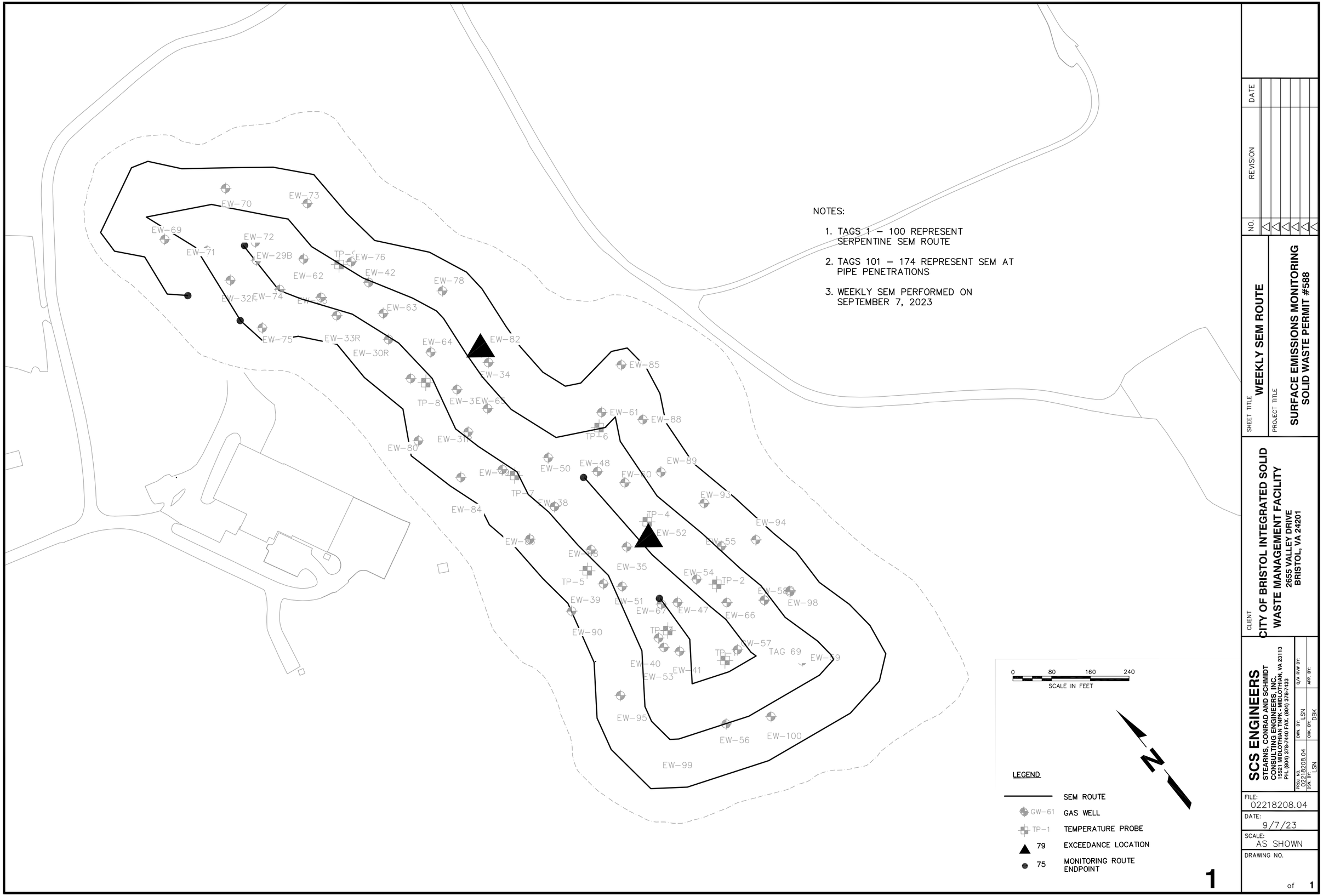
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 174 represent SEM at Pipe Penetrations
Weather Conditions: Mostly Cloudy, 75˚F Wind: W - 8 MPH

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

9/7/2023	10:46	ZERO	0.0	PPM
9/7/2023	10:48	SPAN	502.0	PPM

Background Reading:

9/7/2023	10:56	Upwind	1.5	PPM
9/7/2023	11:03	Downwind	1.4	PPM



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.	DWN. BY:	CHK. BY:	QA/QC BY:	APP. BY:
02218208.04	LSN	DBK		
DSK. BY: LSN				

FILE: 02218208.04
DATE: 9/7/23
SCALE: AS SHOWN
DRAWING NO.

of 1

September 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 – September 15, 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 September 15, 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	176
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	76
Number of Exceedances	2
Number of Serpentine Exceedances	1
Number of Pipe Penetration Exceedances	1

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	9/15/23 Event	9/15/23 Event Result	Comments
EW-55	7/12/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
Tag 69	7/12/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-58	7/21/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-52	8/4/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-90	8/11/23	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-53	8/17/2023	30-Day Retest	Passed	Exceedance Resolved
EW-30R	8/17/2023	30-Day Retest	Passed	Exceedance Resolved
EW-63	8/17/2023	30-Day Retest	Passed	Exceedance Resolved
EW-42	8/17/2023	30-Day Retest	Passed	Exceedance Resolved
EW-33B	8/17/2023	30-Day Retest	Passed	Exceedance Resolved
EW-62	8/17/2023	30-Day Retest	Passed	Exceedance Resolved
EW-64	8/23/2023	N/A	Passed	Requires 30-Day Retest
EW-74	8/31/2023	N/A	Passed	Requires 30-Day Retest
EW-82	9/7/23	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 - SEPTEMBER 15, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	16.4 PPM	OK			Start Serpentine Route
2	8.0 PPM	OK			
3	1.0 PPM	OK			
4	0.9 PPM	OK			
5	0.9 PPM	OK			
6	1.1 PPM	OK			
7	1.6 PPM	OK			
8	0.8 PPM	OK			
9	4.0 PPM	OK			
10	8.4 PPM	OK			
11	4.4 PPM	OK			
12	9.5 PPM	OK			
13	10.3 PPM	OK			
14	7.0 PPM	OK			
15	21.3 PPM	OK			
16	7.8 PPM	OK			
17	1.7 PPM	OK			
18	2.1 PPM	OK			
19	3.4 PPM	OK			
20	15.0 PPM	OK			
21	3.8 PPM	OK			
22	6.8 PPM	OK			
23	3.0 PPM	OK			
24	3.6 PPM	OK			
25	2.0 PPM	OK			
26	1.4 PPM	OK			
27	2.9 PPM	OK			
28	3.0 PPM	OK			
29	12.6 PPM	OK			
30	9.7 PPM	OK			
31	2.6 PPM	OK			
32	5.1 PPM	OK			
33	36.7 PPM	OK			
34	19.3 PPM	OK			
35	29.4 PPM	OK			
36	51.0 PPM	OK			
37	167.0 PPM	OK			
38	11.1 PPM	OK			
39	1.7 PPM	OK			
40	0.5 PPM	OK			
41	5.5 PPM	OK			
42	2.7 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 15, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
43	6.8 PPM	OK			
44	1.7 PPM	OK			
45	7.6 PPM	OK			
46	8.7 PPM	OK			
47	5.1 PPM	OK			
48	2.7 PPM	OK			
49	1.7 PPM	OK			
50	5.5 PPM	OK			
51	12.8 PPM	OK			
52	2.6 PPM	OK			
53	2.0 PPM	OK			
54	7.5 PPM	OK			
55	49.7 PPM	OK			
56	2.4 PPM	OK			
57	0.8 PPM	OK			
58	2.3 PPM	OK			
59	9.1 PPM	OK			
60	1.0 PPM	OK			
61	0.2 PPM	OK			
62	0.4 PPM	OK			
63	0.7 PPM	OK			
64	7.4 PPM	OK			
65	12.6 PPM	OK			
66	27.1 PPM	OK			
67	25.4 PPM	OK			
68	6.7 PPM	OK			
69	8.8 PPM	OK			
70	1.9 PPM	OK			
71	3.7 PPM	OK			
72	0.2 PPM	OK			
73	0.0 PPM	OK			
74	0.0 PPM	OK			
75	0.1 PPM	OK			
76	97.8 PPM	OK			
77	153.0 PPM	OK			
78	1.5 PPM	OK			
79	0.1 PPM	OK			
80	0.2 PPM	OK			
81	0.0 PPM	OK			
82	10.3 PPM	OK			
83	8.1 PPM	OK			
84	45.2 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 15, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
85	48.7 PPM	OK			
86	21.9 PPM	OK			
87	0.7 PPM	OK			
88	0.9 PPM	OK			
89	6.7 PPM	OK			
90	0.0 PPM	OK			
91	32.7 PPM	OK			
92	59.2 PPM	OK			
93	21.3 PPM	OK			
94	1219.0 PPM	HIGH_ALRM	36.59900	-82.14749	
95	238.0 PPM	OK			
96	10.5 PPM	OK			
97	2.8 PPM	OK			
98	4.1 PPM	OK			
99	14.9 PPM	OK			
100	65.3 PPM	OK			End Serpentine Route
101	65.9 PPM	OK			EW-35
102	231.0 PPM	OK			EW-52
103	19.1 PPM	OK			TP-4
104	236.0 PPM	OK			EW-60
105	55.9 PPM	OK			EW-48
106	1.1 PPM	OK			TP-6
107	0.0 PPM	OK			EW-61
108	4.9 PPM	OK			EW-34
109	6.5 PPM	OK			EW-50
110	17.4 PPM	OK			EW-67
111	35.1 PPM	OK			EW-47
112	2.2 PPM	OK			EW-54
113	12.7 PPM	OK			EW-55
114	83.0 PPM	OK			EW-92
115	0.8 PPM	OK			EW-91
116	0.0 PPM	OK			EW-96
117	12.4 PPM	OK			TP-2
118	0.0 PPM	OK			EW-66
119	0.0 PPM	OK			EW-58
120	4.7 PPM	OK			EW-57
121	1.9 PPM	OK			TP-1
122	10.1 PPM	OK			EW-59
123	2.0 PPM	OK			EW-56
124	4.1 PPM	OK			EW-97
125	1.7 PPM	OK			EW-41

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 15, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
126	0.4 PPM	OK			EW-53
127	0.6 PPM	OK			EW-40
128	1.0 PPM	OK			TP-3
129	16.1 PPM	OK			EW-51
130	30.3 PPM	OK			EW-39
131	18.3 PPM	OK			TP-5
132	6.5 PPM	OK			EW-68
133	186.0 PPM	OK			EW-87
134	0.5 PPM	OK			EW-38
135	67.9 PPM	OK			TP-7
136	0.0 PPM	OK			EW-49
137	4.4 PPM	OK			EW-83
138	1.5 PPM	OK			EW-31R
139	5.6 PPM	OK			EW-65
140	1.9 PPM	OK			EW-81
141	0.8 PPM	OK			TP-8
142	0.2 PPM	OK			EW-64
143	6.5 PPM	OK			EW-30R
144	232.0 PPM	OK			EW-63
145	1.6 PPM	OK			EW-42
146	1.8 PPM	OK			TP-9
147	26.7 PPM	OK			EW-33
148	78.9 PPM	OK			EW-62
149	228.0 PPM	OK			EW-29R
150	0.3 PPM	OK			EW-74
151	6.1 PPM	OK			EW-32R
152	0.0 PPM	OK			EW-69
153	0.0 PPM	OK			EW-71
154	62.0 PPM	OK			EW-72
155	0.4 PPM	OK			EW-70
156	63.0 PPM	OK			EW-73
157	116.0 PPM	OK			EW-76
158	34.3 PPM	OK			EW-78
159	2.9 PPM	OK			EW-82
160	18.3 PPM	OK			EW-36A
161	0.3 PPM	OK			EW-85
162	0.2 PPM	OK			EW-88
163	46.2 PPM	OK			EW-89
164	0.8 PPM	OK			EW-93
165	0.4 PPM	OK			EW-94
166	0.3 PPM	OK			EW-98
167	4.6 PPM	OK			EW-100
168	1.7 PPM	OK			EW-99
169	47.6 PPM	OK			EW-95
170	763.0 PPM	HIGH_ALRM	36.59894	-82.14810	EW-90
171	18.4 PPM	OK			EW-86
172	9.9 PPM	OK			EW-84
173	0.1 PPM	OK			EW-80
174	0.0 PPM	OK			EW-79

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 15, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
175	8.1 PPM	OK			EW-33B
176	211.0 PPM	OK			EW-75

Number of locations sampled:	176
Number of exceedance locations:	2

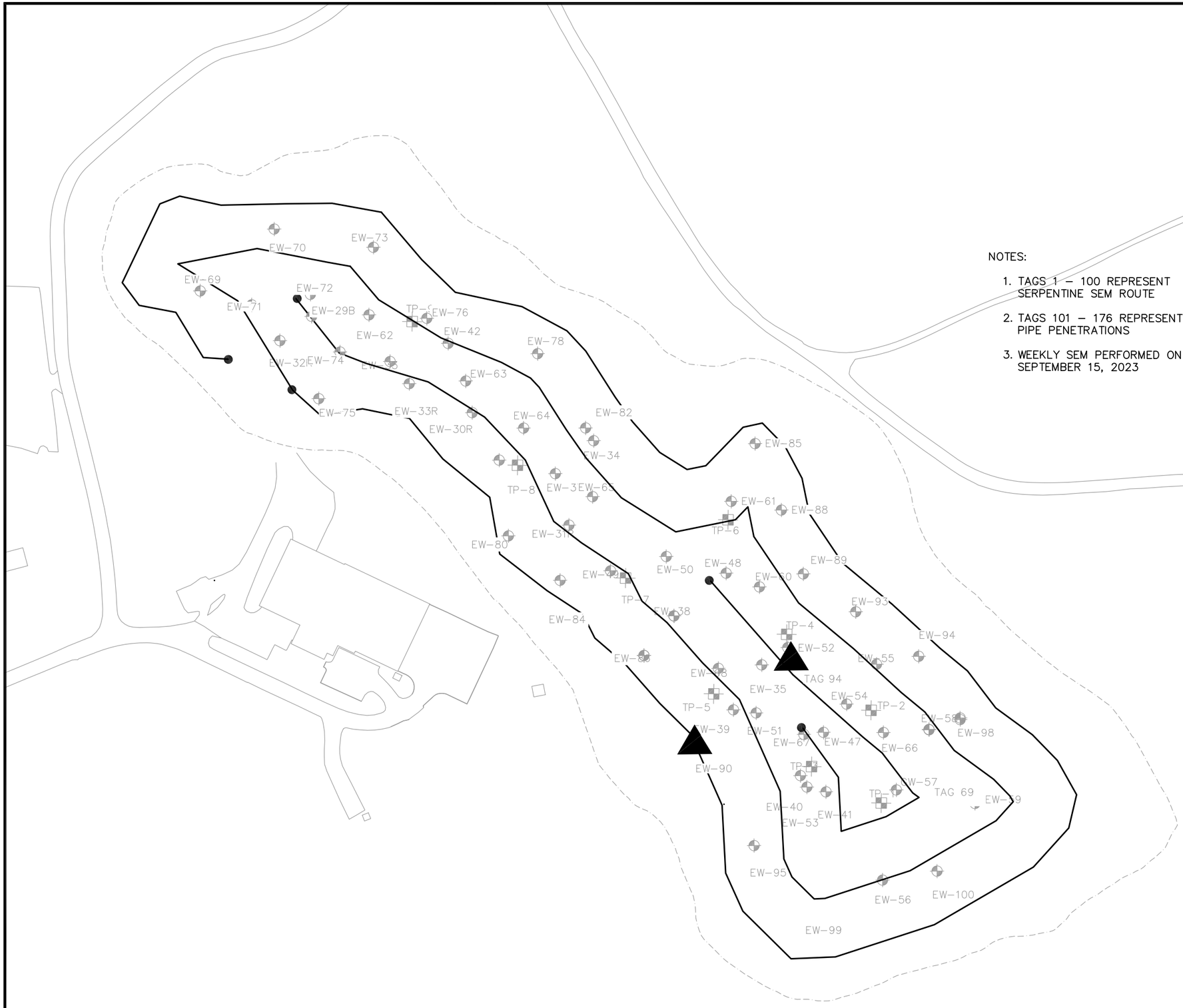
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 176 represent SEM at Pipe Penetrations
Weather Conditions: Partly Cloudy, 72°F Wind: W - 5 MPH

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

9/15/2023	10:25	ZERO	0.1	PPM
9/15/2023	10:30	SPAN	499.0	PPM

Background Reading:

9/15/2023	10:35	Upwind	1.7	PPM
9/15/2023	10:47	Downwind	1.1	PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 176 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON SEPTEMBER 15, 2023

0 80 160 240
SCALE IN FEET

N

LEGEND

- SEM ROUTE
- GW-61 GAS WELL
- TP-1 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.	DWN. BY:	CHK. BY:	QA/QC R/W BY:	APP. BY:
02218208.04	LSN	DBK		
DSN. BY: LSN				

FILE: 02218208.04

DATE: 9/15/23

SCALE: AS SHOWN

DRAWING NO.

of 1

September 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 – September 19, 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 September 19, 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	176
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	76
Number of Exceedances	4
Number of Serpentine Exceedances	1
Number of Pipe Penetration Exceedances	3

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	9/19/23 Event	9/19/23 Event Result	Comments
EW-55	7/12/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
Tag 69	7/12/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-58	7/21/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-52	8/4/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-90	8/11/23	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-64	8/23/2023	30-Day Retest	Passed	Exceedance Resolved
EW-74	8/31/2023	N/A	Passed	Requires 30-Day Retest
EW-82	9/7/23	N/A	Passed	Requires 30-Day Retest
Tag 94	9/15/23	10-Day Retest	Failed	Requires 2nd 10-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 - SEPTEMBER 19, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	11.9 PPM	OK			Start Serpentine Route
2	22.5 PPM	OK			
3	25.9 PPM	OK			
4	16.1 PPM	OK			
5	22.9 PPM	OK			
6	26.2 PPM	OK			
7	16.7 PPM	OK			
8	40.4 PPM	OK			
9	58.0 PPM	OK			
10	88.1 PPM	OK			
11	106.0 PPM	OK			
12	35.9 PPM	OK			
13	14.2 PPM	OK			
14	19.1 PPM	OK			
15	19.2 PPM	OK			
16	10.4 PPM	OK			
17	10.2 PPM	OK			
18	9.8 PPM	OK			
19	11.9 PPM	OK			
20	59.4 PPM	OK			
21	37.1 PPM	OK			
22	41.5 PPM	OK			
23	8.8 PPM	OK			
24	6.6 PPM	OK			
25	5.3 PPM	OK			
26	4.2 PPM	OK			
27	6.7 PPM	OK			
28	3.5 PPM	OK			
29	3.2 PPM	OK			
30	4.6 PPM	OK			
31	1.7 PPM	OK			
32	61.4 PPM	OK			
33	5.2 PPM	OK			
34	36.9 PPM	OK			
35	131.0 PPM	OK			
36	232.0 PPM	OK			
37	193.0 PPM	OK			
38	18.6 PPM	OK			
39	4.5 PPM	OK			
40	3.5 PPM	OK			
41	18.1 PPM	OK			
42	7.7 PPM	OK			
43	4.5 PPM	OK			
44	2.5 PPM	OK			
45	7.8 PPM	OK			
46	10.0 PPM	OK			
47	5.6 PPM	OK			
48	23.2 PPM	OK			
49	11.2 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 19, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
50	32.8 PPM	OK			
51	9.5 PPM	OK			
52	8.4 PPM	OK			
53	15.2 PPM	OK			
54	5.1 PPM	OK			
55	7.0 PPM	OK			
56	16.0 PPM	OK			
57	5.6 PPM	OK			
58	43.1 PPM	OK			
59	19.7 PPM	OK			
60	10.4 PPM	OK			
61	13.0 PPM	OK			
62	17.1 PPM	OK			
63	19.6 PPM	OK			
64	47.5 PPM	OK			
65	9.5 PPM	OK			
66	79.5 PPM	OK			
67	48.9 PPM	OK			
68	16.7 PPM	OK			
69	21.3 PPM	OK			
70	7.5 PPM	OK			
71	122.0 PPM	OK			
72	25.6 PPM	OK			
73	32.0 PPM	OK			
74	7.5 PPM	OK			
75	7.1 PPM	OK			
76	54.0 PPM	OK			
77	17.5 PPM	OK			
78	3.3 PPM	OK			
79	2.3 PPM	OK			
80	10.3 PPM	OK			
81	6.6 PPM	OK			
82	23.5 PPM	OK			
83	5.0 PPM	OK			
84	5.4 PPM	OK			
85	17.0 PPM	OK			
86	22.0 PPM	OK			
87	6.6 PPM	OK			
88	8.1 PPM	OK			
89	6.0 PPM	OK			
90	4.9 PPM	OK			
91	25.1 PPM	OK			
92	26.0 PPM	OK			
93	82.2 PPM	OK			
94	894.0 PPM	HIGH_ALRM	36.59900	-82.14749	
95	62.2 PPM	OK			
96	3.5 PPM	OK			
97	30.8 PPM	OK			
98	64.6 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 19, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
99	6.2 PPM	OK			
100	9.0 PPM	OK			End Serpentine Route
101	320.0 PPM	OK			EW-35
102	389.0 PPM	OK			EW-52
103	43.3 PPM	OK			TP-4
104	109.0 PPM	OK			EW-60
105	73.9 PPM	OK			EW-48
106	6.3 PPM	OK			TP-6
107	4.1 PPM	OK			EW-61
108	171.0 PPM	OK			EW-34
109	4.2 PPM	OK			EW-50
110	6135.0 PPM	HIGH_ALRM	36.59890	-82.14778	EW-67
111	8.9 PPM	OK			EW-47
112	160.0 PPM	OK			EW-54
113	4.5 PPM	OK			EW-55
114	2.0 PPM	OK			EW-92
115	25.5 PPM	OK			EW-91
116	23.3 PPM	OK			EW-96
117	0.7 PPM	OK			TP-2
118	41.3 PPM	OK			EW-66
119	0.7 PPM	OK			EW-58
120	23.7 PPM	OK			EW-57
121	1.4 PPM	OK			TP-1
122	0.6 PPM	OK			EW-59
123	21.1 PPM	OK			EW-56
124	0.8 PPM	OK			EW-97
125	4.6 PPM	OK			EW-41
126	9.0 PPM	OK			EW-53
127	9.2 PPM	OK			EW-40
128	9.3 PPM	OK			TP-3
129	128.0 PPM	OK			EW-51
130	17.0 PPM	OK			EW-39
131	3.7 PPM	OK			TP-5
132	18.3 PPM	OK			EW-68
133	26.9 PPM	OK			EW-87
134	29.3 PPM	OK			EW-38
135	2.5 PPM	OK			TP-7
136	3.9 PPM	OK			EW-49
137	2.8 PPM	OK			EW-83
138	5.1 PPM	OK			EW-31R
139	1.9 PPM	OK			EW-65
140	1.3 PPM	OK			EW-81
141	0.2 PPM	OK			TP-8
142	0.3 PPM	OK			EW-64
143	1.8 PPM	OK			EW-30R
144	39.8 PPM	OK			EW-63
145	54.0 PPM	OK			EW-42
146	156.0 PPM	OK			TP-9

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 19, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
147	101.0 PPM	OK			EW-33R
148	211.0 PPM	OK			EW-62
149	119.0 PPM	OK			EW-29R
150	103.0 PPM	OK			EW-74
151	4.7 PPM	OK			EW-32R
152	197.0 PPM	OK			EW-69
153	80.0 PPM	OK			EW-71
154	9.0 PPM	OK			EW-72
155	25.7 PPM	OK			EW-70
156	51.8 PPM	OK			EW-73
157	2.4 PPM	OK			EW-76
158	20.1 PPM	OK			EW-78
159	60.1 PPM	OK			EW-82
160	0.5 PPM	OK			EW-36A
161	0.5 PPM	OK			EW-85
162	8.1 PPM	OK			EW-88
163	0.4 PPM	OK			EW-89
164	0.8 PPM	OK			EW-93
165	0.2 PPM	OK			EW-94
166	145.0 PPM	OK			EW-98
167	2.1 PPM	OK			EW-100
168	98.3 PPM	OK			EW-99
169	38.0 PPM	OK			EW-95
170	8370.0 PPM	HIGH_ALRM	36.59886	-82.14824	EW-90
171	1.8 PPM	OK			EW-86
172	6.0 PPM	OK			EW-84
173	2.8 PPM	OK			EW-80
174	0.6 PPM	OK			EW-79
175	3.2 PPM	OK			EW-33B
176	3065.0 PPM	HIGH_ALRM	36.60124	-82.14881	EW-75

Number of locations sampled:	176
Number of exceedance locations:	4

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 19, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments

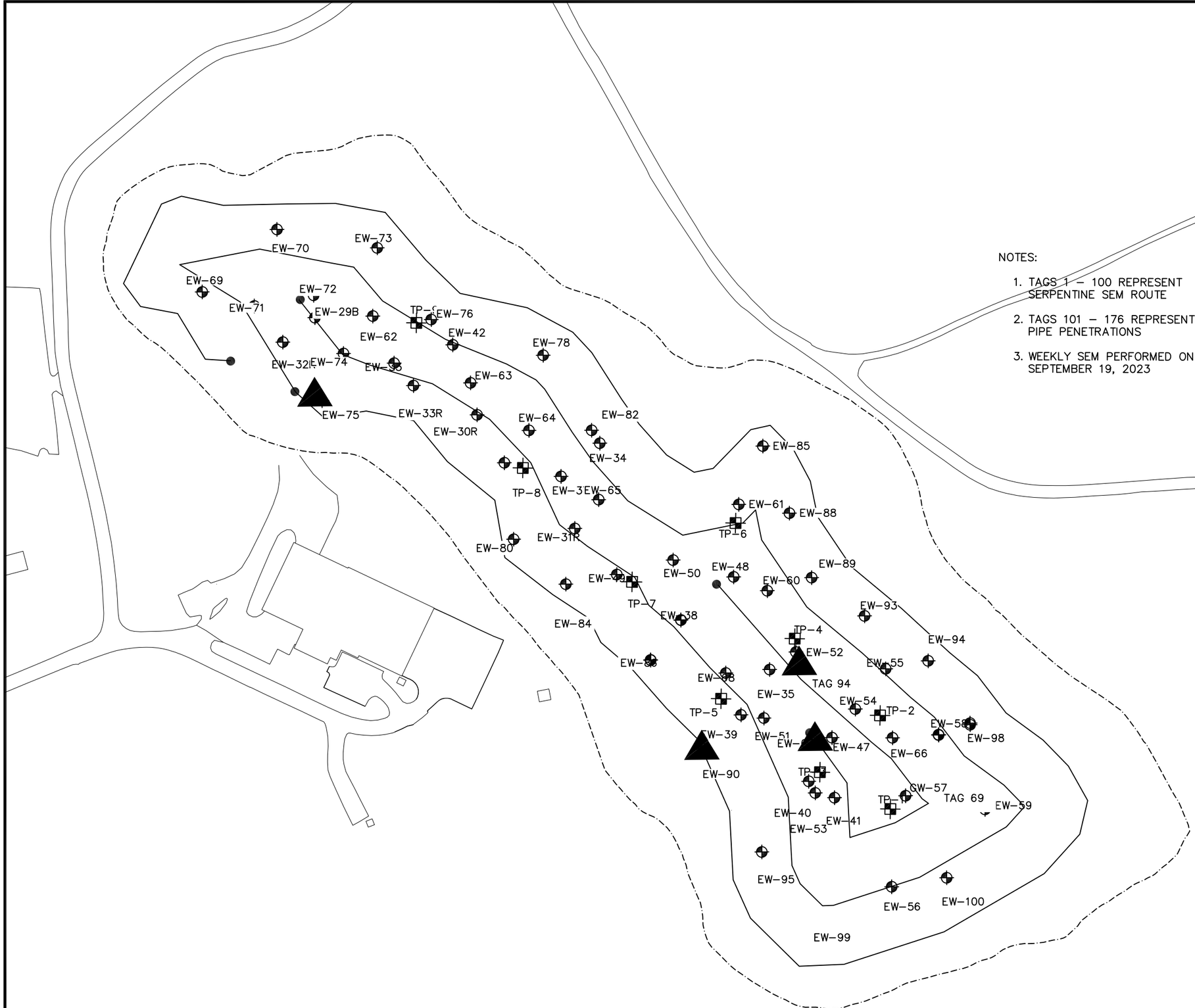
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 176 represent SEM at Pipe Penetrations
Weather Conditions: Sunny, 61°F, Wind: None

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

9/19/2023	8:47	ZERO	0.1	PPM
9/19/2023	8:49	SPAN	504.0	PPM

Background Reading:

9/19/2023	8:50	Upwind	6.7	PPM
9/19/2023	8:55	Downwind	5.8	PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 176 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON SEPTEMBER 19, 2023

0 80 160 240
SCALE IN FEET

N

LEGEND

- SEM ROUTE
- GW-61 GAS WELL
- TP-1 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.	DWN. BY:	Q/A REW BY:
02218208.04	LSN	
DSN. BY: LSN	CHK. BY: DBK	APP. BY:

FILE: 02218208.04
DATE: 9/19/23
SCALE: AS SHOWN
DRAWING NO.

of 1

October 4, 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 – September 25, 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 September 25, 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	177
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	77
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	9/25/23 Event	9/25/23 Event Result	Comments
EW-55	7/12/23	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
Tag 69	7/12/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-58	7/21/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-52	8/4/23	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-90	8/11/23	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-74	8/31/2023	30-Day Retest	Passed	Exceedance Resolved
EW-82	9/7/23	N/A	Passed	Requires 30-Day Retest
Tag 94	9/15/23	2nd 10-Day Retest	Passed	Requires 30-Day Retest
EW-67	9/19/23	10-Day Retest	Passed	Requires 30-Day Retest
EW-75	9/19/23	10-Day Retest	Passed	Requires 30-Day Retest

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

Sincerely,

William J. Fabrie
Staff Professional
SCS Engineers

Lucas S. Nachman
Senior Project Professional
SCS Engineers

LSN/WJF/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 - SEPTEMBER 25, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	31.3 PPM	OK			Start Serpentine Route
2	6.8 PPM	OK			
3	1.8 PPM	OK			
4	1.3 PPM	OK			
5	1.3 PPM	OK			
6	1.2 PPM	OK			
7	1.2 PPM	OK			
8	2 PPM	OK			
9	1.3 PPM	OK			
10	84.4 PPM	OK			
11	10.6 PPM	OK			
12	9.7 PPM	OK			
13	17.6 PPM	OK			
14	15.6 PPM	OK			
15	10.4 PPM	OK			
16	15.2 PPM	OK			
17	11.5 PPM	OK			
18	16.5 PPM	OK			
19	14.4 PPM	OK			
20	42.6 PPM	OK			
21	42.4 PPM	OK			
22	17.3 PPM	OK			
23	9.6 PPM	OK			
24	5.2 PPM	OK			
25	5.4 PPM	OK			
26	7 PPM	OK			
27	2.3 PPM	OK			
28	2.4 PPM	OK			
29	5.7 PPM	OK			
30	4.2 PPM	OK			
31	4.2 PPM	OK			
32	15.3 PPM	OK			
33	24.3 PPM	OK			
34	58.9 PPM	OK			
35	257 PPM	OK			
36	158 PPM	OK			
37	335 PPM	OK			
38	27.2 PPM	OK			
39	20 PPM	OK			
40	5.6 PPM	OK			
41	4.2 PPM	OK			
42	5.2 PPM	OK			
43	3.3 PPM	OK			
44	1.5 PPM	OK			
45	1.1 PPM	OK			
46	0.8 PPM	OK			
47	1.3 PPM	OK			
48	0.7 PPM	OK			
49	0.8 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 25, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
50	0.8 PPM	OK			
51	0.6 PPM	OK			
52	0.7 PPM	OK			
53	0.6 PPM	OK			
54	3.8 PPM	OK			
55	0.6 PPM	OK			
56	0.6 PPM	OK			
57	0.6 PPM	OK			
58	0.6 PPM	OK			
59	1 PPM	OK			
60	1.2 PPM	OK			
61	1 PPM	OK			
62	0.8 PPM	OK			
63	0.9 PPM	OK			
64	40.1 PPM	OK			
65	2.1 PPM	OK			
66	6.9 PPM	OK			
67	27 PPM	OK			
68	5.1 PPM	OK			
69	200 PPM	OK			
70	11.4 PPM	OK			
71	45.6 PPM	OK			
72	56.4 PPM	OK			
73	70 PPM	OK			
74	10.2 PPM	OK			
75	20.1 PPM	OK			
76	161 PPM	OK			
77	145 PPM	OK			
78	119 PPM	OK			
79	31.5 PPM	OK			
80	5.3 PPM	OK			
81	3 PPM	OK			
82	2.4 PPM	OK			
83	6.7 PPM	OK			
84	2.6 PPM	OK			
85	0.3 PPM	OK			
86	0.8 PPM	OK			
87	0.5 PPM	OK			
88	0.3 PPM	OK			
89	1.4 PPM	OK			
90	0.4 PPM	OK			
91	0.2 PPM	OK			
92	0.7 PPM	OK			
93	105 PPM	OK			
94	23 PPM	OK			
95	83.8 PPM	OK			
96	294 PPM	OK			
97	138 PPM	OK			
98	43.5 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 25, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
99	29.5 PPM	OK			
100	48.4 PPM	OK			End Serpentine Route
101	199 PPM	OK			EW-35
102	132 PPM	OK			EW-52
103	77.8 PPM	OK			TP-4
104	15.6 PPM	OK			EW-60
105	38.1 PPM	OK			EW-48
106	57.4 PPM	OK			TP-6
107	2.1 PPM	OK			EW-61
108	52.5 PPM	OK			EW-34
109	4.6 PPM	OK			EW-50
110	123 PPM	OK			EW-67
111	17 PPM	OK			EW-47
112	161 PPM	OK			EW-54
113	812 PPM	HIGH_ALRM	36.59865	-82.14730	EW-55
114	76.1 PPM	OK			EW-92
115	56.3 PPM	OK			EW-91
116	19.5 PPM	OK			EW-96
117	7.6 PPM	OK			TP-2
118	2.9 PPM	OK			EW-66
119	3.9 PPM	OK			EW-58
120	87.4 PPM	OK			EW-57
121	3.4 PPM	OK			TP-1
122	10.4 PPM	OK			EW-59
123	11.2 PPM	OK			EW-56
124	3.9 PPM	OK			EW-97
125	19.2 PPM	OK			EW-41
126	17.5 PPM	OK			EW-53
127	17.7 PPM	OK			EW-40
128	7.2 PPM	OK			TP-3
129	61.8 PPM	OK			EW-51
130	447 PPM	OK			EW-39
131	75.7 PPM	OK			TP-5
132	105 PPM	OK			EW-68
133	440 PPM	OK			EW-87
134	140 PPM	OK			EW-38
135	26.7 PPM	OK			TP-7
136	3 PPM	OK			EW-49
137	4.6 PPM	OK			EW-83
138	3.9 PPM	OK			EW-31R
139	3.9 PPM	OK			EW-65
140	2.8 PPM	OK			EW-81
141	0.2 PPM	OK			TP-8
142	0.1 PPM	OK			EW-64
143	0 PPM	OK			EW-30R
144	0.5 PPM	OK			EW-63
145	0 PPM	OK			EW-42
146	54.9 PPM	OK			TP-9

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 25, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
147	0 PPM	OK			EW-33R
148	0 PPM	OK			EW-62
149	0 PPM	OK			EW-29R
150	0 PPM	OK			EW-74
151	0 PPM	OK			EW-32R
152	0 PPM	OK			EW-69
153	0.4 PPM	OK			EW-71
154	0 PPM	OK			EW-72
155	0 PPM	OK			EW-70
156	0 PPM	OK			EW-73
157	70.8 PPM	OK			EW-76
158	1.9 PPM	OK			EW-78
159	197 PPM	OK			EW-82
160	23.4 PPM	OK			EW-36A
161	0.5 PPM	OK			EW-85
162	0.2 PPM	OK			EW-88
163	174 PPM	OK			EW-89
164	11.3 PPM	OK			EW-93
165	11.1 PPM	OK			EW-94
166	1.8 PPM	OK			EW-98
167	12 PPM	OK			EW-100
168	2.7 PPM	OK			EW-99
169	190 PPM	OK			EW-95
170	7747 PPM	HIGH_ALRM	36.59886	-82.14824	EW-90
171	2.8 PPM	OK			EW-86
172	6 PPM	OK			EW-84
173	2.9 PPM	OK			EW-80
174	0.7 PPM	OK			EW-79
175	1.2 PPM	OK			EW-77
176	1.1 PPM	OK			EW-33B
177	3.2 PPM	OK			EW-75

Number of locations sampled:	177
Number of exceedance locations:	2

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - SEPTEMBER 25, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments

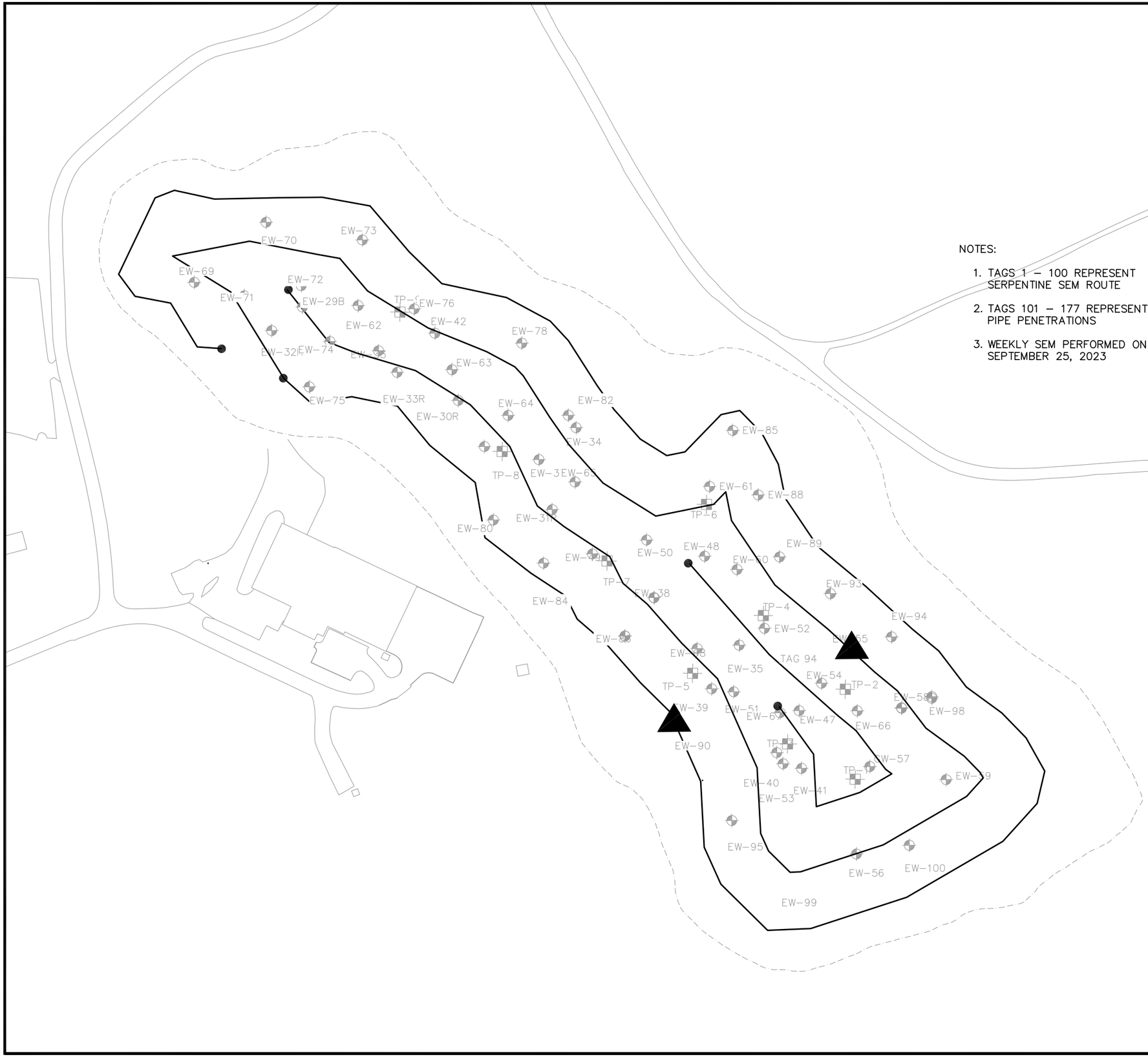
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 177 represent SEM at Pipe Penetrations
Weather Conditions: Overcast, 68°F Wind: N 4 MPH

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

9/25/2023	8:31	ZERO	0.0	PPM
9/25/2023	8:37	SPAN	501.0	PPM

Background Reading:

9/25/2023	8:38	Upwind	2.5	PPM
9/25/2023	8:40	Downwind	5.5	PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 177 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON SEPTEMBER 25, 2023

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.	DWN. BY:	CHK. BY:	QA/QC R/W BY:	APP. BY:
02218208.04	LSN	DBK		
DSN. BY:	LSN			

FILE: 02218208.04
DATE: 9/25/23
SCALE: AS SHOWN
DRAWING NO.

of 1

Appendix B

In-Waste Temperatures on Select Days in September

Appendix B Figures

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

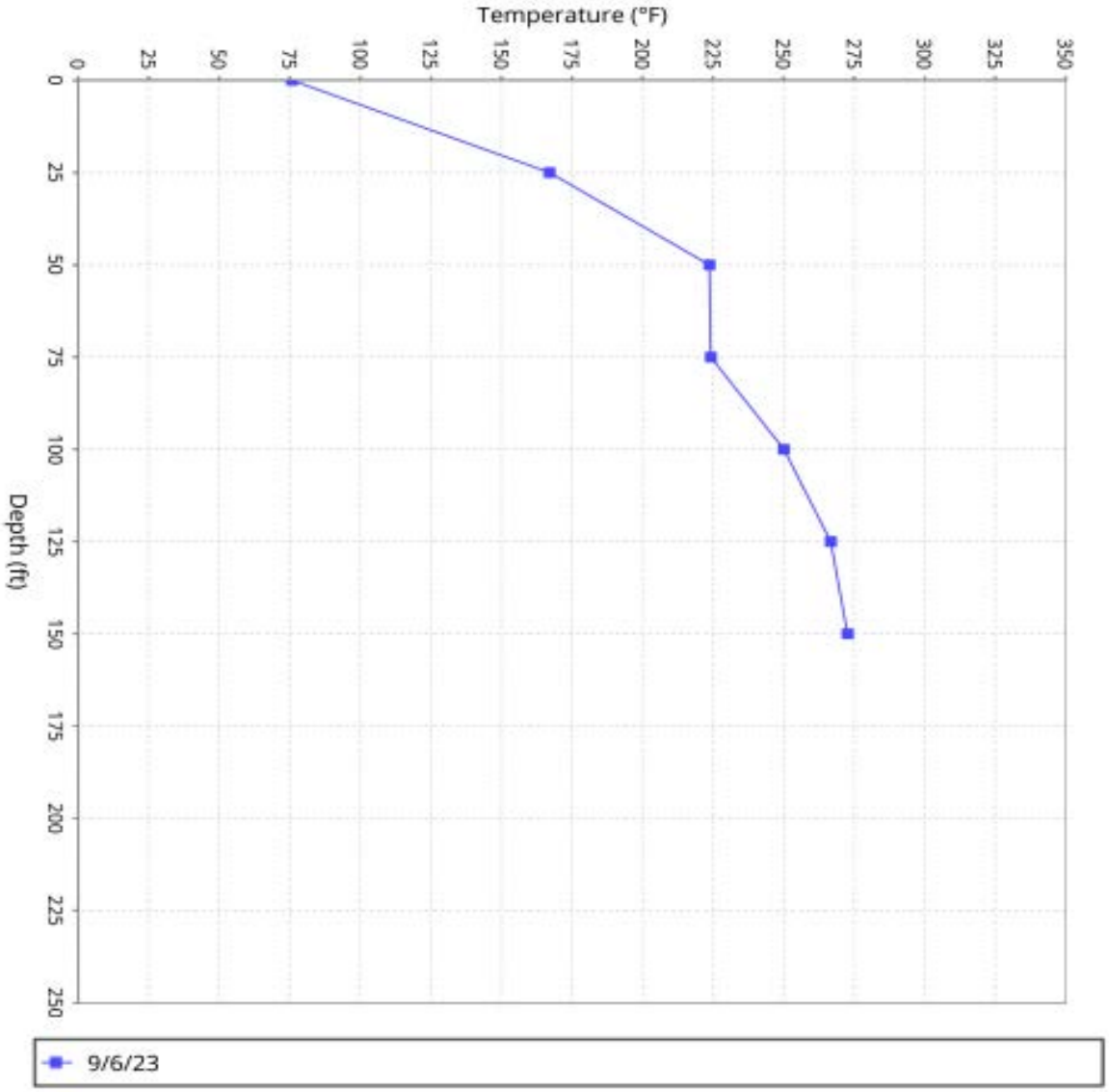


Figure B- 2. Average Temperatures Recorded by TP-1 on September 13, 2023

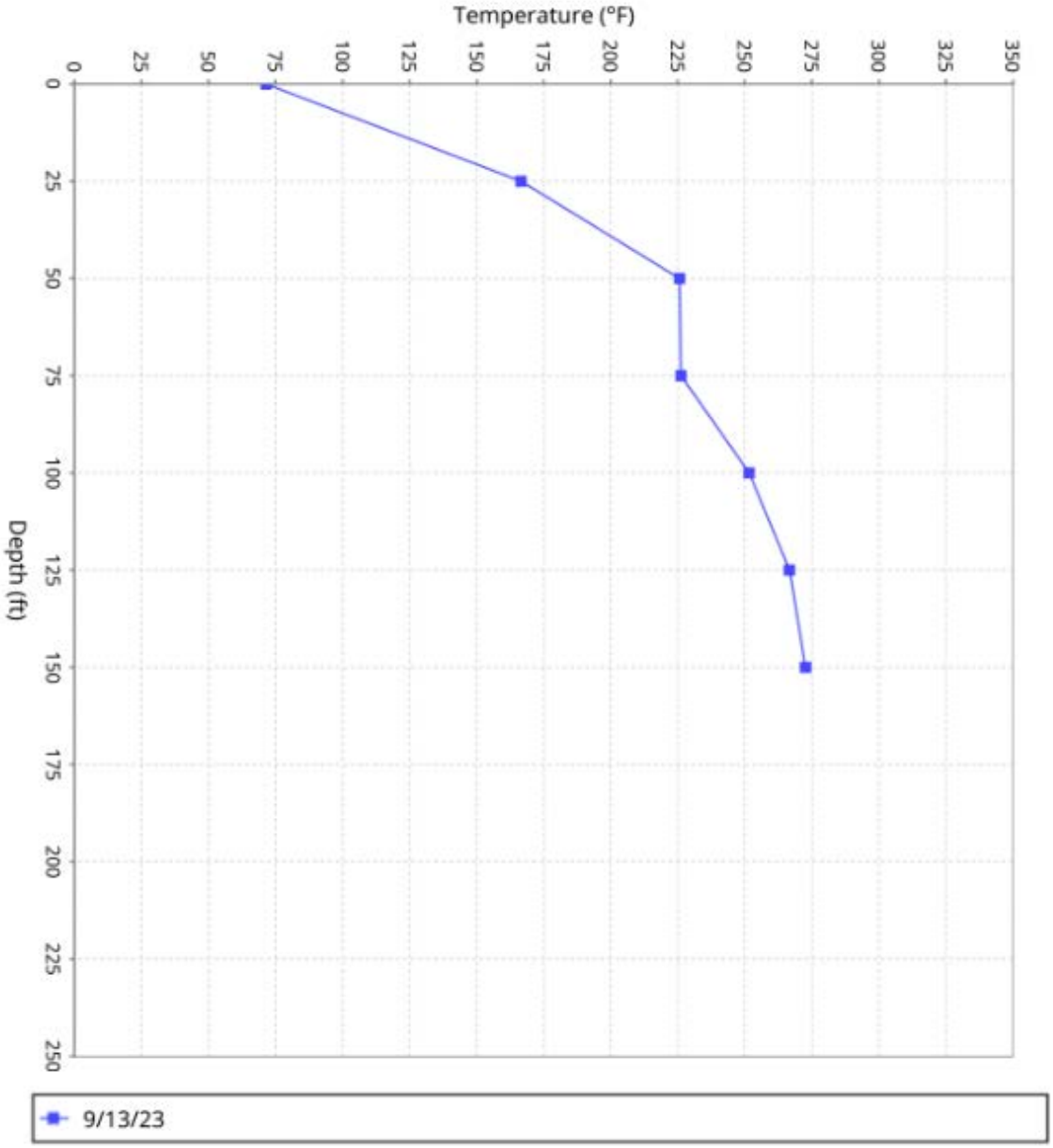


Figure B- 3. Average Temperatures Recorded by TP-1 on September 20, 2023

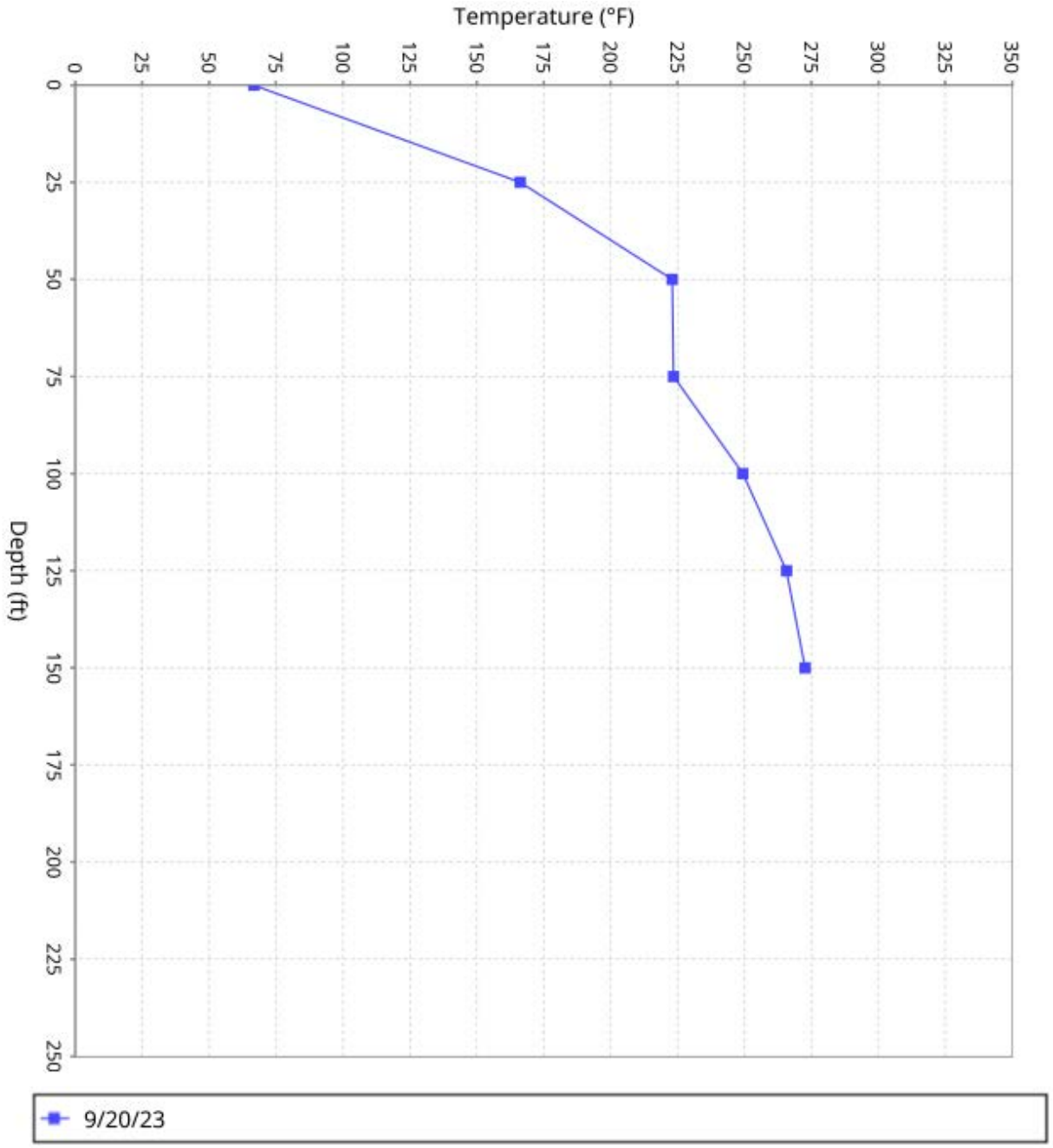


Figure B- 4. Average Temperatures Recorded by TP-1 on September 27, 2023

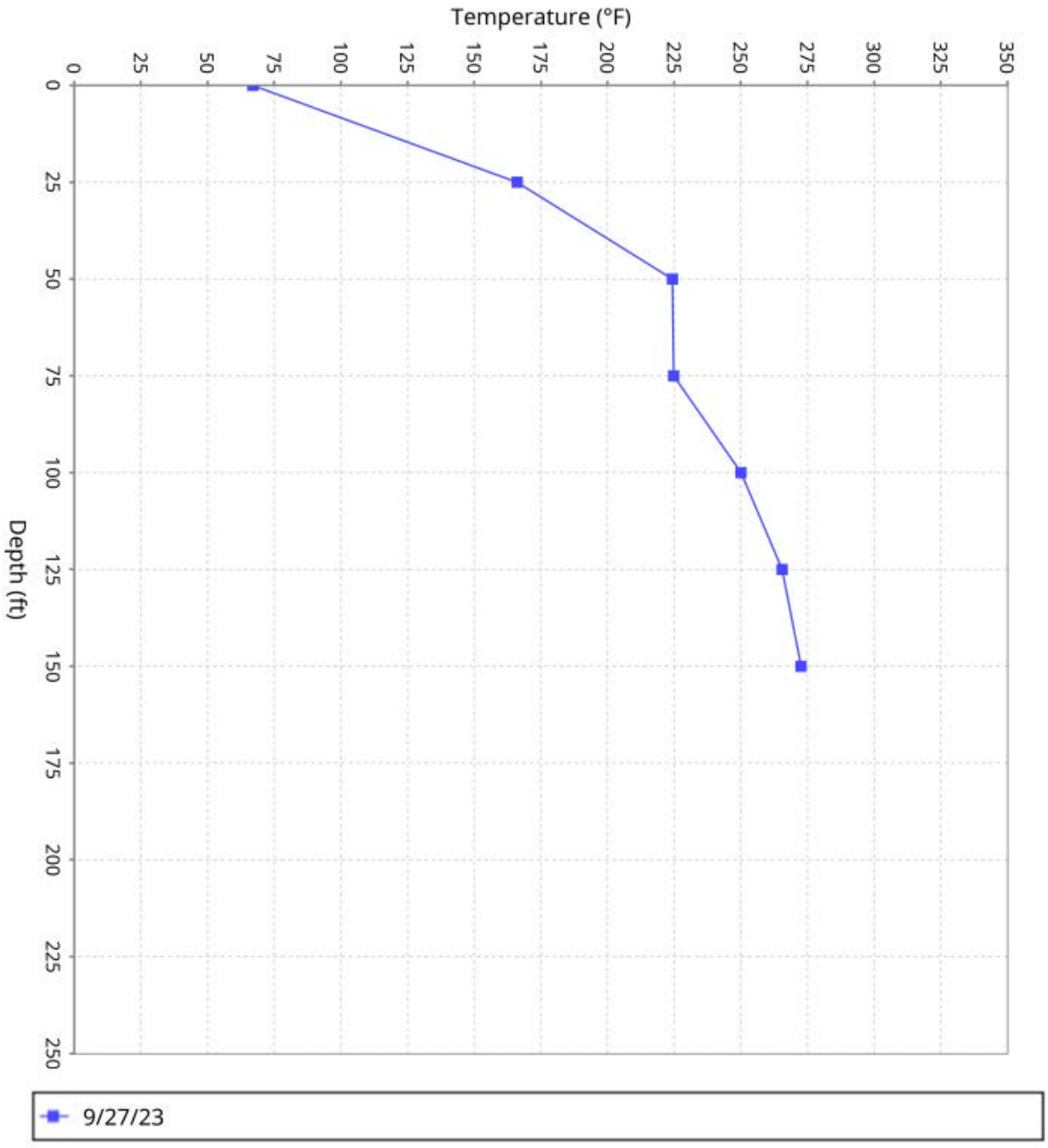


Figure B- 5. Average Temperatures Recorded by TP-2 on September 20, 2023

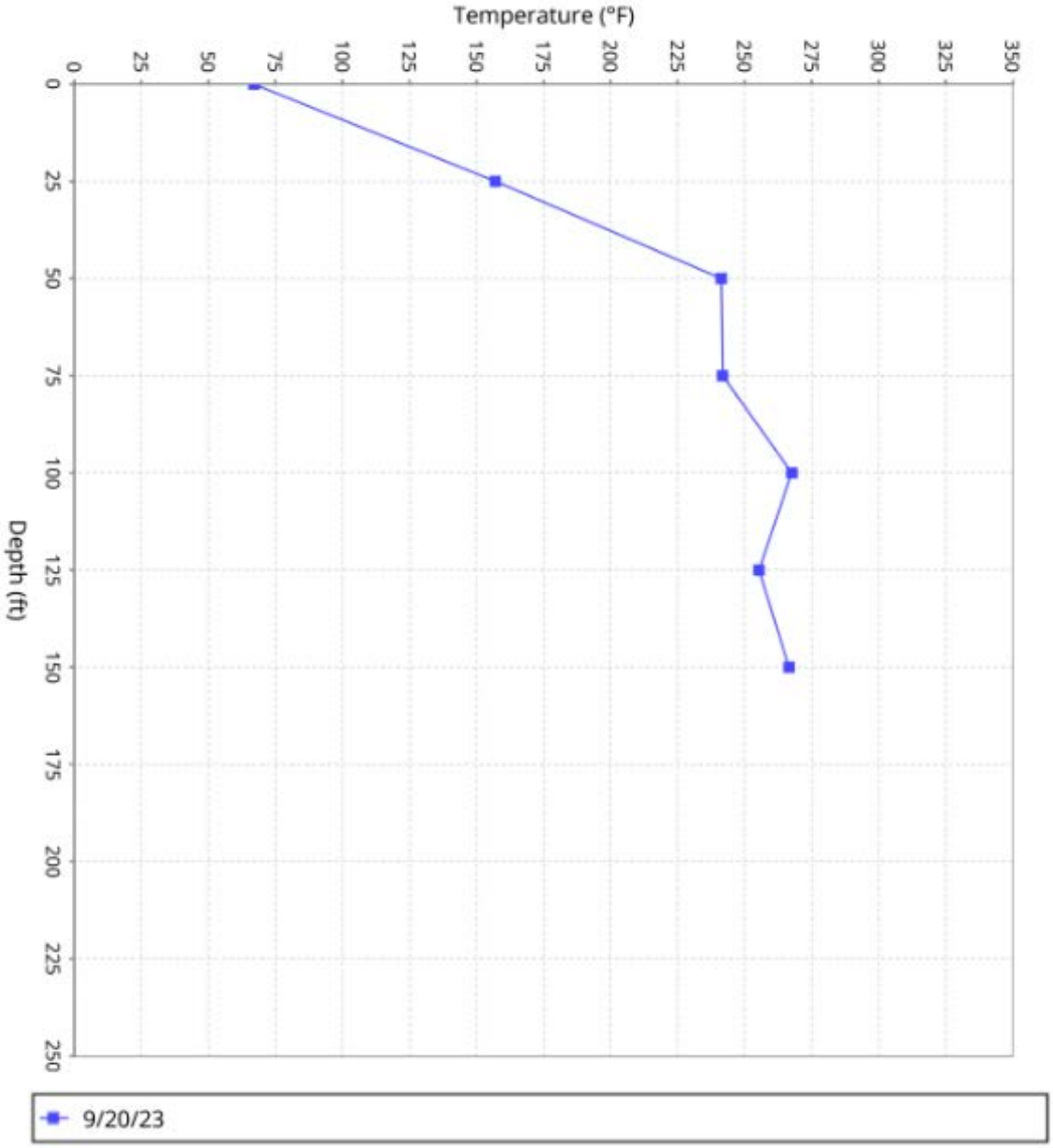


Figure B- 6. Average Temperatures Recorded by TP-2 on September 27, 2023

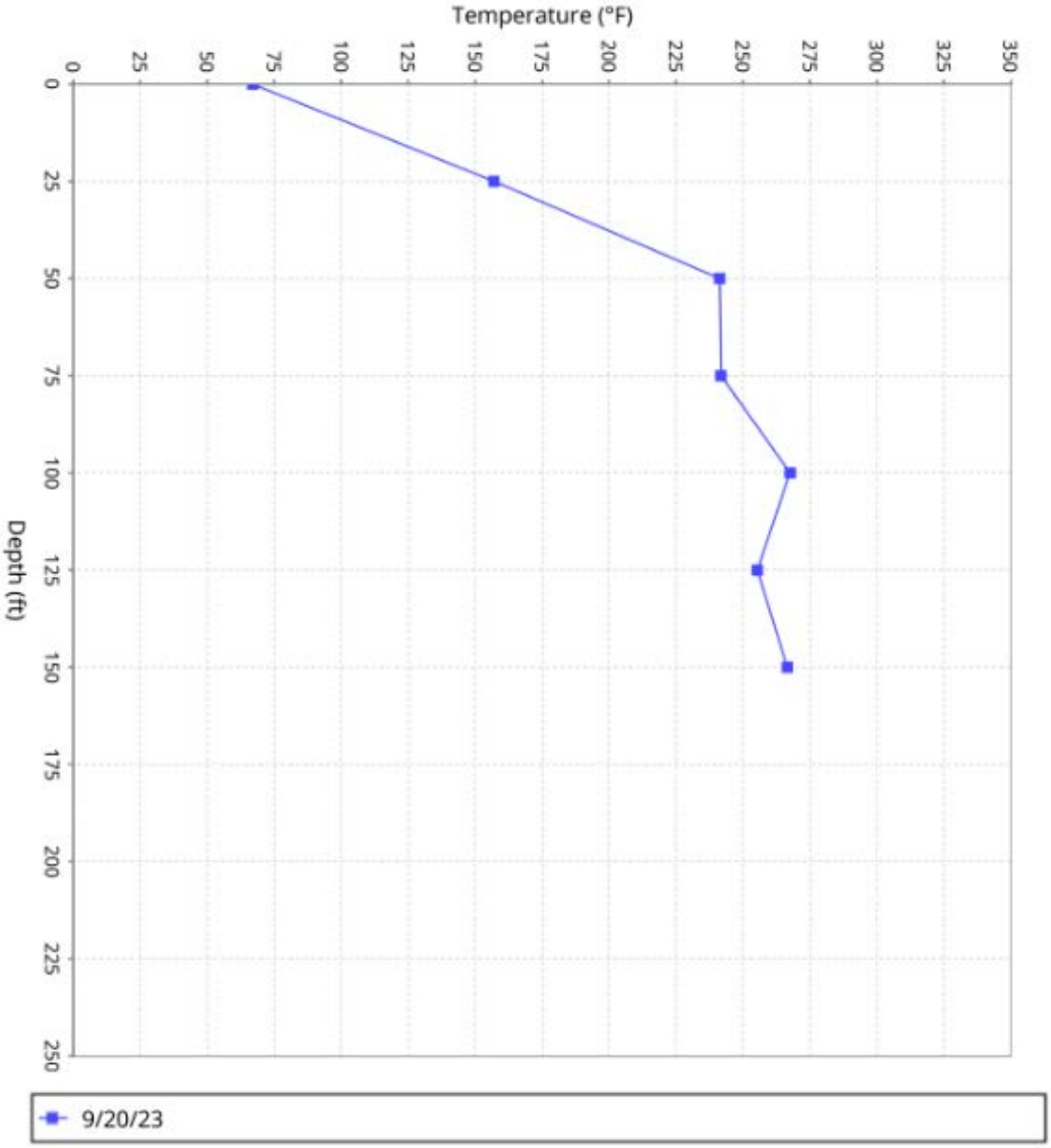


Figure B- 7. Average Temperatures Recorded by TP-3 on September 6, 2023

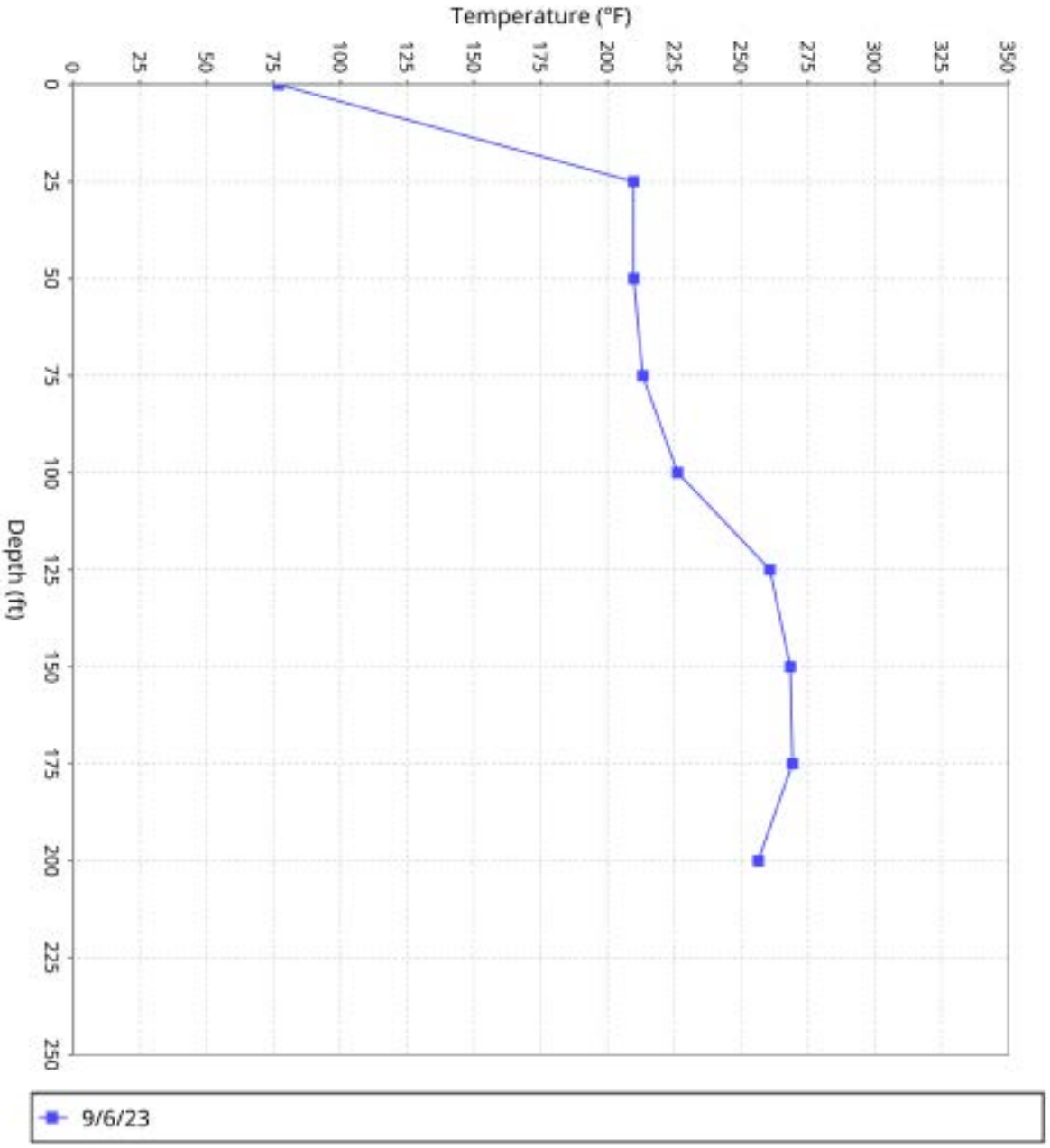


Figure B- 8. Average Temperatures Recorded by TP-3 on September 13, 2023

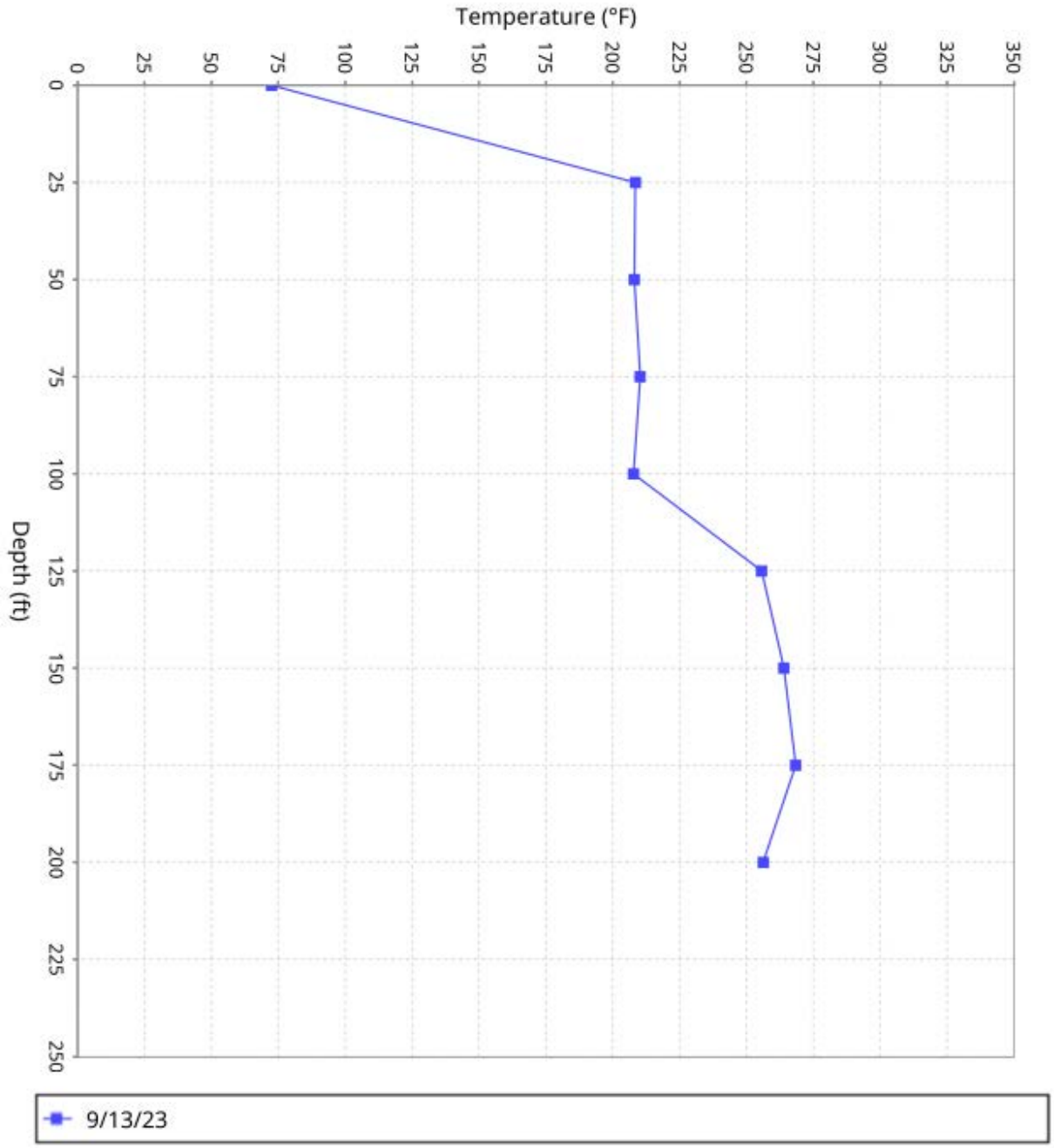


Figure B- 9. Average Temperatures Recorded by TP-3 on September 20, 2023

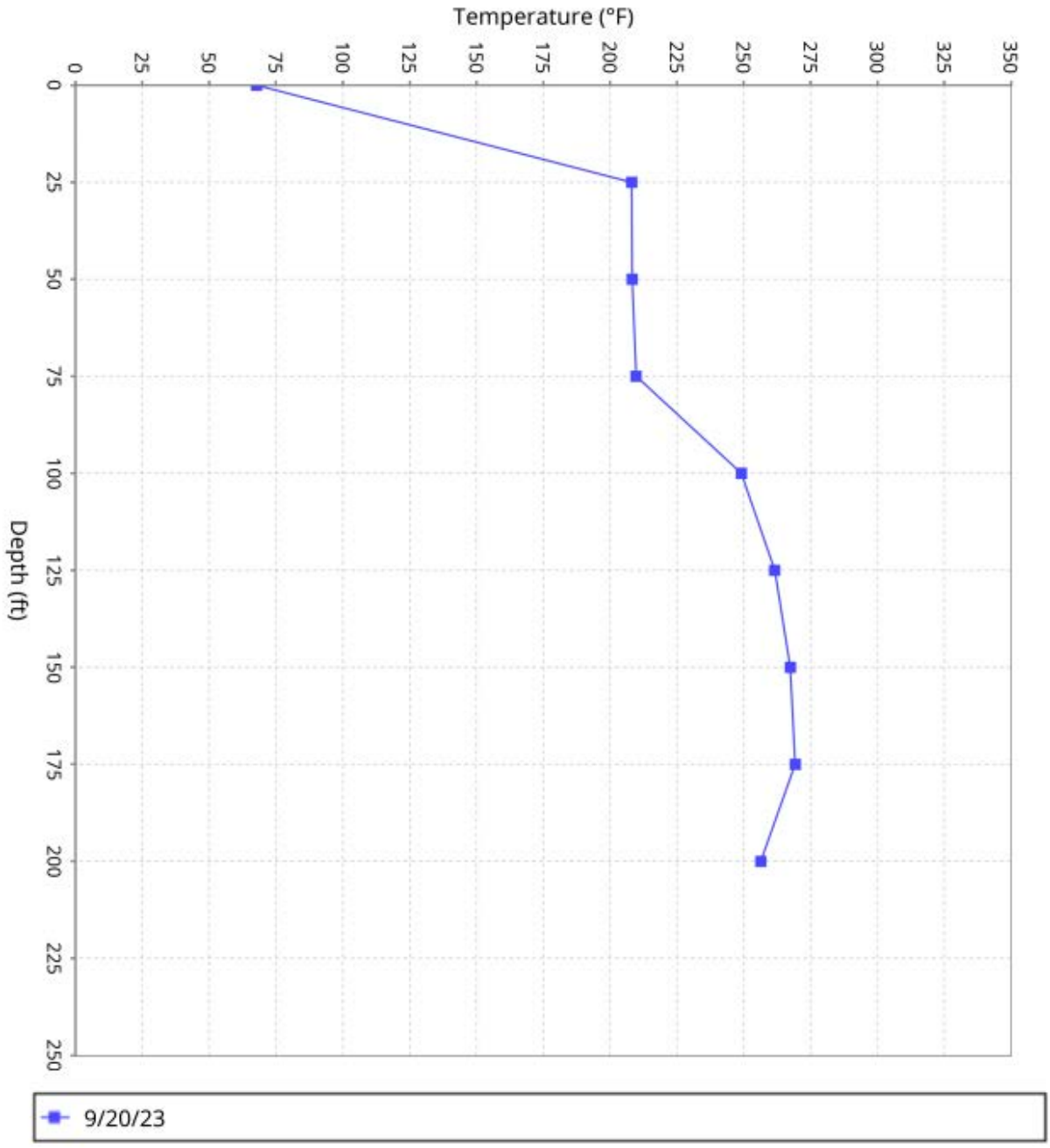


Figure B- 10. Average Temperatures Recorded by TP-3 on September 27, 2023

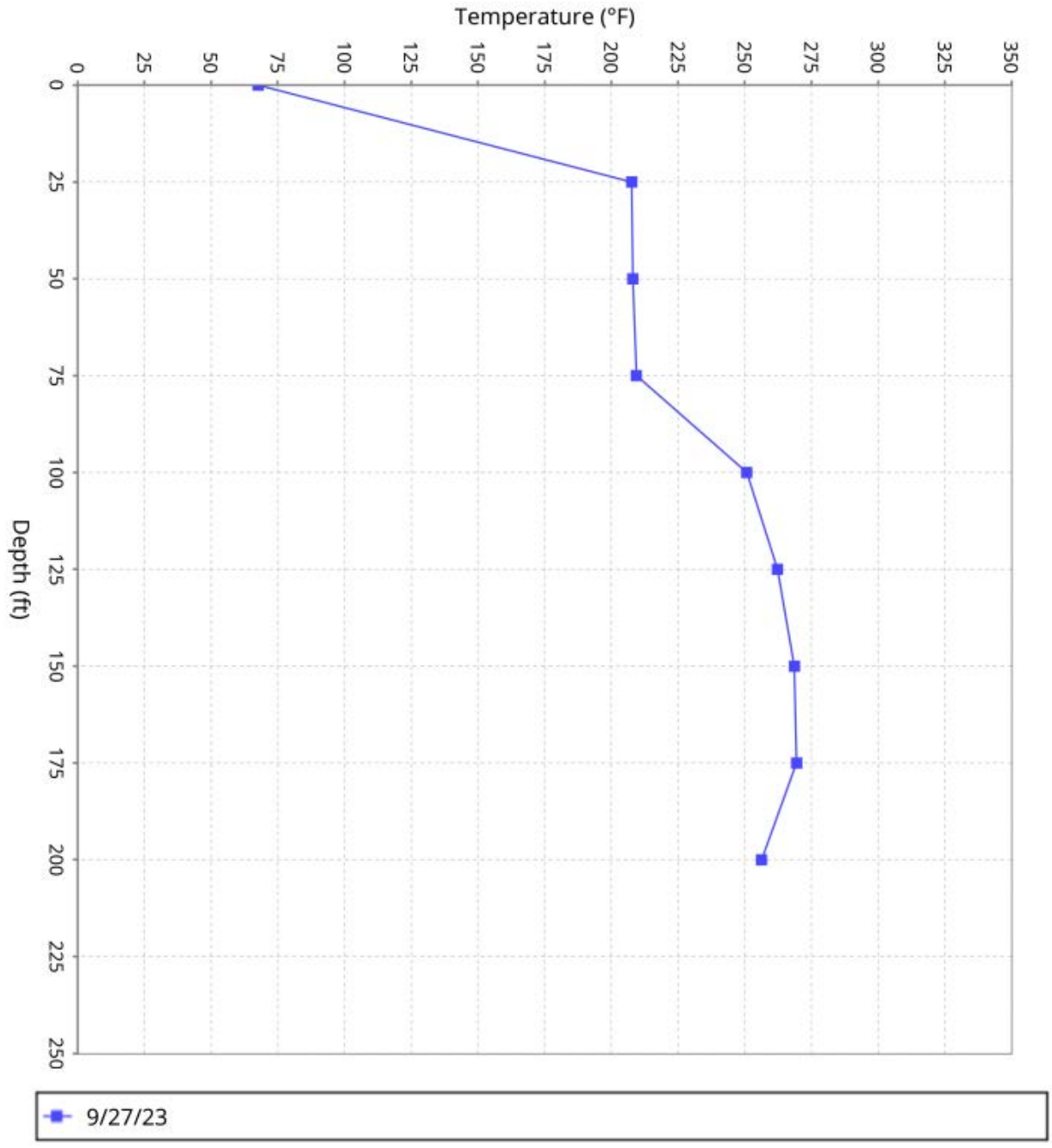


Figure B- 11. Average Temperatures Recorded by TP-4 on September 6, 2023

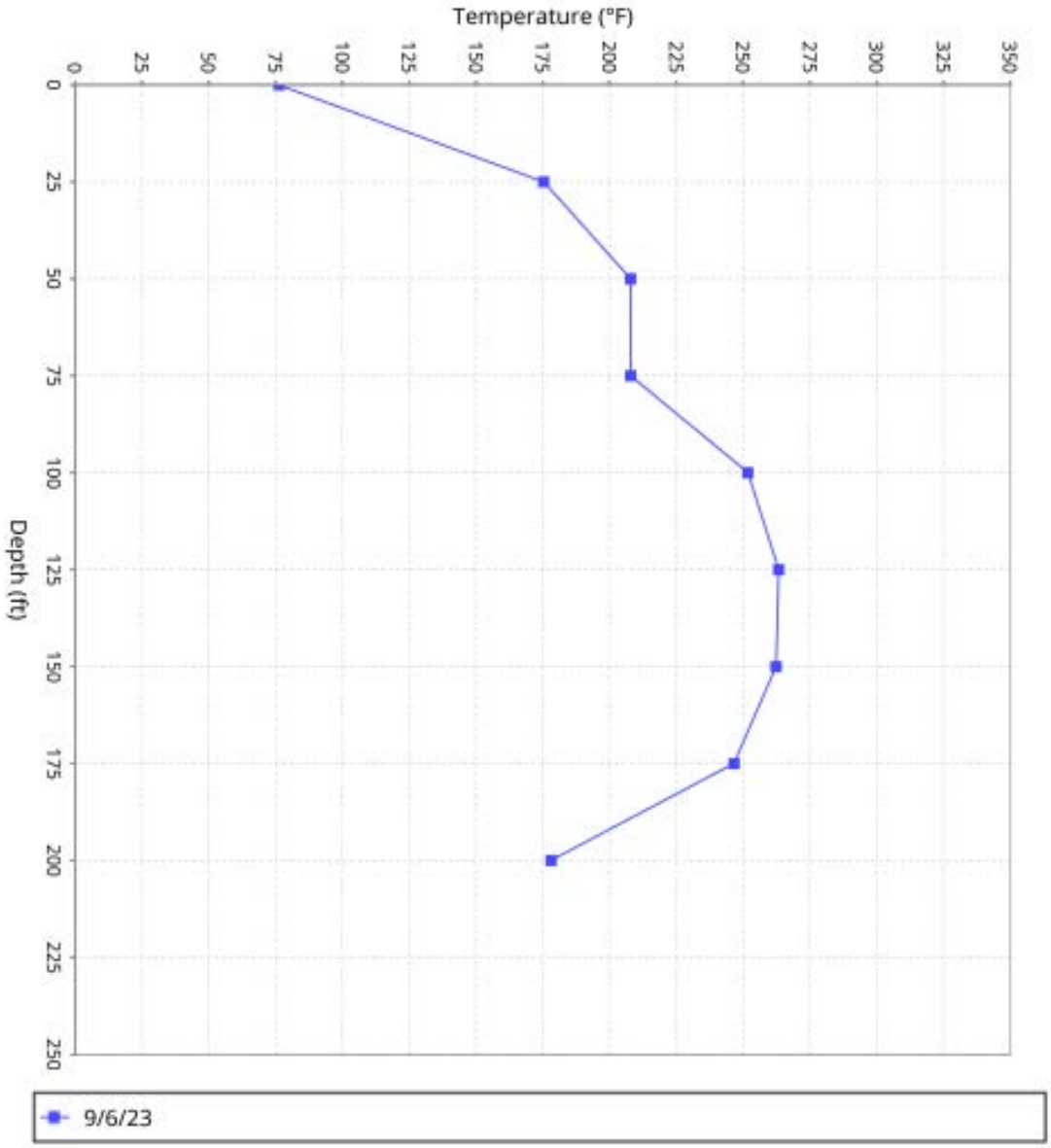


Figure B- 12. Average Temperatures Recorded by TP-4 on September 13, 2023

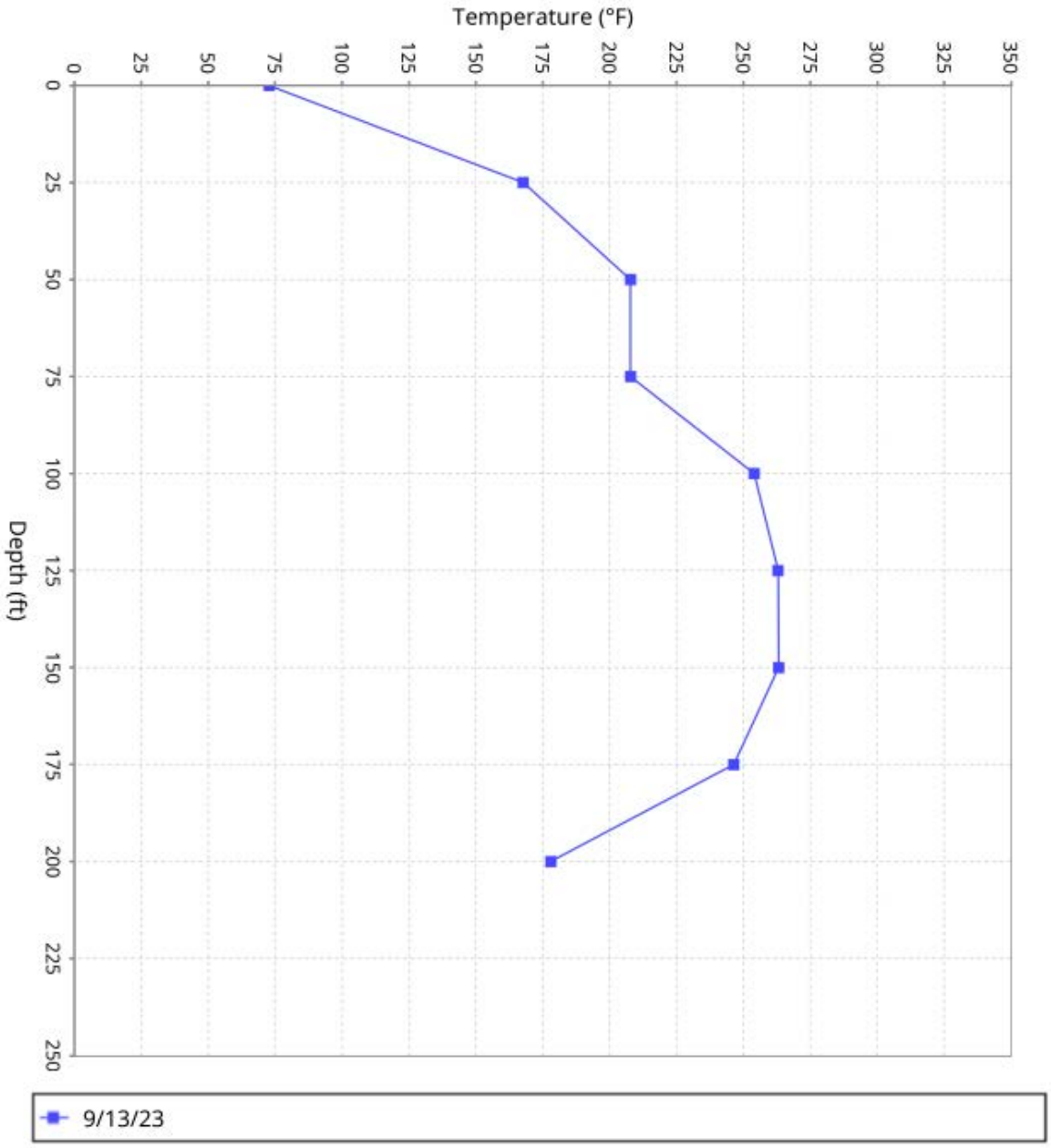


Figure B- 13. Average Temperatures Recorded by TP-4 on September 20, 2023

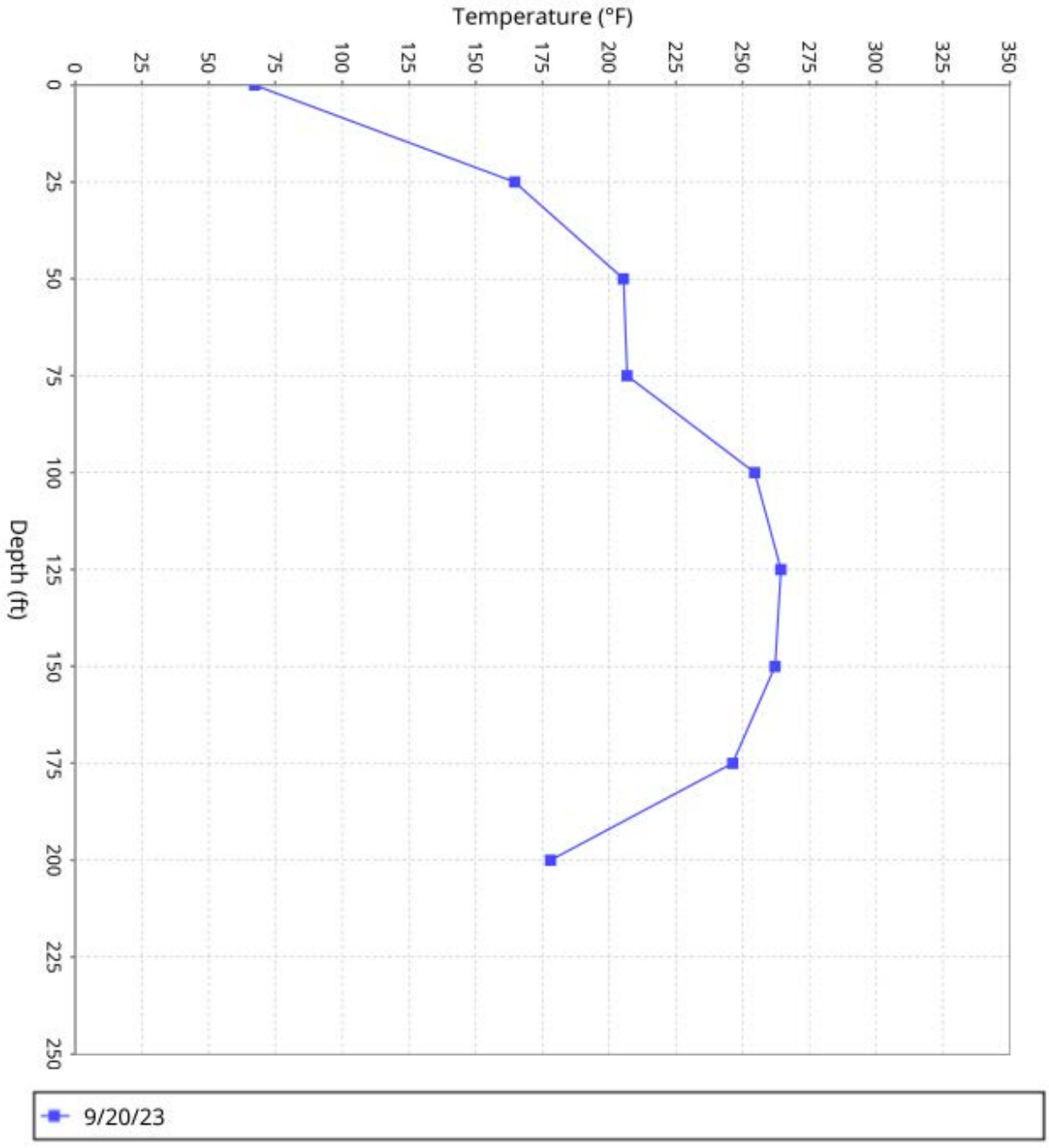


Figure B- 14. Average Temperatures Recorded by TP-4 on September 27, 2023

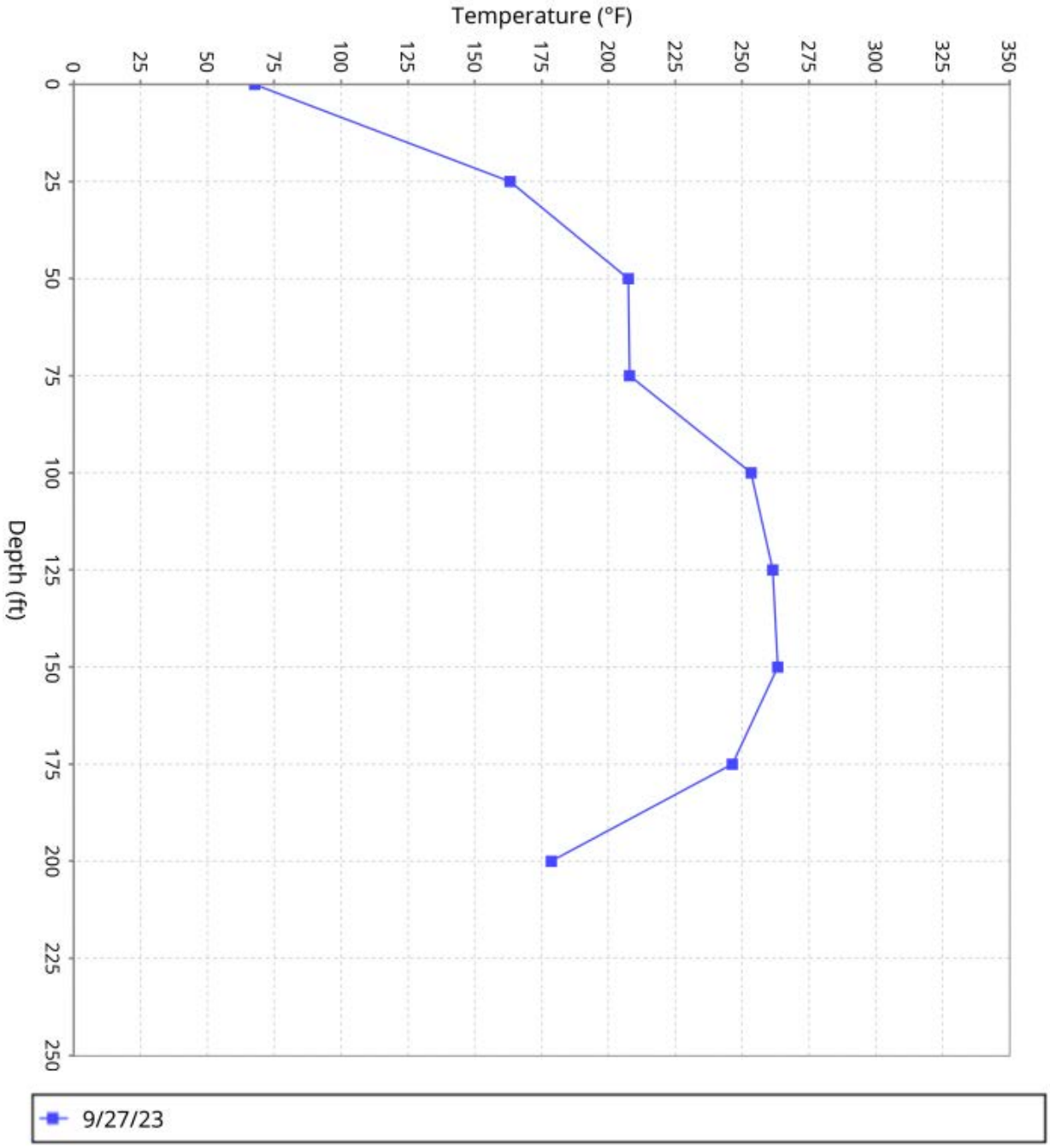


Figure B- 15. Average Temperatures Recorded by TP-5 on September 6, 2023

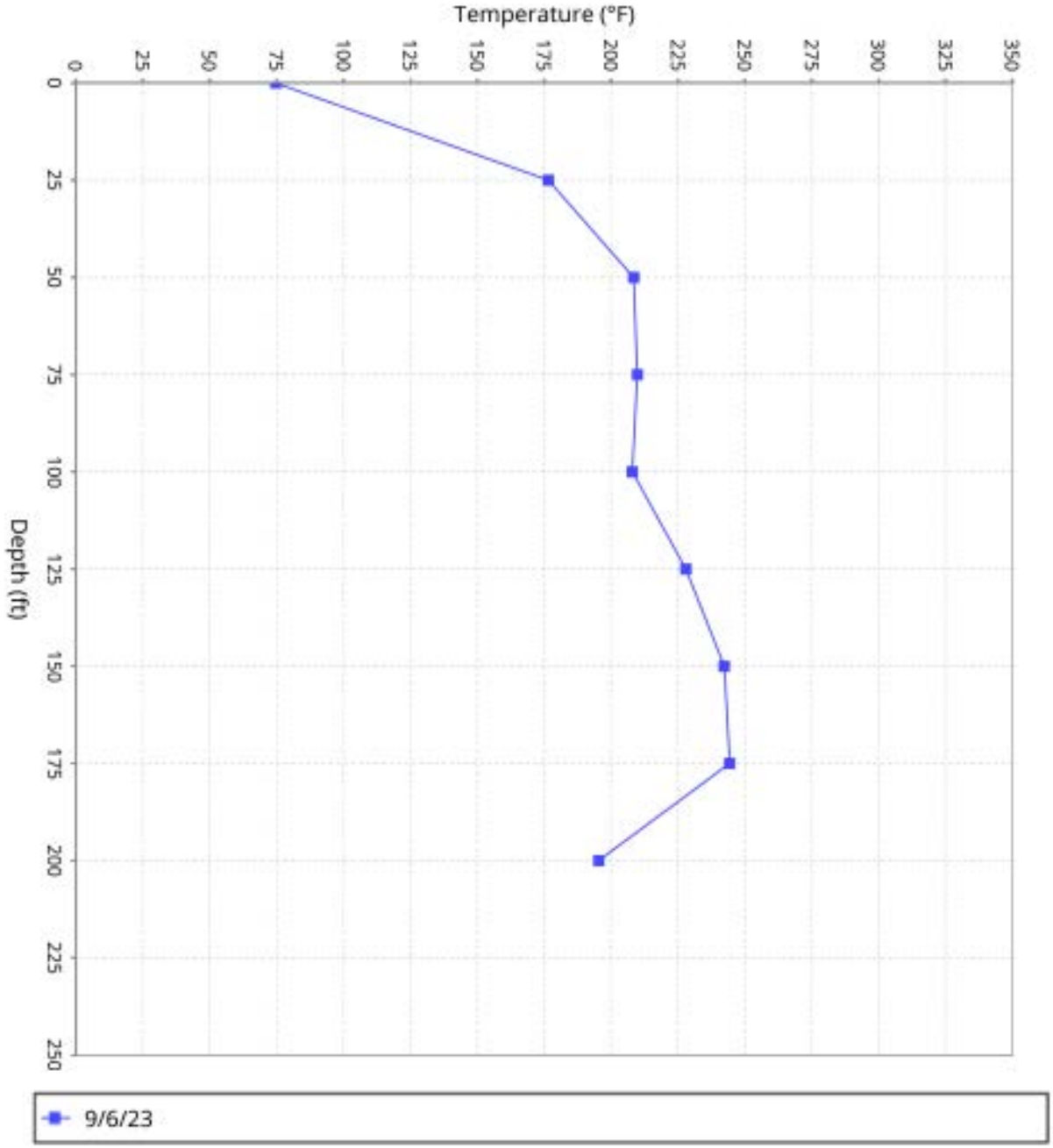


Figure B- 16. Average Temperatures Recorded by TP-5 on September 13, 2023

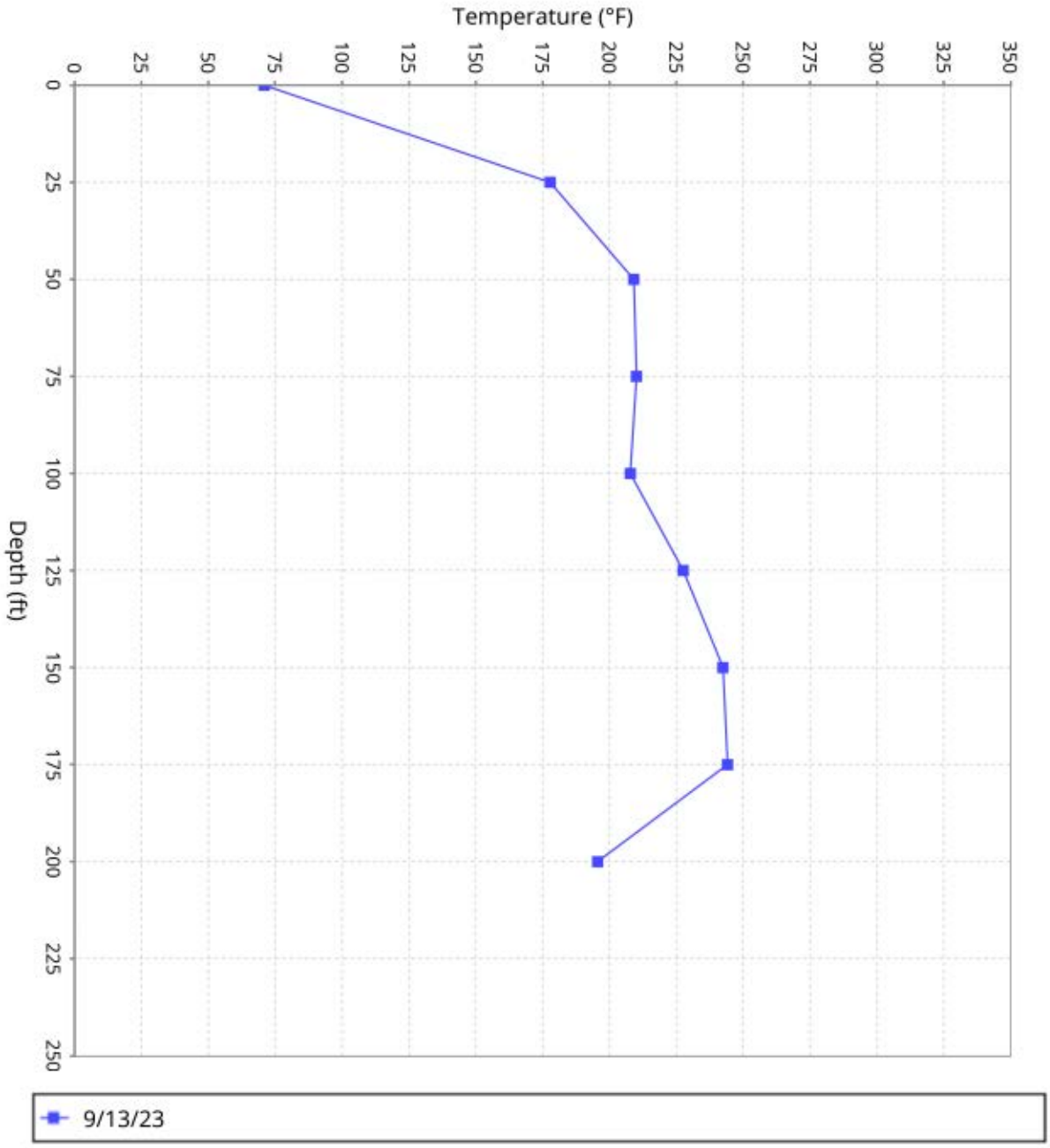


Figure B- 17. Average Temperatures Recorded by TP-5 on September 20, 2023

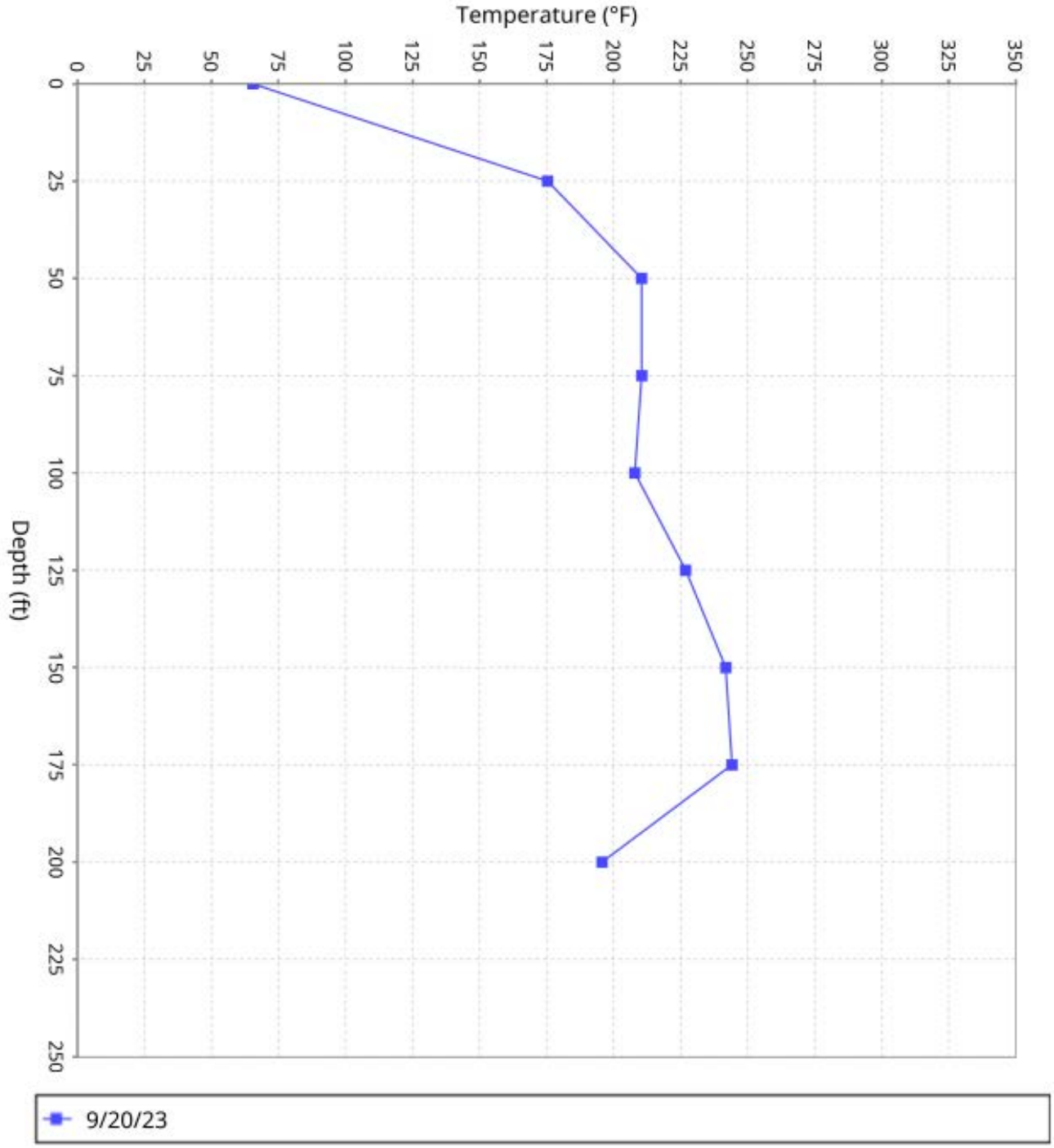


Figure B- 18. Average Temperatures Recorded by TP-5 on September 27, 2023

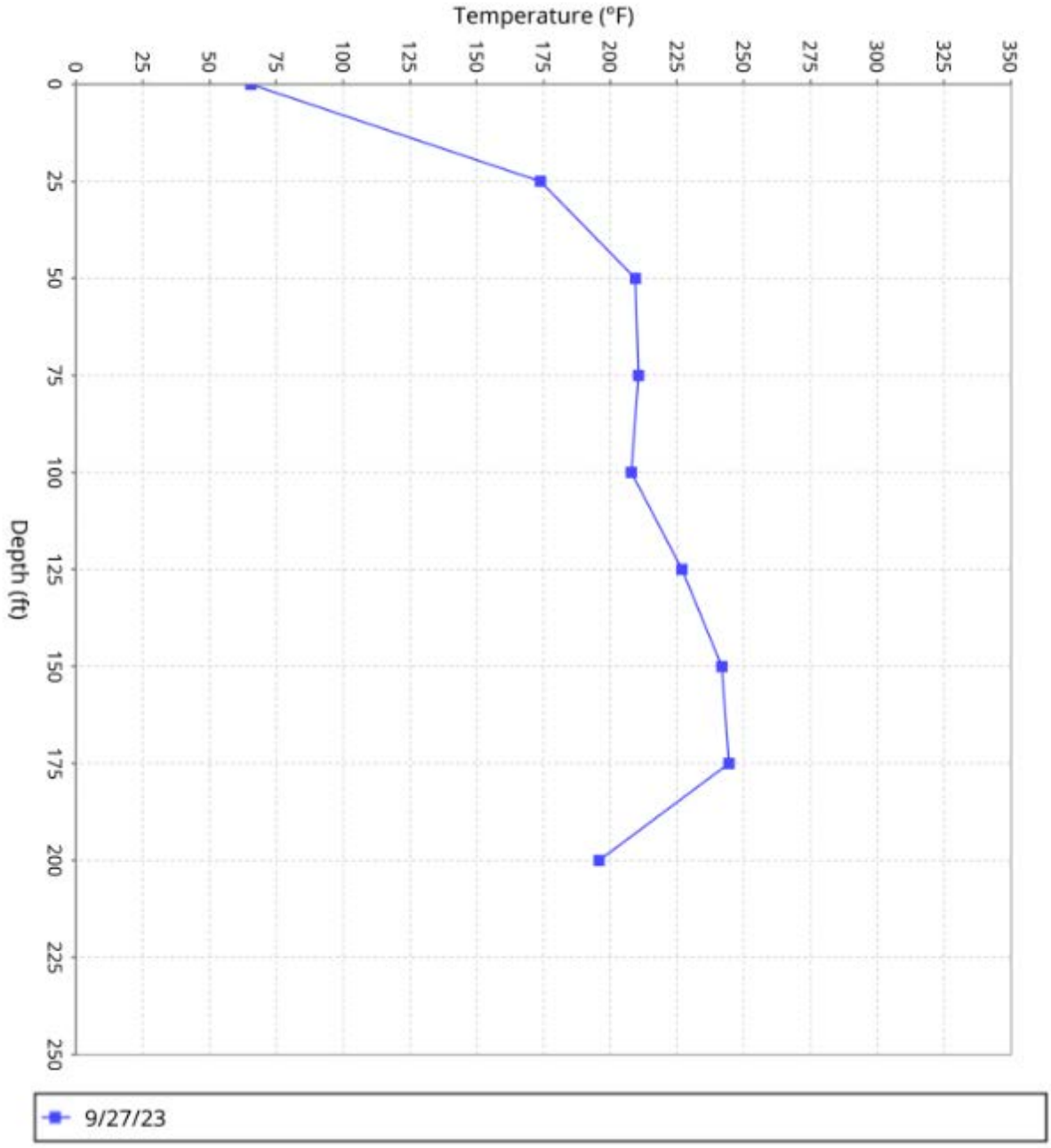


Figure B- 19. Average Temperatures Recorded by TP-6 on September 6, 2023

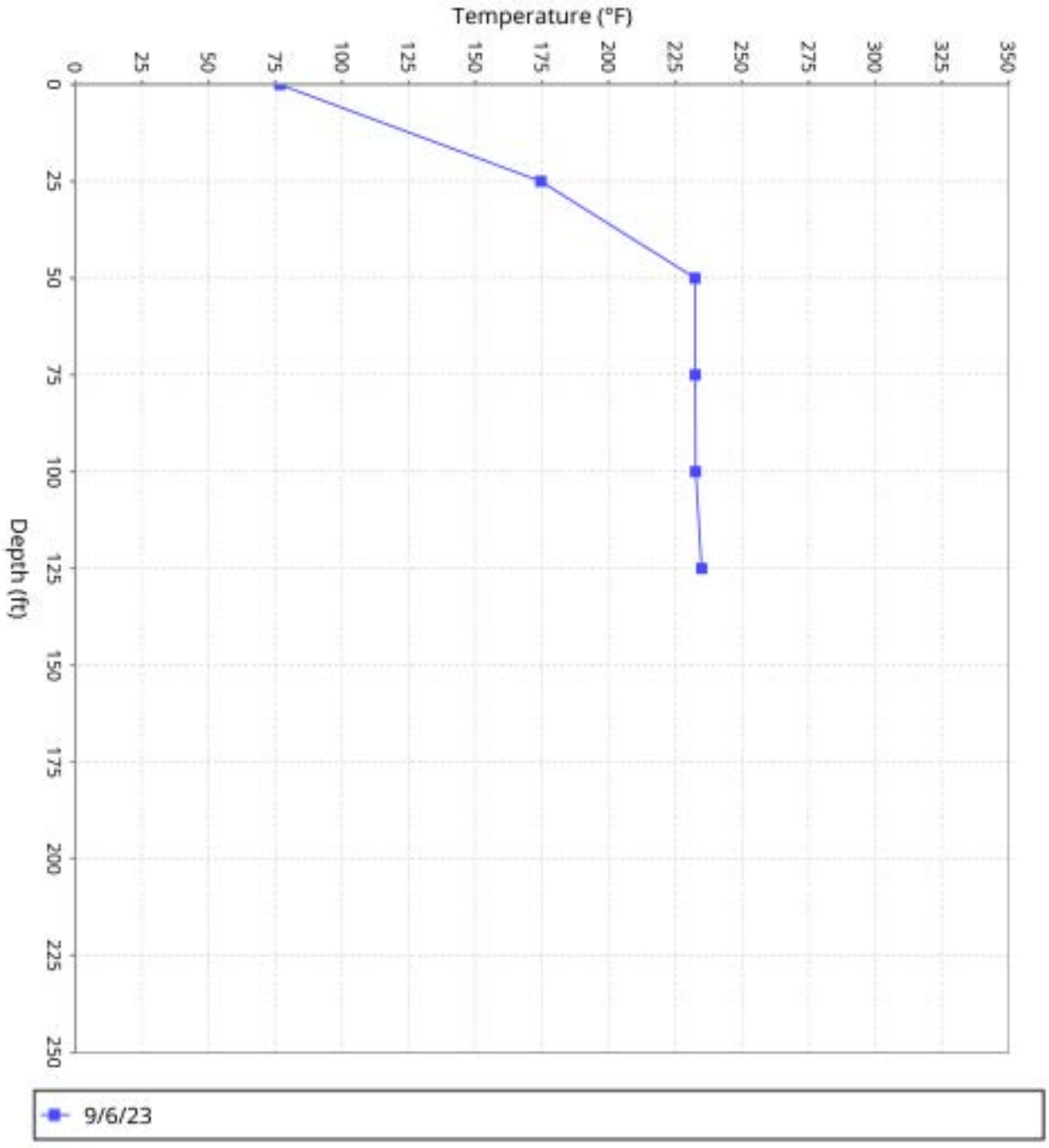


Figure B- 20. Average Temperatures Recorded by TP-6 on September 13, 2023

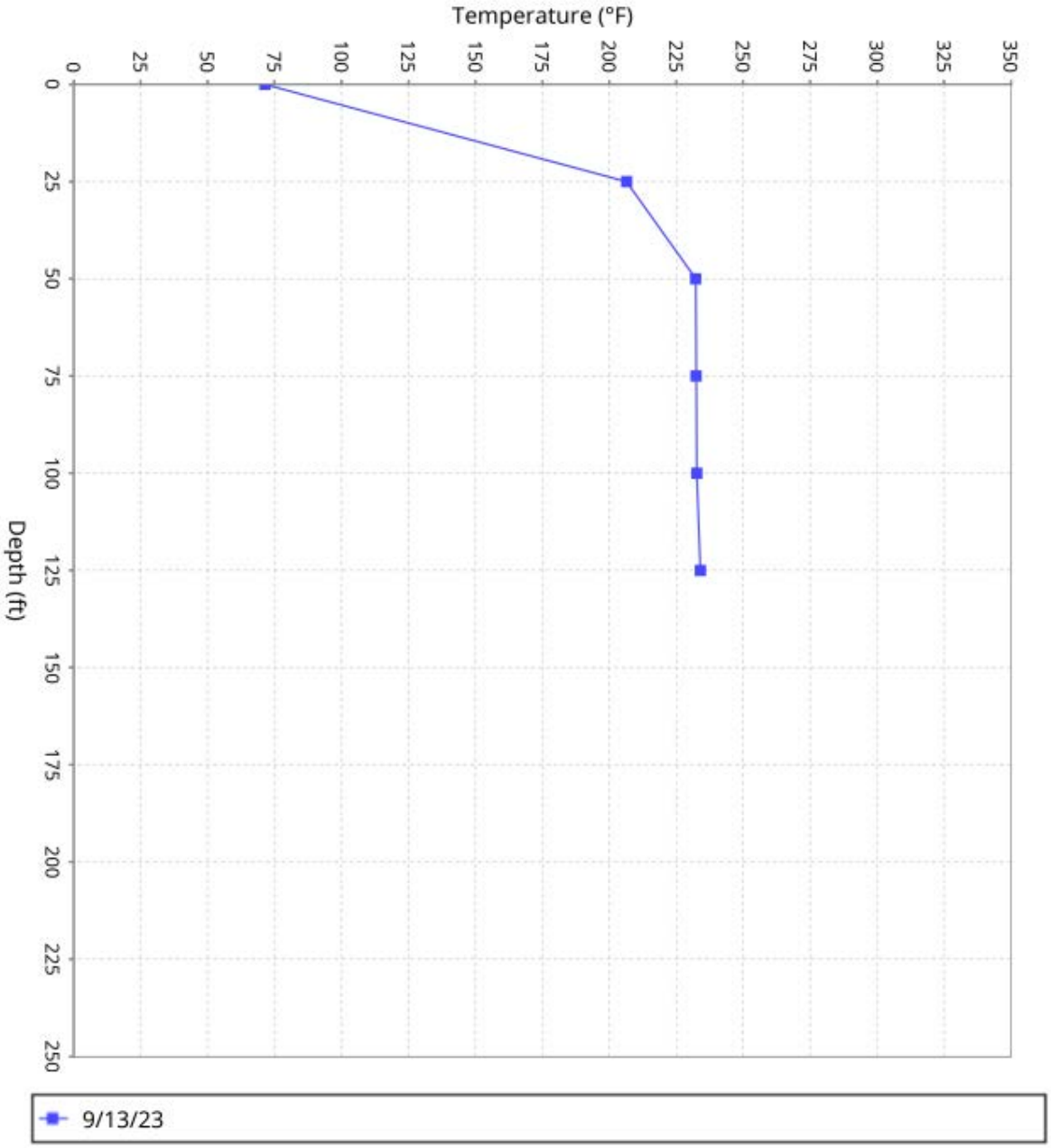


Figure B- 21. Average Temperatures Recorded by TP-6 on September 20, 2023

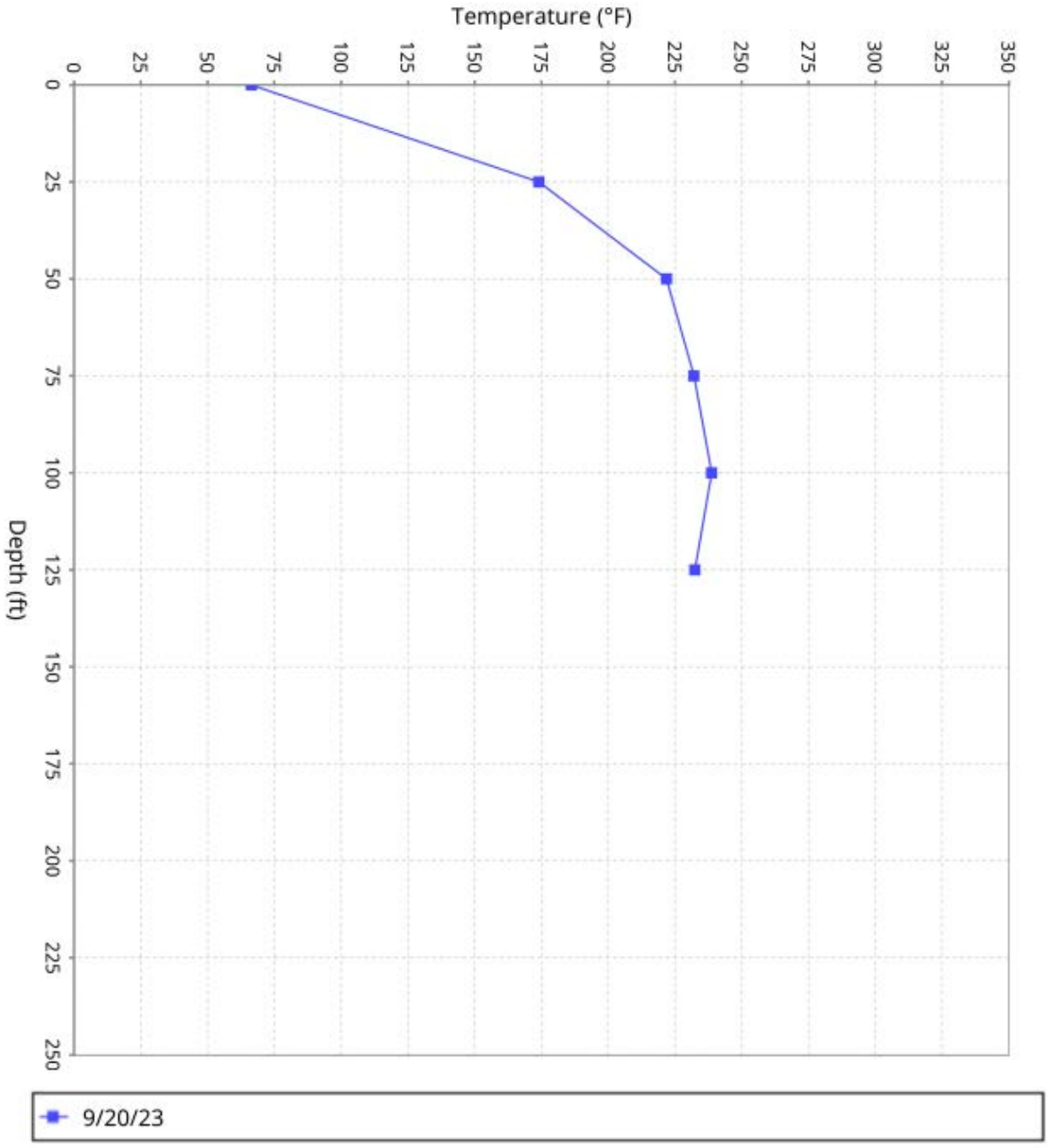


Figure B- 22. Average Temperatures Recorded by TP-6 on September 27, 2023

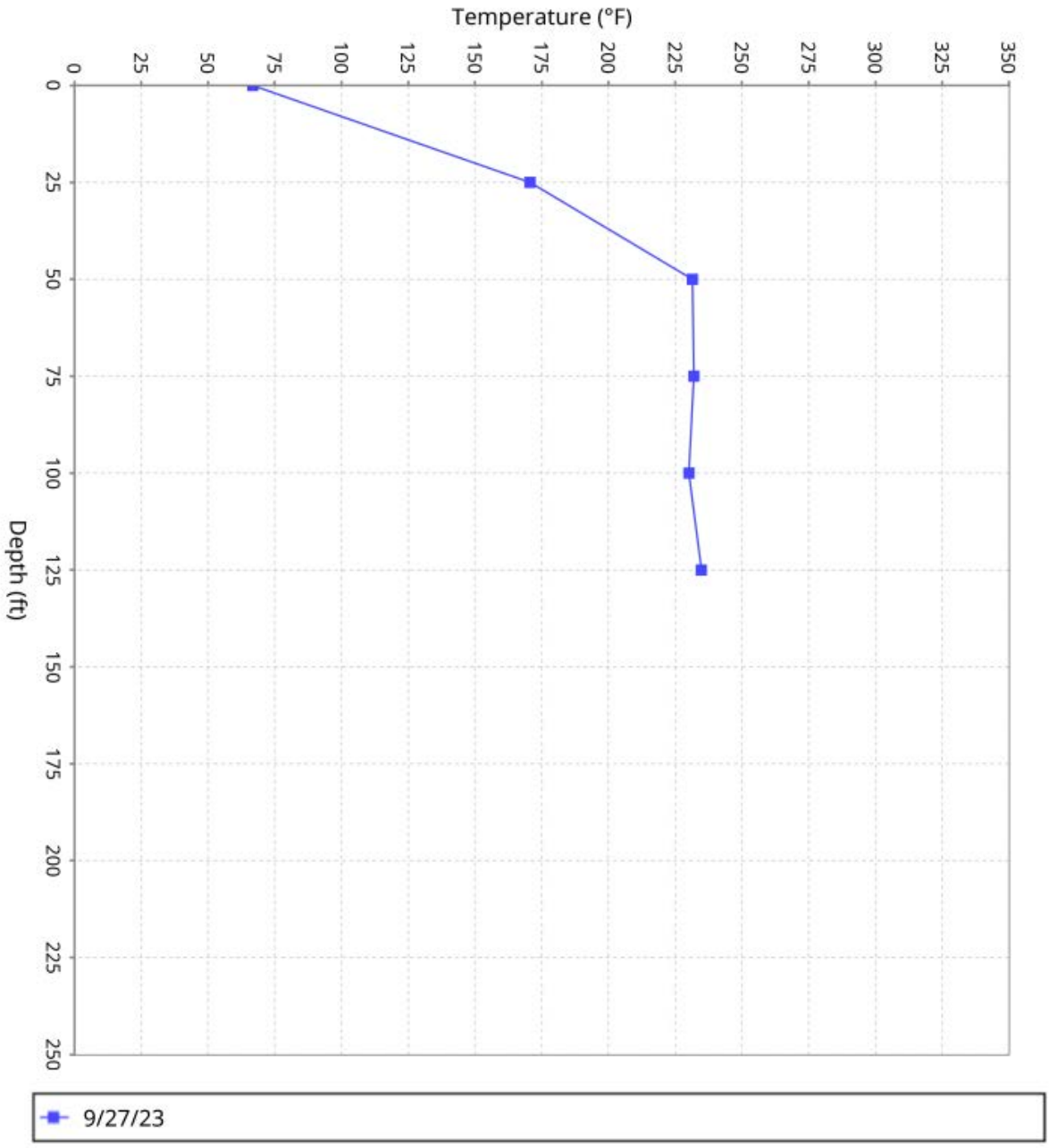


Figure B- 23. Average Temperatures Recorded by TP-7 on September 20, 2023

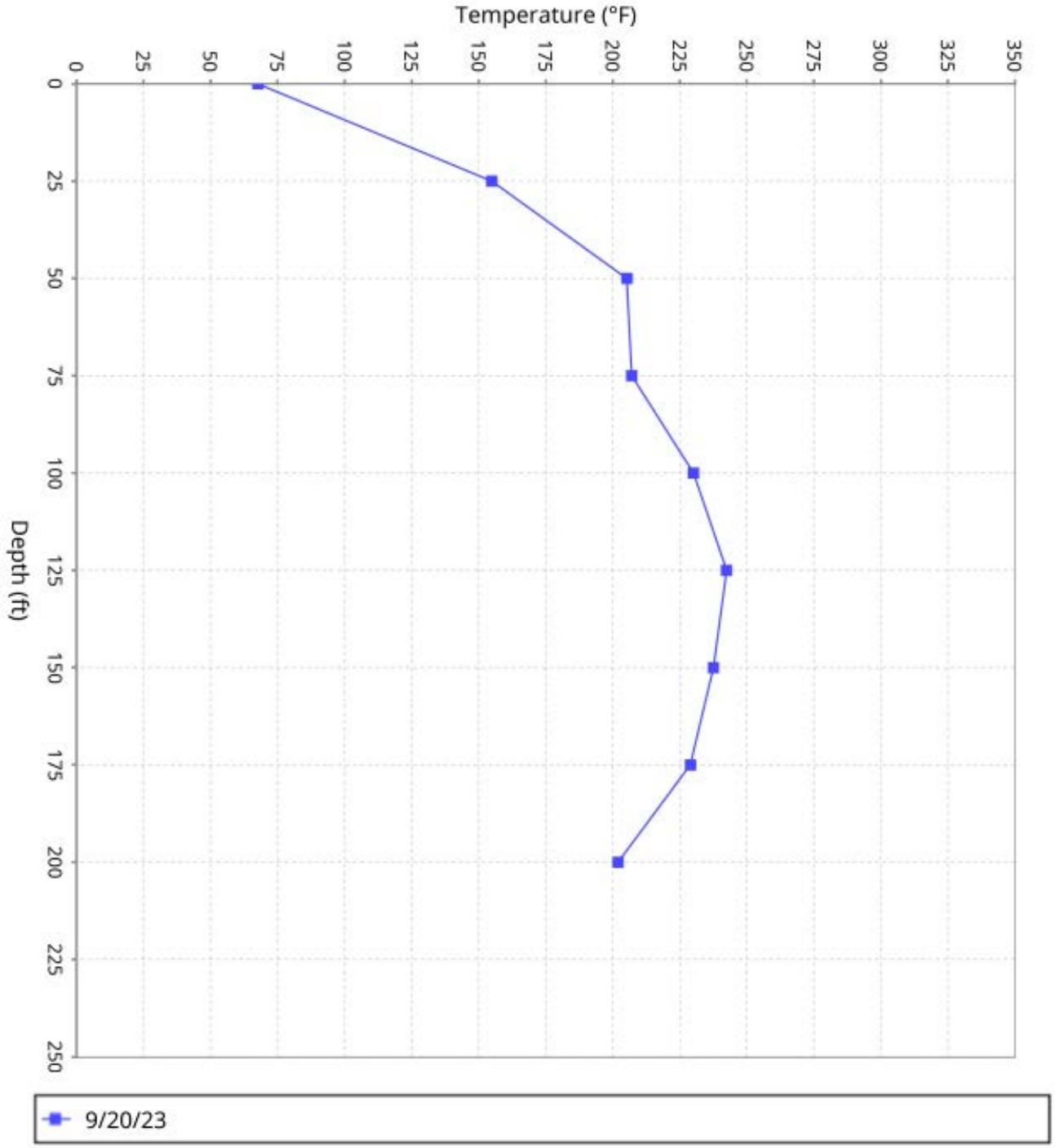


Figure B- 24. Average Temperatures Recorded by TP-7 on September 27, 2023

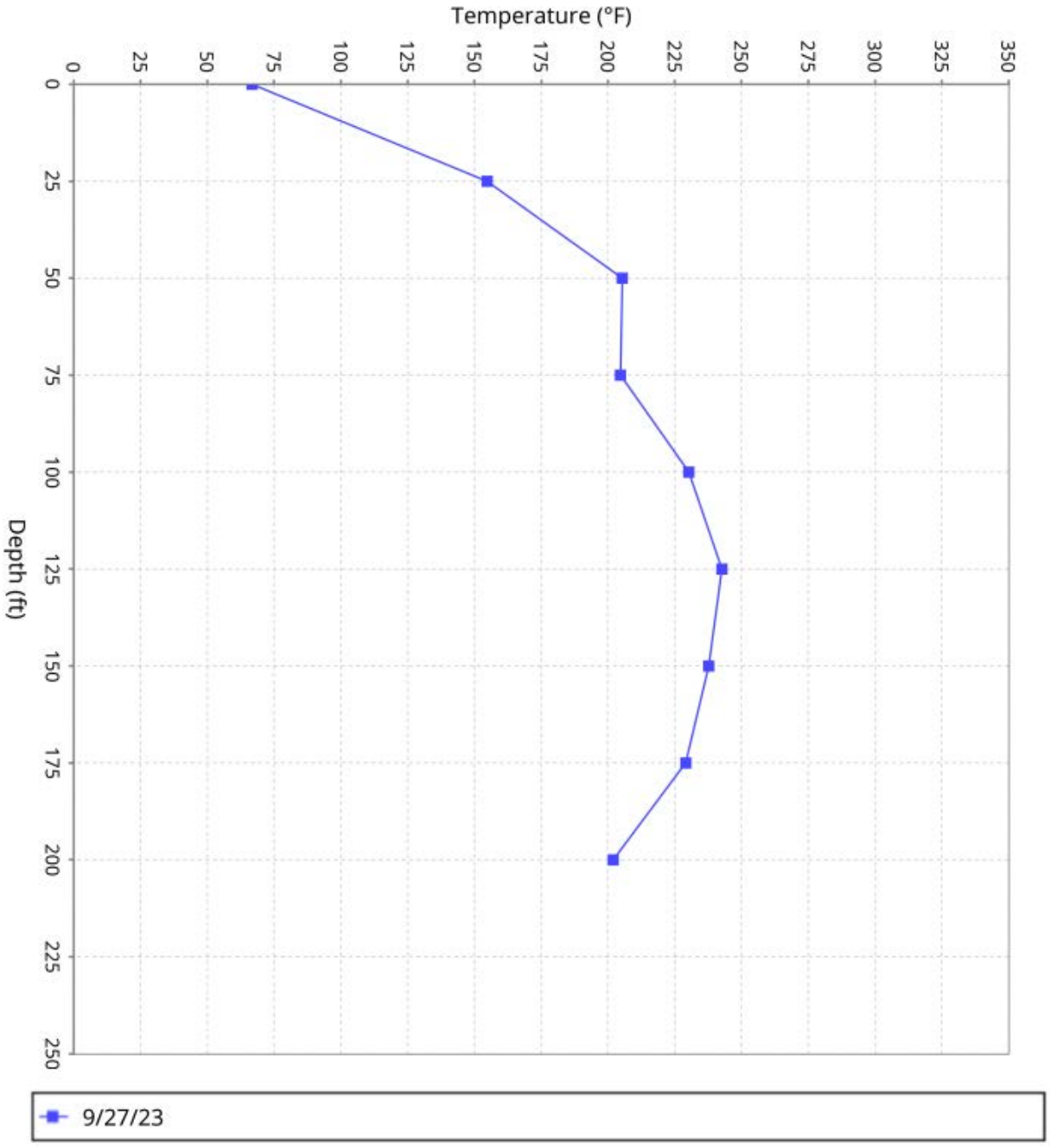


Figure B- 25. Average Temperatures Recorded by TP-8 on September 6, 2023

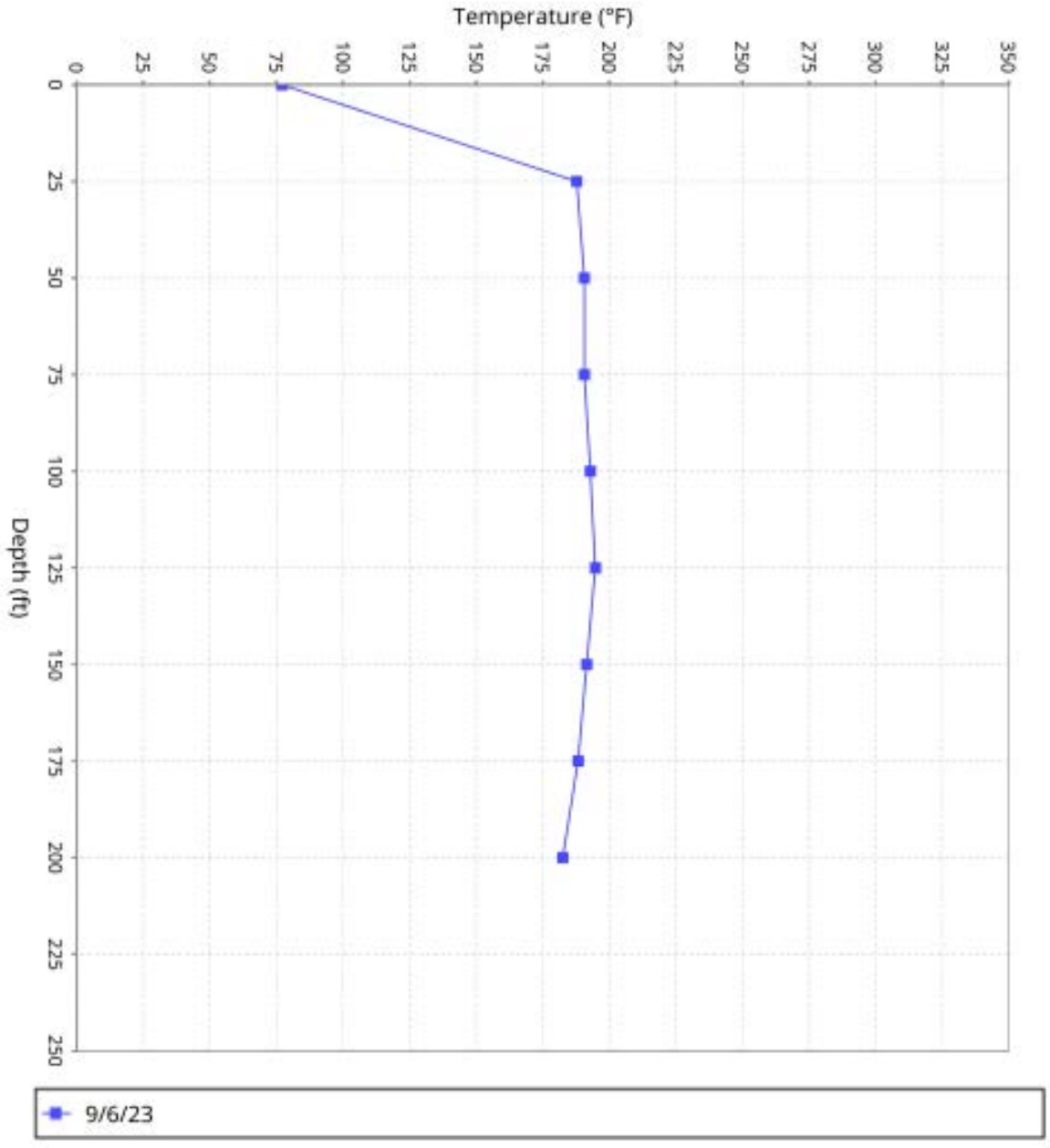


Figure B- 26. Average Temperatures Recorded by TP-8 on September 13, 2023

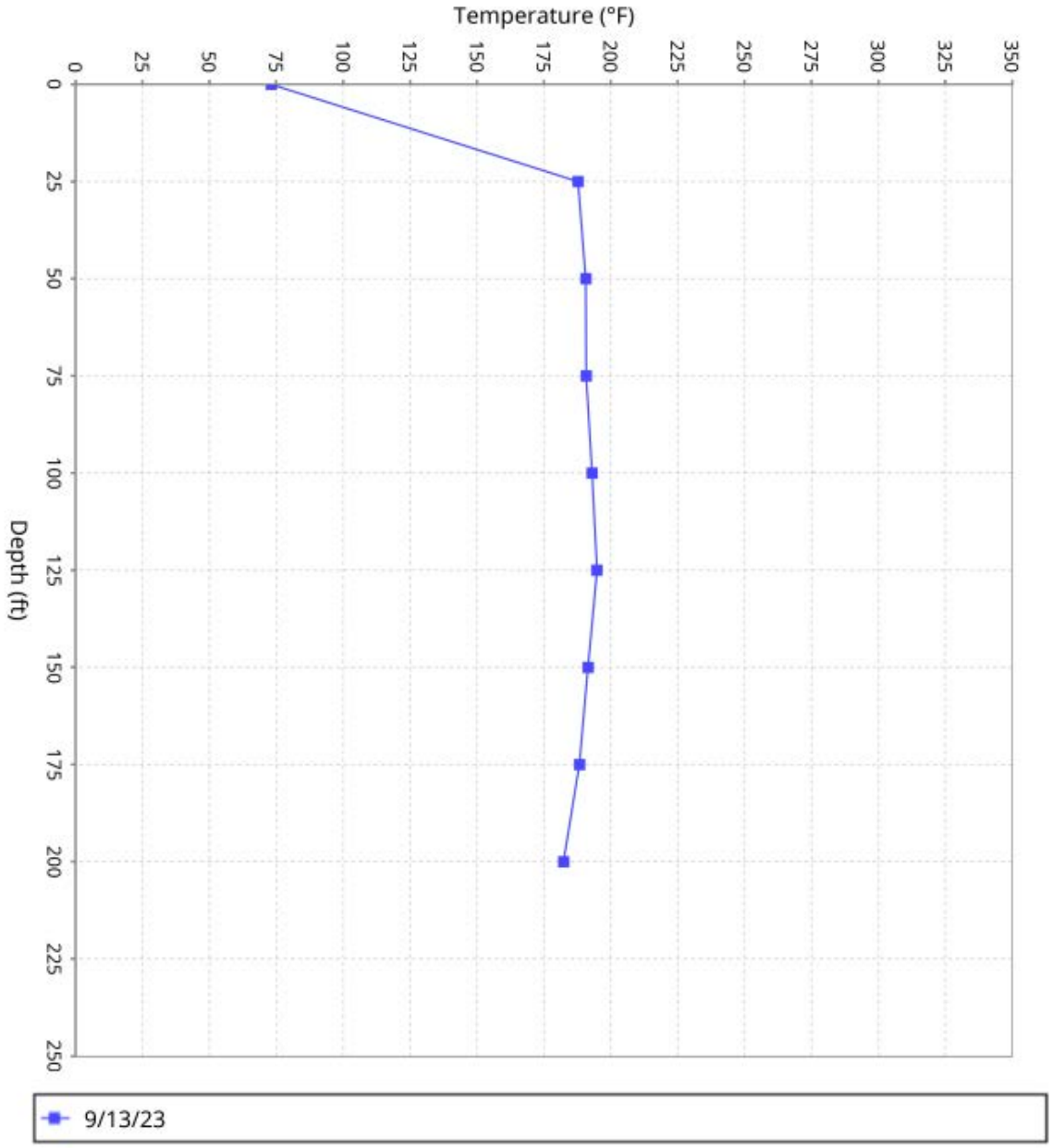


Figure B- 27. Average Temperatures Recorded by TP-8 on September 20, 2023

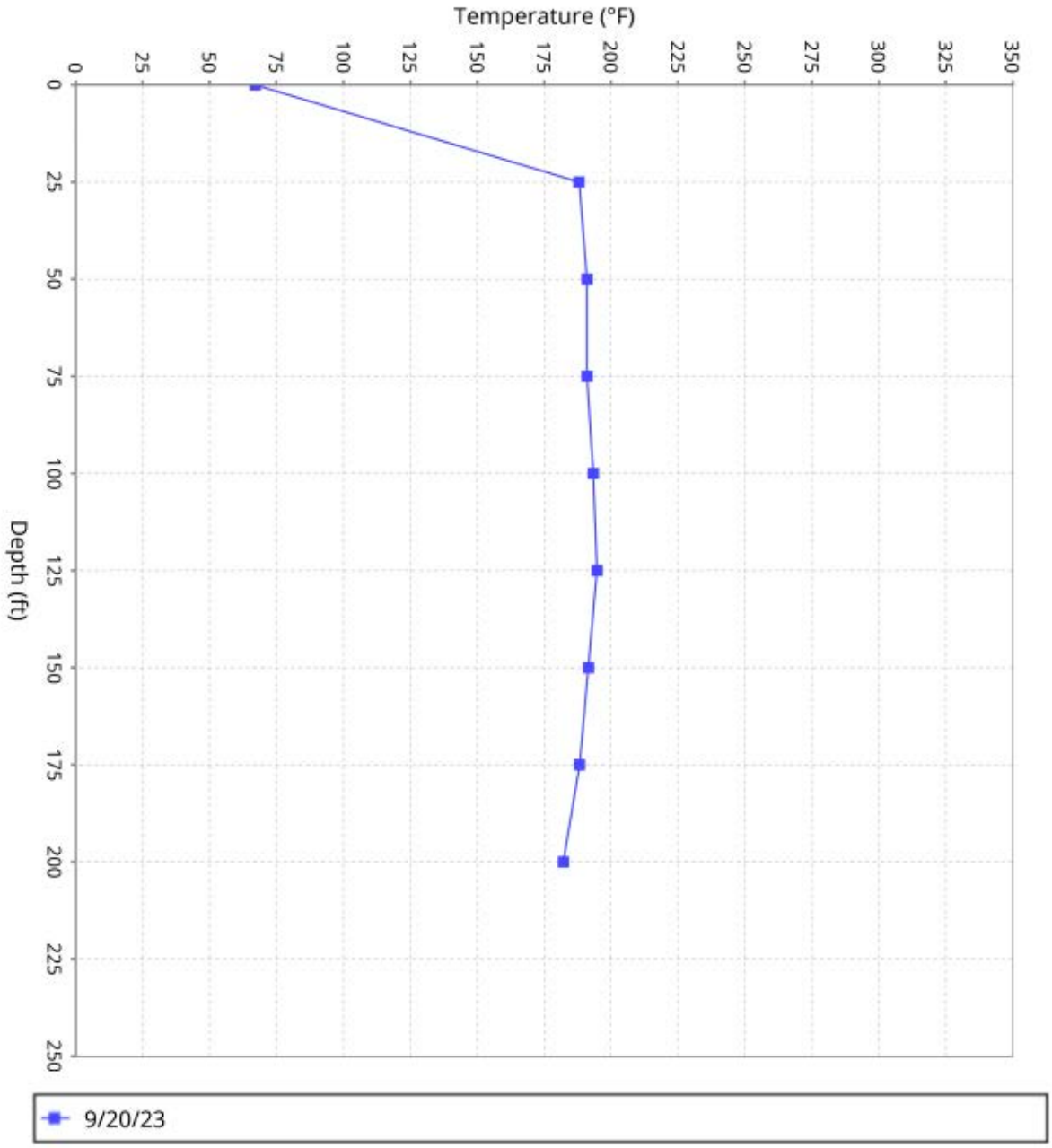


Figure B- 28. Average Temperatures Recorded by TP-8 on September 27, 2023

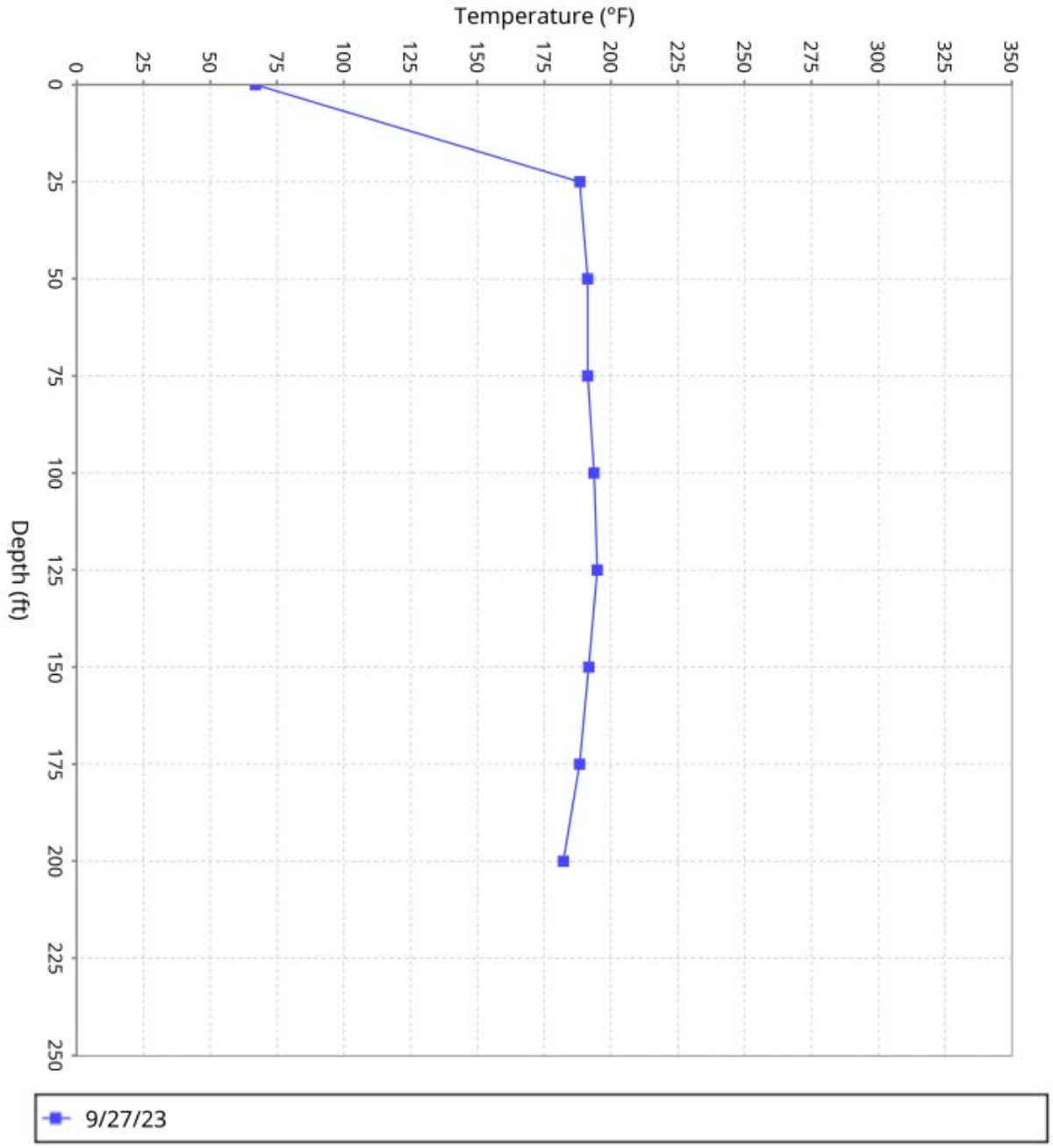


Figure B- 29. Average Temperatures Recorded by TP-9 on September 20, 2023

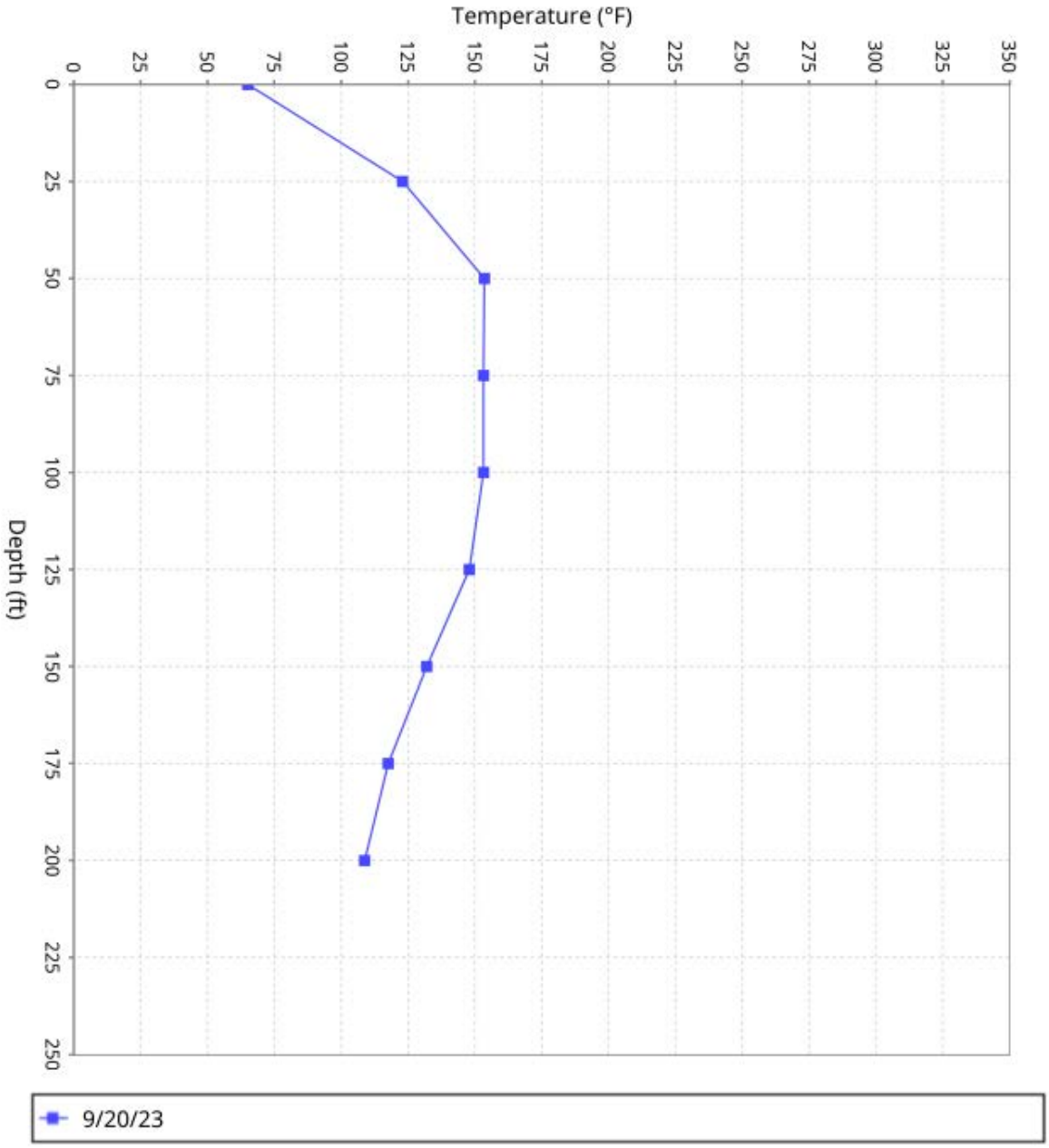
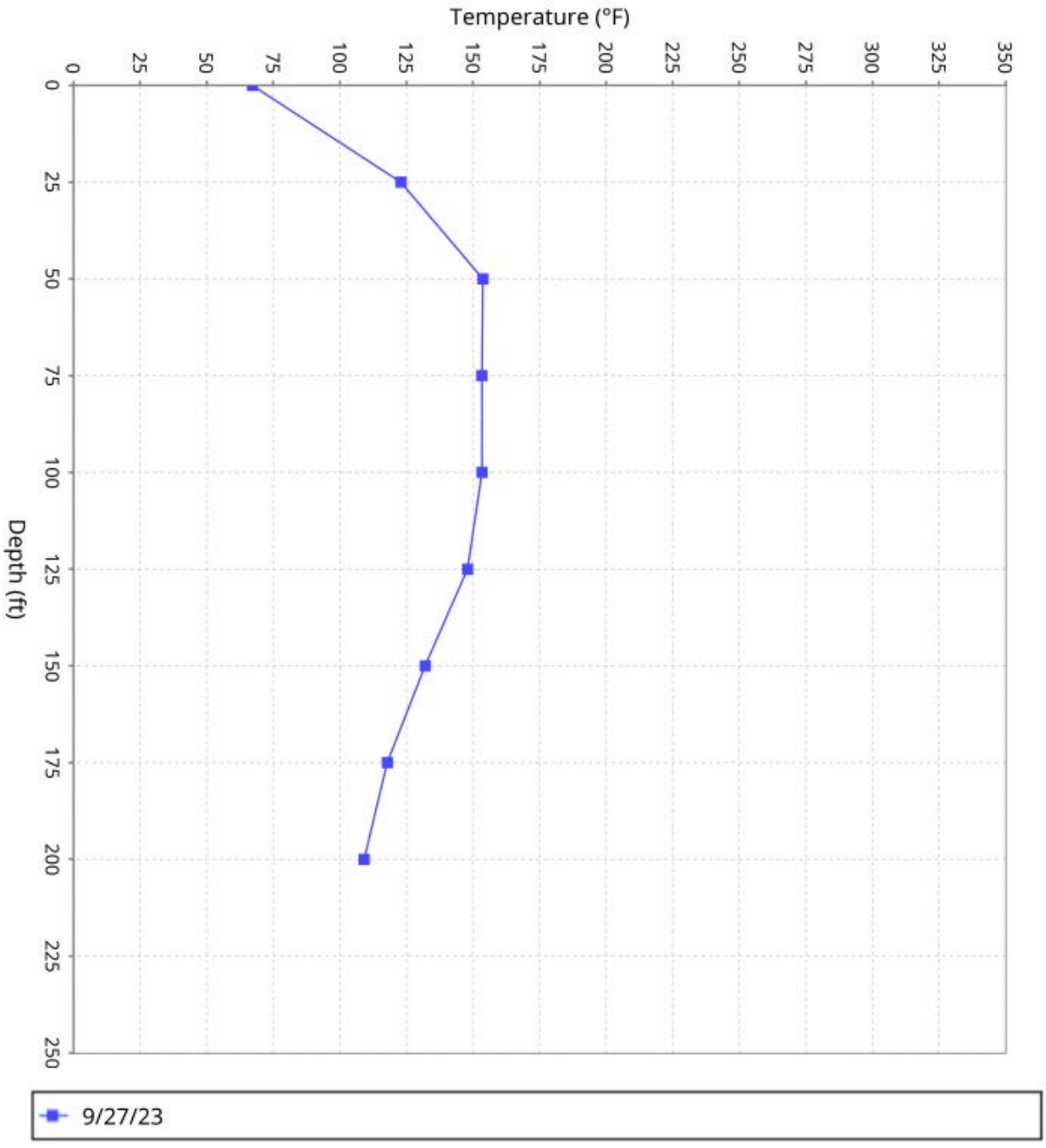


Figure B- 30. Average Temperatures Recorded by TP-9 on September 27, 2023



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 | October 4, 2023

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)
Sep 1	89.9	58.4	117.5
Sep 2	105.2	70.0	115.5
Sep 3	93.7	67.3	109.8
Sep 4	99.3	61.6	117.6
Sep 5	108.6	81.9	118.6
Sep 6	111.7	87.6	120.2
Sep 7	112.8	89.1	120.0
Sep 8	99.2	73.4	115.1
Sep 9	98.3	64.0	117.1
Sep 10	72.9	62.9	91.9
Sep 11	75.8	63.3	95.6
Sep 12	84.2	61.0	122.5
Sep 13	91.4	63.9	120.6
Sep 14	73.5	56.3	106.7
Sep 15	73.3	58.1	92.6
Sep 16	71.1	56.1	90.1
Sep 17	66.9	60.4	79.9
Sep 18	65.6	53.9	87.7
Sep 19	65.9	49.2	85.1
Sep 20	68.5	52.6	90.0
Sep 21	74.0	55.3	113.9
Sep 22	97.7	57.7	128.7
Sep 23	123.4	122.0	125.2
Sep 24	121.7	120.0	122.5
Sep 25	120.3	118.2	121.5
Sep 26	116.9	107.8	121.9
Sep 27	114.7	98.8	124.2
Sep 28	115.8	90.4	124.5
Sep 29	116.9	82.0	122.4
Sep 30	107.3	72.8	122.0
Summary	**94.5**	**65.6**	**123.4**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 34

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	73.3	59.4	95.5
Sep 2	74.2	60.9	93.7
Sep 3	74.9	60.3	97.9
Sep 4	77.4	63.2	99.2
Sep 5	78.2	65.2	97.2
Sep 6	78.8	69.5	95.9
Sep 7	74.7	67.1	92.5
Sep 8	74.8	64.7	95.4
Sep 9	74.7	65.7	97.2
Sep 10	72.1	65.2	86.7
Sep 11	74.9	65.5	94.0
Sep 12	73.1	63.3	89.7
Sep 13	73.1	64.6	88.4
Sep 14	70.8	57.2	90.9
Sep 15	71.9	59.2	90.4
Sep 16	70.8	57.1	89.4
Sep 17	67.3	61.6	77.8
Sep 18	65.7	55.3	80.9
Sep 19	65.3	50.9	85.6
Sep 20	69.1	55.9	93.4
Sep 21	69.0	56.9	85.9
Sep 22	68.2	56.9	87.1
Sep 23	66.2	53.6	83.9
Sep 24	66.1	61.4	72.8
Sep 25	66.8	57.2	78.7
Sep 26	70.7	55.9	94.7
Sep 27	69.0	57.8	88.2
Sep 28	67.0	54.1	86.3
Sep 29	69.5	58.0	86.4
Sep 30	68.4	55.3	88.2
Summary	**71.2**	**65.3**	**78.8**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 35

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	74.6	60.9	94.8
Sep 2	74.7	61.2	95.7
Sep 3	75.6	61.7	99.8
Sep 4	78.5	63.8	100.6
Sep 5	79.5	65.6	101.1
Sep 6	78.8	69.4	99.3
Sep 7	74.8	67.8	90.7
Sep 8	75.3	65.4	97.2
Sep 9	75.3	66.4	97.0
Sep 10	71.1	65.6	84.5
Sep 11	73.6	65.7	95.5
Sep 12	72.8	63.7	87.8
Sep 13	73.2	66.3	86.9
Sep 14	70.8	59.3	89.3
Sep 15	72.5	61.1	90.6
Sep 16	72.2	59.3	90.9
Sep 17	67.7	62.7	75.6
Sep 18	65.7	56.9	79.1
Sep 19	65.9	52.9	85.1
Sep 20	69.2	56.6	93.5
Sep 21	69.9	58.8	86.7
Sep 22	68.6	58.7	84.7
Sep 23	66.9	55.2	83.1
Sep 24	66.1	61.3	72.9
Sep 25	66.8	56.7	76.3
Sep 26	71.9	57.8	94.8
Sep 27	68.6	60.2	82.6
Sep 28	67.5	56.6	84.2
Sep 29	69.5	56.3	86.9
Sep 30	70.0	55.9	90.2
Summary	**71.6**	**65.7**	**79.5**

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

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	0.0	0.0	0.0
Sep 2	0.0	0.0	0.0
Sep 3	0.0	0.0	0.0
Sep 4	0.0	0.0	0.0
Sep 5	0.0	0.0	0.0
Sep 6	0.0	0.0	0.0
Sep 7	134.3	114.3	143.7
Sep 8	152.8	128.7	198.4
Sep 9	194.0	192.4	195.6
Sep 10	194.1	193.5	195.4
Sep 11	194.2	193.4	196.8
Sep 12	185.3	121.0	194.5
Sep 13	192.6	190.3	193.9
Sep 14	193.9	193.2	194.7
Sep 15	194.5	194.2	194.8
Sep 16	194.1	193.4	194.6
Sep 17	194.4	193.8	194.8
Sep 18	194.5	193.7	195.0
Sep 19	195.3	194.7	195.8
Sep 20	195.8	195.3	197.6
Sep 21	194.9	194.1	195.7
Sep 22	194.9	193.5	196.6
Sep 23	158.5	89.9	195.0
Sep 24	162.1	93.7	198.6
Sep 25	195.3	191.5	198.1
Sep 26	138.4	101.1	192.7
Sep 27	167.4	109.3	199.2
Sep 28	196.7	195.9	198.7
Sep 29	196.1	195.3	198.3
Sep 30	195.6	195.1	197.1
Summary	**147.0**	**0.0**	**196.7**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 40

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	73.8	58.5	96.3
Sep 2	74.0	59.8	94.7
Sep 3	75.5	59.2	101.0
Sep 4	77.3	61.8	102.3
Sep 5	79.0	64.1	101.9
Sep 6	72.0	27.3	95.5
Sep 7	74.6	66.3	94.4
Sep 8	71.3	26.9	92.4
Sep 9	74.8	64.6	98.0
Sep 10	70.4	63.6	84.5
Sep 11	70.6	26.9	94.5
Sep 12	72.2	62.0	91.0
Sep 13	74.6	64.3	90.8
Sep 14	70.9	57.4	91.5
Sep 15	72.8	59.4	93.2
Sep 16	71.4	56.2	92.1
Sep 17	67.3	60.8	78.4
Sep 18	65.1	54.6	79.1
Sep 19	65.2	49.9	88.1
Sep 20	69.2	54.2	94.2
Sep 21	69.9	56.2	91.0
Sep 22	69.1	56.6	88.4
Sep 23	66.7	52.9	86.5
Sep 24	66.0	61.4	72.8
Sep 25	66.6	56.9	79.6
Sep 26	72.0	56.0	97.5
Sep 27	68.7	58.2	90.1
Sep 28	67.0	54.3	89.5
Sep 29	69.8	56.6	91.7
Sep 30	69.5	54.9	90.5
Summary	**70.9**	**65.1**	**79.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 47

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	79.2	63.3	99.4
Sep 2	78.5	63.2	96.5
Sep 3	83.0	61.2	101.7
Sep 4	97.5	90.4	99.7
Sep 5	100.7	101.5	101.5
Sep 6	89.5	95.8	95.8
Sep 7	77.3	69.2	85.1
Sep 8	82.2	72.4	96.6
Sep 9	74.9	69.7	69.7
Sep 10	0.0	90.9	90.9
Sep 11	86.5	71.1	100.2
Sep 12	76.2	68.0	93.5
Sep 13	75.8	66.2	91.1
Sep 14	72.1	57.1	90.8
Sep 15	77.7	65.4	95.6
Sep 16	77.2	62.2	96.1
Sep 17	72.5	66.6	80.6
Sep 18	69.1	55.9	81.7
Sep 19	67.3	50.3	90.2
Sep 20	73.5	55.9	98.5
Sep 21	73.4	61.2	91.8
Sep 22	71.2	59.8	89.2
Sep 23	68.1	55.1	85.9
Sep 24	67.2	62.6	73.5
Sep 25	68.6	58.2	81.3
Sep 26	74.0	59.1	97.1
Sep 27	70.1	59.1	90.9
Sep 28	70.1	57.3	89.5
Sep 29	70.8	56.4	95.7
Sep 30	70.4	54.4	93.6
Summary	**73.8**	**0.0**	**100.7**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 49

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	137.9	96.7	143.8
Sep 2	141.1	139.9	142.4
Sep 3	140.7	139.6	142.6
Sep 4	141.0	139.7	142.8
Sep 5	140.7	139.5	142.2
Sep 6	139.0	124.9	143.1
Sep 7	139.5	135.7	140.7
Sep 8	138.4	126.3	142.2
Sep 9	139.7	137.4	141.8
Sep 10	139.4	138.6	140.0
Sep 11	139.7	138.8	141.1
Sep 12	139.4	138.9	140.6
Sep 13	138.7	137.5	139.9
Sep 14	138.8	137.7	140.7
Sep 15	139.0	137.8	140.5
Sep 16	138.6	137.8	139.8
Sep 17	138.2	137.6	138.7
Sep 18	137.9	136.7	138.7
Sep 19	138.3	136.8	139.7
Sep 20	138.5	137.0	140.1
Sep 21	137.9	137.3	139.2
Sep 22	133.5	85.5	139.9
Sep 23	137.1	136.0	138.4
Sep 24	137.0	135.4	138.0
Sep 25	125.9	112.3	137.8
Sep 26	117.3	110.7	125.7
Sep 27	125.2	112.3	138.7
Sep 28	137.2	134.7	139.5
Sep 29	124.6	80.6	142.6
Sep 30	137.6	135.5	140.0
Summary	**136.6**	**117.3**	**141.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 50

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	117.7	106.5	121.3
Sep 2	118.9	117.6	120.7
Sep 3	119.1	117.7	121.2
Sep 4	119.4	118.1	121.6
Sep 5	119.7	118.3	121.5
Sep 6	118.1	109.6	120.2
Sep 7	118.3	116.2	120.4
Sep 8	118.8	115.3	120.9
Sep 9	119.1	117.9	120.9
Sep 10	119.2	118.0	119.9
Sep 11	119.4	118.7	120.7
Sep 12	119.4	118.6	120.8
Sep 13	119.5	118.6	120.6
Sep 14	119.2	118.2	120.8
Sep 15	119.3	118.4	120.9
Sep 16	119.0	118.2	120.3
Sep 17	118.8	118.3	119.3
Sep 18	118.6	117.0	119.6
Sep 19	118.9	117.6	120.8
Sep 20	118.4	117.1	120.0
Sep 21	118.0	117.3	119.9
Sep 22	117.6	102.3	120.3
Sep 23	119.3	118.8	120.4
Sep 24	118.2	117.0	119.1
Sep 25	118.2	116.5	119.1
Sep 26	118.6	117.3	120.6
Sep 27	118.1	117.3	119.5
Sep 28	118.4	114.1	120.2
Sep 29	113.4	99.4	121.4
Sep 30	119.4	117.6	121.8
Summary	**118.6**	**113.4**	**119.7**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 51

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	120.2	64.2	195.7
Sep 2	85.0	70.4	116.5
Sep 3	94.4	67.5	192.0
Sep 4	111.5	65.8	193.7
Sep 5	86.1	72.3	105.4
Sep 6	81.4	67.4	142.1
Sep 7	85.4	66.2	191.1
Sep 8	75.9	67.7	98.5
Sep 9	74.4	65.9	93.8
Sep 10	70.3	65.0	82.4
Sep 11	73.7	65.1	90.5
Sep 12	71.5	63.2	87.6
Sep 13	72.2	64.9	85.2
Sep 14	69.4	58.7	86.9
Sep 15	71.0	59.9	88.5
Sep 16	70.1	57.4	85.9
Sep 17	66.4	60.6	75.6
Sep 18	64.0	55.2	76.3
Sep 19	102.5	51.0	193.8
Sep 20	194.5	191.1	195.5
Sep 21	194.8	192.0	196.8
Sep 22	183.6	139.5	194.9
Sep 23	89.3	68.5	132.7
Sep 24	69.0	64.6	74.4
Sep 25	69.6	61.2	78.6
Sep 26	84.9	59.9	191.6
Sep 27	134.5	60.8	193.5
Sep 28	109.9	65.3	169.9
Sep 29	69.6	56.0	80.9
Sep 30	70.0	56.9	84.4
Summary	**93.8**	**64.0**	**194.8**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 52

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	73.1	58.7	92.6
Sep 2	71.1	27.3	96.1
Sep 3	74.4	59.3	96.5
Sep 4	77.3	62.1	97.9
Sep 5	78.4	64.0	99.0
Sep 6	77.1	67.3	93.8
Sep 7	116.7	66.6	174.0
Sep 8	161.8	154.4	176.4
Sep 9	157.8	155.7	160.1
Sep 10	154.4	153.0	155.7
Sep 11	157.4	151.9	174.8
Sep 12	157.1	152.3	174.1
Sep 13	151.1	148.4	153.2
Sep 14	153.2	147.3	171.1
Sep 15	155.0	149.6	172.9
Sep 16	154.5	149.2	176.7
Sep 17	151.6	148.9	158.1
Sep 18	155.2	148.0	176.2
Sep 19	149.3	143.0	152.5
Sep 20	147.6	145.4	149.1
Sep 21	145.6	143.6	147.5
Sep 22	150.3	130.2	177.5
Sep 23	161.0	150.8	177.8
Sep 24	146.8	138.5	154.6
Sep 25	156.2	140.2	178.2
Sep 26	154.3	140.7	181.8
Sep 27	160.3	144.0	182.8
Sep 28	150.4	145.7	152.5
Sep 29	163.6	146.7	182.9
Sep 30	160.0	152.1	165.7
Summary	**137.4**	**71.1**	**163.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 53

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	157.0	152.2	163.5
Sep 2	155.7	151.5	161.1
Sep 3	154.1	149.9	161.4
Sep 4	153.2	148.4	159.9
Sep 5	152.9	148.8	160.9
Sep 6	151.6	148.1	158.1
Sep 7	150.5	142.0	158.4
Sep 8	150.9	145.2	157.5
Sep 9	150.2	143.6	158.8
Sep 10	148.2	145.9	152.2
Sep 11	150.4	145.3	161.7
Sep 12	145.9	143.0	151.4
Sep 13	144.0	139.0	150.2
Sep 14	143.3	136.6	153.6
Sep 15	145.5	139.2	152.4
Sep 16	143.1	138.1	150.3
Sep 17	140.8	136.7	143.9
Sep 18	139.4	134.5	143.8
Sep 19	139.2	132.9	148.2
Sep 20	140.9	133.1	151.9
Sep 21	140.1	135.6	147.0
Sep 22	137.6	133.0	144.1
Sep 23	138.0	133.8	145.5
Sep 24	137.3	134.7	140.6
Sep 25	136.2	132.4	141.2
Sep 26	136.7	128.1	146.9
Sep 27	134.2	126.8	145.5
Sep 28	135.1	127.6	145.1
Sep 29	135.1	127.2	146.3
Sep 30	134.7	127.8	144.5
Summary	**144.1**	**134.2**	**157.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 54

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	77.0	64.0	97.7
Sep 2	77.0	61.2	99.5
Sep 3	79.9	63.2	105.7
Sep 4	82.3	65.9	107.3
Sep 5	85.5	68.7	110.0
Sep 6	84.3	73.9	104.5
Sep 7	82.7	71.7	100.4
Sep 8	80.8	71.0	101.3
Sep 9	81.3	69.3	107.3
Sep 10	78.8	72.0	94.3
Sep 11	111.6	73.6	165.7
Sep 12	93.7	74.9	150.1
Sep 13	80.2	70.3	94.2
Sep 14	89.8	60.1	165.6
Sep 15	85.2	73.9	103.5
Sep 16	79.5	63.8	98.4
Sep 17	78.9	72.4	90.4
Sep 18	73.6	58.9	85.8
Sep 19	70.7	53.6	93.1
Sep 20	75.9	59.7	103.0
Sep 21	73.7	63.4	91.6
Sep 22	71.5	60.0	87.0
Sep 23	69.1	56.7	86.5
Sep 24	68.3	63.4	74.8
Sep 25	70.2	59.4	79.4
Sep 26	76.1	62.6	96.2
Sep 27	74.1	63.9	91.2
Sep 28	72.5	60.9	88.1
Sep 29	74.4	60.4	95.2
Sep 30	74.2	60.8	94.3
Summary	**79.1**	**68.3**	**111.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 55

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	181.3	163.8	194.3
Sep 2	158.1	136.8	184.2
Sep 3	131.8	120.2	140.3
Sep 4	123.6	113.8	134.0
Sep 5	154.3	111.5	193.1
Sep 6	162.3	136.4	192.1
Sep 7	184.1	165.8	193.9
Sep 8	172.3	151.4	193.7
Sep 9	157.0	137.1	179.2
Sep 10	129.0	117.6	138.6
Sep 11	125.6	109.3	143.0
Sep 12	116.8	100.6	137.5
Sep 13	111.1	95.9	123.4
Sep 14	107.2	83.2	162.2
Sep 15	114.6	110.7	119.2
Sep 16	111.0	103.7	117.3
Sep 17	106.7	101.4	110.3
Sep 18	101.4	86.6	108.7
Sep 19	95.0	78.1	113.1
Sep 20	103.2	86.6	120.1
Sep 21	103.1	97.2	114.6
Sep 22	100.8	89.9	111.7
Sep 23	93.0	83.5	105.9
Sep 24	92.9	84.9	102.0
Sep 25	98.6	91.0	110.0
Sep 26	102.2	93.4	114.7
Sep 27	140.7	87.1	189.5
Sep 28	178.7	98.6	195.5
Sep 29	148.4	69.1	197.5
Sep 30	152.3	139.2	176.9
Summary	**128.6**	**92.9**	**184.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 56

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	117.5	112.2	126.5
Sep 2	118.4	109.9	129.1
Sep 3	121.3	116.6	130.1
Sep 4	121.2	116.8	128.9
Sep 5	121.4	116.4	129.4
Sep 6	122.1	111.4	131.3
Sep 7	124.7	118.4	131.0
Sep 8	124.0	119.6	127.9
Sep 9	125.3	119.5	133.5
Sep 10	126.9	125.3	130.5
Sep 11	128.3	124.8	134.3
Sep 12	126.3	123.1	130.5
Sep 13	122.9	117.3	126.6
Sep 14	120.5	110.7	132.1
Sep 15	127.6	124.2	132.7
Sep 16	128.0	124.4	133.2
Sep 17	127.2	125.4	129.6
Sep 18	123.9	116.5	127.6
Sep 19	120.9	113.9	128.5
Sep 20	125.1	119.0	133.5
Sep 21	124.2	118.3	129.4
Sep 22	122.5	118.5	127.4
Sep 23	121.7	119.6	126.9
Sep 24	120.9	118.3	123.5
Sep 25	121.2	118.7	124.2
Sep 26	122.2	118.1	129.4
Sep 27	120.0	114.1	126.4
Sep 28	122.1	114.7	127.5
Sep 29	114.4	95.2	129.8
Sep 30	115.6	109.8	123.9
Summary	**122.6**	**114.4**	**128.3**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 57

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	165.4	148.8	181.4
Sep 2	146.0	137.7	152.8
Sep 3	140.7	134.2	150.9
Sep 4	149.4	133.0	180.6
Sep 5	146.2	139.1	162.4
Sep 6	145.5	136.0	177.9
Sep 7	147.1	124.3	152.7
Sep 8	152.0	148.2	156.2
Sep 9	149.1	142.3	163.2
Sep 10	142.1	141.0	144.7
Sep 11	143.6	138.6	138.6
Sep 12	178.5	179.1	179.1
Sep 13	175.6	176.8	176.8
Sep 14	0.0	168.9	168.9
Sep 15	0.0	163.2	163.2
Sep 16	0.0	157.4	157.4
Sep 17	0.0	151.7	151.7
Sep 18	149.9	145.2	153.1
Sep 19	150.1	144.3	158.4
Sep 20	153.0	147.0	161.1
Sep 21	152.1	148.9	157.8
Sep 22	151.0	148.8	154.7
Sep 23	150.5	147.9	155.4
Sep 24	150.3	148.1	153.3
Sep 25	144.6	135.4	152.8
Sep 26	145.3	132.8	158.2
Sep 27	148.7	144.0	154.2
Sep 28	150.6	144.1	156.5
Sep 29	147.4	138.8	156.4
Sep 30	146.8	141.7	154.1
Summary	**130.7**	**0.0**	**178.5**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 58

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	100.1	85.2	110.9
Sep 2	100.4	92.3	110.9
Sep 3	100.1	92.3	110.9
Sep 4	100.6	93.1	111.0
Sep 5	101.0	93.7	111.6
Sep 6	99.1	90.0	108.4
Sep 7	98.5	94.4	105.2
Sep 8	97.6	93.5	106.8
Sep 9	98.3	92.2	109.0
Sep 10	96.8	93.3	102.0
Sep 11	98.8	94.3	106.3
Sep 12	97.9	93.4	105.7
Sep 13	98.3	94.7	107.0
Sep 14	96.5	88.9	105.5
Sep 15	99.8	93.9	108.5
Sep 16	101.0	94.3	108.8
Sep 17	100.0	97.1	103.2
Sep 18	98.8	92.9	104.0
Sep 19	97.5	89.7	107.9
Sep 20	103.6	92.4	118.9
Sep 21	110.4	101.9	119.9
Sep 22	111.2	106.9	122.7
Sep 23	111.7	103.4	120.6
Sep 24	108.2	89.1	119.3
Sep 25	118.0	98.7	163.6
Sep 26	151.5	84.2	160.2
Sep 27	131.5	108.7	153.6
Sep 28	117.5	109.3	124.4
Sep 29	106.2	78.7	127.8
Sep 30	90.3	69.5	108.6
Summary	**104.7**	**90.3**	**151.5**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 59

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	113.5	105.8	117.0
Sep 2	114.2	112.8	115.4
Sep 3	114.2	113.2	115.4
Sep 4	114.1	113.3	115.5
Sep 5	114.4	113.3	115.5
Sep 6	113.5	104.2	116.0
Sep 7	113.9	113.1	114.7
Sep 8	114.2	112.4	115.8
Sep 9	114.5	113.6	115.5
Sep 10	114.6	114.3	115.2
Sep 11	115.3	114.6	116.2
Sep 12	116.0	115.4	116.7
Sep 13	116.5	116.1	117.2
Sep 14	116.5	115.9	117.3
Sep 15	116.4	115.8	117.1
Sep 16	116.8	116.2	117.5
Sep 17	117.1	116.9	117.4
Sep 18	117.4	117.2	118.1
Sep 19	117.8	117.1	118.7
Sep 20	118.2	117.6	119.2
Sep 21	118.5	118.1	119.6
Sep 22	117.7	96.3	120.1
Sep 23	118.7	118.3	119.4
Sep 24	118.8	118.6	119.1
Sep 25	119.1	118.6	119.4
Sep 26	119.9	119.2	121.0
Sep 27	119.8	119.3	120.6
Sep 28	120.1	119.4	120.9
Sep 29	118.4	111.4	122.9
Sep 30	120.5	119.8	121.6
Summary	**116.7**	**113.5**	**120.5**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 60

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	125.0	103.7	126.4
Sep 2	0.0	123.4	123.4
Sep 3	124.1	122.2	124.8
Sep 4	120.7	121.3	122.2
Sep 5	0.0	108.2	108.2
Sep 6	115.4	103.1	119.6
Sep 7	124.7	124.7	124.7
Sep 8	0.0	124.7	124.7
Sep 9	123.5	124.6	124.6
Sep 10	123.5	119.8	119.8
Sep 11	0.0	145.3	145.3
Sep 12	0.0	164.0	164.0
Sep 13	170.4	169.0	171.3
Sep 14	160.3	139.8	170.7
Sep 15	132.0	125.8	138.6
Sep 16	123.9	121.6	125.4
Sep 17	120.3	119.3	121.8
Sep 18	118.7	116.5	120.2
Sep 19	117.9	115.3	120.8
Sep 20	118.4	115.4	122.1
Sep 21	118.1	116.9	121.5
Sep 22	116.2	98.2	120.3
Sep 23	115.9	114.3	118.2
Sep 24	115.5	113.5	117.2
Sep 25	115.6	113.7	117.7
Sep 26	116.1	113.1	120.2
Sep 27	115.2	112.9	117.8
Sep 28	114.8	111.2	117.4
Sep 29	106.7	88.7	118.2
Sep 30	113.6	109.6	118.2
Summary	**102.2**	**0.0**	**170.4**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 62

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	125.2	114.6	131.2
Sep 2	128.3	123.9	130.8
Sep 3	123.5	99.9	128.8
Sep 4	112.1	60.5	131.6
Sep 5	127.6	123.1	130.4
Sep 6	128.3	123.5	131.8
Sep 7	129.1	125.9	131.4
Sep 8	123.2	102.2	131.7
Sep 9	123.1	61.4	131.3
Sep 10	113.9	94.9	126.9
Sep 11	115.1	88.5	130.0
Sep 12	116.5	95.6	129.8
Sep 13	121.8	95.0	131.6
Sep 14	118.4	92.1	130.8
Sep 15	110.0	89.6	129.7
Sep 16	104.7	84.0	129.0
Sep 17	116.9	110.6	124.2
Sep 18	117.7	108.2	128.4
Sep 19	114.5	108.1	120.1
Sep 20	111.3	103.4	118.1
Sep 21	114.8	98.3	130.1
Sep 22	123.7	99.7	129.1
Sep 23	125.3	123.5	127.8
Sep 24	125.1	124.0	126.1
Sep 25	125.2	120.8	127.1
Sep 26	120.1	102.2	127.9
Sep 27	115.9	88.2	131.4
Sep 28	124.5	109.5	129.6
Sep 29	125.4	106.1	130.8
Sep 30	115.5	87.1	131.2
Summary	**119.9**	**104.7**	**129.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 63

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	107.9	76.7	128.5
Sep 2	114.2	92.8	126.6
Sep 3	98.8	72.8	109.5
Sep 4	102.7	62.3	126.6
Sep 5	111.7	92.6	125.4
Sep 6	112.3	95.0	127.0
Sep 7	111.6	93.4	124.1
Sep 8	97.2	79.7	117.4
Sep 9	101.1	66.9	124.4
Sep 10	81.2	63.6	102.4
Sep 11	85.5	63.6	110.3
Sep 12	84.9	61.5	103.6
Sep 13	93.6	67.1	115.6
Sep 14	95.4	57.1	125.7
Sep 15	96.1	58.0	128.3
Sep 16	91.0	56.5	130.3
Sep 17	106.7	96.6	121.0
Sep 18	105.8	91.2	127.7
Sep 19	102.1	92.5	112.8
Sep 20	98.2	87.5	110.5
Sep 21	111.4	88.9	132.5
Sep 22	124.6	85.1	129.9
Sep 23	127.2	124.3	131.3
Sep 24	126.8	125.2	129.0
Sep 25	127.7	125.4	130.3
Sep 26	117.4	87.9	132.9
Sep 27	114.9	83.3	133.1
Sep 28	121.8	93.1	131.0
Sep 29	123.1	81.8	133.8
Sep 30	112.6	67.8	134.7
Summary	**106.8**	**81.2**	**127.7**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 64

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	123.7	63.1	144.8
Sep 2	139.6	123.3	143.6
Sep 3	113.3	68.7	140.5
Sep 4	117.2	62.3	144.7
Sep 5	139.1	126.3	143.4
Sep 6	138.6	128.8	142.6
Sep 7	139.2	136.5	142.5
Sep 8	134.5	117.7	142.1
Sep 9	135.9	115.1	142.1
Sep 10	125.1	105.6	136.9
Sep 11	126.4	102.5	139.0
Sep 12	126.2	103.2	140.1
Sep 13	132.8	113.5	141.9
Sep 14	128.6	96.6	141.3
Sep 15	118.3	93.1	137.7
Sep 16	116.3	87.9	139.4
Sep 17	127.5	123.5	134.3
Sep 18	128.1	116.7	135.7
Sep 19	126.7	123.5	133.1
Sep 20	126.4	121.5	131.0
Sep 21	132.0	121.2	140.3
Sep 22	135.5	92.6	139.5
Sep 23	137.2	136.1	138.2
Sep 24	137.1	136.3	137.9
Sep 25	137.3	136.1	138.0
Sep 26	133.2	124.5	139.9
Sep 27	133.0	120.6	139.9
Sep 28	134.0	116.8	138.4
Sep 29	134.7	106.2	140.8
Sep 30	130.4	108.0	141.3
Summary	**130.3**	**113.3**	**139.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 65

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	132.2	106.5	138.8
Sep 2	134.5	132.8	136.5
Sep 3	134.5	133.1	136.7
Sep 4	135.1	133.4	137.4
Sep 5	135.2	133.7	137.2
Sep 6	133.4	105.6	138.5
Sep 7	134.2	131.7	135.9
Sep 8	133.6	124.1	137.9
Sep 9	134.6	133.7	136.3
Sep 10	134.5	133.7	135.4
Sep 11	112.3	75.2	134.8
Sep 12	97.5	72.3	136.8
Sep 13	133.1	131.7	134.4
Sep 14	129.6	124.6	133.8
Sep 15	124.6	104.8	131.0
Sep 16	129.9	107.1	136.6
Sep 17	75.7	60.3	121.7
Sep 18	91.5	57.4	132.2
Sep 19	71.8	49.7	113.2
Sep 20	79.3	55.2	116.5
Sep 21	105.7	57.8	140.9
Sep 22	134.3	84.9	139.1
Sep 23	135.5	133.8	137.7
Sep 24	135.5	134.2	136.7
Sep 25	132.8	95.3	136.6
Sep 26	113.6	67.4	135.0
Sep 27	100.7	60.1	133.9
Sep 28	122.1	84.7	133.5
Sep 29	120.8	83.3	136.7
Sep 30	128.9	121.9	136.8
Summary	**120.6**	**71.8**	**135.5**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 66

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	134.7	121.6	141.8
Sep 2	137.4	130.7	143.3
Sep 3	138.9	136.6	142.9
Sep 4	138.5	135.6	142.3
Sep 5	138.9	135.2	143.3
Sep 6	137.7	116.7	144.8
Sep 7	139.9	129.8	143.4
Sep 8	138.5	124.9	143.1
Sep 9	140.7	138.6	144.0
Sep 10	140.3	138.2	141.6
Sep 11	140.8	138.8	142.9
Sep 12	139.5	136.9	142.1
Sep 13	138.2	134.4	140.9
Sep 14	137.6	132.8	144.1
Sep 15	141.1	139.7	143.4
Sep 16	140.6	138.7	142.7
Sep 17	140.0	138.2	141.4
Sep 18	138.6	134.6	140.3
Sep 19	137.6	132.9	142.9
Sep 20	140.0	137.1	143.4
Sep 21	138.7	134.8	142.0
Sep 22	137.3	109.5	140.9
Sep 23	138.7	134.9	141.2
Sep 24	139.2	137.0	140.7
Sep 25	139.6	135.2	141.2
Sep 26	139.6	137.5	142.6
Sep 27	138.6	134.1	142.1
Sep 28	139.9	133.7	142.6
Sep 29	129.1	105.1	146.7
Sep 30	128.6	108.6	142.3
Summary	**138.3**	**128.6**	**141.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 67

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	173.2	88.6	187.9
Sep 2	169.7	167.8	172.2
Sep 3	167.7	163.3	172.1
Sep 4	163.9	160.0	168.8
Sep 5	160.7	157.0	165.0
Sep 6	155.9	151.9	160.8
Sep 7	152.3	142.5	167.3
Sep 8	146.5	135.3	163.4
Sep 9	147.6	140.6	158.5
Sep 10	145.9	142.7	150.0
Sep 11	161.6	143.0	178.3
Sep 12	155.9	147.9	163.1
Sep 13	142.1	130.4	148.2
Sep 14	129.5	121.0	142.7
Sep 15	126.8	115.9	138.7
Sep 16	129.0	120.1	137.1
Sep 17	129.2	123.4	132.5
Sep 18	128.6	124.6	132.4
Sep 19	130.3	122.7	138.1
Sep 20	125.2	80.7	143.2
Sep 21	123.2	111.7	137.1
Sep 22	120.5	111.5	130.0
Sep 23	125.3	118.3	136.5
Sep 24	127.4	122.5	135.3
Sep 25	129.3	125.4	134.6
Sep 26	132.7	116.2	151.2
Sep 27	126.5	113.8	141.9
Sep 28	129.3	112.4	142.9
Sep 29	130.2	119.3	147.6
Sep 30	129.7	119.0	143.4
Summary	**140.5**	**120.5**	**173.2**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 68

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Sep 1	127.2	121.4	130.6
Sep 2	127.5	121.2	129.4
Sep 3	128.6	127.2	130.7
Sep 4	128.0	123.5	129.8
Sep 5	128.6	127.1	130.3
Sep 6	128.0	120.7	130.4
Sep 7	128.3	126.5	129.7
Sep 8	127.6	120.4	130.7
Sep 9	128.3	127.1	130.2
Sep 10	128.1	127.5	128.8
Sep 11	128.2	127.4	129.4
Sep 12	127.6	125.5	128.9
Sep 13	127.2	125.3	128.9
Sep 14	127.0	124.7	129.7
Sep 15	128.3	127.4	129.6
Sep 16	128.0	127.0	129.2
Sep 17	127.6	127.1	127.9
Sep 18	127.2	125.0	128.5
Sep 19	127.6	125.9	129.9
Sep 20	128.1	126.5	129.7
Sep 21	128.2	127.0	130.9
Sep 22	127.0	120.3	130.7
Sep 23	124.6	121.3	127.0
Sep 24	122.0	120.7	123.7
Sep 25	122.3	103.4	130.3
Sep 26	126.9	125.7	128.2
Sep 27	126.3	124.4	129.0
Sep 28	126.8	120.6	128.3
Sep 29	112.8	76.4	129.6
Sep 30	122.4	120.1	126.4
Summary	**126.5**	**112.8**	**128.6**

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-Sep	167.1	225.9	226.5	251.3	267.0	272.7
2-Sep	167.0	224.9	225.5	250.7	267.0	272.6
3-Sep	167.1	224.4	224.9	250.3	267.0	272.7
4-Sep	167.2	224.1	224.6	250.2	266.9	272.7
5-Sep	167.2	224.5	225.1	250.7	267.2	272.9
6-Sep	167.0	223.7	224.2	250.1	266.7	272.7
7-Sep	167.0	223.3	223.8	249.7	266.6	272.7
8-Sep	166.9	222.3	222.8	249.2	266.4	272.8
9-Sep	166.8	221.7	222.2	248.9	266.2	272.7
10-Sep	166.5	221.3	221.9	248.6	265.8	272.5
11-Sep	166.5	221.6	222.1	248.9	265.9	272.7
12-Sep	166.4	222.4	223.0	249.7	266.1	272.6
13-Sep	166.5	225.6	226.2	251.5	266.6	272.6
14-Sep	166.5	225.7	226.3	251.6	266.6	272.6
15-Sep	166.4	223.9	224.4	250.6	266.3	272.7
16-Sep	166.4	222.7	223.2	249.6	265.9	272.6
17-Sep	166.1	222.5	223.1	249.2	265.6	272.4
18-Sep	166.1	222.6	223.1	249.3	265.5	272.4
19-Sep	166.2	222.6	223.2	249.3	265.7	272.5
20-Sep	166.2	223.0	223.5	249.4	265.7	272.6
21-Sep	166.2	224.0	224.6	249.8	265.7	272.6
22-Sep	166.1	224.2	224.8	249.8	265.5	272.5
23-Sep	166.1	224.4	224.9	249.9	265.6	272.6
24-Sep	166.1	224.4	224.9	249.9	265.4	272.4
25-Sep	166.1	224.4	224.9	250.0	265.4	272.4
26-Sep	166.3	224.1	224.6	249.8	265.8	272.9
27-Sep	166.1	224.4	224.8	250.1	265.5	272.6
28-Sep	166.1	224.5	225.0	250.1	265.5	272.6
29-Sep	166.2	224.8	225.3	250.4	265.7	272.7
30-Sep	166.2	225.1	225.6	250.5	265.6	272.6
Average	**166.5**	**223.8**	**224.3**	**250.0**	**266.1**	**272.6**

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-Sep	*	*	*	*	*	*
2-Sep	*	*	*	*	*	*
3-Sep	*	*	*	*	*	*
4-Sep	*	*	*	*	*	*
5-Sep	*	*	*	*	*	*
6-Sep	*	*	*	*	*	*
7-Sep	*	*	*	*	*	*
8-Sep	*	*	*	*	*	*
9-Sep	*	*	*	*	*	*
10-Sep	*	*	*	*	*	*
11-Sep	*	*	*	*	*	*
12-Sep	*	*	*	*	*	*
13-Sep	*	*	*	*	*	*
14-Sep	*	*	*	*	*	*
15-Sep	*	*	*	*	*	*
16-Sep	*	*	*	*	*	*
17-Sep	*	*	*	*	*	*
18-Sep	157.1	241.3	241.7	267.7	255.5	266.7
19-Sep	157.2	241.3	241.7	267.6	255.4	266.5
20-Sep	157.1	241.4	241.7	267.6	255.4	266.6
21-Sep	157.1	241.3	241.7	267.5	255.3	266.4
22-Sep	157.0	241.2	241.6	267.5	255.2	266.3
23-Sep	157.0	241.0	241.4	267.4	255.1	266.2
24-Sep	157.1	240.9	241.4	267.4	255.1	266.2
25-Sep	157.1	241.0	241.4	267.4	255.2	266.1
26-Sep	157.1	241.2	241.6	267.6	255.4	266.4
27-Sep	156.9	241.1	241.4	267.4	255.2	266.1
28-Sep	157.0	241.0	241.4	267.3	255.3	266.2
29-Sep	157.0	241.0	241.5	267.4	255.4	266.2
30-Sep	157.0	241.0	241.4	267.2	255.3	266.1
Average	**157.0**	**241.1**	**241.5**	**267.5**	**255.3**	**266.3**

* Indicates days that the sensors were not operational

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-Sep	207.6	209.0	212.4	251.3	263.2	269.6	270.2	256.4
2-Sep	207.6	208.9	211.5	251.4	263.3	269.5	270.2	256.5
3-Sep	207.7	213.1	213.2	251.5	263.2	269.4	270.2	256.6
4-Sep	207.7	215.2	216.7	251.7	263.4	269.6	270.5	256.7
5-Sep	207.7	212.0	216.2	251.6	263.4	269.6	270.4	256.6
6-Sep	209.7	209.8	213.3	226.9	260.8	268.4	269.2	256.4
7-Sep	208.9	208.4	210.7	207.7	256.8	266.8	268.6	256.4
8-Sep	208.7	208.2	210.9	207.2	246.6	264.7	268.3	256.4
9-Sep	208.7	208.2	210.7	207.5	248.4	264.0	268.4	256.5
10-Sep	208.2	207.7	210.1	206.9	250.7	263.1	268.1	256.0
11-Sep	208.5	208.0	210.3	207.7	253.2	263.5	268.4	256.3
12-Sep	208.4	207.8	210.1	207.4	254.8	263.6	268.2	256.2
13-Sep	208.5	208.0	210.2	207.8	255.6	263.9	268.3	256.3
14-Sep	208.6	208.2	210.2	207.8	255.2	264.1	268.4	256.3
15-Sep	208.8	208.3	210.5	208.0	255.3	263.7	268.3	256.4
16-Sep	209.4	208.6	211.1	208.5	256.7	263.7	268.1	256.3
17-Sep	209.1	208.3	210.9	207.8	256.9	263.5	267.6	256.0
18-Sep	208.7	208.0	210.5	220.5	258.9	264.2	267.7	256.0
19-Sep	208.0	208.0	209.8	247.9	260.6	266.2	268.7	256.3
20-Sep	208.1	208.3	209.7	249.1	261.6	267.4	269.3	256.4
21-Sep	208.0	208.1	209.6	247.9	261.8	267.7	269.2	256.3
22-Sep	208.1	208.3	209.8	248.4	261.7	267.8	269.2	256.3
23-Sep	207.3	207.4	208.6	249.2	262.2	268.2	269.6	256.3
24-Sep	207.2	207.5	208.9	249.9	261.9	267.5	269.0	256.0
25-Sep	207.3	207.6	209.2	250.2	261.8	267.7	268.9	256.1
26-Sep	207.7	208.0	209.7	250.6	262.2	268.3	269.2	256.5
27-Sep	207.7	208.0	209.4	250.7	262.3	268.6	269.5	256.3
28-Sep	207.8	208.3	210.0	249.7	261.8	268.0	268.8	256.3
29-Sep	207.5	208.1	209.8	251.1	262.1	268.5	269.3	256.5
30-Sep	207.9	208.2	209.9	250.8	262.0	268.3	269.0	256.4
Average	**208.2**	**208.7**	**210.8**	**232.8**	**258.9**	**266.6**	**269.0**	**256.3**

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-Sep	208.0	207.9	208.0	208.1	262.8	261.1	246.3	177.6
2-Sep	208.1	208.0	208.0	208.1	263.1	261.4	246.4	177.7
3-Sep	202.0	207.9	207.9	208.4	263.5	261.5	246.4	177.6
4-Sep	185.5	208.0	208.1	241.5	263.2	262.2	246.8	178.5
5-Sep	177.8	208.0	208.0	250.5	263.0	262.2	246.6	178.3
6-Sep	175.3	207.9	207.9	251.8	263.3	262.3	246.6	178.1
7-Sep	173.3	207.6	207.6	252.5	263.2	262.5	246.5	178.0
8-Sep	171.9	207.6	207.6	253.0	263.1	262.2	246.5	178.0
9-Sep	170.7	207.9	207.8	253.4	264.1	261.5	246.5	177.9
10-Sep	169.3	207.7	207.7	253.4	263.4	262.0	246.3	177.8
11-Sep	169.0	208.0	208.0	253.8	263.5	262.6	246.5	178.0
12-Sep	168.1	207.7	207.7	253.8	262.9	262.6	246.2	177.7
13-Sep	167.7	207.8	207.8	254.0	262.9	263.2	246.4	178.0
14-Sep	167.0	207.7	207.7	254.0	263.1	262.4	246.2	178.1
15-Sep	166.6	207.8	207.9	254.2	262.7	263.2	246.4	178.4
16-Sep	166.1	207.8	207.8	254.2	262.4	263.3	246.4	178.4
17-Sep	165.3	206.6	207.3	254.0	263.4	263.6	246.1	178.1
18-Sep	165.1	206.5	207.4	253.1	262.8	263.5	246.1	178.2
19-Sep	164.8	206.0	207.0	253.5	262.1	263.3	246.1	178.1
20-Sep	164.6	205.3	206.7	254.5	264.1	262.2	246.3	178.0
21-Sep	164.5	204.8	207.6	255.2	266.1	263.2	246.3	178.3
22-Sep	164.1	204.8	207.6	255.1	266.0	263.2	246.2	178.4
23-Sep	163.9	204.4	207.4	254.7	266.8	263.0	246.2	178.3
24-Sep	163.7	205.1	207.4	254.2	265.2	263.0	246.1	178.3
25-Sep	163.3	206.4	207.6	253.9	262.9	262.8	246.1	178.4
26-Sep	163.4	207.1	208.0	253.7	262.8	263.1	246.5	178.9
27-Sep	163.2	207.4	207.9	253.4	261.4	263.3	246.3	178.6
28-Sep	162.9	207.6	207.8	253.3	261.3	263.0	246.3	178.7
29-Sep	162.9	207.8	208.0	253.4	261.0	263.4	246.4	178.9
30-Sep	162.7	207.9	208.0	253.4	261.3	263.1	246.3	178.9
Average	**171.4**	**207.1**	**207.7**	**248.7**	**263.2**	**262.7**	**246.3**	**178.2**

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-Sep	170.7	210.6	210.4	208.2	227.4	241.6	244.4	195.2
2-Sep	172.1	210.6	210.5	208.2	227.7	241.8	244.4	195.2
3-Sep	173.9	209.1	210.1	208.1	227.7	241.9	244.3	195.2
4-Sep	175.0	208.2	209.9	208.0	227.9	242.1	244.3	195.3
5-Sep	175.6	208.7	210.0	208.0	228.0	242.2	244.3	195.4
6-Sep	176.7	208.4	209.8	207.9	227.9	242.2	244.3	195.4
7-Sep	177.6	208.4	209.6	207.7	227.9	242.3	244.2	195.5
8-Sep	177.4	208.7	209.6	207.8	228.2	242.5	244.2	195.5
9-Sep	178.3	209.3	209.9	207.9	228.3	242.6	244.1	195.4
10-Sep	177.4	209.6	209.9	207.9	228.2	242.7	244.1	195.5
11-Sep	176.8	209.8	210.3	207.9	228.5	242.9	244.0	195.5
12-Sep	177.1	208.8	210.0	207.8	227.6	242.6	244.0	195.5
13-Sep	177.8	209.0	210.1	207.8	227.5	242.4	244.1	195.6
14-Sep	177.5	208.9	210.1	207.8	227.4	242.2	244.0	195.5
15-Sep	177.2	208.8	209.9	207.9	227.6	242.4	244.2	195.6
16-Sep	176.7	208.8	209.9	207.8	227.6	242.4	244.1	195.7
17-Sep	176.7	208.3	209.6	207.5	227.4	242.2	244.1	195.6
18-Sep	176.1	208.3	209.5	207.5	227.1	242.1	244.0	195.5
19-Sep	176.1	209.4	209.9	207.7	226.6	241.8	244.0	195.5
20-Sep	175.3	210.4	210.5	207.9	226.8	241.9	244.2	195.7
21-Sep	174.6	210.6	210.7	208.0	226.9	241.9	244.2	195.7
22-Sep	174.5	210.4	210.6	207.9	226.9	242.0	244.2	195.7
23-Sep	175.2	210.1	210.2	207.5	226.9	242.0	244.2	195.7
24-Sep	174.2	210.2	210.3	207.6	226.6	242.0	244.4	195.8
25-Sep	174.5	210.5	210.7	207.7	226.4	241.8	244.3	195.8
26-Sep	174.7	208.6	210.5	207.9	226.7	241.8	244.4	195.8
27-Sep	173.9	209.4	210.6	207.9	226.9	241.9	244.5	195.9
28-Sep	174.0	210.0	210.6	207.9	227.3	241.9	244.5	195.8
29-Sep	174.7	210.1	210.5	207.9	227.5	242.2	244.6	195.8
30-Sep	174.3	210.5	210.6	208.0	227.4	242.2	244.7	195.8
Average	**175.5**	**209.4**	**210.2**	**207.9**	**227.4**	**242.1**	**244.2**	**195.6**

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-Sep	176.9	232.2	232.3	232.2	235.0
2-Sep	176.7	232.1	232.2	232.5	234.5
3-Sep	176.2	232.1	232.2	232.8	234.2
4-Sep	176.1	232.3	232.4	232.9	234.4
5-Sep	175.5	232.4	232.4	233.0	234.5
6-Sep	174.6	232.4	232.5	232.5	234.9
7-Sep	174.2	232.2	232.3	231.9	235.4
8-Sep	173.5	232.3	232.4	232.1	235.4
9-Sep	173.0	232.3	232.4	233.2	234.2
10-Sep	193.3	232.1	232.2	232.4	234.7
11-Sep	207.5	232.3	232.5	232.2	235.1
12-Sep	206.7	232.2	232.4	232.6	233.6
13-Sep	206.5	232.3	232.4	232.7	234.1
14-Sep	203.8	232.0	232.3	233.2	233.9
15-Sep	193.9	231.3	232.3	235.0	234.4
16-Sep	185.4	229.4	232.3	235.9	235.2
17-Sep	191.6	231.7	232.1	232.9	233.7
18-Sep	183.7	230.9	232.0	233.3	234.1
19-Sep	175.6	221.0	232.1	240.5	232.1
20-Sep	174.0	221.9	232.1	238.6	232.5
21-Sep	172.8	227.2	232.3	232.8	233.7
22-Sep	172.4	227.1	232.3	231.8	235.6
23-Sep	172.0	224.7	232.2	233.4	235.9
24-Sep	171.6	225.1	232.1	233.0	235.4
25-Sep	171.3	228.7	232.0	230.7	234.7
26-Sep	171.0	231.5	232.2	229.9	235.0
27-Sep	170.7	231.2	232.0	230.3	234.8
28-Sep	170.7	222.8	232.2	233.5	237.2
29-Sep	170.3	227.4	232.3	231.6	234.7
30-Sep	170.2	230.1	232.2	230.8	233.7
Average	**180.4**	**229.8**	**232.3**	**233.0**	**234.6**

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-Sep	*	*	*	*	*	*	*	*
2-Sep	*	*	*	*	*	*	*	*
3-Sep	*	*	*	*	*	*	*	*
4-Sep	*	*	*	*	*	*	*	*
5-Sep	*	*	*	*	*	*	*	*
6-Sep	*	*	*	*	*	*	*	*
7-Sep	*	*	*	*	*	*	*	*
8-Sep	*	*	*	*	*	*	*	*
9-Sep	*	*	*	*	*	*	*	*
10-Sep	*	*	*	*	*	*	*	*
11-Sep	*	*	*	*	*	*	*	*
12-Sep	*	*	*	*	*	*	*	*
13-Sep	*	*	*	*	*	*	*	*
14-Sep	*	*	*	*	*	*	*	*
15-Sep	*	*	*	*	*	*	*	*
16-Sep	*	*	*	*	*	*	*	*
17-Sep	*	*	*	*	*	*	*	*
18-Sep	155.0	205.6	207.2	230.2	243.3	237.0	228.5	204.0
19-Sep	154.2	205.4	207.2	230.0	242.6	237.0	228.4	202.1
20-Sep	154.9	205.3	207.1	230.1	242.4	237.5	229.0	202.0
21-Sep	155.0	205.3	207.4	229.8	242.4	237.3	229.2	202.3
22-Sep	154.8	205.4	208.0	229.8	242.6	237.3	229.2	202.4
23-Sep	154.7	206.5	207.1	229.9	242.6	237.3	229.0	202.1
24-Sep	154.7	207.2	205.9	230.1	242.6	237.4	228.9	201.9
25-Sep	154.9	205.0	204.6	230.2	242.5	237.4	229.0	201.9
26-Sep	154.8	204.1	205.3	230.5	242.5	237.8	229.4	202.2
27-Sep	154.7	205.4	204.7	230.2	242.6	237.7	229.1	201.9
28-Sep	153.9	206.5	205.9	230.5	242.7	237.8	229.0	202.1
29-Sep	153.6	206.7	205.4	230.6	242.6	237.7	229.3	202.0
30-Sep	153.4	206.8	205.3	230.6	242.5	237.7	229.2	201.9
Average	**154.5**	**205.8**	**206.2**	**230.2**	**242.6**	**237.5**	**229.0**	**202.2**

* Indicates days that the sensors were not operational

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-Sep	187.3	190.4	190.5	192.8	194.7	191.4	188.2	182.4
2-Sep	187.5	190.5	190.5	192.9	194.7	191.4	188.2	182.3
3-Sep	187.1	190.4	190.6	192.9	194.8	191.5	188.3	182.5
4-Sep	187.2	190.6	190.7	193.0	194.8	191.6	188.4	182.6
5-Sep	187.7	190.6	190.6	192.9	194.7	191.5	188.3	182.5
6-Sep	187.7	190.6	190.7	192.9	194.8	191.6	188.4	182.6
7-Sep	187.7	190.5	190.5	192.7	194.5	191.4	188.2	182.5
8-Sep	187.4	190.5	190.6	192.8	194.6	191.4	188.3	182.5
9-Sep	187.6	190.6	190.6	192.8	194.7	191.3	188.2	182.4
10-Sep	187.4	190.6	190.7	192.9	194.8	191.4	188.2	182.3
11-Sep	187.6	190.8	190.8	193.1	194.8	191.6	188.3	182.4
12-Sep	187.6	190.6	190.7	192.9	194.7	191.4	188.2	182.3
13-Sep	187.8	190.7	190.9	193.1	194.8	191.6	188.4	182.4
14-Sep	187.7	190.7	190.8	193.1	194.7	191.4	188.3	182.3
15-Sep	187.6	190.9	191.0	193.2	194.8	191.7	188.3	182.4
16-Sep	187.7	190.9	191.0	193.2	194.7	191.6	188.3	182.3
17-Sep	187.7	190.7	190.8	193.0	194.4	191.4	188.1	182.1
18-Sep	187.8	190.8	190.8	193.1	194.5	191.5	188.2	182.1
19-Sep	188.0	190.9	191.0	193.3	194.7	191.5	188.3	182.3
20-Sep	188.0	191.1	191.0	193.3	194.7	191.6	188.2	182.2
21-Sep	188.1	191.1	191.1	193.5	194.8	191.6	188.3	182.2
22-Sep	188.1	191.1	191.1	193.4	194.7	191.7	188.2	182.2
23-Sep	188.1	191.0	191.1	193.3	194.6	191.8	188.4	182.3
24-Sep	188.1	191.0	191.0	193.2	194.5	191.6	188.1	182.1
25-Sep	188.2	191.1	191.1	193.3	194.6	191.6	188.2	182.1
26-Sep	188.5	191.4	191.4	193.7	195.0	191.9	188.5	182.4
27-Sep	188.3	191.3	191.3	193.6	194.9	191.7	188.2	182.2
28-Sep	188.4	191.4	191.4	193.7	195.0	191.8	188.3	182.2
29-Sep	188.6	191.5	191.4	193.8	195.1	192.0	188.4	182.3
30-Sep	188.5	191.5	191.5	193.9	195.1	191.9	188.4	182.2
Average	**187.8**	**190.9**	**190.9**	**193.2**	**194.7**	**191.6**	**188.3**	**182.3**

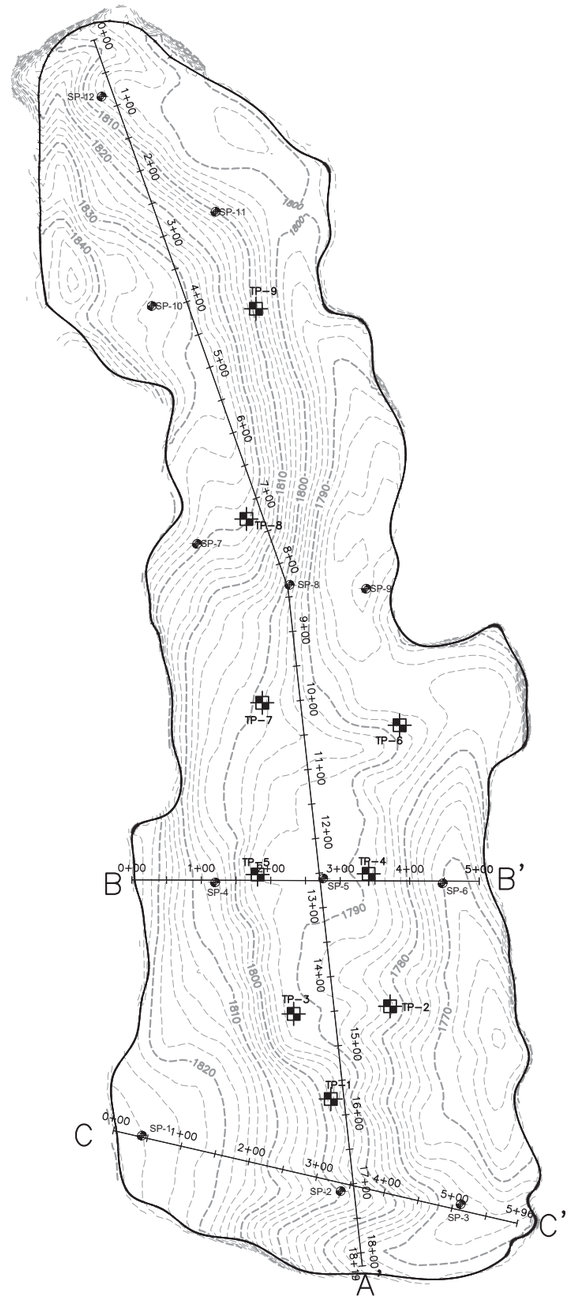
Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 9

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-Sep	*	*	*	*	*	*	*	*
2-Sep	*	*	*	*	*	*	*	*
3-Sep	*	*	*	*	*	*	*	*
4-Sep	*	*	*	*	*	*	*	*
5-Sep	*	*	*	*	*	*	*	*
6-Sep	*	*	*	*	*	*	*	*
7-Sep	*	*	*	*	*	*	*	*
8-Sep	*	*	*	*	*	*	*	*
9-Sep	*	*	*	*	*	*	*	*
10-Sep	*	*	*	*	*	*	*	*
11-Sep	*	*	*	*	*	*	*	*
12-Sep	*	*	*	*	*	*	*	*
13-Sep	*	*	*	*	*	*	*	*
14-Sep	*	*	*	*	*	*	*	*
15-Sep	*	*	*	*	*	*	*	*
16-Sep	*	*	*	*	*	*	*	*
17-Sep	*	*	*	*	*	*	*	*
18-Sep	123.1	153.5	153.2	153.4	148.1	132.1	117.7	108.9
19-Sep	122.8	153.4	153.0	153.2	147.8	131.9	117.5	108.6
20-Sep	123.0	153.6	153.2	153.3	147.9	132.0	117.6	108.8
21-Sep	122.9	153.6	153.2	153.2	147.9	131.9	117.6	108.8
22-Sep	122.9	153.7	153.3	153.4	148.0	132.1	117.8	108.9
23-Sep	122.7	153.4	153.0	153.3	147.9	131.9	117.7	108.8
24-Sep	122.5	153.3	153.0	153.3	147.9	132.0	117.8	109.0
25-Sep	122.7	153.5	153.2	153.3	147.9	132.1	117.8	109.0
26-Sep	122.9	153.8	153.4	153.4	148.0	132.1	117.8	109.0
27-Sep	123.0	153.7	153.3	153.4	148.0	132.1	117.9	109.1
28-Sep	122.9	153.6	153.2	153.3	147.9	132.0	117.9	109.1
29-Sep	122.8	153.7	153.3	153.3	147.9	132.0	117.9	109.1
30-Sep	122.6	153.7	153.2	153.3	147.9	131.9	117.8	109.1
Average	**122.8**	**153.6**	**153.2**	**153.3**	**147.9**	**132.0**	**117.8**	**108.9**

* Indicates days that the sensors were not operational

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 AUGUST 2, 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.

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

NO.	REVISION	DATE

SHEET TITLE: AUGUST 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.
54 SOUTH MAIN ST. SUITE A, MEDFORD, NJ 08055
PH. (609) 654-4000 SCSENGINEERS.COM

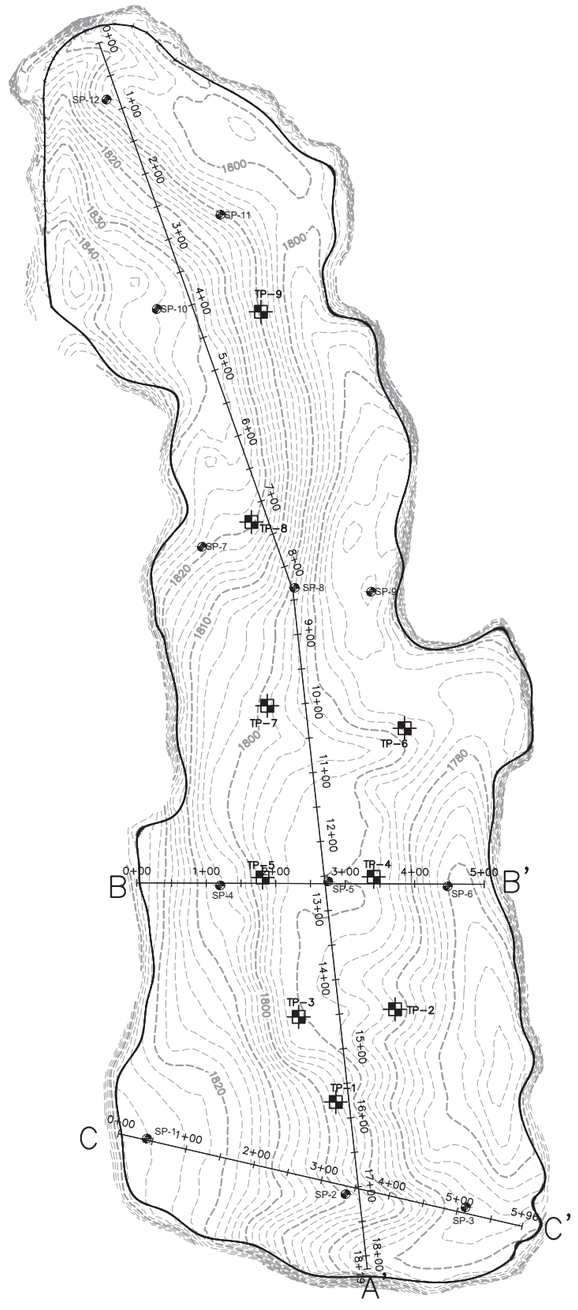
PROJ. NO. 02232208.05
DSN. BY: DWN. BY: HGW
CHK. BY: CJW
QA RVW. BY:
APP. BY: CJW

CADD FILE: SURF COMP

DATE: 9/28/2023

SCALE: 1" = 100'

DRAWING NO. 1 of 5



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.

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

NO.	REVISION	DATE

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.
53 SOUTH MAIN ST., SUITE A, MEDFORD, NJ 08055
PH. (609) 654-4000 SCSENGINEERS.COM

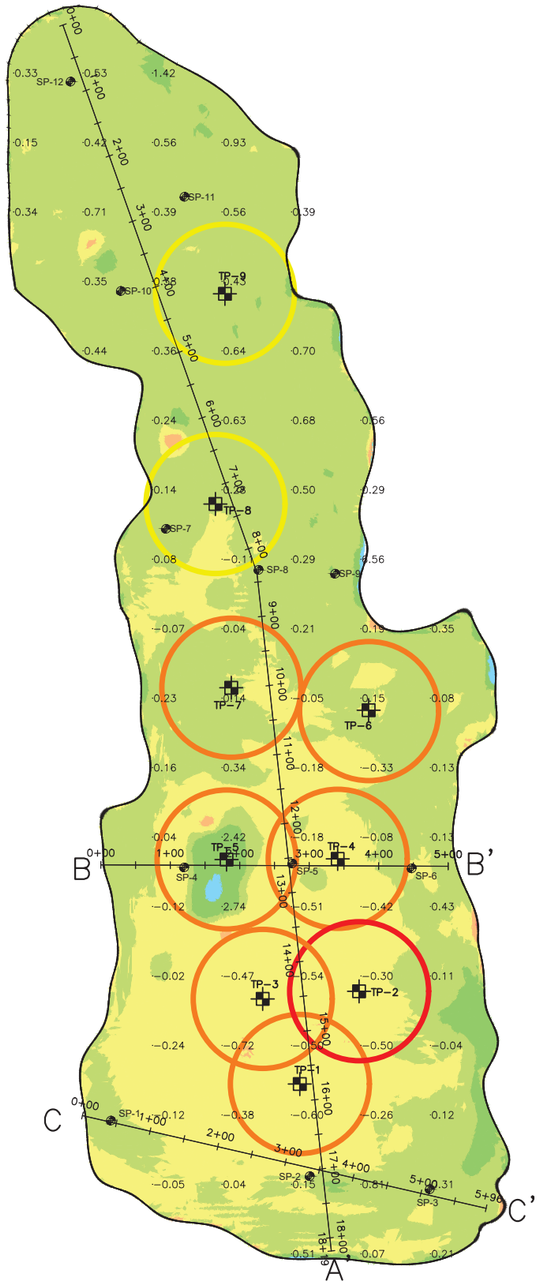
PROJ. NO. 218208.05 0027
DSN. BY: DWN. BY: HGW
CHK. BY: C.JW
QA/A RVW. BY: C.JW
APP. BY: C.JW

CADD FILE: SURF COMP

DATE: 9/28/2023

SCALE: 1" = 100'

DRAWING NO. 2 of 5



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 – AUGUST 2, 2023
Comparison Surface TOPO – SEPTEMBER 15, 2023

Cut Volume	3,155 Cu. Yd.
Fill Volume	8,488 Cu. Yd.
Net Fill	5,333 Cu. Yd.

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-12.000	-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 JULY 12, 2023 AND AUGUST 2, 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'

NO.	REVISION	DATE

SHEET TITLE: SEPTEMBER VOLUME CHANGE AUGUST 2023 TO SEPTEMBER 2023

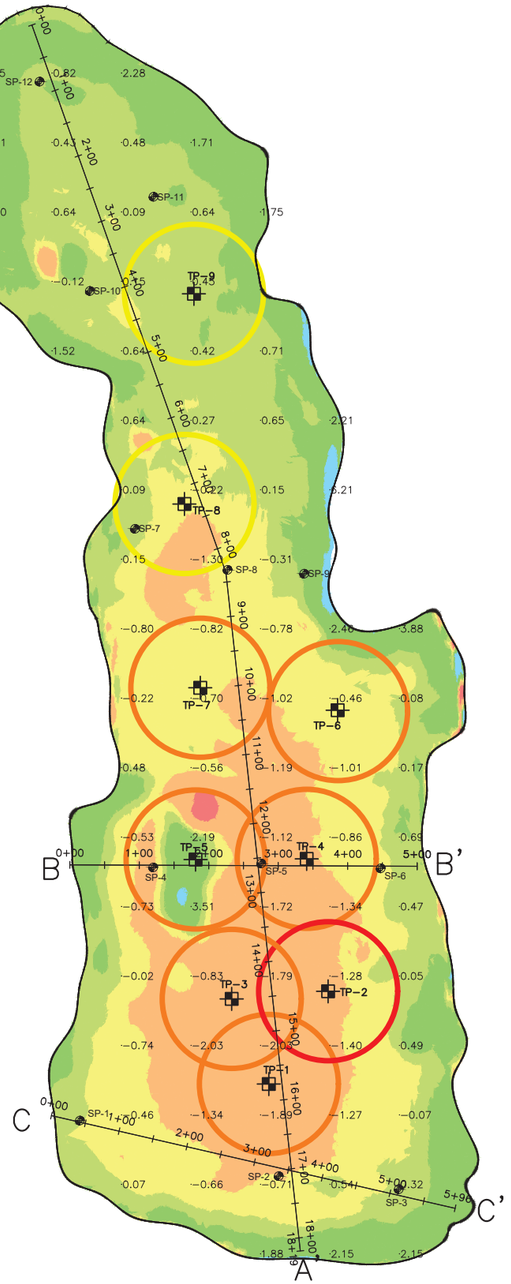
PROJECT TITLE: MONTHLY TOPOGRAPHY ANALYSIS SOLID WASTE PERMIT #588

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

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
53 SOUTH MAIN ST. SUITE 1, MEDFORD, NJ 08055
PH. (609) 654-4000 SCSENGINEERS.COM

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

CADD FILE: SURF COMP
DATE: 9/28/2023
SCALE: 1" = 100'
DRAWING NO. 3 of 5



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 – JUNE 9, 2023
Comparison Surface TOPO – SEPTEMBER 15, 2023

Cut Volume 14,001 Cu. Yd.
Fill Volume 16,240 Cu. Yd.
Net Fill 2,239 Cu. Yd.

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-11.000	-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 MAY 11, 2023 AND AUGUST 2, 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'

NO. | REVISION | DATE

SHEET TITLE: SEPTEMBER VOLUME CHANGE JUNE 2023 TO SEPTEMBER 2023

PROJECT TITLE: MONTHLY TOPOGRAPHY ANALYSIS SOLID WASTE PERMIT #588

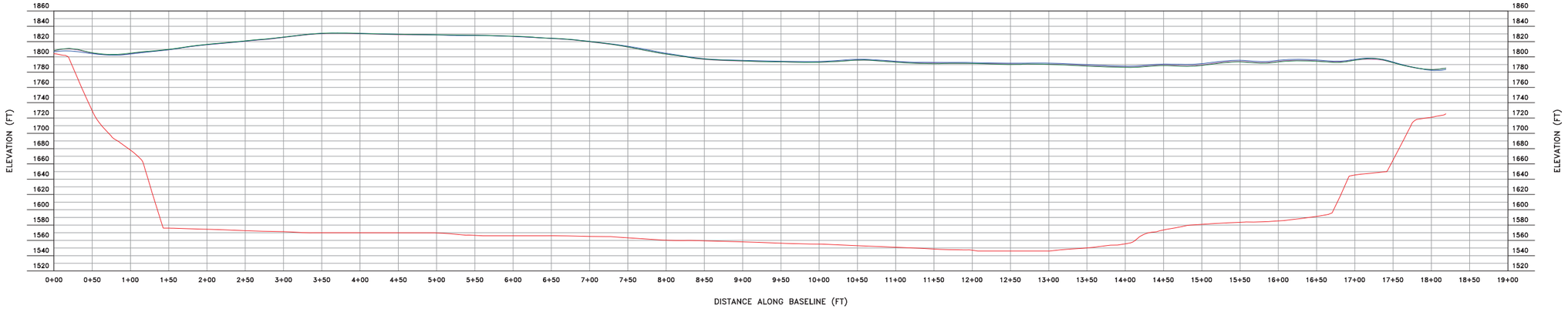
CLIENT: CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY
2655 VALLEY DRIVE
BRISTOL, VIRGINIA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
52 SOUTH MAIN ST. SUITE 1, MEDFORD, NJ 08055
PH. (609) 654-4000 SCSENGINEERS.COM

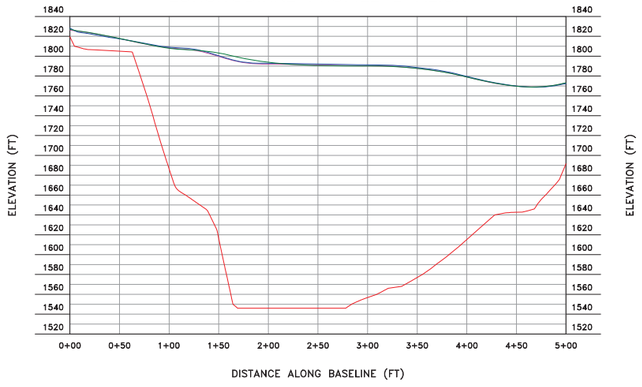
PROJ. NO. 02218208.05
DSN. BY:
DRN. BY: HGW
CHK. BY: CJW
Q/A RVW. BY:
APP. BY: CJW

CADD FILE: SURF COMP
DATE: 9/28/2023
SCALE: 1" = 100'
DRAWING NO. 4 of 5

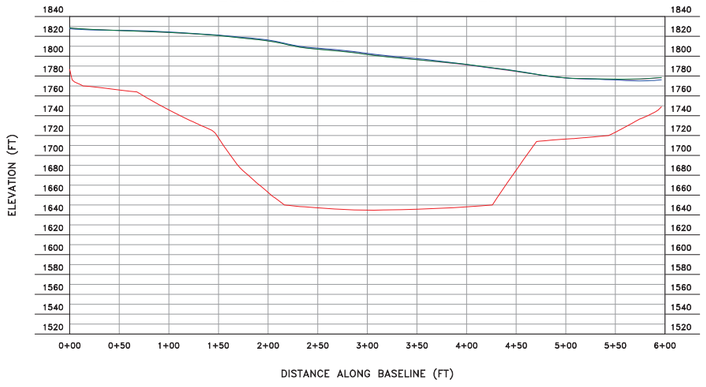
LONGITUDINAL PROFILE A ALIGN



LONGITUDINAL PROFILE B ALIGN



LONGITUDINAL PROFILE C ALIGN



LEGEND

- BOTTOM LINER ELEVATION
- JUNE 2023 TOPO
- AUGUST 2023 TOPO
- SEPTEMBER 2023 TOPO

NO.	REVISION	DATE

SHEET TITLE: **PROFILES**

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.
53 SOUTH MAIN ST, SUITE A, MEDFORD, NJ 08055
PH. (609) 654-4000 SCSENGINEERS.COM

PROJ. NO.: 18208.05
DSN. BY:
DWN. BY: HGW
CHK. BY: CJW
Q/A RVW. BY:
APP. BY: CJW

CADD FILE: SURF COMP

DATE: 9/28/2023

SCALE: AS NOTED

DRAWING NO.: **5** of **5**

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	September 25 - 26, 2023										
Personnel	A. Minnick, W. Fabrie										
Location ID	Date	Scheduled Borehole Depth (ft)	Measured Well Casing Depth		Should Have Pump	Pump Depth (ft)	Cycle Count	Depth to Liquid (ft)	Casing Stickup (ft)	Liquid Column Thickness (ft)	Comments
			(ft)	(Date)							
EW-33B	9/25/2023	180			x		13	143.68	5.80	---	
EW-36A	9/26/2023	184	---				---	---	5.21	---	Hazardous Heat
EW-49	9/25/2023		96.15	12/20-21/2022	x	90	777885	---	6.72	---	Stick Up Too Tall
EW-50	9/25/2023		77.70	12/20-21/2022	x	83	1253483	39.09	5.07	38.61	Air disconnected
EW-51	9/26/2023		92.80	12/20-21/2022	x	95	---	42.68	2.80	50.12	Air disconnected
EW-52	9/25/2023		98.70	12/20-21/2022	x	93	249787	74.43	3.80	24.27	Disconnected
EW-53	9/25/2023		100.70	12/20-21/2022	x		2325908	48.75	4.67	51.95	
EW-54	9/25/2023		82.70	12/20-21/2022	x	75	597278	35.31	5.12	47.39	
EW-55	9/25/2023		90.40	12/20-21/2022	x	90	540572	37.91	6.69	52.49	
EW-56	9/25/2023		58.50	12/20-21/2022	x	58	---	45.01	4.46	13.49	
EW-57	9/25/2023		107.40	12/20-21/2022	x	71	671207	---	4.21	---	Pump Disconnected
EW-58	9/25/2023		84.50	12/20-21/2022	x	82	2437437	29.18	5.48	55.32	No Sample Port
EW-59	9/25/2023		73.40	12/20-21/2022	x	64	2400494	33.45	3.69	39.95	Pump Disconnected
EW-60	9/25/2023		81.80	12/20-21/2022	x	70	464819	35.60	3.98	46.20	Air disconnected
EW-61	9/25/2023		87.80	12/20-21/2022	x	66	---	51.00	3.90	36.80	Air disconnected
EW-62	9/25/2023		110.60	12/20-21/2022	x	80	193956	87.54	3.62	23.06	
EW-63	9/25/2023		62.10	12/20-21/2022		64	---	58.34	4.33	3.76	No Pump
EW-64	9/25/2023		109.00	12/20-21/2022	x	113	177585	79.45	3.98	29.55	
EW-65	9/25/2023		88.40	12/20-21/2022	x	50	48.06	52.21	4.76	36.19	
EW-67	9/26/2023		107.75	12/20-21/2022	x	62.5	140046	41.87	6.41	65.88	
EW-68	9/25/2023		73.57	12/20-21/2022	x	68	2216379	36.01	1.42	37.56	Pump Disconnected
EW-69	9/25/2023	93	98.00	5/3/2023			8	84.12	4.12	13.88	
EW-70	9/25/2023	66	71.00	5/3/2023	x		13	51.23	1.61	19.77	
EW-71	9/25/2023	180	185.80	7/18/2023	x		---	169.4	4.51	16.40	No Sample Port/Pump
EW-72	9/25/2023	180	141.21	8/17/2023	x		---	98.77	3.76	42.44	No Sample Port/Pump
EW-73	9/25/2023	111	116.00	5/3/2023	x		24	67.79	3.53	48.21	Grey/Greenish silty foam
EW-74	9/25/2023	180	184.15	7/18/2023	x		16	33.63	5.55	150.52	
EW-75	9/25/2023	179	124.58	8/17/2023	x		11	122.97	4.98	1.61	Recheck 09/26/2023
EW-76	9/25/2023	122	127.00	5/3/2023	x		23	68.02	3.28	58.98	
EW-77	9/25/2023	180	185.22	8/17/2023		N/A	---	"Dry"	4	---	
EW-78	9/25/2023	52	57.00	5/3/2023	x		49080	45.5	3.53	11.50	
EW-79	9/25/2023	180	185.64	8/17/2023		N/A	---	"Dry"	4.11	---	
EW-80	9/25/2023	144	149.00	5/3/2023		N/A	---	133.88	3.80	15.12	
EW-81	9/26/2023	180	151.56	8/17/2023		N/A	479884	137.9	5.31	13.66	
EW-82	9/26/2023	180	163.26	8/17/2023		N/A	351999	147.9	4.90	15.36	No Sample Port
EW-83	9/26/2023	180	167.04	8/17/2023		N/A	432793	142.56	3.91	24.48	No Sample Port
EW-84	9/25/2023	137	130.56	8/17/2023		N/A	---	"Dry"	4.01	---	No Pump
EW-85	9/25/2023	86	91.00	5/3/2023			462	7.17	2.78	83.83	No Sample Port
EW-86	9/25/2023	148	153.00	5/3/2023		N/A	---	83.22	3.61	69.78	No Pump
EW-87	9/26/2023	180	149.57	8/16/2023		N/A	486110	57.22	3.82	92.35	

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

Date	September 25 - 26, 2023										
Personnel	A. Minnick, W. Fabrie										
Location ID	Date	Scheduled Borehole Depth (ft)	Measured Well Casing Depth		Should Have Pump	Pump Depth (ft)	Cycle Count	Depth to Liquid (ft)	Casing Stickup (ft)	Liquid Column Thickness (ft)	Comments
			(ft)	(Date)							
EW-88	9/25/2023	95	100.00	5/3/2023	x		216299	41.4	3.15	58.60	
EW-89	9/25/2023	121	84.57	8/16/2023			---	35.62	3.15	48.95	No Sample Port
EW-90	9/25/2023	109	114.00	5/3/2023			167820	83.81	3.42	30.19	No sample Port
EW-91	9/26/2023	180	137.70	8/16/2023			557448	44.65	3.95	93.05	
EW-92	9/26/2023	140	112.99	8/16/2023			521051	53.09	5.83	59.90	
EW-93	9/25/2023	106	111.00	5/3/2023			---	29.27	3.60	81.73	No Pump
EW-94	9/26/2023	45	50.00	5/3/2023	x		210559	23.9	4.00	26.10	
EW-95	9/25/2023	63	68.00	5/3/2023			---	56.41	3.55	11.59	No Sample Port
EW-96	9/26/2023	180	164.35	7/18/2023			23755	46.21	6.21	118.14	No Sample Port
EW-97	9/26/2023	180	67.95	8/16/2023			---	65.5	5.29	2.45	Disconnected, Recheck 9/
EW-98	9/25/2023	51	51.00	5/3/2023	x		1201071	22.78	3.66	28.22	
EW-99	9/26/2023	60	65.00	5/3/2023			10	42.29	3.71	22.71	
EW-100	9/25/2023	130	108.50	5/3/2023			201633	66.25	3.51	42.25	
Log Checked By:		J. Robb									

--- = not applicable/available

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	9/26/2023	13:40	63.4	5.3	41.3	0.11	-45.7	>1100	High foam content, dark color
EW-78	9/26/2023	12:45	45.9	7.94	10.03	0.17	-147.7	53.31	Mild Odor

Sampler: A. Minick, W. Fabrie

Samples Shipped By: Courier

Log Checked By: J. Robb

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

DRAFT REPORT

Laboratory Order ID 23I1456

Client Name:	SCS Engineers-Winchester 296 Victory Road Winchester, VA 22602	Date Received:	September 28, 2023 8:00
		Date Issued:	October 3, 2023 11:24
		Project Number:	[none]
Submitted To:	Jennifer Robb	Purchase Order:	
Client Site I.D.:	23-09 Bristol LFG - EW		

Enclosed are the results of analyses for samples received by the laboratory on 09/28/2023 08:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

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.

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

Analysis Detects Report

Client Name: SCS Engineers-Winchester
Client Site ID: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

Laboratory Sample ID: **23I1456-01** **Client Sample ID:** **EW-78**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
2-Butanone (MEK)	01	SW8260D	439		60.0	200	20	ug/L
Acetone	01	SW8260D	188	J	140	200	20	ug/L
Benzene	01	SW8260D	193		8.00	20.0	20	ug/L
Ethylbenzene	01	SW8260D	22.8		8.00	20.0	20	ug/L
m+p-Xylenes	01	SW8260D	14.4	J	12.0	40.0	20	ug/L
Tetrahydrofuran	01	SW8260D	343		200	200	20	ug/L
Toluene	01	SW8260D	40.6		10.0	20.0	20	ug/L

Laboratory Sample ID: **23I1456-02** **Client Sample ID:** **EW-52**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
2-Butanone (MEK)	02	SW8260D	17500		750	2500	250	ug/L
Acetone	02	SW8260D	40100		1750	2500	250	ug/L
Benzene	02	SW8260D	468		100	250	250	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
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EW-78	23I1456-01	Ground Water	09/26/2023 12:45	09/28/2023 08:00
EW-52	23I1456-02	Ground Water	09/26/2023 13:40	09/28/2023 08:00
Trip Blank	23I1456-03	Ground Water	09/20/2023 13:35	09/28/2023 08:00

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

Client Sample ID: **EW-78** **Laboratory Sample ID:** **23I1456-01**

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												
2-Butanone (MEK)	01	78-93-3	SW8260D	09/29/2023 19:14	09/29/2023 19:14	439		60.0	200	20	ug/L	RJB
Acetone	01	67-64-1	SW8260D	09/29/2023 19:14	09/29/2023 19:14	188	J	140	200	20	ug/L	RJB
Benzene	01	71-43-2	SW8260D	09/29/2023 19:14	09/29/2023 19:14	193		8.00	20.0	20	ug/L	RJB
Ethylbenzene	01	100-41-4	SW8260D	09/29/2023 19:14	09/29/2023 19:14	22.8		8.00	20.0	20	ug/L	RJB
m+p-Xylenes	01	179601-23-1	SW8260D	09/29/2023 19:14	09/29/2023 19:14	14.4	J	12.0	40.0	20	ug/L	RJB
o-Xylene	01	95-47-6	SW8260D	09/29/2023 19:14	09/29/2023 19:14	BLOD		8.00	20.0	20	ug/L	RJB
Toluene	01	108-88-3	SW8260D	09/29/2023 19:14	09/29/2023 19:14	40.6		10.0	20.0	20	ug/L	RJB
Xylenes, Total	01	1330-20-7	SW8260D	09/29/2023 19:14	09/29/2023 19:14	BLOD		20.0	60.0	20	ug/L	RJB
Tetrahydrofuran	01	109-99-9	SW8260D	09/29/2023 19:14	09/29/2023 19:14	343		200	200	20	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	*01*		*103 %*	*70-120*	*09/29/2023 19:14*	*09/29/2023 19:14*						
Surr: 4-Bromofluorobenzene (Surr)	*01*		*95.7 %*	*75-120*	*09/29/2023 19:14*	*09/29/2023 19:14*						
Surr: Dibromofluoromethane (Surr)	*01*		*94.3 %*	*70-130*	*09/29/2023 19:14*	*09/29/2023 19:14*						
Surr: Toluene-d8 (Surr)	*01*		*96.7 %*	*70-130*	*09/29/2023 19:14*	*09/29/2023 19:14*						

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Client Sample ID: **EW-52** **Laboratory Sample ID:** **23I1456-02**

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	09/29/2023 19:40	09/29/2023 19:40	17500		750	2500	250	ug/L	RJB
Acetone	02	67-64-1	SW8260D	09/29/2023 19:40	09/29/2023 19:40	40100		1750	2500	250	ug/L	RJB
Benzene	02	71-43-2	SW8260D	09/29/2023 19:40	09/29/2023 19:40	468		100	250	250	ug/L	RJB
Ethylbenzene	02	100-41-4	SW8260D	09/29/2023 19:40	09/29/2023 19:40	BLOD		100	250	250	ug/L	RJB
m+p-Xylenes	02	179601-23-1	SW8260D	09/29/2023 19:40	09/29/2023 19:40	BLOD		150	500	250	ug/L	RJB
o-Xylene	02	95-47-6	SW8260D	09/29/2023 19:40	09/29/2023 19:40	BLOD		100	250	250	ug/L	RJB
Toluene	02	108-88-3	SW8260D	09/29/2023 19:40	09/29/2023 19:40	BLOD		125	250	250	ug/L	RJB
Xylenes, Total	02	1330-20-7	SW8260D	09/29/2023 19:40	09/29/2023 19:40	BLOD		250	750	250	ug/L	RJB
Tetrahydrofuran	02	109-99-9	SW8260D	09/29/2023 19:40	09/29/2023 19:40	BLOD		2500	2500	250	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	*02*		*108 %*	*70-120*	*09/29/2023 19:40*	*09/29/2023 19:40*						
Surr: 4-Bromofluorobenzene (Surr)	*02*		*95.9 %*	*75-120*	*09/29/2023 19:40*	*09/29/2023 19:40*						
Surr: Dibromofluoromethane (Surr)	*02*		*94.6 %*	*70-130*	*09/29/2023 19:40*	*09/29/2023 19:40*						
Surr: Toluene-d8 (Surr)	*02*		*95.7 %*	*70-130*	*09/29/2023 19:40*	*09/29/2023 19:40*						

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Client Sample ID: **Trip Blank** **Laboratory Sample ID:** **23I1456-03**

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)	03	78-93-3	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		3.00	10.0	1	ug/L	RJB
Acetone	03	67-64-1	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		7.00	10.0	1	ug/L	RJB
Benzene	03	71-43-2	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		0.40	1.00	1	ug/L	RJB
Ethylbenzene	03	100-41-4	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		0.40	1.00	1	ug/L	RJB
m+p-Xylenes	03	179601-23-1	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		0.60	2.00	1	ug/L	RJB
o-Xylene	03	95-47-6	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		0.40	1.00	1	ug/L	RJB
Toluene	03	108-88-3	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		0.50	1.00	1	ug/L	RJB
Xylenes, Total	03	1330-20-7	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		1.00	3.00	1	ug/L	RJB
Tetrahydrofuran	03	109-99-9	SW8260D	09/29/2023 13:43	09/29/2023 13:43	BLOD		10.0	10.0	1	ug/L	RJB
Surr: 1,2-Dichloroethane-d4 (Surr)	*03*	*108 %*	*70-120*	*09/29/2023 13:43*	*09/29/2023 13:43*							
Surr: 4-Bromofluorobenzene (Surr)	*03*	*95.5 %*	*75-120*	*09/29/2023 13:43*	*09/29/2023 13:43*							
Surr: Dibromofluoromethane (Surr)	*03*	*95.3 %*	*70-130*	*09/29/2023 13:43*	*09/29/2023 13:43*							
Surr: Toluene-d8 (Surr)	*03*	*96.6 %*	*70-130*	*09/29/2023 13:43*	*09/29/2023 13:43*							

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

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 BGI1164 - SW5030B-MS										
Blank (BGI1164-BLK1)				Prepared & Analyzed: 09/29/2023						
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							
m+p-Xylenes	ND	2.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*50.9*		ug/L	*50.0*		*102*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*46.8*		ug/L	*50.0*		*93.5*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.1*		ug/L	*50.0*		*94.1*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.6*		ug/L	*50.0*		*97.2*	*70-130*			
LCS (BGI1164-BS1)				Prepared & Analyzed: 09/29/2023						
1,1,1,2-Tetrachloroethane	51.5	0.4	ug/L	50.0		103	80-130			
1,1,1-Trichloroethane	46.7	1	ug/L	50.0		93.4	65-130			
1,1,2,2-Tetrachloroethane	46.2	0.4	ug/L	50.0		92.3	65-130			
1,1,2-Trichloroethane	50.5	1	ug/L	50.0		101	75-125			
1,1-Dichloroethane	43.7	1	ug/L	50.0		87.4	70-135			
1,1-Dichloroethylene	46.6	1	ug/L	50.0		93.2	70-130			
1,1-Dichloropropene	44.8	1	ug/L	50.0		89.7	75-135			
1,2,3-Trichlorobenzene	42.6	1	ug/L	50.0		85.2	55-140			
1,2,3-Trichloropropane	47.2	1	ug/L	50.0		94.4	75-125			
1,2,4-Trichlorobenzene	51.9	1	ug/L	50.0		104	65-135			
1,2,4-Trimethylbenzene	49.2	1	ug/L	50.0		98.5	75-130			

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

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 BGI1164 - SW5030B-MS										
LCS (BGI1164-BS1)				Prepared & Analyzed: 09/29/2023						
1,2-Dibromo-3-chloropropane (DBCP)	37.8	1	ug/L	50.0		75.6	50-130			
1,2-Dibromoethane (EDB)	49.4	1	ug/L	50.0		98.9	80-120			
1,2-Dichlorobenzene	53.0	0.5	ug/L	50.0		106	70-120			
1,2-Dichloroethane	39.8	1	ug/L	50.0		79.6	70-130			
1,2-Dichloropropane	48.1	0.5	ug/L	50.0		96.1	75-125			
1,3,5-Trimethylbenzene	46.6	1	ug/L	50.0		93.2	75-125			
1,3-Dichlorobenzene	54.1	1	ug/L	50.0		108	75-125			
1,3-Dichloropropane	48.4	1	ug/L	50.0		96.8	75-125			
1,4-Dichlorobenzene	54.4	1	ug/L	50.0		109	75-125			
2,2-Dichloropropane	44.5	1	ug/L	50.0		89.0	70-135			
2-Butanone (MEK)	39.3	10	ug/L	50.0		78.6	30-150			
2-Chlorotoluene	48.1	1	ug/L	50.0		96.2	75-125			
2-Hexanone (MBK)	38.5	5	ug/L	50.0		77.0	55-130			
4-Chlorotoluene	49.8	1	ug/L	50.0		99.6	75-130			
4-Isopropyltoluene	54.2	1	ug/L	50.0		108	75-130			
4-Methyl-2-pentanone (MIBK)	41.2	5	ug/L	50.0		82.4	60-135			
Acetone	35.3	10	ug/L	50.0		70.6	40-140			
Benzene	47.3	1	ug/L	50.0		94.6	80-120			
Bromobenzene	56.4	1	ug/L	50.0		113	75-125			
Bromochloromethane	49.2	1	ug/L	50.0		98.4	65-130			
Bromodichloromethane	47.0	0.5	ug/L	50.0		93.9	75-120			
Bromoform	44.3	1	ug/L	50.0		88.6	70-130			
Bromomethane	52.0	1	ug/L	50.0		104	30-145			
Carbon disulfide	35.1	10	ug/L	50.0		70.3	35-160			
Carbon tetrachloride	34.2	1	ug/L	50.0		68.5	65-140			

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

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 BGI1164 - SW5030B-MS										
LCS (BGI1164-BS1)				Prepared & Analyzed: 09/29/2023						
Chlorobenzene	53.2	1	ug/L	50.0		106	80-120			
Chloroethane	36.7	1	ug/L	50.0		73.4	60-135			
Chloroform	46.3	0.5	ug/L	50.0		92.6	65-135			
Chloromethane	42.4	1	ug/L	50.0		84.9	40-125			
cis-1,2-Dichloroethylene	43.4	1	ug/L	50.0		86.9	70-125			
cis-1,3-Dichloropropene	51.6	1	ug/L	50.0		103	70-130			
Dibromochloromethane	48.4	0.5	ug/L	50.0		96.8	60-135			
Dibromomethane	52.6	1	ug/L	50.0		105	75-125			
Dichlorodifluoromethane	54.3	1	ug/L	50.0		109	30-155			
Ethylbenzene	49.5	1	ug/L	50.0		98.9	75-125			
Hexachlorobutadiene	54.1	0.8	ug/L	50.0		108	50-140			
Isopropylbenzene	48.6	1	ug/L	50.0		97.1	75-125			
m+p-Xylenes	99.2	2	ug/L	100		99.2	75-130			
Methylene chloride	47.4	4	ug/L	50.0		94.7	55-140			
Methyl-t-butyl ether (MTBE)	40.3	1	ug/L	50.0		80.5	65-125			
Naphthalene	43.9	1	ug/L	50.0		87.7	55-140			
n-Butylbenzene	54.3	1	ug/L	50.0		109	70-135			
n-Propylbenzene	48.5	1	ug/L	50.0		97.0	70-130			
o-Xylene	50.5	1	ug/L	50.0		101	80-120			
sec-Butylbenzene	53.2	1	ug/L	50.0		106	70-125			
Styrene	51.4	1	ug/L	50.0		103	65-135			
tert-Butylbenzene	49.1	1	ug/L	50.0		98.2	70-130			
Tetrachloroethylene (PCE)	54.1	1	ug/L	50.0		108	45-150			
Toluene	49.1	1	ug/L	50.0		98.3	75-120			
trans-1,2-Dichloroethylene	44.1	1	ug/L	50.0		88.1	60-140			

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
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 BGI1164 - SW5030B-MS										
LCS (BGI1164-BS1)				Prepared & Analyzed: 09/29/2023						
trans-1,3-Dichloropropene	55.4	1	ug/L	50.0		111	55-140			
Trichloroethylene	51.0	1	ug/L	50.0		102	70-125			
Trichlorofluoromethane	44.0	1	ug/L	50.0		87.9	60-145			
Vinyl chloride	43.8	0.5	ug/L	50.0		87.6	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*55.6*		ug/L	*50.0*		*111*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.4*		ug/L	*50.0*		*98.7*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*45.7*		ug/L	*50.0*		*91.4*	*70-130*			
Surr: Toluene-d8 (Surr)	*47.6*		ug/L	*50.0*		*95.3*	*70-130*			
Duplicate (BGI1164-DUP1)	**Source: 23I1518-01**			Prepared & Analyzed: 09/29/2023						
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	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	

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
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 BGI1164 - SW5030B-MS										
Duplicate (BGI1164-DUP1)	**Source: 23I1518-01**			Prepared & Analyzed: 09/29/2023						
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	
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	

ENTHALPY ANALYTICAL

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
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 BGI1164 - SW5030B-MS										
Duplicate (BGI1164-DUP1)		**Source: 23I1518-01**		Prepared & Analyzed: 09/29/2023						
cis-1,2-Dichloroethylene	0.74	1.00	ug/L		0.90			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)	28.3	5.00	ug/L		26.8			5.26	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)	61.9	1.00	ug/L		62.3			0.741	30	
Naphthalene	ND	1.00	ug/L		BLOD			NA	30	
n-Butylbenzene	ND	1.00	ug/L		BLOD			NA	30	
n-Propylbenzene	0.69	1.00	ug/L		0.57			NA	30	
o-Xylene	ND	1.00	ug/L		BLOD			NA	30	
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	ND	1.00	ug/L		BLOD			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	2.40	1.00	ug/L		2.84			16.8	30	

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
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 BGI1164 - SW5030B-MS										
Duplicate (BGI1164-DUP1)	**Source: 23I1518-01**			Prepared & Analyzed: 09/29/2023						
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)	*54.9*		ug/L	*50.0*		*110*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*48.2*		ug/L	*50.0*		*96.5*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.4*		ug/L	*50.0*		*94.9*	*70-130*			
Surr: Toluene-d8 (Surr)	*48.5*		ug/L	*50.0*		*97.0*	*70-130*			
Matrix Spike (BGI1164-MS1)	**Source: 23I1448-32**			Prepared & Analyzed: 09/29/2023						
1,1,1,2-Tetrachloroethane	48.6	0.4	ug/L	50.0	BLOD	97.1	80-130			
1,1,1-Trichloroethane	48.3	1	ug/L	50.0	BLOD	96.5	65-130			
1,1,2,2-Tetrachloroethane	47.3	0.4	ug/L	50.0	BLOD	94.6	65-130			
1,1,2-Trichloroethane	54.0	1	ug/L	50.0	BLOD	108	75-125			
1,1-Dichloroethane	44.2	1	ug/L	50.0	BLOD	88.3	70-135			
1,1-Dichloroethylene	51.0	1	ug/L	50.0	BLOD	102	50-145			
1,1-Dichloropropene	46.9	1	ug/L	50.0	BLOD	93.8	75-135			
1,2,3-Trichlorobenzene	55.1	1	ug/L	50.0	BLOD	110	55-140			
1,2,3-Trichloropropane	48.4	1	ug/L	50.0	BLOD	96.8	75-125			
1,2,4-Trichlorobenzene	58.0	1	ug/L	50.0	BLOD	116	65-135			
1,2,4-Trimethylbenzene	50.9	1	ug/L	50.0	BLOD	102	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	44.7	1	ug/L	50.0	BLOD	89.4	50-130			
1,2-Dibromoethane (EDB)	49.6	1	ug/L	50.0	BLOD	99.2	80-120			
1,2-Dichlorobenzene	53.8	0.5	ug/L	50.0	BLOD	108	70-120			

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

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 BGI1164 - SW5030B-MS										
Matrix Spike (BGI1164-MS1)	**Source: 23I1448-32**			Prepared & Analyzed: 09/29/2023						
1,2-Dichloroethane	40.5	1	ug/L	50.0	BLOD	81.1	70-130			
1,2-Dichloropropane	50.4	0.5	ug/L	50.0	BLOD	101	75-125			
1,3,5-Trimethylbenzene	46.7	1	ug/L	50.0	BLOD	93.5	75-124			
1,3-Dichlorobenzene	55.5	1	ug/L	50.0	BLOD	111	75-125			
1,3-Dichloropropane	50.5	1	ug/L	50.0	BLOD	101	75-125			
1,4-Dichlorobenzene	56.2	1	ug/L	50.0	BLOD	112	75-125			
2,2-Dichloropropane	44.0	1	ug/L	50.0	BLOD	88.0	70-135			
2-Butanone (MEK)	41.4	10	ug/L	50.0	BLOD	82.9	30-150			
2-Chlorotoluene	49.9	1	ug/L	50.0	BLOD	99.8	75-125			
2-Hexanone (MBK)	38.1	5	ug/L	50.0	BLOD	76.2	55-130			
4-Chlorotoluene	50.4	1	ug/L	50.0	BLOD	101	75-130			
4-Isopropyltoluene	55.0	1	ug/L	50.0	BLOD	110	75-130			
4-Methyl-2-pentanone (MIBK)	42.0	5	ug/L	50.0	BLOD	84.0	60-135			
Acetone	35.3	10	ug/L	50.0	BLOD	60.7	40-140			
Benzene	48.4	1	ug/L	50.0	BLOD	96.8	80-120			
Bromobenzene	55.6	1	ug/L	50.0	BLOD	111	75-125			
Bromochloromethane	50.3	1	ug/L	50.0	BLOD	101	65-130			
Bromodichloromethane	47.1	0.5	ug/L	50.0	BLOD	94.2	75-136			
Bromoform	41.4	1	ug/L	50.0	BLOD	82.8	70-130			
Bromomethane	51.9	1	ug/L	50.0	BLOD	104	30-145			
Carbon disulfide	33.1	10	ug/L	50.0	BLOD	66.1	35-160			
Carbon tetrachloride	27.3	1	ug/L	50.0	BLOD	54.7	65-140			M
Chlorobenzene	52.7	1	ug/L	50.0	BLOD	105	80-120			
Chloroethane	38.3	1	ug/L	50.0	BLOD	76.6	60-135			
Chloroform	47.9	0.5	ug/L	50.0	BLOD	95.8	65-135			

ENTHALPY ANALYTICAL

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

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 BGI1164 - SW5030B-MS										
Matrix Spike (BGI1164-MS1)	**Source: 23I1448-32**			Prepared & Analyzed: 09/29/2023						
Chloromethane	43.4	1	ug/L	50.0	BLOD	86.8	40-125			
cis-1,2-Dichloroethylene	45.4	1	ug/L	50.0	BLOD	90.8	70-125			
cis-1,3-Dichloropropene	51.1	1	ug/L	50.0	BLOD	102	47-136			
Dibromochloromethane	45.9	0.5	ug/L	50.0	BLOD	91.7	60-135			
Dibromomethane	53.9	1	ug/L	50.0	BLOD	108	75-125			
Dichlorodifluoromethane	61.6	1	ug/L	50.0	BLOD	123	30-155			
Ethylbenzene	49.0	1	ug/L	50.0	BLOD	98.0	75-125			
Hexachlorobutadiene	60.5	0.8	ug/L	50.0	BLOD	121	50-140			
Isopropylbenzene	48.4	1	ug/L	50.0	BLOD	96.8	75-125			
m+p-Xylenes	97.3	2	ug/L	100	BLOD	97.3	75-130			
Methylene chloride	49.0	4	ug/L	50.0	BLOD	95.6	55-140			
Methyl-t-butyl ether (MTBE)	42.2	1	ug/L	50.0	BLOD	84.4	65-125			
Naphthalene	58.0	1	ug/L	50.0	BLOD	116	55-140			
n-Butylbenzene	54.8	1	ug/L	50.0	BLOD	110	70-135			
n-Propylbenzene	50.2	1	ug/L	50.0	BLOD	100	70-130			
o-Xylene	49.9	1	ug/L	50.0	BLOD	99.9	80-120			
sec-Butylbenzene	55.1	1	ug/L	50.0	BLOD	110	70-125			
Styrene	50.9	1	ug/L	50.0	BLOD	102	65-135			
tert-Butylbenzene	50.1	1	ug/L	50.0	BLOD	100	70-130			
Tetrachloroethylene (PCE)	54.7	1	ug/L	50.0	2.43	105	51-231			
Toluene	50.7	1	ug/L	50.0	BLOD	101	75-120			
trans-1,2-Dichloroethylene	46.4	1	ug/L	50.0	BLOD	92.8	60-140			
trans-1,3-Dichloropropene	56.9	1	ug/L	50.0	BLOD	114	55-140			
Trichloroethylene	54.6	1	ug/L	50.0	BLOD	109	70-125			
Trichlorofluoromethane	47.9	1	ug/L	50.0	BLOD	95.8	60-145			

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
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 BGI1164 - SW5030B-MS										
Matrix Spike (BGI1164-MS1)	**Source: 23I1448-32**			Prepared & Analyzed: 09/29/2023						
Vinyl chloride	43.9	0.5	ug/L	50.0	BLOD	87.8	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*53.6*		ug/L	*50.0*		*107*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*47.4*		ug/L	*50.0*		*94.8*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*45.0*		ug/L	*50.0*		*89.9*	*70-130*			
Surr: Toluene-d8 (Surr)	*47.9*		ug/L	*50.0*		*95.7*	*70-130*			

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGI1127 - No Prep Wet Chem										
Blank (BGI1127-BLK1)				Prepared & Analyzed: 09/28/2023						
Nitrite as N	ND	0.05	mg/L							
LCS (BGI1127-BS1)				Prepared & Analyzed: 09/28/2023						
Nitrite as N	0.10	0.05	mg/L	0.100		100	80-120			
Matrix Spike (BGI1127-MS1)	**Source: 23I1376-02**			Prepared & Analyzed: 09/28/2023						
Nitrite as N	0.09	0.05	mg/L	0.100	BLOD	88.0	80-120			
Matrix Spike (BGI1127-MS2)	**Source: 23I1457-01**			Prepared & Analyzed: 09/28/2023						
Nitrite as N	0.08	0.05	mg/L	0.100	BLOD	84.0	80-120			
Matrix Spike Dup (BGI1127-MSD1)	**Source: 23I1376-02**			Prepared & Analyzed: 09/28/2023						
Nitrite as N	0.09	0.05	mg/L	0.100	BLOD	88.0	80-120	0.00	20	
Matrix Spike Dup (BGI1127-MSD2)	**Source: 23I1457-01**			Prepared & Analyzed: 09/28/2023						
Nitrite as N	0.08	0.05	mg/L	0.100	BLOD	85.0	80-120	1.18	20	

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Analytical Summary

23I1456-01		SM4500-NO3F-2016
23I1456-02		SM4500-NO3F-2016

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
23I1456-01	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177
23I1456-02	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
23I1456-01	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
23I1456-02	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
23I1456-03	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
BGI1127-BLK1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177
BGI1127-BS1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177
BGI1127-MRL1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177
BGI1127-MS1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177
BGI1127-MS2	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177
BGI1127-MSD1	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177
BGI1127-MSD2	25.0 mL / 25.0 mL	SM4500-NO2B-2011	BGI1127	SGI1021	AD30177

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
BGI1164-BLK1	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
BGI1164-BLK2	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
BGI1164-BS1	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
BGI1164-BS2	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
BGI1164-DUP1	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
BGI1164-MRL1	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265
BGI1164-MS1	5.00 mL / 5.00 mL	SW8260D	BGI1164	SGJ0004	AE30265

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

Certified Analyses included in this Report

Analyte	Certifications
SW8260D in Non-Potable Water	
2-Butanone (MEK)	VELAP,NCDEQ,PADEP,WVDEP
Acetone	VELAP,NCDEQ,PADEP,WVDEP
Benzene	VELAP,NCDEQ,PADEP,WVDEP
Ethylbenzene	VELAP,NCDEQ,PADEP,WVDEP
m+p-Xylenes	VELAP,NCDEQ,PADEP,WVDEP
o-Xylene	VELAP,NCDEQ,PADEP,WVDEP
Toluene	VELAP,NCDEQ,PADEP,WVDEP
Xylenes, Total	VELAP,NCDEQ,PADEP,WVDEP
Tetrahydrofuran	VELAP,PADEP

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2023
NC	North Carolina DENR	495	12/31/2023
NCDEQ	North Carolina DEQ	495	12/31/2023
NCDOH	North Carolina Department of Health	51714	07/31/2024
NYDOH	New York DOH Drinking Water	12069	04/01/2024
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
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	11/30/2023

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

Qualifiers and Definitions

J	The reported result is an estimated value.
M	Matrix spike recovery is outside established acceptance limits
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
formerly Air, Water & Soil Laboratories

1941 Reymet Rd
Richmond, VA 23237
(804) 358-8295 PHONE
(804)358-8297 FAX

CHAIN OF CUSTODY

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: 23-09 Bristol LFG - EW
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER:
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676 EMAIL: Jrobb@scsengineers.com		Pretreatment Program:
Is sample for compliance reporting? YES Va	Is sample from a chlorinated supply? YES NO	PWS I.D. #:
SAMPLER NAME (PRINT): A. Minnich W. Fabrize	SAMPLER SIGNATURE:	Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste 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	ANALYSIS / (PRESERVATIVE): VOCs (Acetone, Benzene, EB, MEK, THF, Toluene, Xylene)	VFAs	Phenolics	Metals 6020 (Ag, As, Ba, Cd, Cr, Cu, Ni, Pb, Se, Zn, Hg)	TKN, Nitrate (Cd), Nitrite	COD, Ammonia	SVOC (Anthracene only)	BOD	Cyanide	COMMENTS
1) EW-7B	X					092623	1245		GW	13	X	X	X	X	X	X	X	X	X	BOD has 48hr hold time
2) EW-52	X					092623	1340		GW	13	X	X	X	X	X	X	X	X	X	
3) Trip Blank	X					092023	1335		DI	2	X									
4)																				
5)																				
6)																				Rec received 2/1
7)																				
8)																				
9)																				
10)																				

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

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
	092723/1100	LCW	
LCW			9/28/23 0800

QC Data Package — LAB USE ONLY — COOLER TEMP 1.1 °C

Level I
Level II
Level III
Level IV

SCS-W **2311456**
23-07 Bristol LFG-EW
Recd: 09/28/2023 Due: 10/12/2023

v130325002

ENTHALPY ANALYTICAL

Sample Preservation Log

Order ID 23I1456 Date Performed: 9/28/23 Analyst Performing Check: CSB

Sample ID	Container ID	Metals pH as Received <2	Metals pH as Received Other	Metals Final pH	Cyanide pH as Received >12	Cyanide pH as Received Other	Cyanide Final pH	Sulfide pH as Received >9	Sulfide pH as Received Other	Sulfide Final pH	Ammonia pH as Received <2	Ammonia pH as Received Other	Ammonia Final pH	TKN pH as Received <2	TKN pH as Received Other	TKN Final pH	Phos, Tot pH as Received <2	Phos, Tot pH as Received Other	Phos, Tot Final pH	NO3+NO2 pH as Received <2	NO3+NO2 pH as Received Other	NO3+NO2 Final pH	DRO pH as Received <2	DRO pH as Received Other	DRO Final pH	Pesticide (8081/608/508) PCB DW only Received Res. Cl +	Pesticide Received Res. Cl -	Pesticide final + or -	SVOC (525/8270/625) Received Res. Cl +	SVOC Received Res. Cl -	SVOC final + or -	CrVI * ** Received pH	CrVI Final pH	Pest/PCB (508) / SVOC(525) pH as Received <2	Pest/PCB (508) / SVOC(525) pH as Received Other	Pest/PCB (508) / SVOC(525) Final pH	COD pH as Received <2	COD pH as Received Other	COD Final pH	Phenolics pH as Received <2	Phenolics pH as Received Other	Phenolics Final pH
1	A		9	<2																																							
1	B											8	<2		8	<2					8	<2																			8	<2			
1	E																																										8	<2
1	F																													—														
1	M					10	7/2																																					
2	A		5	<2																																							
2	B											5	<2		5	<2					5	<2																			5	<2			
2	E																																										5	<2
2	F																													—														
2	M					6	7/2																																					

NaOH ID: 2H00468 HNO3 ID: 3H04374 CrVI preserved date/time: Analyst Initials:

*pH must be adjusted between 9.3 - 9.7

H2SO4 ID: 3I03139 Na2S2O3 ID: Ammonia Buffer Sol'n ID:

HCL ID: Na2SO3 ID: 5N NaOH ID:

Metals were received with pH = 9,5 HNO3 was added on 28 Sep 2023 at 1020 by CSB 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.

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

ENTHALPY ANALYTICAL

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

Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Date Issued: 10/3/2023 11:24:23AM

Laboratory Order ID: 23I1456

Sample Conditions Checklist

Samples Received at:	**1.10°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?	Yes
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

*NaOH-preserved containers for both samples were received with a pH less than 12, and NaOH was added to bring the pH to greater than 12.
*H2SO4-preserved containers were received with a pH greater than 2, and H2SO4 was added to bring the pH to less than 2.

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: 10/3/2023 11:24:23AM
Client Site I.D.: 23-09 Bristol LFG - EW
Submitted To: Jennifer Robb

Jennifer Robb notified via email. MRS 09/28/23 1628

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	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**	---	---	---	**1500**	---	---	---	---	**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
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																
Nitrate+Nitrite as N (mg/L)	November-2022	---	---	---	---	---	**2.91**	---	**0.16**	---	**0.33**	---	---	---	---	---	0.1	0.1
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																
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
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
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	EW-94	EW-98	LOD	LOQ
Parameter	Monitoring Event	Concentration																
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
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	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
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																
VOLATILE FATTY ACIDS mg/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
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
Lactic Acid	November-2022	---	---	---	---	---	---	---	ND	---	---	---	---	---	---	---	11	100
		---	---	---	---	---	ND	---	---	---	ND	---	---	---	---	---	27	250
	December-2022	**90 J**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	27	250
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
Pyruvic Acid	November-2022	---	---	---	---	---	---	---	**46 J**	---	---	---	---	---	---	---	12	100
		---	---	---	---	---	**98 J**	---	---	---	ND	---	---	---	---	---	30	250
	December-2022	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	30	250

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	EW-94	EW-98	LOD	LOQ
Parameter	**Monitoring Event**	**Concentration**																
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-54	EW-57	EW-58	EW-59	EW-60	EW-61	EW-64	EW-65	EW-67	EW-68	EW-78	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

--- = 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

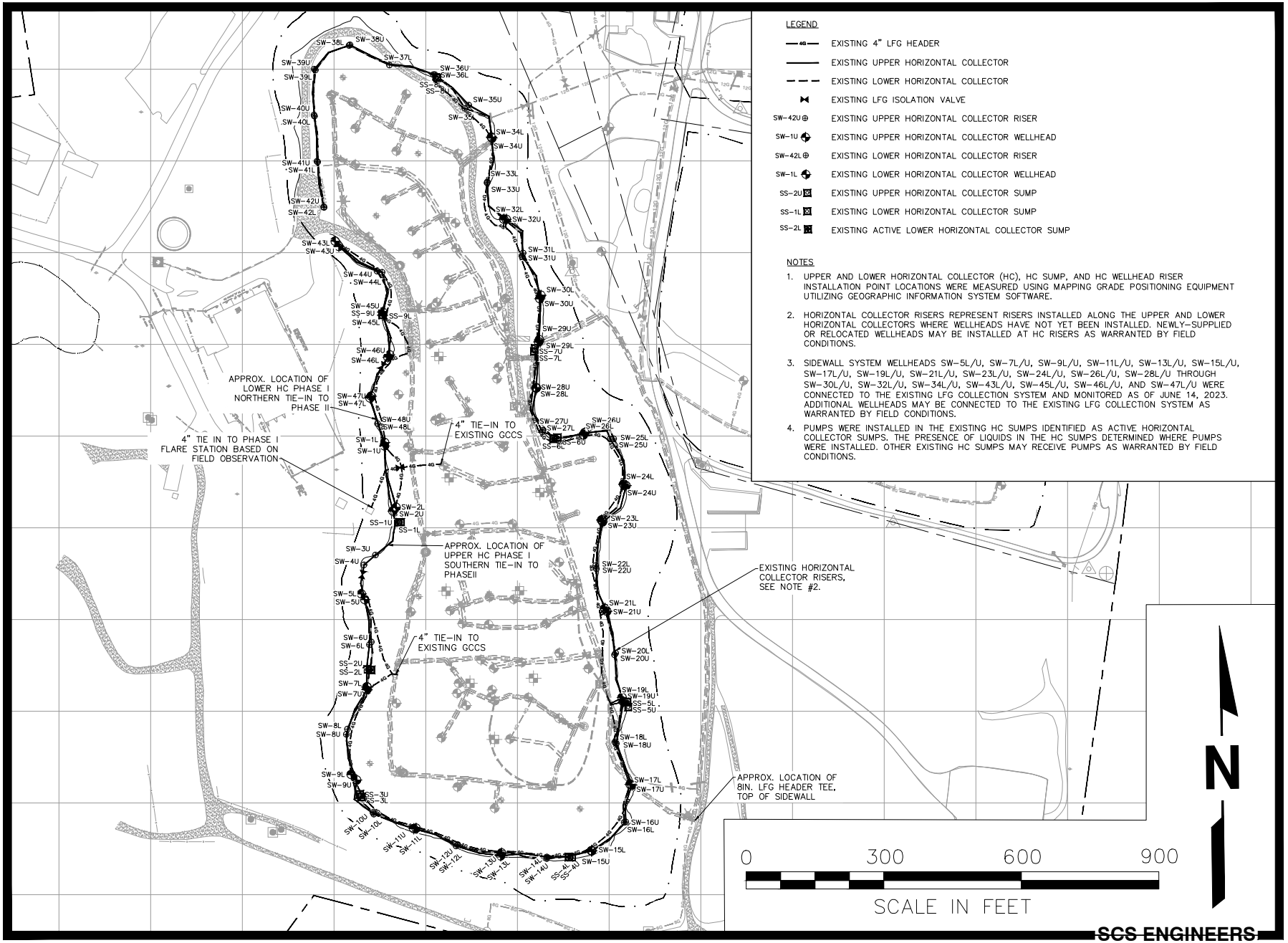
ND = Not Detected

ug/L = micrograms per liter

Appendix G

Sidewall Odor Mitigation System Progress Drawings

DRAWN BY: HGW DATE: 10/5/23 FILE NAME: 02218208.11



SIDEWALL ODOR MITIGATION SYSTEM APPROXIMATE AS-BUILT LOCATIONS