February
Monthly Compliance Report

Solid Waste Permit #588
Bristol Integrated Solid Waste Management Facility
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SCS ENGINEERS

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INTRODUCTION

On behalf of the City of Bristol, Virginia (City), SCS Engineers has prepared this report to the Virginia Department of Environmental Quality (VDEQ) in accordance with item 8.iii in Appendix A of the Consent Decree between the City and VDEQ. This report covers the Solid Waste Permit #588 landfill during the month of February.

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

In addition to standard regulatory quarterly surface emissions monitoring, SCS performed additional surface emissions monitoring on February 7, 2023, February 15, 2023, February 23, 2023 and February 28, 2023. These Weekly Surface Emissions Monitoring (SEM) Events were performed in accordance with Section 3.5 of the Plan of Action in Response to the Expert Panel Report, submitted to VDEQ on July 6, 2022.

The monitoring in February 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 outside of the active filling area.

SCS submitted letters to VDEQ outlining the results of the February monitoring events on February 15, 2023, February 22, 2023, March 1, 2023, and March 8, 2023. Copies of those submittals are included in Appendix A. Table 1 summarizes the results of the four monitoring events in February.

Table 1. Summary of December Surface Emissions Monitoring

Description	February 7, 2023	February 15, 2023	February 23, 2023	February 28, 2023
Number of Points Sampled	149	149	149	149
Number of Points in Serpentine Route	100	100	100	100
Number of Points at Surface Cover Penetrations	49	49	49	49
Number of Exceedances	0	0	0	0
Number of Serpentine Exceedances	0	0	0	0

Description	February 7, 2023	February 15, 2023	February 23, 2023	February 28, 2023
Number of Pipe Penetration Exceedances	0	0	0	0

Out of the 596 recorded points monitored as part of the four February monitoring events, no exceedances were found.

1.1.2 Leachate Collection Emissions

SCS Field Services (SCS-FS) visited the Bristol Landfill on February 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 SCS-FS's summary report for the month of February dated March 7, 2023. A copy of this report is included in Appendix B. The monitoring data for the clean-outs at the southern end of the landfill are listed as LC01 – LC10. The monitoring data for the clean-outs at the northern end of the landfill are listed as NC01 – NC10. Table 2 presents the cleanout pipe identification labeling convention, which is based on site records and review of correspondence.

Table 2. Cleanout Pipe Identification

Northern Cleanouts		Southern Cleanouts	
ID #	Description	ID #	Description
NC01	Leachate East	LC01	Gradient West
NC02	Leachate Center	LC02	Gradient East
NC03	Leachate West	LC03	Leachate Center
NC04	Witness East	LC04	Witness East
NC05	Witness Center	LC05	Leachate West
NC06	Witness West	LC06	Gradient Center West
NC07	Gradient East	LC07	Leachate East
NC08	Gradient Center East	LC08	Gradient Center East
NC09	Gradient Center West	LC09	Leachate West
NC10	Gradient West	LC10	Witness Center

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 SCS-FS's summary report for the month of February.

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 well-heads. 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. As outlined in the November Monthly Compliance Report for the SWP #588 Landfill the system is currently undergoing commissioning. Following a review of the initial data from the sensors, SCS concluded that a longer probe length would likely provide more representative measurement of the well-head gas temperatures, with less interference from ambient temperatures.

On January 6, 2023, SCS replaced the existing wellhead temperature sensors on Well #51 and Well #68 with the longer (2 inches) sensors. SCS reviewed the data from these sensors and noted improved precision of the measurements. During the week of February 27, 2023 SCS replaced the 1-inch temperature sensors in 23 wells with 2-inch temperature sensors. SCS will collect data during the month of March and compare the data collected with measurements taken using field instrumentation.

Despite the system still being subject to ongoing commissioning, the City began sharing data with VDEQ on a daily basis per the Department's request. This reporting began with the November 30, 2022 data which was submitted on December 1, 2022. Daily averages for each wellhead are reported to the Department the following day. A report with the daily temperature data is included as Appendix C. The system is still in the commissioning phase, and caution should be used when making any interpretations based on the data in this report.

The well-head on Well 67 was replaced during the month of February. The sensor on Well 67 is currently not functional and data reported does not reflect field conditions. SCS will take steps during the month of March to reconnect the sensor on Well 67.

1.4 LARGE-DIAMETER DUAL-PHASE EXTRACTION WELLS

SCS completed design work on an expansion of the existing GCCS during the month of December. 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 has commenced solicitation of contractor's bids for this project by advertising for bids on December 12, 2022 and conducting the Pre-bid Meeting on December 16, 2022. The contractor's bids were due to the City on January 12, 2023. The City 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.

Following award of the bid, SCS reviewed the design of the Large Diameter Dual-Phase Extraction Wells and compared the proposed expansion to other proposed designs and field data including:

- The anticipated footprint of the Sidewall Odor Mitigation System Project (Refer to Sections 2.2 and 2.3)
- The anticipated waste grades that would result from grading associated with the EVOH Deployment Plan (Refer to Section 6.2)
- Waste Temperature Data Collected from In Waste Temperature Sensors (Refer to Section 3.2)

Based on SCS's review, modifications were made to the drawings and project manual. Modifications included the following:

- Revised well locations to avoid conflicts between well locations and future projects.
- Changes to perforation depths based on future grading.

- Specified stainless steel instead of chlorinated polyvinyl chloride (CPVC) for well casings to accommodate higher waste temperatures.

- Changes to wellhead design to improve access to liquid pumps.

- Changes to specified pumps and tubing to accommodate higher than expected temperatures.

- Decrease in depth of proposed pump locations to reduce clogging of pumps.

In addition to these changes, SCS identified concerns associated with the weight of steel casings required to construct gas wells with a 12–inch diameter that will perform at the high temperatures anticipated. Individual lengths of steel casing may weigh as much as 5 tons, which SCS concluded would present significant challenges during installation and concerns about the weight would impact the long term viability of the wells. As an alternative, SCS proposed using 8-inch diameter casings instead of the 12-diameter casings, but keep the overall diameter of the borehole the same. This change is not anticipated to have a measurable impact on the performance of the large diameter dual-phase extraction wells.

SCS conveyed these concerns and suggested modifications to casing diameter to VDEQ during a conference call on February 13, 2023. SCS's Senior Vice President, Robert E. Dick prepared a declaration that addressed this change in detail and submitted it to VDEQ on February 27, 2023. A copy of that declaration is included in Appendix D.

1.5 VDEQ CONCURRENCE ON WELLS

The City has engaged with VDEQ in discussions about the proposed approach for landfill GCCS improvements and expansions. Discussions held between SCS, the City, and VDEQ include the following:

- October 27, 2022. SCS provided VDEQ with an overview of the proposed GCCS expansion design outlined in Section 1.4. on

- December 31, 2022. SCS submitted the design of the landfill GCCS expansion to VDEQ

- February 13, 2023. SCS and the City presented proposed changes to casing materials and diameters to VDEQ

The City and SCS intend to continue engaging with the Department throughout the design and installation process. The City intends to delay installation of temporary or final cover systems until the City and VDEQ agree that the GCCS is sufficient.

2.0 SIDEWALL ODOR MITIGATION

The City has initiated design and construction work to address fugitive emissions emanating from the quarry sidewalls. Specific aspects of the proposed design features are outlined in the following sections.

2.1 PERIMETER GAS COLLECTION SYSTEM

SCS's design of the GCCS expansion outlined in Section 1.5 includes perimeter LFG wells. These wells will be placed 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. SCS submitted the final design, which includes these wells, to VDEQ on December 31, 2022. The City moved forward with advertising for and selecting a contractor for GCCS expansion. The advertisement for bids was issued by the City on December 12, 2022; the Pre-bid meeting was held on December 16, 2022; and bids were received on January 12, 2023 (note: only one bid was received from SCS Field Services Construction (SCS-CONS). On January 26, 2023 the City awarded the project to SCS-CONS.

Similar to the review that was discussed in Section 1.4, SCS reviewed the design documents and compared the perimeter gas collection system to other proposed designs and field data including:

- The anticipated footprint of the Sidewall Odor Mitigation System Project (Refer to Sections 2.2 and 2.3)
- The anticipated waste grades that would result from grading associated with the EVOH Deployment Plan (Refer to Section 6.2)
- Waste Temperature Data Collected from In Waste Temperature Sensors (Refer to Section 3.2)

Based on SCS's review, modifications were made to the drawings and project manual. Modifications included the following:

- Revised well locations to avoid conflicts between well locations and future projects.
- Changes to perforation depths based on future grading.
- Specified the use of CPVC in place of polyvinyl chloride (PVC) for well casing to accommodate higher temperatures.
- The addition of pumps to 4 wells that will be deeper based on revised locations.
- Changes to specified pumps and tubing to accommodate higher than expected temperatures.
- Decrease in depth of proposed pump locations to reduce clogging of pumps.
- Inclusion of supplemental stainless steel casing materials to be available on standby if waste temperatures encountered warrant additional change in materials.

SCS developed a schedule based on discussions with the contractor regarding the availability and lead times associated with procurement of materials required to construct the perimeter gas collection system. This schedule extended beyond the proposed schedule for the perimeter gas collection system outlined in the Consent Decree. SCS' Senior Vice President, Robert E. Dick prepared a declaration that addressed this scheduling concern and submitted it to VDEQ on February 27, 2023. A copy of that declaration is included in Appendix E.

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. 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 system 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. Phase 1 is considered the pilot system portion of the SOMS. Substantial completion was determined as a point at which the system could begin testing and operation. SCS submitted a design engineer certification to VDEQ on February 10, 2023 that documented the substantial completion of Phase 1 of the SOMS. A copy of that certification is included in Appendix G.

Phase 1 was initially connected to an auxiliary flare located near the system. Measurements of gas quality were taken by the City at the auxiliary flare during the first two weeks of February. A summary of those measurements is shown in Table 3.

Table 3. Auxiliary Flare Gas Quality Measurements

Device ID	Date/Time	CH_4 (%)	CO_2 (%)	O_2 (%)
GEM™5000	1/31/2023 9:37	32.8	67.2	0
GEM™5000	1/31/2023 16:51	40.3	57.3	2.5
GEM™5000	2/2/2023 15:44	37.4	61.3	1.3
GEM™5000	2/3/2023 8:57	33.2	66.8	0
GEM™5000	2/3/2023 9:38	36.1	63	0.9
GEM™5000	2/3/2023 11:26	38.8	60.1	1.1
GEM™5000	2/3/2023 12:21	36.7	63.1	0.1
GEM™5000	2/3/2023 15:51	38.7	60.5	0.9
GEM™5000	2/6/2023 16:20	37.1	62.3	0.6
GEM™5000	2/7/2023 9:17	39.1	60.5	0.4
GEM™5000	2/7/2023 14:47	42.6	56.1	1.3
GEM™5000	2/8/2023 7:43	38.6	61.2	0.2
GEM™5000	2/8/2023 15:42	41.6	54.1	2.3
GEM™5000	2/9/2023 11:18	43.1	55.2	1.8
GEM™5000	2/9/2023 13:41	44.3	50	2.9
GEM™5000	2/9/2023 15:41	44.1	53.9	2.1
GEM™5000	2/10/2023 9:08	41.2	50.3	3.6
GEM™5000	2/10/2023 13:27	43.1	52.3	2.5
GEM™5000	2/10/2023 15:56	44.2	53.4	2.4
GEM™5000	2/13/2023 10:00	42	56.5	1.4

Soil cover was installed on top of Phase 1 of the system during the remainder of February. Figure 1 shows soil placement on Phase 1 of the system. Phase 1 collectors were connected to the existing LFG system via a 4-inch HDPE pipe with isolation valves on February 16, 2023. Wellheads were installed at 4 locations on Phase 1 of the SOMS. Gas collected from the SOMS is currently routed to the primary flare and power generation facility. Gas quality will be measured at the well heads beginning in March.

Figure 1. Phase 1 Sidewall Odor Mitigation System Construction

2.4 FULL SYSTEM CONSTRUCTION

In addition to construction of Phase 1, SCS-CONS continued construction of Phase 2 of the SOMS. Lower horizontal collector placement has been completed along the west sidewall south of Phase 1, the south sidewall, and the southern portion of the east sidewall. Liquids collection sumps were also installed as part of the lower collector installation. Phase 2 lower collector construction progress is shown in Figure 2.

Figure 2. Phase 2 Sidewall Odor Mitigation System Construction

Some sections of sidewall were found to have discontinuities in the existing liner. SCS contacted VDEQ regarding handling of discontinuities and scheduled a conference call on March 2, 2023 to discuss management of discontinuities. Work will proceed based on the procedures proposed as a result of discussions between SCS, the City, and VDEQ.

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

The in-situ Landfill Temperature Monitoring System Project encountered significant challenges during the month of January. The sensors were damaged as a result of unforeseen subterranean conditions. These conditions and the damage to the sensors were discussed in the January Monthly Compliance Report for the SWP #588 landfill.

Replacement sensors were installed in all 9 casings during the week of February 6, 2023. The new sensors and support equipment were programmed and brought online during the week of February 13, 2023. SCS began collecting temperature data on a daily basis on February 15, 2023. Figure 3 shows the top of one of the casings after the temperature sensors were installed.

Figure 3. In-waste Temperature Sensor Installation

The replacement sensors are more resilient than the sensors that were previously installed. The drawback to these sensors is that they are larger and heavier taking up more space within the casing. The number of sensors that could be installed in the casing was limited by the diameter of the casing. To compensate for the reduction in sensors that could be installed, the interval between sensors was increased to 25 feet.

SCS submitted a letter to VDEQ on February 16, 2023 notifying the department of the data availability. The letter included daily average temperatures within each casing for February 15, 2023. A copy of this letter is included in Appendix H.

Figure 4 shows daily average temperatures in Temperature Probe 1 (TP-1) on February 16, 2023 and February 22, 2023. Daily temperatures were generally consistent with a minor increase (~6°F) at the 150-foot depth. 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 is equipped with an ambient temperature sensor above the waste surface, but a software issue prevented that sensor from reporting during the month of February. A software update resolved the ambient temperature reporting issue and ambient temperatures will be recorded during the month of March.

Figure 4. Average Temperatures within TP-1 on Select Days in February

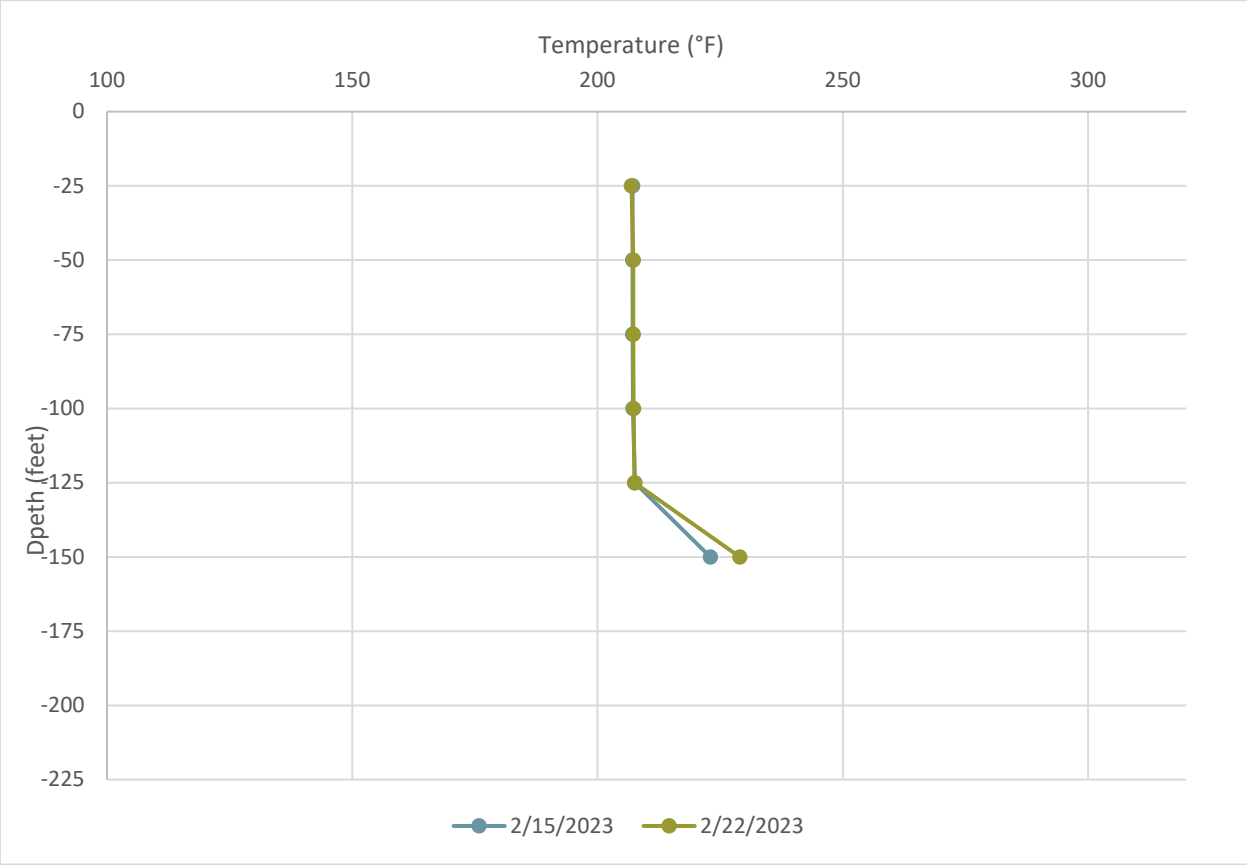


Figure 5 shows daily average temperatures in Temperature Probe 2 (TP-2) on February 16, 2023 and February 22, 2023. Daily temperatures increased by 21 degrees on average between the 2 dates. TP-2 was originally drilled to a depth of 160 feet. TP-2 is equipped with an ambient temperature sensor above the waste surface, but a software issue prevented that sensor from reporting during the month of February. A software update resolved the ambient temperature reporting issue and ambient temperatures will be recorded during the month of March.

Figure 5. Average Temperatures within TP-2 on Select Days in February

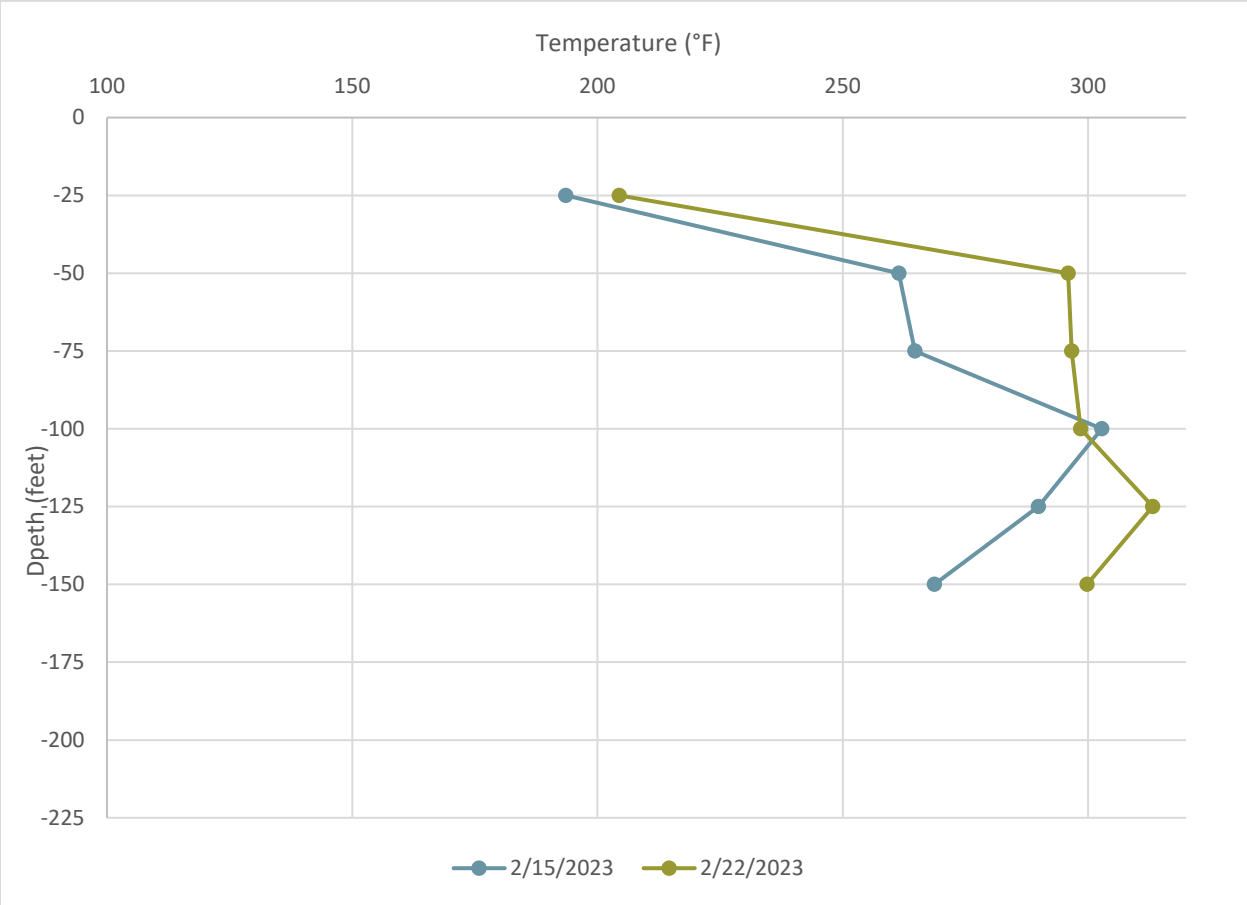


Figure 6 shows daily average temperatures in Temperature Probe 3 (TP-3) on February 16, 2023 and February 22, 2023. Daily temperatures increased by 24 degrees between the 2 dates at the 50-foot and 75-foot depths.

Figure 6. Average Temperatures within TP-3 on Select Days in February

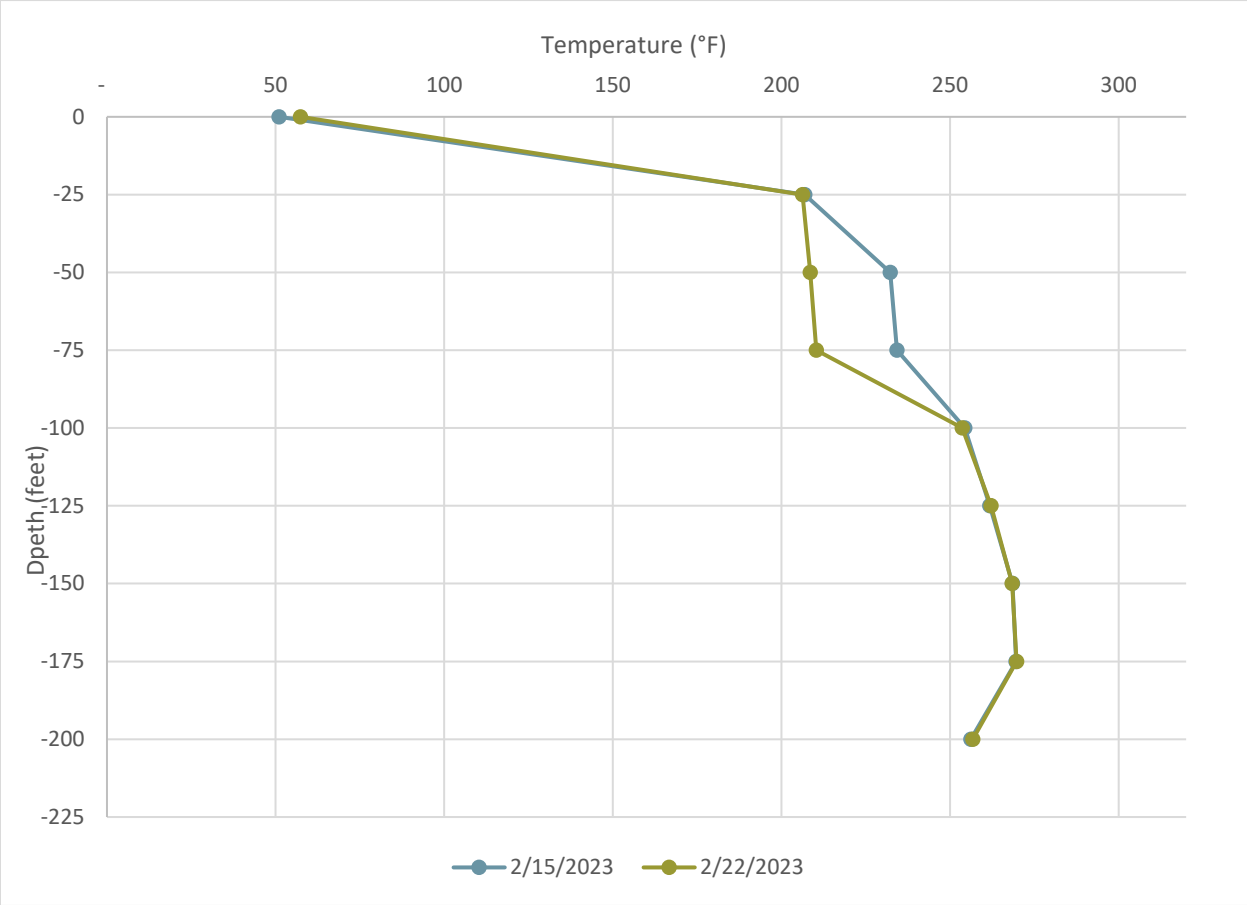


Figure 7 shows daily average temperatures in Temperature Probe 4 (TP-4) on February 16, 2023 and February 22, 2023. Daily temperatures decreased by 26 degrees on average between the 2 dates.

Figure 7. Average Temperatures within TP-4 on Select Days in February

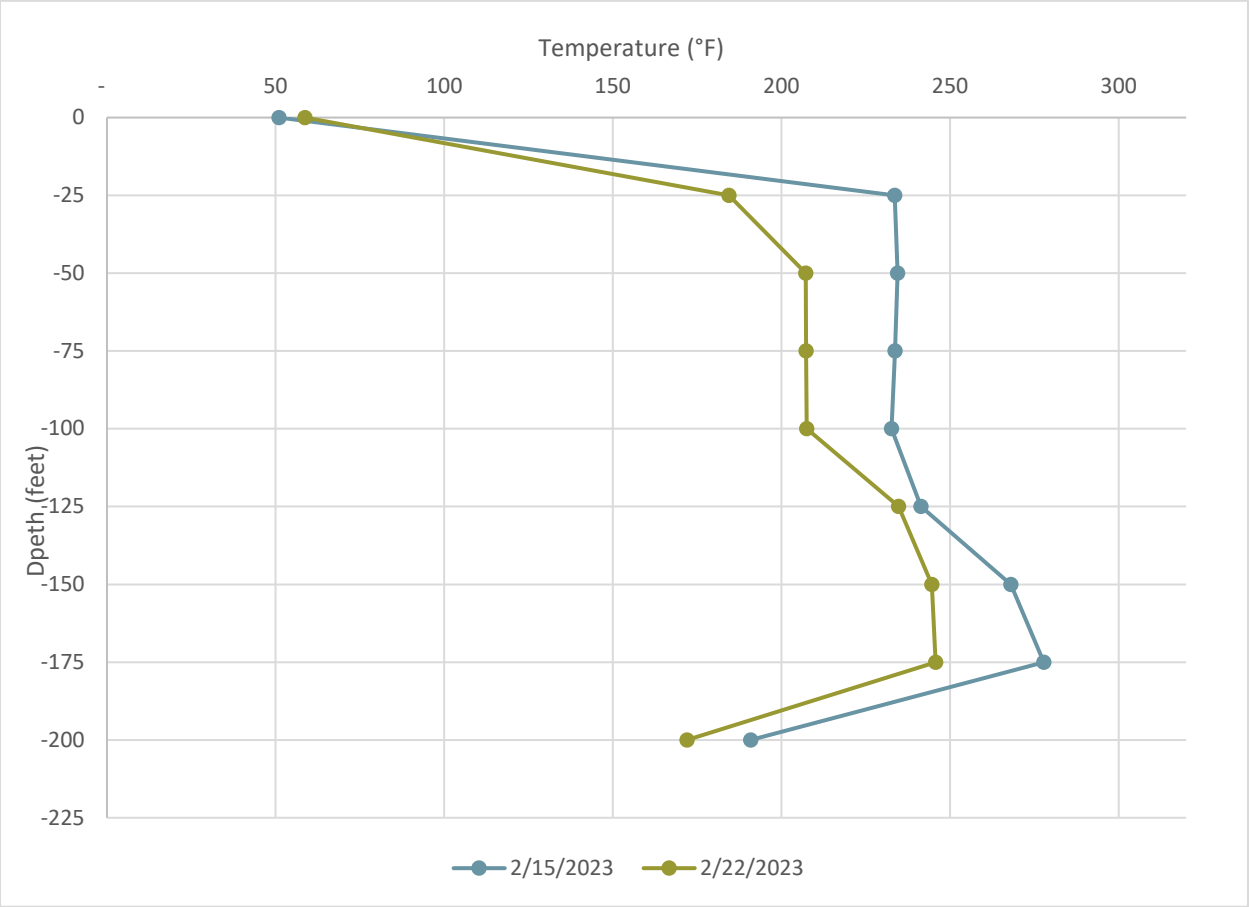


Figure 8 shows daily average temperatures in Temperature Probe 5 (TP-5) on February 16, 2023 and February 22, 2023. Daily temperatures increased by 26 degrees on average between the 2 dates.

Figure 8. Average Temperatures within TP-5 on Select Days in February

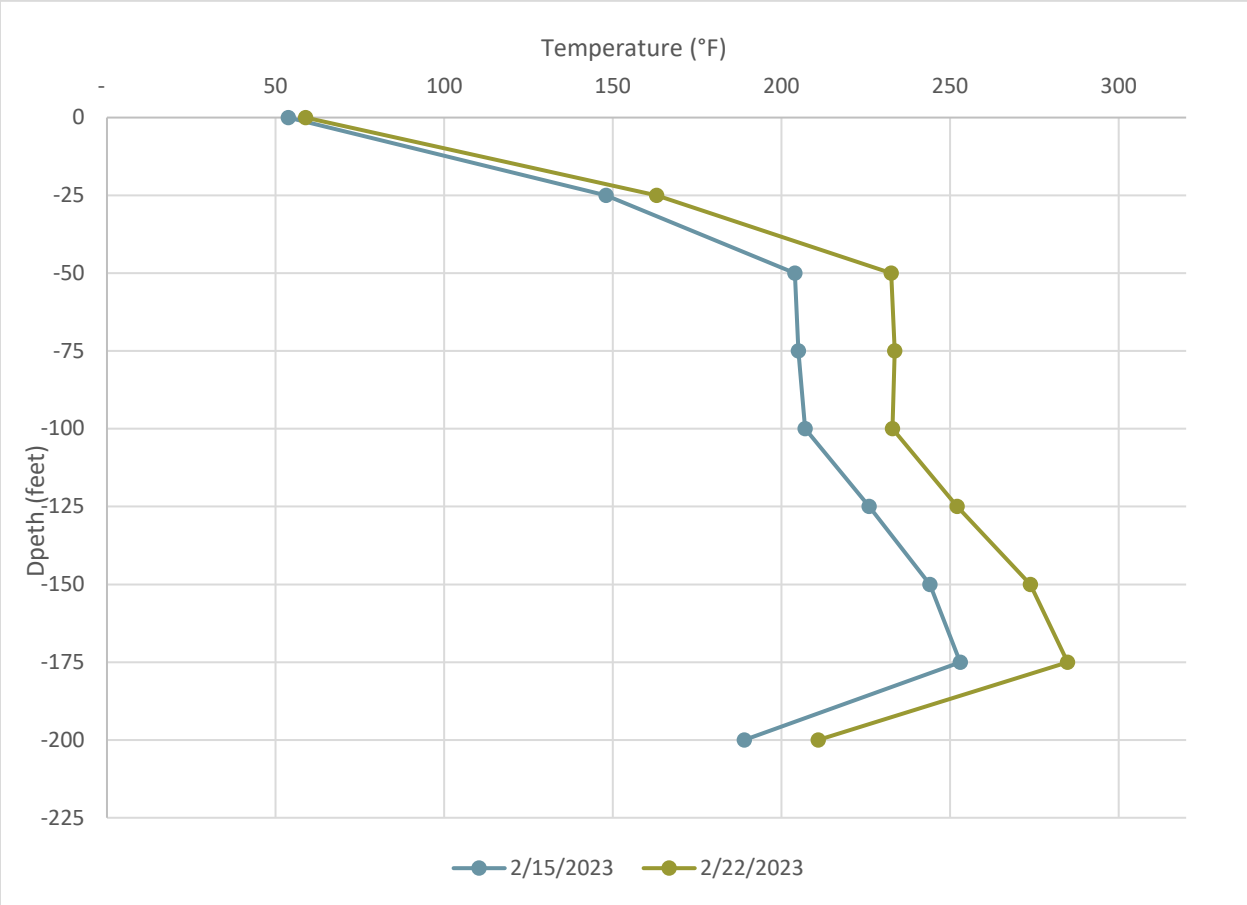


Figure 9 shows daily average temperatures in Temperature Probe 6 (TP-6) on February 16, 2023 and February 22, 2023. Daily temperatures generally consistent between the 2 dates. TP-6 was originally drilled to a depth of 208 feet and casing was installed to the full depth. During the installation of the installation of replacement sensors, a blockage within the casing prevented placement of sensors below the 125-foot depth.

Figure 9. Average Temperatures within TP-6 on Select Days in February

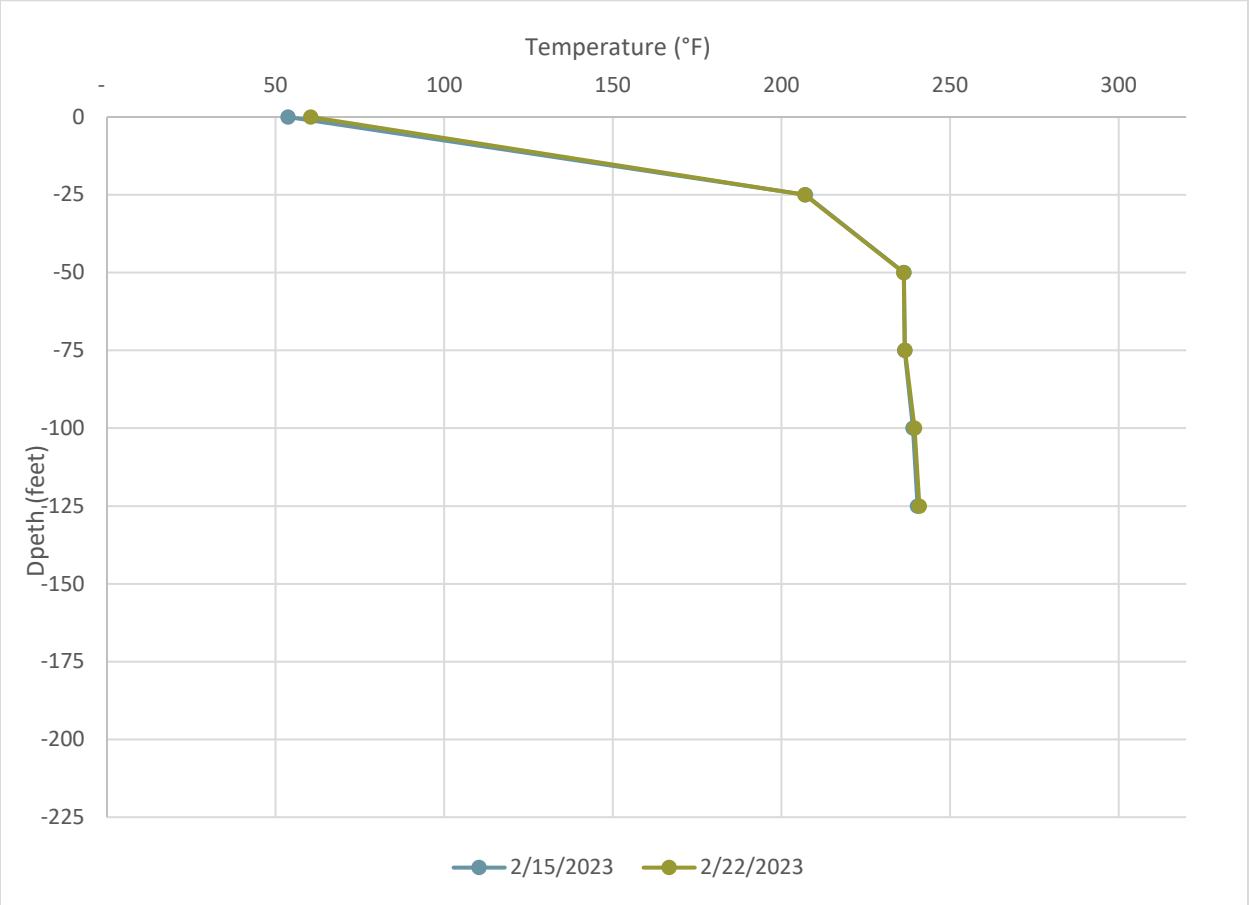


Figure 10 shows daily average temperatures in Temperature Probe 7 (TP-7) on February 16, 2023 and February 22, 2023. Daily temperatures decreased by 17 degrees on average between the 2 dates.

Figure 10. Average Temperatures within TP-7 on Select Days in February

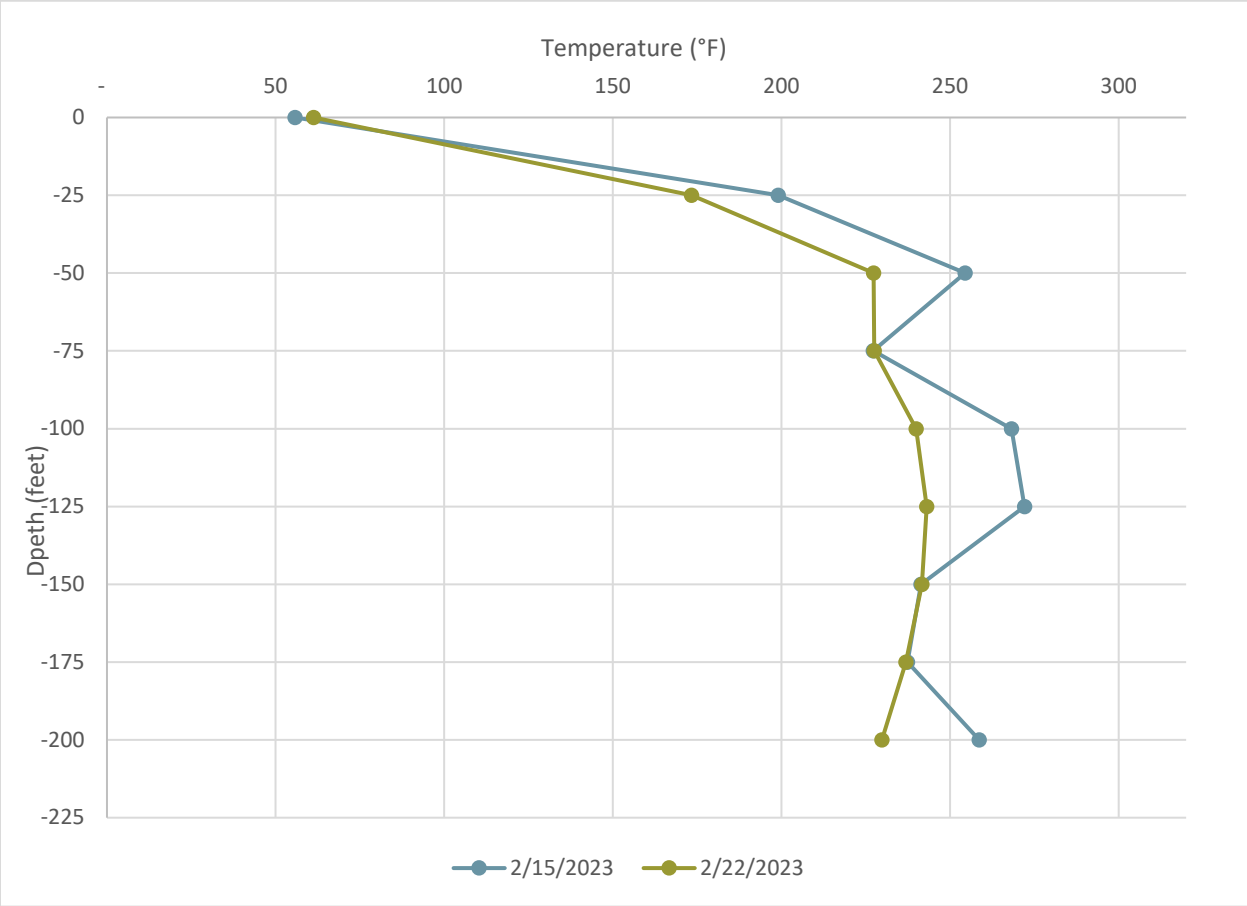


Figure 11 shows daily average temperatures in Temperature Probe 8 (TP-8) on February 16, 2023 and February 22, 2023. Daily temperatures were generally consistent between the 2 dates.

Figure 11. Average Temperatures within TP-8 on Select Days in February

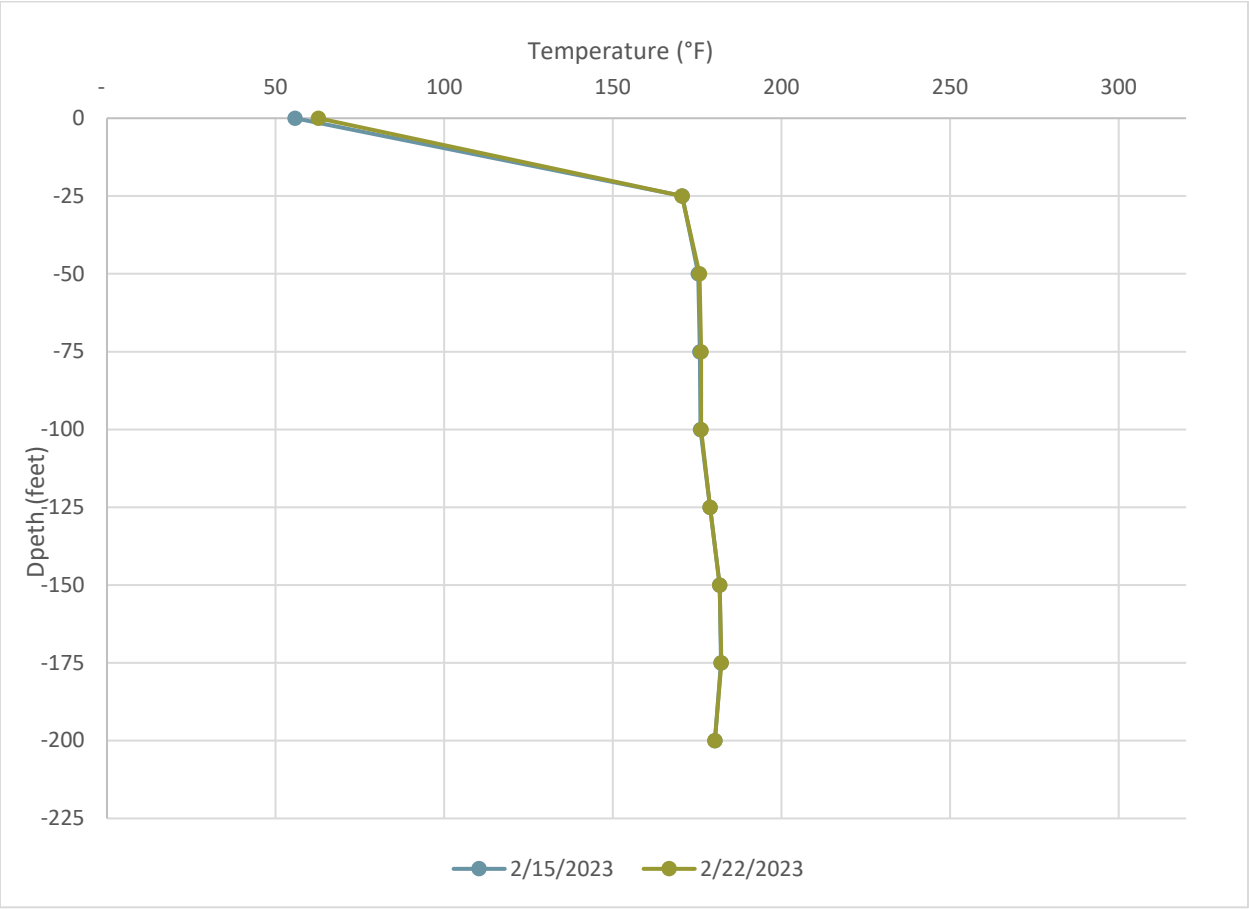
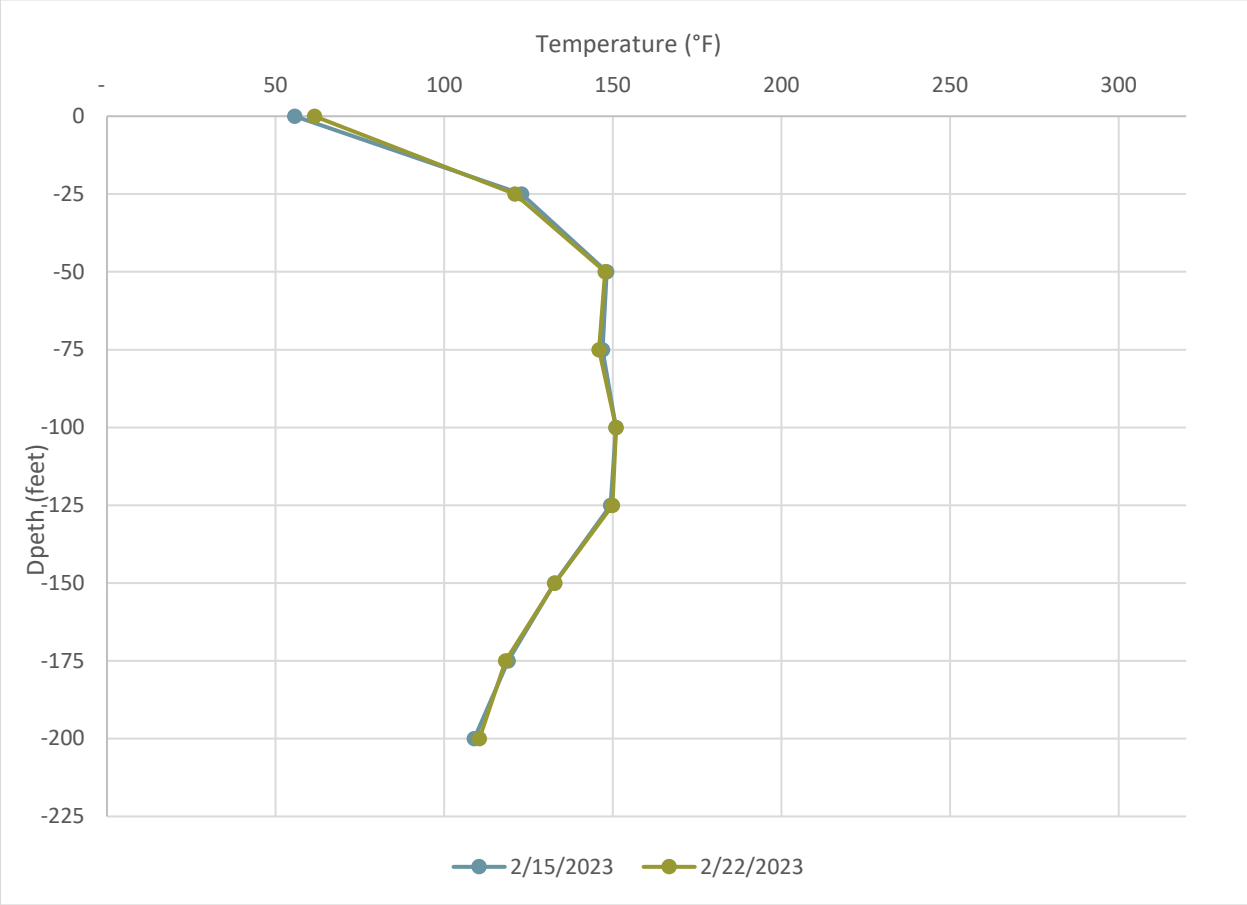


Figure 12 shows daily average temperatures in Temperature Probe 9 (TP-9) on February 16, 2023 and February 22, 2023. Daily temperatures were generally consistent between the 2 dates.

Figure 12. Average Temperatures within TP-9 on Select Days in February



Daily average temperatures recorded by the temperature probes between February 15, 2023 and February 28, 2023 are included in Appendix I.

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 mobilizations to conduct surface emissions monitoring outlined in Section 1.1.1, SCS also collected stroke counter data from the pumps installed in the GCCS wells. Stroke counts were collected from 18 wells on January 5, 2023; January 11, 2023; January 19, 2023; January 26, 2023; and January 30, 2023. The data collected is summarized in Table 4. Cells marked with "*" represent dates when the pump was removed from the well for maintenance.

Table 4. Summary of Dual Extraction Well Pump Stroke Counter Data

Well	February 7, 2023	February 15, 2023	February 23, 2023	February 28, 2023
EW64	98033	98033	*	98033
EW61	212078	212085	212085	212085
EW50	698314	749046	7857641	785764
EW49	439643	439650	439650	439650
EW60	163913	163913	*	*
EW52	227419	227419	*	*
EW68	1752505	1812379	1812384	1812384
EW67	193261	258945	285880	300396
EW54	106122	106317	*	*
EW55	529010	529010	*	*
EW58	1615425	1615437	1615437	1615441
EW59	1100151	1100156	1100161	1103346
EW57	125106	215107	*	*
EW65	3871	3871	3871	3871
EW63	*	*	*	48067
EW62	113994	113994	113994	113994
EW53	1852567	1852567	1852567	1852567

Based on this data and stroke counts taken on January 30, 2022, 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 is shown in Table 5.

Table 5. Summary of Dual Extraction Well Pump Liquids Removal

Well	Liquids Removed (gal) January 30, 2022 to February 7, 2023	Liquids Removed (gal) February 7, 2023 to February 15, 2023	Liquids Removed (gal) February 15, 2023 to February 23, 2023	Liquids Removed (gal) February 23, 2023 to February 28, 2023
EW64	0	0	0	0
EW61	9	2	0	0
EW50	8893	15220	11015	0
EW49	2	2	0	0
EW60	0	0	0	0
EW52	0	0	0	0
EW68	34154	17962	2	0

Well	Liquids Removed (gal) January 30, 2022 to February 7, 2023	Liquids Removed (gal) February 7, 2023 to February 15, 2023	Liquids Removed (gal) February 15, 2023 to February 23, 2023	Liquids Removed (gal) February 23, 2023 to February 28, 2023
EW67	1	19705	8081	4355
EW54	77	59	0	0
EW55	0	0	0	0
EW58	6	4	0	1
EW59	10	2	2	956
EW57	0	27000	0	0
EW65	0	0	0	0
EW63	0	0	0	0
EW62	1	0	0	0
EW53	4	0	0	0

SCS estimates that approximately 148,000 gallons of liquids were removed from the landfill gas collection and control system during the month of January. This is an increase of approximately 25,000 gallons when compared to the previous month. 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 construction of the LFGCCS expansion outlined in Sections 1.4 and 2.1, multiple types of leachate extraction pumps will be installed. After installation, the City and SCS will evaluate the performance of those pumps. Based on that evaluation, the City will select the pump type that is most effective give the landfill conditions.

Six pumps were removed from site by the manufacturer (Pump One) and taken to their facilities. The manufacturer is testing a cleaning solution on those pumps. If the cleaning solution proves to be effective at cleaning the pumps, the City may utilize it for cleaning pumps in the future.

4.2 SAMPLING AND ANALYSIS

4.2.1 Sample Collection

On February 7, 2023, SCS collected a leachate sample from one Dual Phase LFG-EW (EW-68). 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 other wells for the following reasons:

- Pumps were not running at the time of sample collection in the following wells:
  - EW-49,

  - EW-50,
  - EW-51,
  - EW-52,
  - EW-54,
  - EW-58,
  - EW-61, and
  - EW-67.
- There was no pump in EW-56 at the time of sample collection.
- The pump was not running and there was no sample port on well EW-53.
- The pump was not running and well was too tall to safely remove well head on well EW-55.
- The air supply was shutoff to pump for well EW-57.
- The pump was not running and liquids discharge line valve was closed for well EW-60.
- The pump was disconnected for wells EW-62, EW-63, EW-64, and EW-65.

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 outlined in the Dual Phase Landfill Gas Extraction Well Leachate Monitoring Plan.

4.2.2 Quality Assurance and Quality Control

Field quality control (QC) involved the collection and analysis of trip blanks to verify that the sample collection and handling processes did not impair the quality of the samples. Trip blanks were prepared for volatile organic compound (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 brief 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. A 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 similar to 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.

Field and laboratory QA/QC also involves the routine collection and analysis of duplicate field samples. These samples are collected at a rate of one per sample event. A duplicate is a separate sample collected independently in such a manner that it equally represents the medium at a given time and location. Co-located samples provide intra-laboratory precision information for the entire measurement system, including sample collection, homogeneity, handling, shipping, storage, preparation, and analysis.

No trip or method blank detects were identified for the February 2023 monitoring event. The laboratory analysis report for the February 2023 monitoring event trip blank is included in **Appendix F**. The February 2023 monitoring event laboratory QA/QC reports, including the method blank results, are included in the COAs in **Appendix F**.

4.2.3 Data Validation

To identify analytical data that may not represent valid results, data from the monitoring events were validated by the Laboratory and SCS in accordance with United States Environmental Protection Agency (EPA) guidance[1]. 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

[1] 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.

due to cross-contamination during sampling, transportation of samples, or laboratory analysis. No leachate results were flagged with a "B" qualifier for the February 2023 monitoring event as no constituents were detected in the February 2023 trip and method blanks.

4.2.4 Laboratory Analytical Results

Chemical characteristics of leachate samples collected from extraction well EW-68 are summarized in Table 6. The associated COA is included in Appendix F. Parameter results from the February 2023 and previous monitoring events (November 2022 – January 2023) are presented on a table in Appendix F.

Table 6. Monthly LFG-EW Leachate Monitoring Event Summary

Well ID	EW-68	LOD	LOQ
Parameter	February 2023 Concentration		
Ammonia as N (mg/L)	**1490**	100	100
Biological Oxygen Demand (mg/L)	**7230**	0.2	2
Chemical Oxygen Demand (mg/L)	**9210**	1000	1000
Nitrate as N (mg/L)	ND	0.35	1.35
Nitrite as N (mg/L)	**0.48 J**	0.25	1.25
Total Kjeldahl Nitrogen (mg/L)	**1870**	16.8	50
Total Recoverable Phenolics (mg/L)	**22.4**	1.5	2.5
SEMI-VOLATILE ORGANIC COMPOUND (ug/L)			
Anthracene	ND	187	374
TOTAL METALS (mg/L)			
Arsenic	**0.29**	0.005	0.01
Barium	**1.04**	0.01	0.05
Cadmium	**0.000297 J**	0.0001	0.001
Chromium	**0.277**	0.004	0.01
Copper	**0.00365**	0.0003	0.001
Lead	**0.006**	0.001	0.001
Mercury	ND	0.0004	0.0004
Nickel	**0.1726**	0.001	0.001
Selenium	**0.00199**	0.00085	0.001
Silver	ND	0.00006	0.001
Zinc	**0.0851**	0.0025	0.005
VOLATILE FATTY ACIDS mg/L			
Acetic Acid	ND	---	500
Butyric Acid	ND	---	500
Propionic Acid	ND	---	500
VOLATILE ORGANIC COMPOUNDS (ug/L)			
2-Butanone (MEK)	**14400**	600	2000
Acetone	**23900**	1400	2000

Table 6. Monthly LFG-EW Leachate Monitoring Event Summary

Well ID	EW-68	LOD	LOQ
Parameter	February 2023 Concentration		
Benzene	**1370**	4	10
Ethylbenzene	**151**	4	10
Tetrahydrofuran	**3760**	2000	2000
Toluene	**224**	5	10
VOLATILE ORGANIC COMPOUND (ug/L)			
Xylenes, Total	**240**	10	30

--- = not 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

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 prepared a settlement monitoring and management plan. The plan provides for means and methods for monitoring surface elevations across the surface of the landfill, prior to, and after placement of the EVOH cover system. The settlement monitoring and management plan includes procedures for placement of settlement monitoring before and after the placement of the EVOH cover.

Settlement monitoring outlined in the plan includes two components:

- Installation and monitoring of settlement plates installed within the waste mass
- Monthly surveys of the landfill topography

The plan also addresses data collection procedures, settlement analysis, settlement plate design, and reporting procedures. The plan was submitted to VDEQ on November 15, 2022.

5.2 MONTHLY SURVEYS

5.2.1 Topographic Data Collection

The City, through SCS, collected topographic data of the Solid Waste Permit #588 Landfill using photogrammetric methods via an unmanned aerial vehicle (UAV or drone). On February 7, 2023 the

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

The topography within the landfill footprint was compared to topographic data collected by SCS using photogrammetric methods on January 10, 2023. A drawing depicting the January 10, 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 2,800 cubic yards. During that same time period approximately 3,900 cubic yards of 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 1,100 cubic yards.

The largest settlement occurred primarily in the southern end of the landfill where the waste settled by approximately 0.5 feet or more in some areas. Settlement in the northern portion of the landfill was generally less substantial. The eastern side of the landfill exhibited an increase in elevation, likely due to sediment deposition during storm events. Increases in elevation along the western edge of the landfill are most likely due to installation of the Sidewall Odor Mitigation System. Soil stockpile locations associated with the Sidewall Odor Mitigation System showed a negative elevation change due to material removal from the stockpiles. A visual depiction of settlement and filling at the landfill during this time is depicted on Sheet 3 in Appendix E.

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 change within the waste is less than 0.1 feet.

SCS will collect topographic data covering the landfill surface again in March using photogrammetric methods via UAV. This data will be compared to the data collected in February.

5.2.2 Settlement Plate Surveys

On November 7, 2022 SCS field services installed 12 settlement plates on the Solid Waste Permit #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 sprayed painted orange to improve visibility.

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; and February 6, 2023. The settlement plate locations are depicted on Sheet 4 in Appendix E. The surveyed coordinates[2] and elevation changes of the settlement plates are shown in Table 7.

Table 7. Settlement Plate Locations

Settlement Plate	Northing	Easting	Elevation on February 6, 2023	Elevation Change Since January 3, 2023	Elevation Change Since Installation
SP-1	3,397,886.2	10,412,078.1	1,833.3	-0.5	-1.1
SP-2	3,397,806.5	10,412,364.3	1,808.3	-0.9	-2.3

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

Settlement Plate	Northing	Easting	Elevation on February 6, 2023	Elevation Change Since January 3, 2023	Elevation Change Since Installation
SP-3	3,397,787.3	10,412,536.7	1,783.5	-0.1	-0.2
SP-4[3]	3,398,250.2	10,412,185.2	1,815.1	-1.1	-2.4
SP-5	3,398,256.3	10,412,338.7	1,798.9	-0.8	-1.9
SP-6	3,398,249.4	10,412,510.8	1,777.1	-0.2	-0.6
SP-7	3,398,737.4	10,412,157.3	1,828.1	-0.3	-0.5
SP-8	3,398,679.2	10,412,290.7	1,806.1	-0.6	-1.3
SP-9	3,398,673.1	10,412,400.6	1,785.3	-0.3	-0.5
SP-10	3,399,080.4	10,412,092.2	1,839.7	-0.4	-0.5
SP-11	3,399,216.1	10,412,183.7	1,816.0	-0.3	-0.3
SP-12	3,399,382.0	10,412,019.6	1,810.4	-0.2	-0.3

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

6.0 INTERMEDIATE COVER AND EVOH COVER SYSTEM

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

6.1 INTERMEDIATE COVER INSTALLATION

The City completed hauling and placement of a 12-inch thick intermediate cover across the entire landfill prior to October 10, 2022. The cover was placed in accordance with 9VAC20-81-140(B)(1)(d). SCS coordinated with the City to dig a series of test holes to verify cover thickness in select locations. Details of these verifications were discussed in the October Monthly Compliance Report for the SWP #588 Landfill.

6.2 EVOH COVER SYSTEM DESIGN

SCS submitted the Ethylene Vinyl Alcohol (EVOH) Geomembrane Deployment Plan and product specification to VDEQ on January 30, 2023. SCS has prepared the drawings (7 sheets) titled “Interim EVOH Cover System Preliminary Design Plans” dated January 30, 2023 which include the layout and details of the proposed EVOH deployment.

SCS has received comments from VDEQ on the design and is in the process of reviewing those comments and preparing responses.

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

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.

6.4 EVOH COVER SYSTEM INSTALLATION

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

7.0 STORM WATER MANAGEMENT

As discussed in section 6.3, the EVOH deployment plan included some initial stormwater management details. These details will be further refined as the design process progresses.

8.0 MISCELLANEOUS

8.1 CEASE WASTE ACCEPTANCE

The City ceased acceptance of offsite waste at the Solid Waste Permit #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 #588 landfill on December 30, 2022. The Plan documents procedures for monitoring, maintaining, and repair/upgrade for the landfill cover, leachate and gas collection system, sidewall odor mitigation system, and the stormwater management controls for the City of Bristol Integrated Solid Waste Management Facility Solid Waste Permit #588 Landfill. The Plan is intended to be a "living" document to be revised as construction is completed and new information becomes available.

8.3 MONTHLY COMPLIANCE REPORTS

As outlined in the introduction this report is intended to provide comprehensive updates regarding progress towards completion of each item outlined 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, outlined the actions taken as part of their community outreach efforts. For the month of February, those actions include:

- **February – ongoing basis:** Four posts on the BristalVALandfill.org site and the existing City of Bristol Landfill Notifications and Information page covering several important updates including:

  - Progress updates during construction of the Sidewall Odor Mitigation System (SOMS), including news that 'Phase 1' of the SOMS was completed.
  - Updates regarding continued work on the SOMS related to 'Phase 2'.
  - Announcement that Bristol, VA accepted a contractor bid for the expansion of the Landfill Gas System from SCS Field Services.
  - Provided links to news articles chronicling construction updates and information related to how Bristol, VA is funding current and future work at the landfill.
  - Announcement that Bristol, VA is hosting a second Open House for citizens and nearby residents to learn about the latest remediation progress at the quarry landfill from SCS Engineers Senior Vice President Robert B. Gardner and Craig Benson, PhD.

- **February 21st:** Informational Open House hosted at City Council Chambers

  - The City of Bristol, VA hosted an Open House where city residents and residents of Bristol, TN came to learn about the remediation progress at the quarry landfill and have their questions answered by project experts. Twenty-five to 30 members of the public attended the hour-and-a-half event.
  - In attendance to answer questions at the Open House were City Manager Randy Eads, Mayor Anthony Farnum, SCS Engineers Senior Vice President Robert B. Gardner, PE, BCEE and Craig Benson, PhD, PE, DGE, BCEE, NAE. Two consultants with McGuireWoods Consulting, LLC were also in attendance.
  - The City is currently reviewing feedback received at the Open House in order to provide updates to comments and questions left by attendees.

- **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 the November 1 Open House to receive information via e-mail**

  - E-mails sent that included weekly remediation progress update and links to website updates and latest news articles on the following days:
    - Friday, February 3rd
    - Friday, February 10th
    - Friday, February 17th
    - Friday, February 24th
  - All e-mails sent in February had over a 50 percent open rate

Appendix A

Surface Emissions Monitoring Summary Letters

February 15, 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 – February 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 February 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 newly installed temperature probes. 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 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 monitory is provided in Table 1.

Table 1. Summary of Surface Emissions Monitoring

Description	Quantity
Number of Points Sampled	149
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	49
Number of Exceedances[1]	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

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	2/7/23 Event	2/7/23 Event Result	Comments
EW-53	1/26/23	N/A	Pass	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
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

S C S E N G I N E E R S

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	77.4 PPM	OK			Start Serpentine Route
2	126 PPM	OK			
3	49.7 PPM	OK			
4	15 PPM	OK			
5	15.9 PPM	OK			
6	8.9 PPM	OK			
7	8.1 PPM	OK			
8	4 PPM	OK			
9	5.2 PPM	OK			
10	3.8 PPM	OK			
11	10.2 PPM	OK			
12	8.9 PPM	OK			
13	74.5 PPM	OK			
14	36.9 PPM	OK			
15	86 PPM	OK			
16	44.1 PPM	OK			
17	6.2 PPM	OK			
18	39.4 PPM	OK			
19	7.3 PPM	OK			
20	146 PPM	OK			
21	108 PPM	OK			
22	413 PPM	OK			
23	94.7 PPM	OK			
24	51.7 PPM	OK			
25	62.7 PPM	OK			
26	19.1 PPM	OK			
27	186 PPM	OK			
28	45 PPM	OK			
29	94 PPM	OK			
30	309 PPM	OK			
31	234 PPM	OK			
32	400 PPM	OK			
33	107 PPM	OK			
34	53.2 PPM	OK			
35	28.2 PPM	OK			
36	23.5 PPM	OK			
37	14.4 PPM	OK			
38	68.5 PPM	OK			
39	7.4 PPM	OK			
40	9.7 PPM	OK			
41	3.6 PPM	OK			
42	25.2 PPM	OK			

SCS ENGINEERS

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
43	26.5 PPM	OK			
44	25.1 PPM	OK			
45	10.9 PPM	OK			
46	9.6 PPM	OK			
47	4.1 PPM	OK			
48	20.1 PPM	OK			
49	17.9 PPM	OK			
50	27.9 PPM	OK			
51	1.7 PPM	OK			
52	0.5 PPM	OK			
53	0.3 PPM	OK			
54	0 PPM	OK			
55	20.3 PPM	OK			
56	31.7 PPM	OK			
57	71.5 PPM	OK			
58	17.1 PPM	OK			
59	19.4 PPM	OK			
60	4.5 PPM	OK			
61	4.6 PPM	OK			
62	5.6 PPM	OK			
63	15.8 PPM	OK			
64	5 PPM	OK			
65	11.1 PPM	OK			
66	9.7 PPM	OK			
67	13.4 PPM	OK			
68	17.4 PPM	OK			
69	8.2 PPM	OK			
70	3.7 PPM	OK			
71	19.2 PPM	OK			
72	1.7 PPM	OK			
73	33.2 PPM	OK			
74	93.6 PPM	OK			
75	10.9 PPM	OK			
76	162 PPM	OK			
77	15.5 PPM	OK			
78	149 PPM	OK			
79	71.6 PPM	OK			
80	1.8 PPM	OK			
81	0.5 PPM	OK			
82	6.9 PPM	OK			
83	196 PPM	OK			
84	235 PPM	OK			

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
85	77.9 PPM	OK			
86	26.2 PPM	OK			
87	7.6 PPM	OK			
88	5.5 PPM	OK			
89	9.1 PPM	OK			
90	9.4 PPM	OK			
91	2.6 PPM	OK			
92	3.9 PPM	OK			
93	42.4 PPM	OK			
94	11 PPM	OK			
95	305 PPM	OK			
96	11.7 PPM	OK			
97	301 PPM	OK			
98	192 PPM	OK			
99	5.6 PPM	OK			
100	4 PPM	OK			End Serpentine Route
101	241 PPM	OK			EW-35
102	50.3 PPM	OK			EW-52
103	30.4 PPM	OK			TP-4
104	207 PPM	OK			EW-60
105	89.2 PPM	OK			EW-48
106	8.8 PPM	OK			TP-6
107	323 PPM	OK			EW-61
108	5 PPM	OK			EW-36
109	15.1 PPM	OK			EW-34
110	78.9 PPM	OK			EW-50
111	300 PPM	OK			EW-67
112	77.4 PPM	OK			EW-47
113	229 PPM	OK			EW-54
114	145 PPM	OK			EW-55
115	10.5 PPM	OK			TP-2
116	4.9 PPM	OK			EW-46
117	109 PPM	OK			EW-66
118	0.8 PPM	OK			EW-58
119	131 PPM	OK			EW-57
120	81.4 PPM	OK			TP-1
121	199 PPM	OK			EW-59
122	54 PPM	OK			EW-56
123	98.4 PPM	OK			EW-41
124	246 PPM	OK			EW-53
125	207 PPM	OK			EW-40

S C S E N G I N E E R S

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
126	39.3 PPM	OK			TP-3
127	94.7 PPM	OK			EW-51
128	177 PPM	OK			EW-39
129	8.3 PPM	OK			TP-5
130	13.5 PPM	OK			EW-68
131	242 PPM	OK			EW-38
132	4.5 PPM	OK			TP-7
133	4.7 PPM	OK			EW-49
134	4.4 PPM	OK			EW-31R
135	9.9 PPM	OK			EW-65
136	5 PPM	OK			EW-37
137	4 PPM	OK			TP-8
138	3.2 PPM	OK			EW-64
139	3.4 PPM	OK			EW-30R
140	4.5 PPM	OK			EW-63
141	56.8 PPM	OK			EW-42
142	30.4 PPM	OK			TP-9
143	1.2 PPM	OK			EW-33R
144	3.5 PPM	OK			EW-62
145	17.9 PPM	OK			EW-29R
146	19.2 PPM	OK			EW-25
147	25.7 PPM	OK			EW-24
148	3.9 PPM	OK			EW-32
149	15.7 PPM	OK			EW-32R

Number of locations sampled:	149
Number of exceedance locations:	0

S C S E N G I N E E R S

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

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

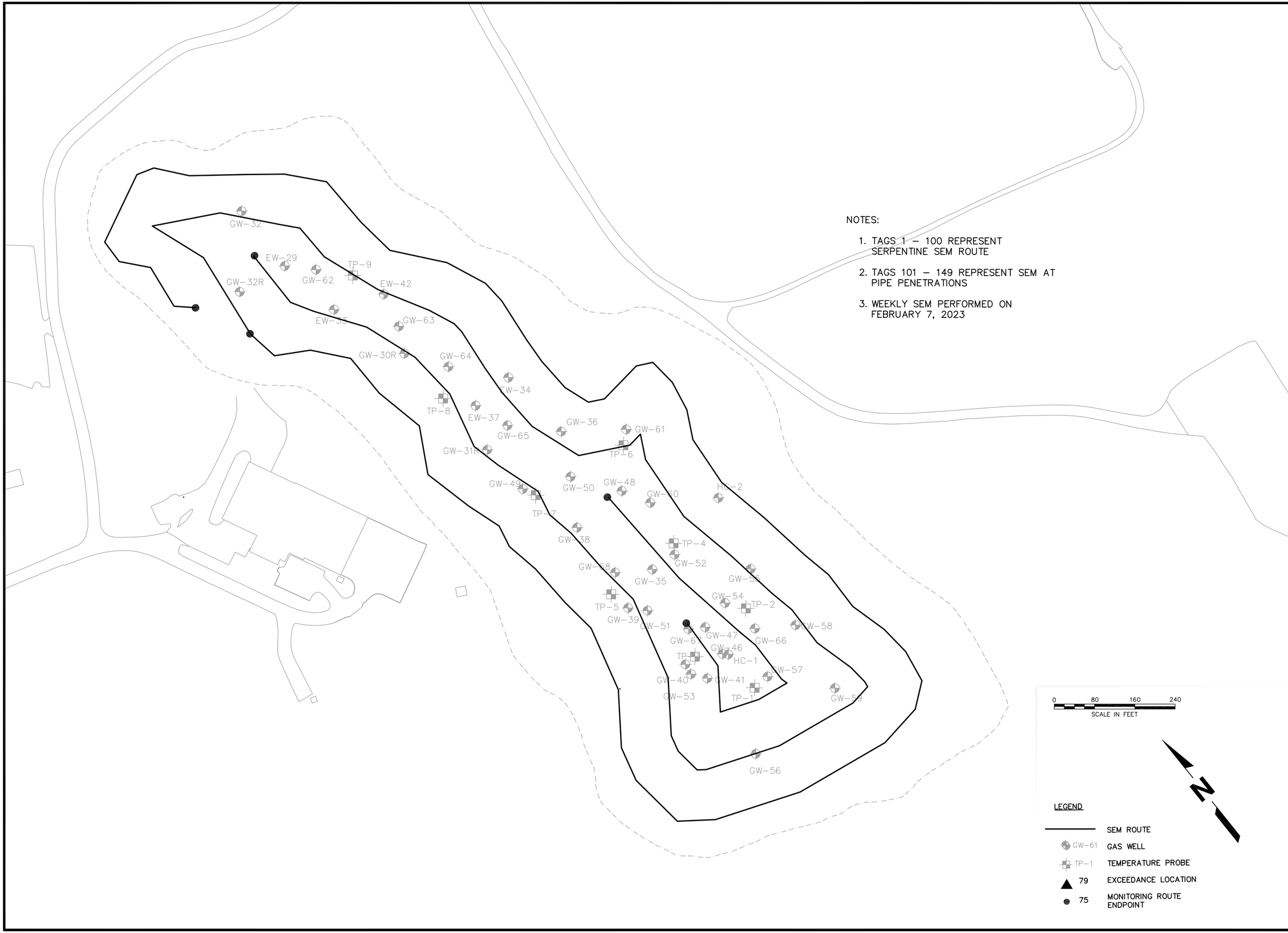
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 149 represent SEM at Pipe Penetrations
Weather Conditions: Sunny, 50°F Wind: W - 5 MPH

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

2/7/2023	10:15	ZERO	0.0 PPM
2/7/2023	10:18	SPAN	501.0 PPM

Background Reading:

2/7/2023	10:23	Upwind	1.4 PPM
2/7/2023	10:30	Downwind	3.6 PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 149 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON FEBRUARY 7, 2023

NO.	REVISION	DATE

SHEET TITLE
WEEKLY SEM ROUTE

PROJECT TITLE
SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

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

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

PROJ. NO. 02218208.04	DWN. BY: LSN	CHK. BY: DBK	O/A R/W BY:
DSN. BY: LSN			APP. BY:

FILE: 02218208.04
DATE: 2/7/23
SCALE: AS SHOWN
DRAWING NO. 1 of 1

February 22, 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 – February 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 February 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 newly installed temperature probes. 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 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 monitory is provided in Table 1.

Table 1. Summary of Surface Emissions Monitoring

Description	Quantity
Number of Points Sampled	149
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	49
Number of Exceedances[1]	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

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	2/15/23 Event	2/15/23 Event Result	Comments
EW-53	1/26/23	N/A	Pass	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
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

S C S E N G I N E E R S

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	41.9 PPM	OK			Start Serpentine Route
2	228 PPM	OK			
3	39.3 PPM	OK			
4	16.7 PPM	OK			
5	64.7 PPM	OK			
6	27.1 PPM	OK			
7	36.2 PPM	OK			
8	13 PPM	OK			
9	21.4 PPM	OK			
10	32.1 PPM	OK			
11	32.1 PPM	OK			
12	103 PPM	OK			
13	61.3 PPM	OK			
14	19.7 PPM	OK			
15	359 PPM	OK			
16	46.9 PPM	OK			
17	81.4 PPM	OK			
18	67.7 PPM	OK			
19	39.4 PPM	OK			
20	21.9 PPM	OK			
21	41.9 PPM	OK			
22	227 PPM	OK			
23	427 PPM	OK			
24	66 PPM	OK			
25	266 PPM	OK			
26	221 PPM	OK			
27	405 PPM	OK			
28	82.4 PPM	OK			
29	242 PPM	OK			
30	12.1 PPM	OK			
31	4.9 PPM	OK			
32	6.4 PPM	OK			
33	9.3 PPM	OK			
34	163 PPM	OK			
35	82.8 PPM	OK			
36	111 PPM	OK			
37	76.5 PPM	OK			
38	4.2 PPM	OK			
39	3.9 PPM	OK			
40	4.8 PPM	OK			
41	4.8 PPM	OK			
42	3.9 PPM	OK			

S C S E N G I N E E R S

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
43	2.3 PPM	OK			
44	6.5 PPM	OK			
45	17.8 PPM	OK			
46	18.3 PPM	OK			
47	20.6 PPM	OK			
48	3.2 PPM	OK			
49	0.5 PPM	OK			
50	64.1 PPM	OK			
51	21.9 PPM	OK			
52	25.6 PPM	OK			
53	1 PPM	OK			
54	8.4 PPM	OK			
55	1 PPM	OK			
56	0.2 PPM	OK			
57	0.1 PPM	OK			
58	0.8 PPM	OK			
59	13 PPM	OK			
60	8.2 PPM	OK			
61	8.6 PPM	OK			
62	5.2 PPM	OK			
63	53.4 PPM	OK			
64	388 PPM	OK			
65	5.7 PPM	OK			
66	4 PPM	OK			
67	14.3 PPM	OK			
68	2.7 PPM	OK			
69	237 PPM	OK			
70	7.3 PPM	OK			
71	206 PPM	OK			
72	5.4 PPM	OK			
73	8.1 PPM	OK			
74	8.9 PPM	OK			
75	7.3 PPM	OK			
76	242 PPM	OK			
77	56.3 PPM	OK			
78	100 PPM	OK			
79	3.6 PPM	OK			
80	9.2 PPM	OK			
81	10 PPM	OK			
82	9 PPM	OK			
83	8.6 PPM	OK			
84	5.2 PPM	OK			

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
85	2.6 PPM	OK			
86	5.8 PPM	OK			
87	6 PPM	OK			
88	4.1 PPM	OK			
89	15.8 PPM	OK			
90	10.1 PPM	OK			
91	70.5 PPM	OK			
92	13.3 PPM	OK			
93	7.7 PPM	OK			
94	5.6 PPM	OK			
95	59.4 PPM	OK			
96	10 PPM	OK			
97	6.9 PPM	OK			
98	10.1 PPM	OK			
99	10.1 PPM	OK			
100	7 PPM	OK			End Serpentine Route
101	121 PPM	OK			EW-35
102	45.7 PPM	OK			EW-52
103	4.9 PPM	OK			TP-4
104	74.5 PPM	OK			EW-60
105	40.6 PPM	OK			EW-48
106	4.4 PPM	OK			TP-6
107	5.7 PPM	OK			EW-61
108	8.6 PPM	OK			EW-36
109	148 PPM	OK			EW-34
110	1.3 PPM	OK			EW-50
111	339 PPM	OK			EW-67
112	307 PPM	OK			EW-47
113	196 PPM	OK			EW-54
114	109 PPM	OK			EW-55
115	302 PPM	OK			TP-2
116	6.3 PPM	OK			EW-46
117	28.9 PPM	OK			EW-66
118	36.8 PPM	OK			EW-58
119	81.4 PPM	OK			EW-57
120	222 PPM	OK			TP-1
121	124 PPM	OK			EW-59
122	230 PPM	OK			EW-56
123	71.1 PPM	OK			EW-41
124	89.9 PPM	OK			EW-53
125	110 PPM	OK			EW-40

SCS ENGINEERS

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

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
126	3.2 PPM	OK			TP-3
127	255 PPM	OK			EW-51
128	10.6 PPM	OK			EW-39
129	95 PPM	OK			TP-5
130	421 PPM	OK			EW-68
131	212 PPM	OK			EW-38
132	11 PPM	OK			TP-7
133	12.7 PPM	OK			EW-49
134	2.3 PPM	OK			EW-31R
135	7.9 PPM	OK			EW-65
136	2.5 PPM	OK			EW-37
137	6.3 PPM	OK			TP-8
138	2.5 PPM	OK			EW-64
139	5.3 PPM	OK			EW-30R
140	1.5 PPM	OK			EW-63
141	14.6 PPM	OK			EW-42
142	14.5 PPM	OK			TP-9
143	0 PPM	OK			EW-33R
144	18 PPM	OK			EW-62
145	5.4 PPM	OK			EW-29R
146	10.7 PPM	OK			EW-25
147	4.2 PPM	OK			EW-24
148	0.9 PPM	OK			EW-32
149	4.4 PPM	OK			EW-32R

Number of locations sampled:	149
Number of exceedance locations:	0

SCS ENGINEERS

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

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

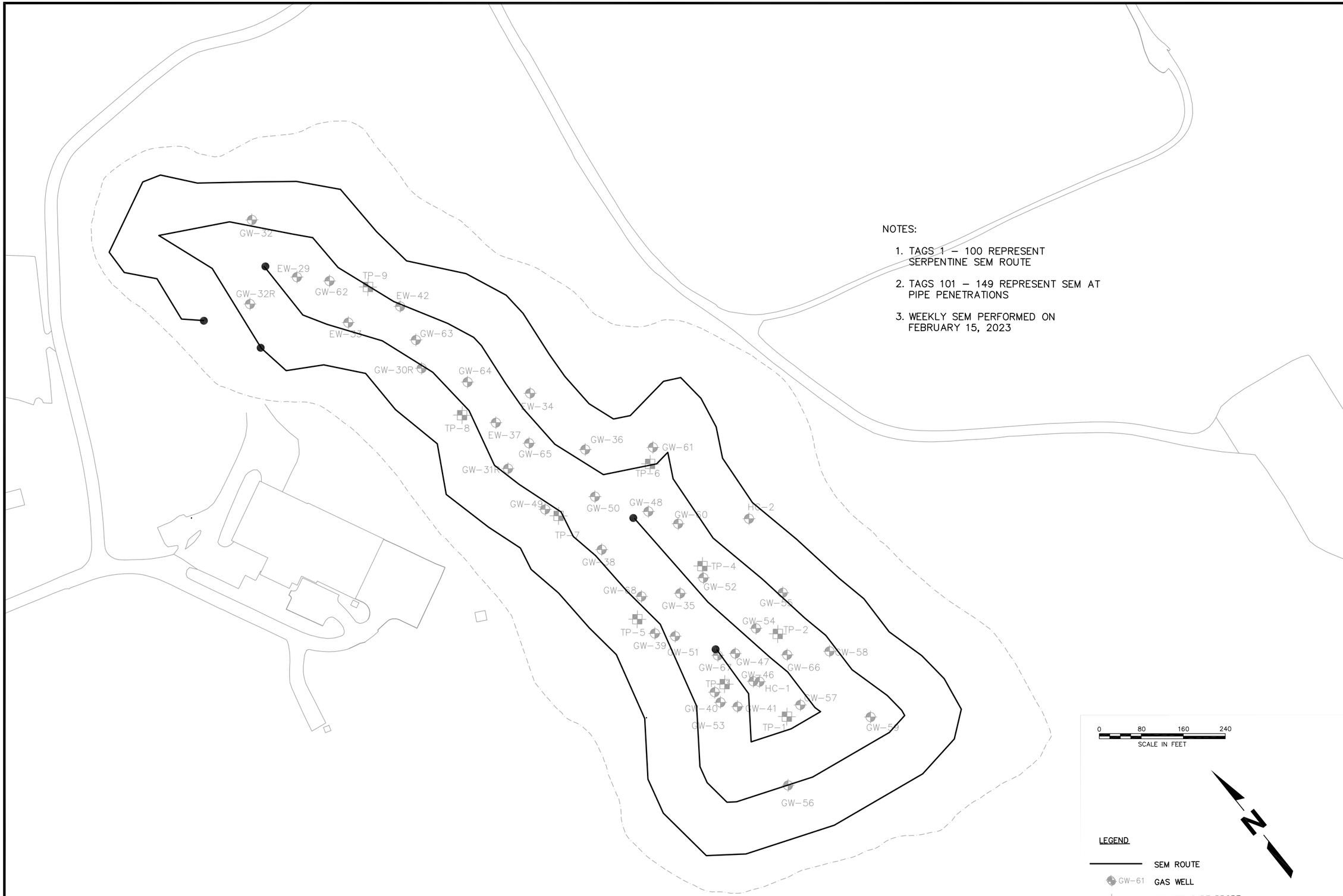
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 149 represent SEM at Pipe Penetrations
Weather Conditions: Mostly Cloudy, 60°F Wind: W - 5 MPH

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

2/14/2023	16:42	ZERO	0.0 PPM
2/14/2023	16:45	SPAN	500.0 PPM

Background Reading:

2/15/2023	8:51	Upwind	3.5 PPM
2/15/2023	8:58	Downwind	37 PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 149 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON FEBRUARY 15, 2023

NO.	REVISION	DATE

SHEET TITLE
WEEKLY SEM ROUTE

PROJECT TITLE
SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

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

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

PROJ. NO. 02218208.04	DWN. BY: LSN	CHK. BY: DBK	O/A R/W BY:
DSN. BY: LSN			APP. BY:

FILE: 02218208.04

DATE: 2/15/23

SCALE: AS SHOWN

DRAWING NO. 1 of 1

March 1, 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 – February 23, 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 February 23, 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 newly installed temperature probes. 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 monitory is provided in Table 1.

Table 1. Summary of Surface Emissions Monitoring

Description	Quantity
Number of Points Sampled	149
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	49
Number of Exceedances[1]	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

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	2/23/23 Event	2/23/23 Event Result	Comments
EW-53	1/26/23	30-Day Retest	Pass	Exceedance Resolved

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
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

S C S E N G I N E E R S

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 23, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	64.1 PPM	OK			Start Serpentine Route
2	13.4 PPM	OK			
3	31.5 PPM	OK			
4	16.3 PPM	OK			
5	33.7 PPM	OK			
6	156 PPM	OK			
7	85.7 PPM	OK			
8	77.4 PPM	OK			
9	28.6 PPM	OK			
10	9.7 PPM	OK			
11	13.9 PPM	OK			
12	12.8 PPM	OK			
13	15.4 PPM	OK			
14	12.5 PPM	OK			
15	7.5 PPM	OK			
16	20 PPM	OK			
17	19.1 PPM	OK			
18	13.7 PPM	OK			
19	13.9 PPM	OK			
20	29 PPM	OK			
21	21.9 PPM	OK			
22	8.6 PPM	OK			
23	51 PPM	OK			
24	83.4 PPM	OK			
25	19.9 PPM	OK			
26	8.7 PPM	OK			
27	16.5 PPM	OK			
28	34.3 PPM	OK			
29	2.5 PPM	OK			
30	7 PPM	OK			
31	320 PPM	OK			
32	213 PPM	OK			
33	20.7 PPM	OK			
34	241 PPM	OK			
35	84.1 PPM	OK			
36	60.6 PPM	OK			
37	42.3 PPM	OK			
38	24.7 PPM	OK			
39	151 PPM	OK			
40	81.3 PPM	OK			
41	33.8 PPM	OK			
42	18.7 PPM	OK			

S C S E N G I N E E R S

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 23, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
43	12 PPM	OK			
44	8.6 PPM	OK			
45	1.7 PPM	OK			
46	4.2 PPM	OK			
47	70.4 PPM	OK			
48	176 PPM	OK			
49	51.4 PPM	OK			
50	15.6 PPM	OK			
51	12.8 PPM	OK			
52	25 PPM	OK			
53	34.7 PPM	OK			
54	51 PPM	OK			
55	42.2 PPM	OK			
56	13.9 PPM	OK			
57	10.7 PPM	OK			
58	20.8 PPM	OK			
59	5.9 PPM	OK			
60	6.1 PPM	OK			
61	4.2 PPM	OK			
62	4.8 PPM	OK			
63	5.3 PPM	OK			
64	4.1 PPM	OK			
65	7.8 PPM	OK			
66	8.8 PPM	OK			
67	8.8 PPM	OK			
68	7.3 PPM	OK			
69	21.2 PPM	OK			
70	11.2 PPM	OK			
71	110 PPM	OK			
72	34.4 PPM	OK			
73	3.2 PPM	OK			
74	108 PPM	OK			
75	90.7 PPM	OK			
76	67.8 PPM	OK			
77	26.9 PPM	OK			
78	29.2 PPM	OK			
79	33 PPM	OK			
80	16.6 PPM	OK			
81	75.8 PPM	OK			
82	35.4 PPM	OK			
83	36.9 PPM	OK			
84	31.9 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 23, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
85	31.1 PPM	OK			
86	30 PPM	OK			
87	30 PPM	OK			
88	29.8 PPM	OK			
89	27.5 PPM	OK			
90	26 PPM	OK			
91	5.1 PPM	OK			
92	25.7 PPM	OK			
93	22.8 PPM	OK			
94	203 PPM	OK			
95	15.7 PPM	OK			
96	296 PPM	OK			
97	39.4 PPM	OK			
98	103 PPM	OK			
99	120 PPM	OK			
100	38.1 PPM	OK			End Serpentine Route
101	89.9 PPM	OK			EW-35
102	20.4 PPM	OK			EW-52
103	98.9 PPM	OK			TP-4
104	74.8 PPM	OK			EW-60
105	142 PPM	OK			EW-48
106	11.8 PPM	OK			TP-6
107	7.8 PPM	OK			EW-61
108	4.5 PPM	OK			EW-36
109	156 PPM	OK			EW-34
110	77.5 PPM	OK			EW-50
111	99.7 PPM	OK			EW-67
112	140 PPM	OK			EW-47
113	310 PPM	OK			EW-54
114	278 PPM	OK			EW-55
115	32.2 PPM	OK			TP-2
116	5.2 PPM	OK			EW-46
117	73.9 PPM	OK			EW-66
118	131 PPM	OK			EW-58
119	60.9 PPM	OK			EW-57
120	165 PPM	OK			TP-1
121	312 PPM	OK			EW-59
122	215 PPM	OK			EW-56
123	8 PPM	OK			EW-41
124	36.6 PPM	OK			EW-53
125	149 PPM	OK			EW-40

SCS ENGINEERS

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 23, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
126	2.3 PPM	OK			TP-3
127	27.4 PPM	OK			EW-51
128	10.9 PPM	OK			EW-39
129	93.2 PPM	OK			TP-5
130	53.7 PPM	OK			EW-68
131	459 PPM	OK			EW-38
132	10.7 PPM	OK			TP-7
133	5.1 PPM	OK			EW-49
134	3.6 PPM	OK			EW-31R
135	1.3 PPM	OK			EW-65
136	2.8 PPM	OK			EW-37
137	5.5 PPM	OK			TP-8
138	3.5 PPM	OK			EW-64
139	5.4 PPM	OK			EW-30R
140	8.6 PPM	OK			EW-63
141	42.7 PPM	OK			EW-42
142	5.2 PPM	OK			TP-9
143	5.2 PPM	OK			EW-33R
144	5.9 PPM	OK			EW-62
145	7.7 PPM	OK			EW-29R
146	38.4 PPM	OK			EW-25
147	22.5 PPM	OK			EW-24
148	7.3 PPM	OK			EW-32
149	10.6 PPM	OK			EW-32R

Number of locations sampled:	149
Number of exceedance locations:	0

SCS ENGINEERS

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 23, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

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

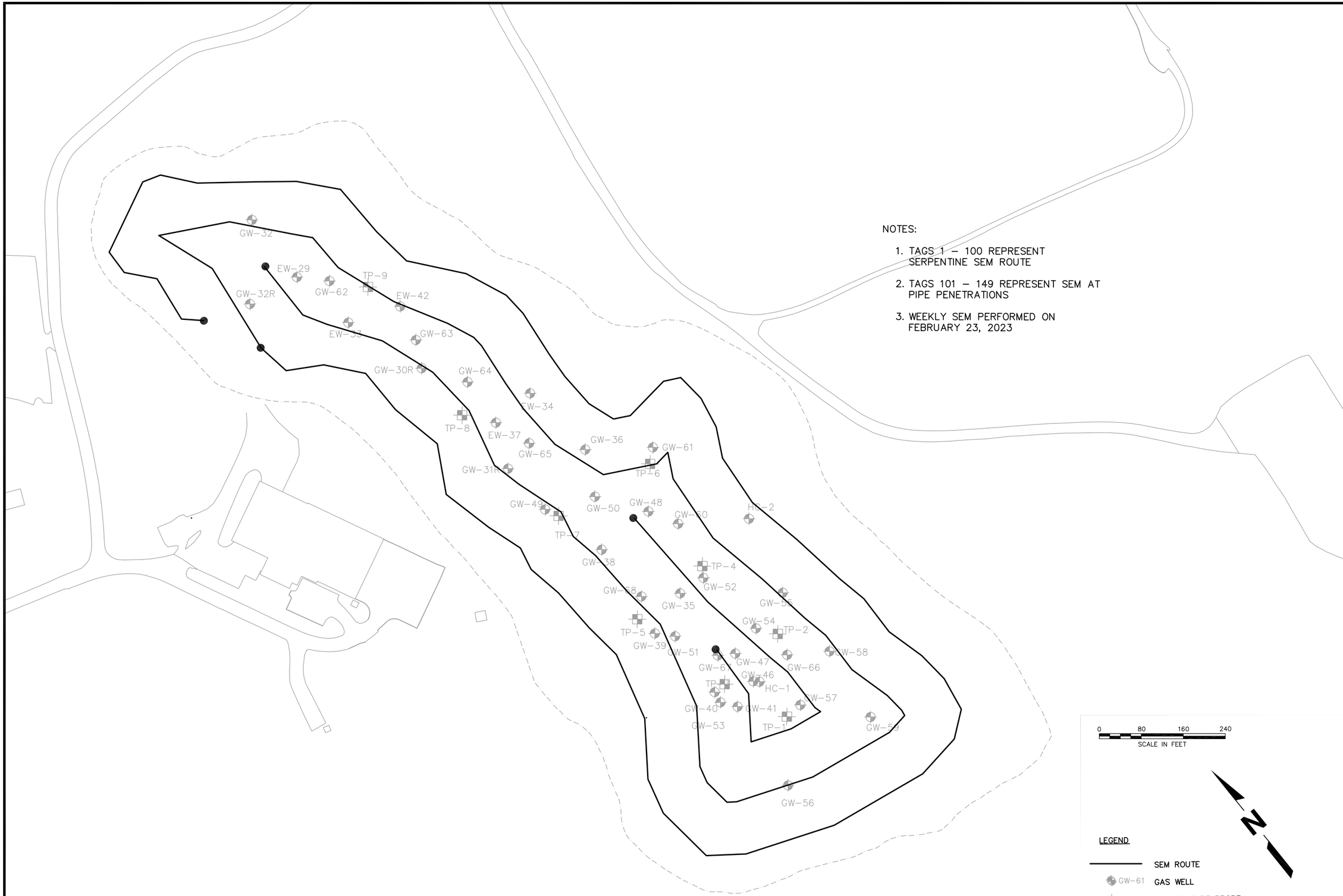
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 149 represent SEM at Pipe Penetrations
Weather Conditions: Cloudy, 60°F Wind: SW 5 MPH

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

2/23/2023	10:44	ZERO	0.0 PPM
2/23/2023	10:49	SPAN	501.0 PPM

Background Reading:

2/23/2023	11:28	Upwind	2 PPM
2/23/2023	11:29	Downwind	7.2 PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 149 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON FEBRUARY 23, 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

NO.	REVISION	DATE

SHEET TITLE
WEEKLY SEM ROUTE

PROJECT TITLE
SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

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

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

PROJ. NO. 02218208.04	DWN. BY: LSN	CHK. BY: DBK	O/A R/W BY:
DSN. BY: LSN			APP. BY:

FILE: 02218208.04
DATE: 2/23/23
SCALE: AS SHOWN
DRAWING NO. 1 of 1

March 8, 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 – February 28, 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 February 28, 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 newly installed temperature probes. 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 monitory is provided in Table 1.

Table 1. Summary of Surface Emissions Monitoring

Description	Quantity
Number of Points Sampled	149
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	49
Number of Exceedances[1]	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

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.

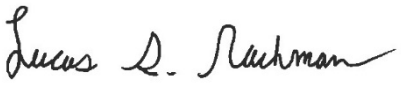
A summary of ongoing exceedance points is provided in Table 2.

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	2/28/23 Event	2/28/23 Event Result	Comments
No Ongoing Exceedances				

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

Sincerely,



Nicholas Gathings
Associate Staff Professional
SCS Engineers

Lucas S. Nachman
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

S C S E N G I N E E R S

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 28, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
1	2.1 PPM	OK			Start Serpentine Route
2	5.5 PPM	OK			
3	16.7 PPM	OK			
4	11.6 PPM	OK			
5	17.7 PPM	OK			
6	5.3 PPM	OK			
7	4.8 PPM	OK			
8	31.4 PPM	OK			
9	5.4 PPM	OK			
10	5.5 PPM	OK			
11	4.1 PPM	OK			
12	7.7 PPM	OK			
13	5.3 PPM	OK			
14	4.5 PPM	OK			
15	6.5 PPM	OK			
16	369 PPM	OK			
17	34.9 PPM	OK			
18	13.2 PPM	OK			
19	53.8 PPM	OK			
20	15.4 PPM	OK			
21	92.2 PPM	OK			
22	10.8 PPM	OK			
23	184 PPM	OK			
24	226 PPM	OK			
25	395 PPM	OK			
26	266 PPM	OK			
27	71.5 PPM	OK			
28	112 PPM	OK			
29	367 PPM	OK			
30	359 PPM	OK			
31	160 PPM	OK			
32	272 PPM	OK			
33	47.2 PPM	OK			
34	65.8 PPM	OK			
35	38 PPM	OK			
36	224 PPM	OK			
37	6.7 PPM	OK			
38	10.2 PPM	OK			
39	7.2 PPM	OK			
40	9.9 PPM	OK			
41	60.3 PPM	OK			
42	4.7 PPM	OK			

S C S E N G I N E E R S

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 28, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
43	5.8 PPM	OK			
44	9.9 PPM	OK			
45	336 PPM	OK			
46	273 PPM	OK			
47	78.5 PPM	OK			
48	12.2 PPM	OK			
49	297 PPM	OK			
50	25.2 PPM	OK			
51	68.4 PPM	OK			
52	19.2 PPM	OK			
53	6.4 PPM	OK			
54	26.1 PPM	OK			
55	7.8 PPM	OK			
56	7.2 PPM	OK			
57	4.3 PPM	OK			
58	53.2 PPM	OK			
59	2.4 PPM	OK			
60	3.5 PPM	OK			
61	4.5 PPM	OK			
62	5.4 PPM	OK			
63	38.5 PPM	OK			
64	15 PPM	OK			
65	4.8 PPM	OK			
66	10.3 PPM	OK			
67	7.5 PPM	OK			
68	40.2 PPM	OK			
69	8 PPM	OK			
70	30.9 PPM	OK			
71	24.7 PPM	OK			
72	26 PPM	OK			
73	15.2 PPM	OK			
74	65.4 PPM	OK			
75	3 PPM	OK			
76	142 PPM	OK			
77	81.9 PPM	OK			
78	377 PPM	OK			
79	5.8 PPM	OK			
80	3.2 PPM	OK			
81	3.9 PPM	OK			
82	5 PPM	OK			
83	2.8 PPM	OK			
84	1.8 PPM	OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 28, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
85	2 PPM	OK			
86	7 PPM	OK			
87	10.7 PPM	OK			
88	4.9 PPM	OK			
89	17.6 PPM	OK			
90	1.9 PPM	OK			
91	18 PPM	OK			
92	14.8 PPM	OK			
93	2.3 PPM	OK			
94	12.3 PPM	OK			
95	419 PPM	OK			
96	10.4 PPM	OK			
97	17.7 PPM	OK			
98	8.1 PPM	OK			
99	11 PPM	OK			
100	26.5 PPM	OK			End Serpentine Route
101	470 PPM	OK			EW-35
102	137 PPM	OK			EW-52
103	33 PPM	OK			TP-4
104	105 PPM	OK			EW-60
105	27.2 PPM	OK			EW-48
106	2.6 PPM	OK			TP-6
107	3 PPM	OK			EW-61
108	1.6 PPM	OK			EW-36
109	284 PPM	OK			EW-34
110	10.3 PPM	OK			EW-50
111	188 PPM	OK			EW-67
112	18.3 PPM	OK			EW-47
113	202 PPM	OK			EW-54
114	29.2 PPM	OK			EW-55
115	29.3 PPM	OK			TP-2
116	9.2 PPM	OK			EW-46
117	16.7 PPM	OK			EW-66
118	356 PPM	OK			EW-58
119	56.4 PPM	OK			EW-57
120	5.6 PPM	OK			TP-1
121	303 PPM	OK			EW-59
122	15.7 PPM	OK			EW-56
123	8.8 PPM	OK			EW-41
124	28.1 PPM	OK			EW-53
125	10.5 PPM	OK			EW-40

S C S E N G I N E E R S

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 28, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

ID #	Methane Concentration	Compliance	GPS Coordinates Lat.	Long.	Comments
126	17.1 PPM	OK			TP-3
127	305 PPM	OK			EW-51
128	17.8 PPM	OK			EW-39
129	236 PPM	OK			TP-5
130	4.3 PPM	OK			EW-68
131	115 PPM	OK			EW-38
132	9 PPM	OK			TP-7
133	2.2 PPM	OK			EW-49
134	1.7 PPM	OK			EW-31R
135	2.8 PPM	OK			EW-65
136	7.7 PPM	OK			EW-37
137	5.6 PPM	OK			TP-8
138	8.6 PPM	OK			EW-64
139	13.5 PPM	OK			EW-30R
140	4.5 PPM	OK			EW-63
141	5.5 PPM	OK			EW-42
142	7 PPM	OK			TP-9
143	1.6 PPM	OK			EW-33R
144	1.1 PPM	OK			EW-62
145	2.3 PPM	OK			EW-29R
146	18.2 PPM	OK			EW-25
147	45.1 PPM	OK			EW-24
148	5.7 PPM	OK			EW-32
149	9 PPM	OK			EW-32R

Number of locations sampled:	149
Number of exceedance locations:	0

SCS ENGINEERS

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS
WEEKLY MONITORING EVENT - FEBRUARY 28, 2023
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

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

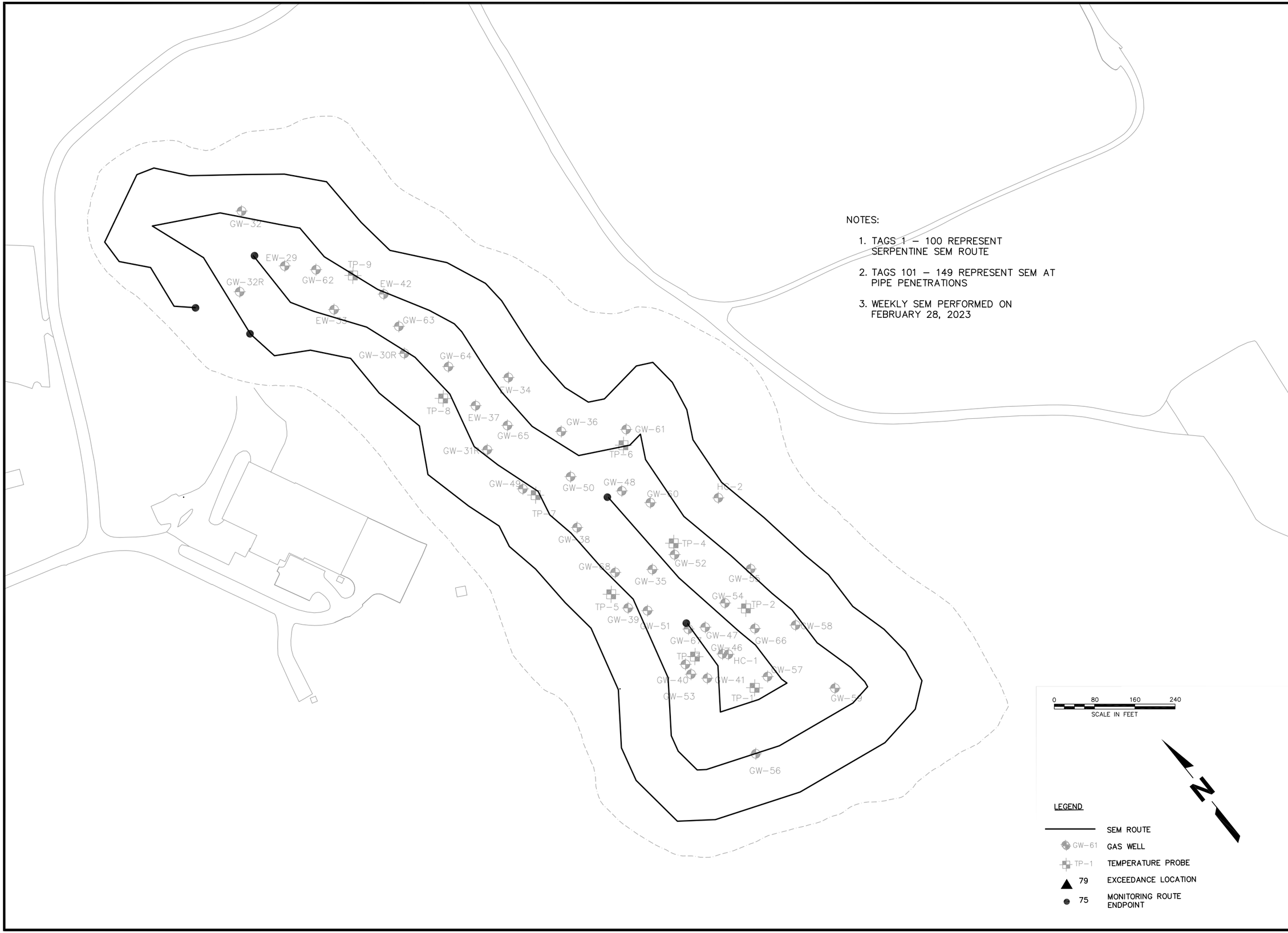
NOTES:
Points 1 through 100 represent serpentine SEM route.
Points 101 through 149 represent SEM at Pipe Penetrations
Weather Conditions: Sunny, 65˚F Wind: NW - 10 MPH

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

2/28/2023	10:47	ZERO	0.0 PPM
2/28/2023	10:48	SPAN	499.0 PPM

Background Reading:

2/28/2023	10:52	Upwind	1.8 PPM
2/28/2023	10:56	Downwind	1.5 PPM



NOTES:

1. TAGS 1 – 100 REPRESENT SERPENTINE SEM ROUTE
2. TAGS 101 – 149 REPRESENT SEM AT PIPE PENETRATIONS
3. WEEKLY SEM PERFORMED ON FEBRUARY 28, 2023

NO.	REVISION	DATE

SHEET TITLE
WEEKLY SEM ROUTE

PROJECT TITLE
SURFACE EMISSIONS MONITORING
SOLID WASTE PERMIT #588

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

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

PROJ. NO. 02218208.04	DWN. BY: LSN	CHK. BY: DBK	QA/QC BY:
DSN. BY: LSN			APP. BY:

FILE: 02218208.04
DATE: 2/28/23
SCALE: AS SHOWN
DRAWING NO. 1 of 1

Appendix B

SCS-FS February Summary Report

March 7, 2023
Job No. 07220028.00

SENT VIA EMAIL on February 7, 2023

Mr. Michael Martin
City of Bristol
2125 Shakesville Road
Bristol, VA 24201

Subject: Summary of Operation, Monitoring, and Maintenance (OM&M) Services
Permit Area 588 Gas Collection Control System (GCCS)
City of Bristol Integrated Solid Waste Management Facility, Bristol, Virginia
February 2023

Dear Mr. Martin:

SCS Field Services (SCS-FS) performed routine and non-routine monitoring and maintenance on the Solid Waste Permit (SWP) #588 Landfill gas collection and control system (GCCS) for the City of Bristol at the Bristol Integrated Solid Waste Management Facility (ISWMF) during the month of February, 2023, This report summarizes the work performed and presents the data collected. The monitoring data is presented in the following attachments:

Attachment 1. SWP #588 Wellfield Monitoring Data
Attachment 2. Exceedance Detail Report
Attachment 3. Enhanced Monitoring Record Form and Analytical Results
Attachment 4. Daily Logs

The tables in Attachment 1 include the February blower/flare station (BFS) monitoring data and the last three months of monitoring data for the wellheads and the leachate cleanouts.

GCCS SITE ACTIVITES

SCS-FS monitored the extraction wells (EW) each week throughout the month. Adjustments were made and wellheads were re-monitored as needed to maintain regulatory compliance and the target gas concentrations and flow rates. The blower/flare station operation was monitored each working day.

On February 3, SCS-FS conducted non-routine enhanced monitoring and carbon monoxide (CO) sampling (enhanced monitoring) for compliance with the National Emission Standards for Hazardous Air Pollutants (NESHAP) at EW-37 and -57. Samples for CO and fixed gases analysis were collected and submitted to Enthalpy Analytical for analysis. Analytical results as available from the laboratory for the enhanced monitoring sampling events are included in Attachment 3.

On February 7, SCS-FS made repairs at the following wells: replaced temperature port on EW-51; repaired flex hose clamp at EW-68; and replaced test ports on EW-38 and -48.

On February 8, SCS-FS conducted enhanced monitoring and CO sample collection at EW-37 and -57. SCS-FS also monitored the leachate cleanouts on the north and south side of SWP #588.

On February 15, SCS-FS conducted enhanced monitoring and CO sample collection at EW-37 and -57.

On February 23, SCS-FS conducted enhanced monitoring at EW-37, -53, and -57. Samples for CO analysis were collected at EW-37 and -53. No sample was collected at EW-57, as it was below the regulatory limit of 145 degrees Fahrenheit. SCS-FS also performed pump maintenance at EW-51, -52, -54, -57, -60, and -67, and replaced wellheads on EW-57 and -60.

Please contact either of the undersigned if you have any questions or need additional information regarding this report.

Very truly yours,

Mike Gibbons
Project Manager
SCS FIELD SERVICES

Thomas M. Lock
Vice President / Northeast Region Manager
SCS FIELD SERVICES

Attachments

cc: Bob Dick, SCS Engineers

Attachments

1. Wellfield Monitoring Data
2. Exceedance Detail Report
3. Enhanced Monitoring Record Forms and Analytical Results
4. Daily Logs

Attachment 1

SWP #588 Wellfield Monitoring Data

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
29	12/8/2022 11:15:10 AM	60.0	39.0	0.2	0.8	99.6	99.7	-4.00	-3.98	-3.97	
29	12/8/2022 11:15:10 AM	60.0	39.0	0.2	0.8	99.6	99.7	-4.00	-3.98	-3.97	
29	1/5/2023 12:45:22 PM	56.0	38.5	1.0	4.5	100.0	100.0	-4.72	-4.35	-4.35	
29	2/3/2023 10:24:53 AM	53.0	36.5	2.4	8.1	46.2	46.0	-2.09	-1.99	-1.97	
29	2/3/2023 10:24:53 AM	53.0	36.5	2.4	8.1	46.2	46.0	-2.09	-1.99	-1.97	
29	2/3/2023 10:24:53 AM	53.0	36.5	2.4	8.1	46.2	46.0	-2.09	-1.99	-1.97	
29	2/3/2023 10:24:53 AM	53.0	36.5	2.4	8.1	46.2	46.0	-2.09	-1.99	-1.97	
29	2/3/2023 10:24:53 AM	53.0	36.5	2.4	8.1	46.2	46.0	-2.09	-1.99	-1.97	
29	2/8/2023 8:21:01 AM	58.0	39.7	0.9	1.4	59.9	59.8	-1.73	-1.68	-1.66	No Change
29	2/8/2023 8:21:01 AM	58.0	39.7	0.9	1.4	59.9	59.8	-1.73	-1.68	-1.66	No Change
29	2/8/2023 8:21:01 AM	58.0	39.7	0.9	1.4	59.9	59.8	-1.73	-1.68	-1.66	No Change
29	2/14/2023 1:17:01 PM	57.1	40.1	0.5	2.3	92.7	92.8	-1.37	-1.35	-1.32	No Change
29	2/22/2023 3:05:29 PM	58.6	41.0	0.4	0.0	98.3	98.3	-0.89	-0.89	-0.89	No Change
30R	12/8/2022 12:45:05 PM	22.0	34.3	3.5	40.2	129.4	129.6	-21.61	-21.59	-21.13	
30R	1/12/2023 12:22:41 PM	49.0	37.1	0.5	13.4	127.2	127.3	-7.04	-6.68	-5.77	
30R	2/3/2023 9:48:17 AM	18.7	20.3	8.1	52.9	128.1	128.2	-0.58	-0.54	-6.33	
30R	2/7/2023 2:32:09 PM	21.7	21.0	6.1	51.2	129.2	129.8	-0.56	-0.53	-6.17	
30R	2/8/2023 8:36:06 AM	20.0	20.7	6.5	52.8	128.8	129.0	-0.55	-0.51	-6.09	No Change
30R	2/14/2023 1:01:58 PM	21.4	21.9	5.8	50.9	129.9	129.9	-0.63	-0.63	-0.64	No Change
30R	2/22/2023 2:46:51 PM	22.4	21.1	6.4	50.1	129.7	129.8	-0.49	-0.48	-5.37	No Change
31R	12/8/2022 12:08:04 PM	25.7	25.1	5.1	44.1	132.9	132.9	-0.83	-0.83	-7.90	
31R	1/5/2023 1:43:08 PM	21.0	38.2	2.8	38.0	138.2	138.3	-21.01	-21.01	-21.40	
31R	2/1/2023 1:30:51 PM	24.7	48.5	0.6	26.2	127.5	127.6	-21.49	-20.91	-16.79	
32	12/8/2022 11:29:45 AM	58.9	41.1	0.0	0.0	72.6	72.7	-4.70	-4.64	-8.59	
32	1/5/2023 12:47:56 PM	57.1	42.9	0.0	0.0	72.0	72.3	-3.94	-3.90	-10.65	
32	2/3/2023 10:27:44 AM	50.6	40.4	9.1		60.5	62.8	-2.81	-2.97	-6.59	Increased Flow/Vacuum
32	2/8/2023 8:47:35 AM	57.5	42.1	0.4	0.0	75.8	77.3	-6.99	-8.07	-9.38	Increased Flow/Vacuum
32	2/14/2023 1:20:28 PM	56.3	43.7	0.0	0.0	87.6	87.0	-14.54	-14.34	-15.26	Increased Flow/Vacuum
32	2/22/2023 3:21:32 PM	55.7	44.3	0.0	0.0	89.6	89.6	-15.91	-16.24	-14.94	Increased Flow/Vacuum
32R	12/8/2022 11:10:28 AM	50.1	39.1	0.0	10.8	130.1	130.1	-1.83	-1.77	-5.40	
32R	1/5/2023 12:42:19 PM	48.8	39.5	0.0	11.7	128.6	128.6	-2.38	-2.39	-6.16	
32R	2/3/2023 10:32:02 AM	52.0	39.8	0.0	8.2	118.9	118.1	-1.28	-1.18	-3.15	Increased Flow/Vacuum
32R	2/8/2023 8:15:29 AM	52.4	39.2	0.9	7.5	120.2	120.3	-0.95	-0.95	-3.33	Increased Flow/Vacuum
32R	2/14/2023 1:23:48 PM	51.2	40.4	0.0	8.4	122.8	122.8	-0.94	-0.93	-3.44	No Change
32R	2/14/2023 1:23:48 PM	51.2	40.4	0.0	8.4	122.8	122.8	-0.94	-0.93	-3.44	No Change
32R	2/22/2023 3:08:40 PM	49.2	36.7	2.1	12.0	120.3	120.4	-0.76	-0.75	-1.36	No Change
33	12/8/2022 11:51:43 AM	35.3	27.3	5.0	32.4	130.5	130.3	-1.42	-1.41	-7.98	
33	1/5/2023 1:11:23 PM	37.0	29.5	4.2	29.3	129.4	129.5	-2.02	-2.02	-1.54	
33	2/3/2023 11:56:29 AM	38.6	26.1	9.3	26.0	116.2	118.4	-1.20	-1.20	-6.99	

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
33	2/14/2023 1:26:42 PM	36.9	30.1	3.3	29.7	118.7	118.8	-1.22	-1.16	-6.23	No Change
33	2/22/2023 3:00:05 PM	36.6	28.4	4.0	31.0	115.9	116.1	-1.37	-1.34	-6.49	No Change
34	12/8/2022 12:35:48 PM	2.4	74.0	0.0	23.6	139.2	139.3	-4.90	-4.36	-4.34	
34	1/5/2023 1:37:03 PM	2.8	72.8	0.1	24.3	138.0	138.0	-8.90	-8.86	-8.83	
34	2/3/2023 9:54:03 AM	12.5	16.1	15.0	56.4	127.2	128.1	-2.20	-2.20	-1.38	
34	2/7/2023 2:20:41 PM	2.1	67.8	0.5	29.6	128.0	128.3	-6.21	-6.20	-8.12	No Change
34	2/14/2023 12:51:32 PM	1.3	74.2	0.0	24.5	136.8	136.8	-4.39	-4.37	-6.18	
34	2/22/2023 2:40:02 PM	1.0	39.4	10.1	49.5	114.7	114.9	-3.22	-3.20	-5.12	No Change
35	12/8/2022 1:40:33 PM	0.2	0.4	21.4	78.0	68.0	68.5	-10.43	-10.40	-20.27	
35	1/5/2023 2:15:29 PM	32.6	23.4	9.9	34.1	66.9	66.9	-7.11	-7.05	-20.05	
35	2/1/2023 12:39:33 PM	21.7	17.2	14.2	46.9	48.0	47.7	-12.20	-11.72	-18.26	
35	2/7/2023 11:23:00 AM	19.4	15.1	13.5	52.0	68.1	67.7	-13.70	-12.32	-20.93	Increased Flow/Vacuum
35	2/14/2023 12:10:53 PM	3.1	7.5	19.4	70.0	77.8	76.8	-5.56	-5.63	-20.47	
35	2/22/2023 11:43:10 AM	2.2	2.0	20.7	75.1	86.5	85.7	-6.83	-6.85	-17.08	No Change
36	12/8/2022 1:00:23 PM	24.8	16.0	13.2	46.0	65.3	65.2	-21.97	-21.96	-21.95	
36	1/5/2023 1:51:12 PM	15.1	10.1	16.4	58.4	65.7	65.8	-22.56	-22.15	-22.14	
36	2/3/2023 9:34:14 AM	11.3	9.0	18.5	61.2	48.8	48.8	-22.29	-22.26	-22.23	Can Not Sample due to Access/Safety
36	2/7/2023 2:12:31 PM	21.2	14.9	14.0	49.9	76.0	75.7	-21.90	-21.90	-21.89	No Change
37	12/8/2022 12:32:15 PM	18.7	28.4	6.3	46.6	151.2	150.8	-1.64	-1.61	-8.05	
37	12/9/2022 9:19:24 AM	19.0	28.3	6.7	46.0	148.5	148.5	-1.51	-1.53	-7.09	High Temp
37	12/14/2022 8:37:04 AM	17.4	28.4	6.2	48.0	148.6	148.6	-1.56	-1.57	-7.82	
37	12/20/2022 11:19:00 AM	14.7	25.2	6.6	53.5	148.6	148.6	-1.45	-1.47	-6.88	Fully Open
37	1/5/2023 1:34:21 PM	15.5	27.4	6.3	50.8	151.9	151.8	-2.26	-2.23	-8.95	
37	1/6/2023 7:24:18 AM	16.1	26.9	6.7	50.3	149.2	149.2	-1.97	-1.95	-9.11	
37	1/12/2023 12:18:14 PM	15.0	24.3	6.2	54.5	149.7	149.7	-8.51	-8.49	-8.14	High Temp
37	1/18/2023 12:33:18 PM	14.0	26.2	6.8	53.0	149.0	149.0	-1.84	-1.82	-8.05	High Temp
37	1/25/2023 11:53:12 AM	14.2	28.4	6.1	51.3	149.7	149.8	-1.82	-1.79	-7.80	High Temp
37	2/1/2023 1:33:56 PM	18.2	30.2	6.3	45.3	150.9	150.9	-1.89	-1.86	-7.41	
37	2/3/2023 10:18:21 AM	14.9	27.2	7.8	50.1	148.6	149.0	-1.75	-1.64	-7.27	High Temp
37	2/7/2023 2:26:19 PM	17.0	28.3	6.6	48.1	150.4	150.5	-6.15	-6.47	-6.79	No Change
37	2/8/2023 9:35:19 AM	16.7	29.2	6.3	47.8	149.1	149.1	-1.49	-1.50	-6.70	No Change,High Temp
37	2/14/2023 12:54:47 PM	16.2	31.5	5.9	46.4	149.6	149.6	-1.50	-1.49	-6.35	High O2
37	2/15/2023 10:32:47 AM	17.1	29.3	6.5	47.1	148.6	148.6	-1.42	-1.41	-6.26	High O2
37	2/22/2023 2:36:29 PM	17.5	30.9	6.1	45.5	149.1	149.5	-1.51	-1.53	-6.69	High Temp,No Change
37	2/23/2023 9:25:10 AM	16.1	30.3	6.0	47.6	149.0	148.9	-1.41	-1.42	-5.95	
38	12/8/2022 1:18:39 PM	38.1	25.5	8.0	28.4	82.5	82.6	-14.24	-14.24	-14.24	
38	1/5/2023 2:06:15 PM	34.6	23.0	9.5	32.9	104.2	104.1	-13.31	-13.30	-13.32	
38	2/1/2023 1:20:21 PM	15.9	12.6	16.8	54.7	47.7	47.8	-22.98	-22.93	-22.92	
38	2/7/2023 11:54:01 AM	28.1	19.0	11.3	41.6	105.7	105.7	-11.94	-11.89	-11.85	No Change

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
38	2/14/2023 12:31:59 PM	2.6	3.2	20.7	73.5	101.1	101.3	-8.52	-8.46	-7.70	
38	2/22/2023 12:01:37 PM	0.5	0.7	21.7	77.1	99.7	100.0	-7.48	-7.71	-7.14	
39	12/8/2022 1:28:35 PM	5.8	6.5	18.6	69.1	60.7	60.7	-10.74	-10.22	-9.33	
39	1/5/2023 2:21:35 PM	29.4	20.0	11.0	39.6	60.2	60.3	-18.07	-18.44	-17.71	
39	2/1/2023 12:48:21 PM	0.9	1.8	22.2	75.1	40.9	40.9	-16.51	-17.11	-16.69	
39	2/7/2023 11:32:42 AM	0.7	1.5	21.1	76.7	63.9	64.2	-21.50	-21.47	-21.38	
39	2/14/2023 12:16:23 PM	1.2	10.0	19.0	69.8	69.6	67.8	-15.27	-15.50	-15.55	Increased Flow/Vacuum
39	2/22/2023 11:49:10 AM	1.9	3.4	20.5	74.2	78.0	78.0	-12.27	-13.07	-12.99	No Change
40	12/8/2022 2:11:07 PM	54.4	45.6	0.0	0.0	132.9	133.0	-9.66	-9.10	-15.24	
40	1/5/2023 3:04:22 PM	45.5	54.2	0.3	0.0	138.5	139.3	-17.73	-17.72	-18.69	
40	2/1/2023 12:17:30 PM	46.1	53.4	0.5	0.0	124.2	124.0	-4.70	-4.67	-9.13	
40	2/1/2023 1:25:38 PM	2.7	72.9	0.2	24.2	123.6	123.8	-6.95	-6.96	-6.98	
40	2/7/2023 10:59:58 AM	49.0	50.6	0.4	0.0	127.7	128.4	-10.32	-12.66	-12.78	Increased Flow/Vacuum
40	2/14/2023 11:54:08 AM	48.9	50.3	0.1	0.7	129.8	129.7	-13.01	-13.76	-15.39	Increased Flow/Vacuum
40	2/14/2023 11:54:08 AM	48.9	50.3	0.1	0.7	129.8	129.7	-13.01	-13.76	-15.39	Increased Flow/Vacuum
40	2/22/2023 11:09:42 AM	45.2	47.0	3.6	4.2	124.1	124.0	-10.20	-11.03	-12.52	Increased Flow/Vacuum
41	12/8/2022 2:05:22 PM	53.4	46.4	0.2	0.0	73.4	72.7	-19.53	-18.44	-18.28	
41	1/5/2023 3:06:16 PM	50.6	49.3	0.2		128.3	128.4	-6.73	-6.67	-16.59	
41	2/1/2023 12:06:23 PM	55.7	42.5	1.3	0.5	46.3	46.3	-19.84	-19.83	-19.58	
41	2/7/2023 10:53:30 AM	50.0	38.4	2.6	9.0	108.2	109.1	-18.95	-19.27	-1.58	Increased Flow/Vacuum
41	2/14/2023 11:48:08 AM	50.3	39.8	1.8	8.1	96.9	97.3	-17.09	-16.68	-1.16	
41	2/14/2023 11:48:08 AM	50.3	39.8	1.8	8.1	96.9	97.3	-17.09	-16.68	-1.16	
41	2/22/2023 10:48:07 AM	52.6	40.2	1.7	5.5	94.3	93.9	-15.34	-15.21	-3.47	
42	12/8/2022 11:56:37 AM	55.3	40.2	0.8	3.7	115.7	115.8	-0.87	-0.86	-0.84	
42	1/5/2023 1:13:58 PM	36.4	27.4	7.5	28.7	120.0	119.9	-1.47	-0.88	-0.88	
42	2/3/2023 9:59:26 AM	57.8	42.2	0.0	0.0	105.5	107.7	-0.89	-0.80	-0.82	Close_Task
42	2/8/2023 8:30:05 AM	0.3	0.7	21.9	77.1	111.1	111.3	-0.08	-0.08	-0.08	No Change
42	2/14/2023 1:10:19 PM	57.5	41.0	0.5	1.0	111.5	111.4	-0.39	-0.36	-0.28	No Change
42	2/22/2023 2:56:36 PM	56.4	43.6	0.0	0.0	115.2	115.6	-0.42	-0.42	-0.38	No Change
46	12/8/2022 2:14:50 PM	45.7	44.1	0.0	10.2	140.0	140.0	-1.31	-1.28	-19.84	
46	1/5/2023 2:51:41 PM	54.0	46.0	0.0	0.0	143.9	143.9	-1.25	-1.24	-20.36	
46	2/1/2023 12:01:55 PM	53.6	46.4	0.0	0.0	145.5	144.8	-1.30	-0.65	-20.21	
46	2/7/2023 10:48:45 AM	53.0	45.0	1.0	1.0	143.4	144.0	-1.01	-1.16	-20.19	Increased Flow/Vacuum,High Temp
46	2/14/2023 11:42:51 AM	51.5	43.5	0.1	4.9	143.9	143.8	-6.06	-6.18	-20.63	Increased Flow/Vacuum
46	2/14/2023 11:42:51 AM	51.5	43.5	0.1	4.9	143.9	143.8	-6.06	-6.18	-20.63	Increased Flow/Vacuum
46	2/22/2023 10:30:58 AM	44.2	38.1	1.4	16.3	139.2	140.0	-6.91	-5.34	-19.44	Opened Valve 1/2 Turn or Less
47	12/8/2022 1:58:07 PM	42.2	37.3	5.5	15.0	94.4	94.5	-21.60	-21.56	-21.56	
47	1/5/2023 3:11:39 PM	54.0	36.5	3.1	6.4	63.0	62.6	-21.41	-21.29	-21.15	
47	2/1/2023 12:26:37 PM	56.8	41.0	1.4	0.8	89.1	89.0	-22.29	-22.28	-21.90	

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
47	2/7/2023 11:07:45 AM	55.3	40.3	1.1	3.3	72.9	73.4	-19.54	-19.54	-19.55	Increased Flow/Vacuum
47	2/14/2023 12:00:09 PM	36.4	28.0	7.6	28.0	97.6	97.9	-20.77	-20.78	-20.69	
47	2/22/2023 11:22:54 AM	55.8	40.0	1.0	3.2	98.5	98.6	-19.93	-19.90	-19.72	No Change
48	12/8/2022 1:10:59 PM	2.4	3.0	19.9	74.7	61.1	61.0	-21.00	-20.97	-20.97	
48	1/5/2023 2:01:26 PM	3.2	2.9	20.0	73.9	65.2	65.5	-21.80	-21.77	-21.77	
48	2/1/2023 1:01:58 PM	6.1	5.2	20.0	68.7	40.1	40.1	-23.09	-22.28	-22.25	
48	2/7/2023 11:57:54 AM	0.6	1.3	21.2	76.9	69.2	68.7	-21.48	-21.48	-21.38	No Change
48	2/14/2023 12:26:42 PM	1.7	9.2	19.1	70.0	62.6	62.5	-20.00	-19.99	-20.48	
48	2/22/2023 11:58:20 AM	1.3	1.5	21.2	76.0	72.7	72.4	-19.09	-19.07	-19.39	No Change
49	12/8/2022 12:49:58 PM	30.9	34.0	1.2	33.9	137.0	136.9	-8.06	-8.04	-8.03	
49	1/5/2023 1:45:47 PM	28.9	31.9	5.1	34.1	136.1	136.2	-9.02	-9.03	-9.04	
49	2/3/2023 9:40:11 AM	40.9	37.1	3.1	18.9	133.0	133.2	-3.90	-3.92	-3.93	Can Not Sample due to Access/Safety
49	2/7/2023 12:18:58 PM	35.1	32.6	3.6	28.7	135.0	135.6	-3.91	-3.91	-3.92	No Change
49	2/14/2023 12:35:07 PM	39.0	35.6	2.4	23.0	135.4	135.4	-4.40	-4.37	-4.36	
49	2/22/2023 12:12:23 PM	47.1	41.0	0.9	11.0	95.8	95.6	-1.55	-1.54	-1.53	Can Not Sample due to Access/Safety
50	12/8/2022 12:56:39 PM	42.8	30.8	4.3	22.1	105.3	105.4	-1.63	-1.63	-1.51	
50	1/5/2023 1:48:39 PM	44.4	32.3	2.6	20.7	124.4	124.3	-2.65	-2.61	-2.42	
50	2/1/2023 1:11:21 PM	50.0	35.1	1.4	13.5	123.9	124.0	-2.50	-2.46	-21.63	
50	2/7/2023 12:16:20 PM	49.5	34.4	0.9	15.2	125.0	125.2	-2.14	-4.50	-0.13	Increased Flow/Vacuum
50	2/14/2023 12:38:21 PM	34.8	30.2	1.4	33.6	122.7	122.7	-5.48	-5.49	-5.48	
50	2/22/2023 12:09:01 PM	40.0	29.5	1.3	29.2	121.8	122.0	-5.14	-5.12	-5.08	No Change
51	12/8/2022 1:34:12 PM	3.2	70.6	1.3	24.9	174.4	175.7		-12.24	-13.46	
51	12/8/2022 1:35:45 PM	4.8	68.0	1.3	25.9	175.7	175.3	-13.74	-13.27	-11.55	
51	12/9/2022 9:42:48 AM	5.5	70.1	0.9	23.5	163.1	165.5	-7.16	-7.40	-7.91	High Temp
51	12/14/2022 10:11:03 AM	18.2	63.9	1.1	16.8	104.1	104.2	-5.51	-5.50	-5.53	Recheck
51	1/5/2023 2:24:06 PM	39.2	53.9	0.7	6.2	130.6	130.5	-12.19	-11.49	-11.43	
51	2/1/2023 12:43:37 PM	39.7	48.2	3.1	9.0	68.5	68.4	-9.09	-9.40	-8.32	
51	2/7/2023 11:27:46 AM	41.1	37.0	4.7	17.2	80.4	80.8	-21.46	-21.46	-21.18	Increased Flow/Vacuum
51	2/14/2023 12:13:26 PM	34.8	47.0	3.2	15.0	96.3	97.1	-9.38	-7.43	-10.97	
51	2/22/2023 11:45:44 AM	6.3	66.1	2.8	24.8	91.2	91.1	-5.75	-6.30	-6.09	No Change
52	12/8/2022 1:44:49 PM	36.6	54.4	1.7	7.3	138.1	138.2	-19.77	-19.20	-18.64	
52	1/5/2023 2:12:59 PM	42.2	56.8	0.2	0.8	144.0	144.0	-18.01	-17.51	-16.92	
52	2/1/2023 12:36:35 PM	47.4	51.2	1.0	0.4	130.7	130.8	-18.19	-18.17	-18.46	
52	2/7/2023 11:19:47 AM	43.0	49.8	1.0	6.2	135.1	135.8	-21.37	-21.33	-21.23	Increased Flow/Vacuum
52	2/14/2023 12:08:00 PM	36.1	42.2	3.7	18.0	118.8	119.1	-19.59	-19.63	-19.48	
52	2/22/2023 11:39:36 AM	35.5	38.1	6.0	20.4	115.6	117.9	-19.74	-19.72	-18.77	
53	12/8/2022 2:08:21 PM	40.5	59.5	0.0	0.0	140.0	140.0	-16.84	-16.83	-18.64	
53	1/5/2023 3:02:09 PM	48.6	38.7	3.9	8.8	120.0	120.9	-17.79	-17.77	-1.68	Positive Static Press.
53	2/1/2023 12:13:15 PM	39.7	59.7	0.6	0.0	144.6	144.5	-14.06	-13.47	-15.75	

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
53	2/7/2023 10:57:07 AM	4.2	46.0	7.0	42.8	141.5	142.4	-14.12	-14.11	-15.66	
53	2/14/2023 11:51:20 AM	23.3	49.0	4.0	23.7	144.7	144.2	-13.88	-13.24	-16.23	
53	2/22/2023 10:52:35 AM	23.4	47.6	4.7	24.3	151.7	152.4	-11.44	-10.87	-14.41	High Temp,Increased Flow/Vacuum
53	2/23/2023 9:28:48 AM	23.0	46.9	5.0	25.1	145.3	145.6	-12.74	-12.05	-13.96	High Temp
54	12/8/2022 1:54:58 PM	31.1	68.9	0.0	0.0	151.5	151.5	-0.72	-0.22	-20.52	
54	12/9/2022 9:35:09 AM	33.6	62.4	4.0	0.0	143.8	144.0	-0.36	-0.33	-20.55	Increased Flow/Vacuum
54	12/9/2022 9:38:40 AM	35.1	63.7	1.1	0.1	138.4	139.6	-6.84	-8.81	-20.41	Increased Flow/Vacuum
54	1/5/2023 3:14:09 PM	35.3	64.7	0.0	0.0	61.7	62.0	-21.14	-21.13	-21.16	
54	2/1/2023 12:29:25 PM	29.0	63.6	1.3	6.1	122.9	122.9	-22.04	-22.04	-21.19	
54	2/7/2023 11:12:49 AM	28.1	62.0	5.9	4.0	131.2	133.8	-21.33	-21.33	-21.12	No Change
54	2/14/2023 12:02:12 PM	18.5	36.5	8.5	36.5	78.1	77.6	-20.77	-20.75	-20.83	
54	2/22/2023 11:33:14 AM	25.9	66.0	0.0	8.1	142.0	141.8	-19.50	-19.51	-19.75	
55	12/20/2022 11:28:13 AM	10.3	25.6	13.2	50.9	97.5	100.2	-21.38	-21.38	-20.81	Fully Open
55	1/5/2023 3:16:40 PM	42.2	34.0	4.2	19.6	60.8	60.5	-20.98	-20.94	-20.92	
55	2/3/2023 9:26:25 AM	37.0	32.9	4.4	25.7	37.0	36.9	-21.37	-21.36	-21.35	
55	2/7/2023 10:41:44 AM	40.7	34.5	3.2	21.6	74.4	74.9	-22.10	-22.06	-22.03	
55	2/7/2023 11:15:17 AM	40.0	33.0	3.8	23.2	84.8	85.3	-21.46	-21.45	-21.44	No Change
55	2/14/2023 12:04:35 PM	39.5	35.7	3.4	21.4	74.9	75.0	-20.85	-20.84	-20.85	
55	2/22/2023 11:29:39 AM	46.4	36.6	1.8	15.2	83.5	83.3	-20.04	-20.00	-19.97	
56	12/8/2022 2:25:51 PM	48.8	51.2	0.0	0.0	140.2	143.1	-19.89	-19.92	-19.83	No Change
56	1/5/2023 2:38:09 PM	44.3	40.0	3.6	12.1	130.4	130.4	-18.30	-18.28	-20.14	
56	2/1/2023 11:18:41 AM	42.1	39.9	4.3	13.7	131.9	132.1	-19.14	-19.06	-21.16	
56	2/7/2023 10:08:48 AM	42.3	38.0	4.4	15.3	130.9	130.8	-18.15	-18.11	-20.42	Increased Flow/Vacuum
56	2/14/2023 11:19:18 AM	42.0	37.0	4.3	16.7	127.6	131.1	-20.03	-19.95	-19.95	
56	2/22/2023 10:11:50 AM	43.2	38.7	4.1	14.0	133.4	133.4	-17.46	-17.48	-18.39	Opened Valve 1/2 Turn or Less
57	12/8/2022 2:23:44 PM	32.1	31.4	5.1	31.4	113.8	114.6	-6.84	-6.86	-24.00	Opened Valve 1/2 Turn or Less
57	1/5/2023 2:43:59 PM	41.4	49.1	9.4	0.1	143.4	145.6	-20.55	-20.54	-20.37	
57	1/6/2023 7:40:46 AM	48.1	51.8	0.1	0.0	148.1	148.4	-21.06	-21.04	-20.79	
57	1/12/2023 12:36:07 PM	38.0	45.7	1.4	14.9	176.1	176.9	-12.83	-8.09	-12.03	High Temp
57	1/18/2023 11:59:14 AM	6.4	10.5	16.9	66.2	172.4	172.4	0.04	0.04	0.05	High Temp
57	1/25/2023 12:05:49 PM	31.7	59.3	0.6	8.4	170.0	170.3	-20.15	-20.16	-20.04	Opened for Sample
57	1/25/2023 12:05:49 PM	31.7	59.3	0.6	8.4	170.0	170.3	-20.15	-20.16	-20.04	Opened for Sample
57	2/1/2023 11:27:35 AM	43.8	55.7	0.5	0.0	155.3	155.3	-21.19	-20.85	-20.52	
57	2/3/2023 10:41:30 AM	40.2	55.2	0.1	4.5	150.8	150.9	-20.28	-20.29	-18.60	High O2
57	2/7/2023 10:28:03 AM	41.5	54.2	0.3	4.0	153.2	153.0	-21.00	-20.99	-20.91	Increased Flow/Vacuum,High Temp
57	2/8/2023 9:43:21 AM	42.0	55.4	0.3	2.3	152.5	152.4	-20.81	-20.78	-20.51	High Temp
57	2/14/2023 11:27:21 AM	34.4	56.0	0.6	9.0	147.4	147.7	-20.74	-20.78	-20.78	High Temp
57	2/15/2023 12:23:29 PM	40.1	56.7	0.5	2.7	149.6	149.7	-20.44	-20.46	-20.45	High Temp
57	2/22/2023 10:19:10 AM	40.3	58.2	0.0	1.5	149.7	149.7	-18.57	-18.65	-18.71	No Change

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
57	2/23/2023 9:38:29 AM	38.9	57.8	0.4	2.9	144.3	144.5	-17.61	-16.66	-17.24	No Change
57	2/23/2023 9:38:29 AM	38.9	57.8	0.4	2.9	144.3	144.5	-17.61	-16.66	-17.24	No Change
57	2/23/2023 9:38:29 AM	38.9	57.8	0.4	2.9	144.3	144.5	-17.61	-16.66	-17.24	No Change
58	12/8/2022 2:23:57 PM	20.0	18.9	8.1	53.0	127.2	127.3	-11.61	-11.58	-11.56	
58	1/5/2023 2:48:50 PM	26.7	36.1	2.2	35.0	119.7	120.2	-6.01	-6.01	-6.00	
58	2/1/2023 11:40:33 AM	31.1	45.2	0.7	23.0	124.2	124.2	-2.98	-2.92	-0.45	
58	2/7/2023 10:37:31 AM	36.3	42.3	1.6	19.8	115.8	116.4	-11.16	-11.13	-11.13	
58	2/14/2023 11:31:09 AM	49.9	50.0	0.0	0.1	94.9	95.1	-20.71	-20.66	-20.59	
58	2/14/2023 11:31:09 AM	49.9	50.0	0.0	0.1	94.9	95.1	-20.71	-20.66	-20.59	
58	2/22/2023 10:22:20 AM	2.1	2.4	19.9	75.6	71.7	70.6	-18.36	-18.38	-18.39	No Change
59	12/8/2022 2:17:23 PM	45.1	40.2	3.3	11.4	131.2	131.1	-17.37	-17.30	-19.92	No Change
59	1/5/2023 2:40:57 PM	31.5	30.6	5.9	32.0	114.2	114.3	-1.62	-1.58	-22.29	
59	2/1/2023 11:22:29 AM	30.0	31.8	6.2	32.0	115.3	115.3	-3.12	-1.89	-22.82	
59	2/7/2023 10:22:56 AM	29.8	30.0	6.2	34.0	112.6	112.8	-1.76	-1.19	-21.93	
59	2/14/2023 11:22:47 AM	38.6	37.3	3.3	20.8	114.0	113.9	-1.41	-1.41	-21.72	
59	2/22/2023 10:14:58 AM	45.3	43.7	2.0	9.0	114.1	114.1	-3.03	-3.07	-21.15	Opened Valve 1/2 to 1 Turn
60	12/8/2022 1:14:48 PM	59.6	40.2	0.0	0.2	126.2	126.2	-6.01	-5.97	-5.96	
60	1/5/2023 2:09:27 PM	52.0	48.0	0.0	0.0	138.5	138.7	-5.20	-5.15	-21.46	
60	2/1/2023 12:56:22 PM	56.3	43.6	0.1	0.0	112.4	112.6	-6.69	-7.43	-21.86	
60	2/7/2023 11:51:54 AM	56.4	40.0	0.6	3.0	115.1	115.6	-17.19	-17.26	-21.05	Increased Flow/Vacuum
60	2/14/2023 12:23:16 PM	37.1	34.3	1.8	26.8	117.1	117.2	-19.29	-19.25	-20.95	Increased Flow/Vacuum
60	2/22/2023 11:55:29 AM	22.2	16.2	12.6	49.0	116.5	116.5	-16.53	-17.92	-19.85	No Change
61	12/8/2022 1:06:31 PM	39.0	54.6	0.1	6.3	58.9	83.2	-0.30	-0.12	-0.14	
61	1/5/2023 1:54:02 PM	36.2	49.9	1.9	12.0	127.3	127.3	-0.93	-0.87	-20.71	
61	2/1/2023 1:15:48 PM	29.0	68.9	0.1	2.0	114.8	114.7	-1.26	-0.56	-21.78	
61	2/7/2023 12:13:19 PM	39.5	56.5	0.0	4.0	120.7	120.8	-0.26	-0.24	-21.78	No Change
61	2/14/2023 12:43:01 PM	35.0	60.3	0.0	4.7	120.4	123.2	-1.83	-1.76	-21.15	
61	2/22/2023 12:06:04 PM	34.4	28.8	6.4	30.4	110.5	110.8	-1.36	-1.36	-19.94	No Change
62	12/8/2022 11:42:47 AM	22.2	21.0	7.7	49.1	129.7	129.6	-0.73	-0.76	-8.21	
62	1/5/2023 1:06:26 PM	54.2	45.8	0.0	0.0	62.5	62.6	-0.14	-0.10	-9.22	
62	2/3/2023 10:05:07 AM	54.3	45.7	0.0	0.0	45.3	49.9	0.29	-0.30	-6.09	
62	2/3/2023 11:22:00 AM	12.2	12.7	14.8	60.3	57.2	67.7	-1.70	-1.68	-6.55	
62	2/8/2023 8:24:24 AM	33.0	33.0	2.5	31.5	116.9	117.0	-0.51	-0.44	-6.31	No Change
62	2/14/2023 1:14:12 PM	38.6	35.0	1.7	24.7	117.4	117.5	-0.13	-0.15	-5.69	No Change
62	2/22/2023 3:02:47 PM	47.0	38.8	1.1	13.1	117.1	117.4	-1.18	-1.22	-5.43	Increased Flow/Vacuum
63	12/8/2022 12:03:02 PM	26.1	26.8	6.2	40.9	134.5	134.6	-0.15	-0.16	-7.89	
63	1/5/2023 1:16:53 PM	19.3	19.4	8.7	52.6	130.2	130.1	-0.76	-0.32	-8.85	
63	2/1/2023 1:39:27 PM	19.0	21.9	9.2	49.9	134.1	133.6	-1.48	-1.43	-7.31	
63	2/1/2023 1:43:42 PM	21.9	21.0	8.9	48.2	121.8	121.9	-1.03	-0.57	-6.70	

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
63	2/8/2023 8:33:14 AM	18.9	19.5	9.1	52.5	120.4	120.4	-0.39	-0.36	-6.43	
63	2/14/2023 1:06:21 PM	22.6	21.9	7.4	48.1	123.0	122.8	-0.18	-0.17	-6.37	
63	2/22/2023 2:50:08 PM	25.7	23.0	7.0	44.3	123.2	123.1	-0.38	-0.35	-6.42	No Change
64	12/8/2022 12:22:40 PM	29.8	32.2	6.3	31.7	139.3	139.3	-4.98	-3.96	-7.96	
64	1/5/2023 1:28:56 PM	21.4	26.3	5.9	46.4	147.4	147.3	-0.88	-0.92	-0.92	
64	1/6/2023 7:34:07 AM	20.9	25.8	6.5	46.8	145.0	145.2	-1.07	-1.04	-1.02	
64	1/12/2023 12:26:25 PM	22.5	27.2	5.5	44.8	144.7	144.8	-0.97	-0.97	-0.95	
64	2/1/2023 1:47:38 PM	18.2	20.0	9.8	52.0	133.9	134.1	-1.64	-1.60	-7.45	
64	2/7/2023 2:29:30 PM	17.6	19.1	10.0	53.3	131.2	132.1	-1.17	-1.14	-6.56	No Change
64	2/14/2023 12:58:01 PM	18.0	21.2	9.2	51.6	126.8	126.8	-0.90	-0.89	-6.15	No Change
64	2/22/2023 2:43:42 PM	19.7	19.4	9.7	51.2	132.3	132.7	-1.16	-1.14	-6.60	No Change
65	12/8/2022 12:40:38 PM	9.8	14.9	10.9	64.4	133.4	133.5	-1.20	-1.21	-1.19	
65	1/5/2023 1:39:59 PM	8.7	14.3	10.9	66.1	135.6	135.7	-1.77	-1.24	-1.24	
65	2/3/2023 9:37:24 AM	8.5	13.2	12.9	65.4	131.0	131.3	-1.23	-1.21	-1.18	Can Not Sample due to Access/Safety
65	2/7/2023 2:23:10 PM	8.3	14.5	11.2	66.0	132.7	132.9	-1.27	-1.25	-1.23	Can Not Sample due to Access/Safety
65	2/14/2023 12:48:24 PM	7.4	16.0	11.2	65.4	132.8	132.9	-1.17	-1.15	-1.14	No Change
65	2/22/2023 2:33:53 PM	10.1	12.8	11.0	66.1	133.0	133.3	-1.23	-1.21	-1.21	No Change
66	12/8/2022 2:20:43 PM	44.9	55.0	0.1	0.0	128.6	128.5	-2.15	-2.11	-2.10	
66	1/12/2023 12:32:35 PM	45.0	50.8	0.0	4.2	122.1	124.8	-6.19	-6.19	-6.19	
66	2/1/2023 11:50:56 AM	44.2	55.8	0.0	0.0	116.2	116.9	-17.88	-17.80	-20.42	
66	2/7/2023 10:35:30 AM	45.0	54.9	0.0	0.1	114.6	115.0	-20.46	-20.48	-20.47	
66	2/14/2023 11:33:36 AM	35.5	63.5	0.0	1.0	86.1	86.4	-20.47	-20.47	-20.50	
66	2/22/2023 10:25:16 AM	36.6	60.4	1.0	2.0	87.6	88.0	-17.56	-17.61	-17.68	
67	12/8/2022 2:01:30 PM	16.4	54.2	3.2	26.2	159.5	159.5	-4.33	-3.78	-21.19	
67	12/9/2022 9:30:44 AM	16.1	55.0	3.0	25.9	172.2	173.0	-7.45	-7.49	-21.06	High Temp
67	12/14/2022 10:02:15 AM	20.4	61.1	2.2	16.3	175.3	175.5	-2.74	-2.76	-20.17	Slightly Open
67	12/20/2022 11:24:51 AM	15.2	28.6	10.5	45.7	134.7	134.6	-20.14	-20.14	-20.50	Fully Open
67	1/5/2023 3:09:04 PM	38.0	61.6	0.1	0.3	68.6	68.5	-20.97	-20.97	-20.97	
67	2/1/2023 12:21:18 PM	31.7	64.0	0.5	3.8	124.5	124.7	-21.92	-21.82	-21.81	
67	2/7/2023 11:05:37 AM	29.7	63.0	0.0	7.3	85.8	85.9	-21.68	-21.63	-21.15	
68	12/8/2022 1:22:02 PM	56.0	40.1	1.3	2.6	127.3	127.4	-12.19	-12.18	-19.95	
68	1/5/2023 2:17:54 PM	58.6	41.4	0.0	0.0	129.1	129.0	-15.54	-15.10	-20.49	
68	2/1/2023 12:52:07 PM	57.1	42.8	0.0	0.1	125.2	125.2	-17.28	-16.66	-20.49	
68	2/7/2023 11:41:49 AM	52.5	42.5	1.1	3.9	129.3	129.8	-18.07	-18.04	-21.21	Increased Flow/Vacuum
68	2/14/2023 12:19:33 PM	58.5	41.5	0.0	0.0	125.7	125.6	-18.04	-18.09	-19.09	Increased Flow/Vacuum
68	2/22/2023 11:52:43 AM	57.7	42.3	0.0	0.0	125.8	125.8	-18.53	-18.50	-17.46	Increased Flow/Vacuum
HC01	12/8/2022 2:17:05 PM	6.8	5.8	18.9	68.5	58.3	58.1	-20.03	-19.96		
HC01	1/5/2023 2:54:02 PM	26.5	20.2	12.3	41.0	62.1	61.9	-19.73	-20.18		
HC01	2/1/2023 11:55:49 AM	25.6	23.2	11.3	39.9	41.4	41.3	-20.60	-20.55		

Bristol Virginia Landfill - SWP #588 Extraction Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	System Pressure ("H20)	Comments
HC01	2/7/2023 10:46:04 AM	16.8	15.2	14.8	53.2	64.8	64.9	-20.70	-20.72		
HC01	2/14/2023 11:37:28 AM	12.5	5.0	17.5	65.0	66.7	66.7	-20.14	-20.15		
HC01	2/22/2023 10:27:38 AM	0.0	0.1	21.2	78.7	79.5	79.4	-11.58	-10.43		No Change

Bristol Virginia Landfill - North South Leachate Clean-Outs Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	Comments
LC01	11/3/2022 12:34	51.0	46.5	0.6	1.9	88.2	88.7	-14.31	-14.30	
LC01	12/8/2022 13:06	51.7	48.3	0.0	0.0	59.0	58.8	-20.59	-20.53	Increased Flow/Vacuum
LC01	12/8/2022 13:08	51.7	48.3	0.0	0.0	58.4	58.4	-20.32	-20.29	No Change
LC01	1/5/2023 13:49	0.9	1.1	19.7	78.3	69.8	69.4	-20.15	-20.13	
LC01	1/6/2023 07:51	50.2	48.0	1.8	0.0	52.9	52.9	-21.21	-21.16	
LC01	1/6/2023 09:42	38.8	43.5	17.8	0.0	59.1	57.6	-20.59	-20.61	
LC01	2/8/2023 09:57	54.9	44.4	0.7	0.0	57.8	57.7	-18.46	-18.46	Increased Flow/Vacuum
LC02	11/3/2022 12:36	38.9	38.9	4.7	17.5	88.3	86.7	-14.86	-14.87	
LC02	12/8/2022 13:10	46.6	48.5	0.0	4.9	58.3	58.2	-20.68	-20.64	No Change
LC02	1/5/2023 13:52	45.5	47.1	1.1	6.3	57.8	57.7	-20.82	-20.80	
LC02	1/6/2023 07:53	47.3	47.7	0.1	4.9	53.3	53.3	-21.21	-21.25	
LC02	2/8/2023 09:58	47.2	48.8	4.0	0.0	55.5	56.2	-19.26	-19.39	Increased Flow/Vacuum
LC03	11/3/2022 12:41	45.6	38.3	2.8	13.3	80.6	81.4	-15.76	-15.80	
LC03	12/8/2022 13:16	14.5	7.3	16.8	61.4	72.2	74.9	-21.69	-23.97	
LC03	1/6/2023 07:54	9.5	5.5	18.5	66.5	52.6	52.6	-22.57	-22.57	
LC03	2/8/2023 10:00	7.0	4.3	19.5	69.2	52.1	52.1	-21.88	-21.79	Close_Task
LC04	11/3/2022 12:44	38.7	33.1	5.1	23.1	78.2	77.9	-15.91	-15.92	
LC04	12/8/2022 13:19	21.6	13.0	11.0	54.4	75.7	75.7	-22.38	-21.74	No Change
LC04	1/6/2023 07:56	14.4	7.1	15.3	63.2	53.1	53.5	-22.76	-22.74	
LC04	2/8/2023 10:02	16.4	9.0	14.5	60.1	52.8	52.9	-21.98	-21.90	No Change
LC05	11/3/2022 12:45	48.2	47.0	0.8	4.0	85.6	86.1	-20.76	-15.41	
LC05	12/8/2022 13:22	52.1	44.2	0.0	3.7	74.9	73.6	-21.91	-21.22	Opened Valve 1/2 to 1 Turn
LC05	1/6/2023 07:59	52.2	46.0	0.0	1.8	54.5	54.5	-21.25	-21.24	
LC05	2/8/2023 10:10	53.3	43.0	0.1	3.6	58.4	58.4	-19.77	-19.72	No Change
LC05	2/8/2023 10:10	53.3	43.0	0.1	3.6	58.4	58.4	-19.77	-19.72	No Change
LC06	11/3/2022 12:47	40.0	32.6	5.4	22.0	87.7	87.8	-18.63	-18.78	
LC06	12/8/2022 13:24	36.0	23.1	8.2	32.7	72.5	72.5	-22.47	-21.69	Increased Flow/Vacuum
LC06	1/6/2023 08:01	27.3	21.3	11.7	39.7	53.7	53.7	-22.65	-22.64	
LC06	2/8/2023 10:08	34.0	20.4	10.0	35.6	53.4	53.5	-21.97	-21.93	No Change
LC08	11/3/2022 12:48	46.6	43.8	1.1	8.5	88.4	88.3	-16.75	-14.32	
LC08	12/8/2022 13:27	49.0	45.8	0.0	5.2	72.9	72.9	-20.74	-20.18	Increased Flow/Vacuum
LC08	1/6/2023 07:57	47.8	46.9	0.2	5.1	54.3	54.3	-20.92	-20.92	
LC08	2/8/2023 10:04	50.9	46.0	0.3	2.8	55.8	55.9	-18.96	-18.98	Increased Flow/Vacuum
LC09	11/3/2022 12:50	49.0	43.2	1.6	6.2	88.1	88.0	-16.06	-15.94	

Bristol Virginia Landfill - North South Leachate Clean-Outs Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	Comments
LC09	12/8/2022 13:29	35.4	22.5	8.1	34.0	72.4	72.3	-22.04	-23.11	Increased Flow/Vacuum
LC09	1/6/2023 08:03	43.5	26.5	6.2	23.8	54.0	54.1	-22.73	-22.72	
LC09	2/8/2023 10:07	8.2	16.0	15.3	60.5	53.3	53.4	-21.77	-21.76	No Change
LC10	11/3/2022 12:52	50.0	44.3	1.2	4.5	87.6	87.5	-15.81	-15.84	
LC10	12/8/2022 13:31	13.9	9.8	16.2	60.1	71.5	71.4	-21.93	-21.91	No Change
LC10	1/6/2023 08:04	33.4	22.6	9.8	34.2	56.6	56.7	-22.59	-22.60	
LC10	2/8/2023 10:05	31.0	47.2	6.3	15.5	53.3	53.3	-21.93	-21.86	No Change
NC01	11/3/2022 12:59	0.5	0.3	21.3	77.9	86.4	88.5	-13.84	-13.81	
NC01	12/8/2022 13:39	0.2	0.3	21.4	78.1	72.0	72.2	-19.69	-19.64	No Change
NC01	1/6/2023 08:21	0.2	0.3	22.1	77.4	38.2	38.1	-20.14	-20.13	
NC01	2/8/2023 10:15	0.7	2.1	20.3	76.9	67.2	67.2	-17.86	-17.89	
NC02	11/3/2022 13:01	0.8	0.5	21.2	77.5	90.2	89.9	-13.99	-13.96	
NC02	12/8/2022 13:42	0.1	0.2	21.6	78.1	73.9	74.0	-19.64	-19.61	No Change
NC02	12/8/2022 13:45	0.1	0.2	21.6	78.1	75.4	76.6	-19.61	-19.60	
NC02	1/6/2023 08:23	3.4	3.4	19.6	73.6	37.3	37.2	-1.26	-1.25	
NC02	2/8/2023 10:16	3.0	3.1	20.4	73.5	67.6	67.7	-6.41	-6.36	
NC03	11/3/2022 13:04	2.3	1.4	20.5	75.8	91.0	91.0	-14.02	-14.02	
NC03	11/3/2022 13:18	2.0	1.4	19.9	76.7	92.3	92.5	-14.20	-14.18	
NC03	12/8/2022 13:48	0.2	0.1	21.6	78.1	76.5	76.6	-19.73	-19.68	No Change
NC03	1/6/2023 08:26	0.7	1.0	21.8	76.5	37.3	37.3	-20.12	-20.10	
NC03	2/8/2023 10:17	0.6	1.1	21.1	77.2	69.3	69.6	-18.13	-18.15	No Change
NC04	11/3/2022 13:09	0.1	0.0	21.1	78.8	96.2	96.2	-13.92	-13.90	
NC04	12/8/2022 13:50	13.3	9.8	13.4	63.5	76.7	76.7	-19.87	-19.78	Increased Flow/Vacuum
NC04	1/6/2023 08:27	0.1	0.2	22.3	77.4	37.1	37.0	-18.83	-18.82	
NC04	2/8/2023 10:18	0.2	0.6	21.9	77.3	71.2	71.3	-15.49	-15.46	
NC05	11/3/2022 13:10	0.1	0.0	21.1	78.8	94.5	94.3	-13.93	-13.88	
NC05	12/8/2022 13:54	10.8	9.7	12.9	66.6	75.1	74.8	-19.73	-19.64	Increased Flow/Vacuum
NC05	1/6/2023 08:28	0.1	0.2	22.4	77.3	37.1	37.1	-18.89	-18.86	
NC05	2/8/2023 10:19	0.2	0.7	21.8	77.3	71.9	72.0	-15.28	-15.24	No Change
NC06	11/3/2022 13:11	0.1	0.0	21.1	78.8	94.3	94.3	-13.80	-13.79	
NC06	12/8/2022 13:55	0.1	0.1	21.7	78.1	73.8	73.8	-19.72	-19.69	Increased Flow/Vacuum
NC06	1/6/2023 08:29	0.1	0.2	22.4	77.3	37.2	37.2	-18.75	-18.75	
NC06	2/8/2023 10:20	0.2	0.8	21.8	77.2	72.8	72.9	-15.30	-15.22	No Change
NC07	11/3/2022 13:14	33.9	18.1	6.7	41.3	95.7	95.8	-14.15	-14.18	

Bristol Virginia Landfill - North South Leachate Clean-Outs Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H20)	Comments
NC07	12/8/2022 13:57	15.6	10.9	10.7	62.8	73.4	73.4	-19.83	-19.82	No Change
NC07	1/6/2023 08:31	6.0	5.7	16.9	71.4	37.4	37.4	-20.14	-20.13	
NC07	2/8/2023 10:21	0.2	0.7	21.8	77.3	74.5	74.5	-19.48	-19.45	No Change
NC08	11/3/2022 13:15	45.0	24.9	1.7	28.4	94.6	94.4	-14.09	-14.12	
NC08	12/8/2022 13:59	24.0	17.3	3.1	55.6	73.6	73.8	-19.82	-19.85	Opened Valve 1/2 Turn or Less
NC08	1/6/2023 08:33	7.3	6.6	13.4	72.7	37.6	37.6	-20.09	-20.07	
NC09	11/3/2022 13:16	45.4	24.6	3.1	26.9	93.0	92.9	-14.13	-14.15	
NC09	12/8/2022 14:00	25.5	18.6	2.4	53.5	73.9	73.7	-19.78	-20.96	Increased Flow/Vacuum
NC09	1/6/2023 08:34	15.5	14.3	5.5	64.7	42.4	43.0	-20.06	-20.05	
NC10	11/3/2022 13:05	1.4	0.7	20.8	77.1	92.7	92.9	-14.03	-14.03	
NC10	11/3/2022 13:07	1.3	0.7	20.7	77.3	96.1	96.2	-14.03	-14.04	
NC10	12/8/2022 14:02	0.2	0.3	21.2	78.3	72.7	72.8	-19.86	-19.78	No Change
NC10	1/6/2023 08:36	0.2	0.3	22.3	77.2	48.3	48.5	-15.44	-15.37	

Bristol Virginia Landfill - Blower/Flare Data - 2/01/2023 to 2/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Temp (F)	Static Pressure ("H2O)	Flow (scfm)	Comments
Blower Inlet	2/1/2023 12:01	33.6	33.1	4.2	29.1	55.1	-24.55	350	
Blower Inlet	2/1/2023 13:58	33.2	33.0	4.6	29.2	53.9	-24.60	380	
Blower Inlet	2/3/2023 09:07	33.3	32.8	4.3	29.6	36.5	-24.48	600	
Blower Inlet	2/6/2023 11:08	34.2	33.8	5.2	26.8	66.7	-24.62	348	
Blower Inlet	2/7/2023 09:08	32.6	32.2	5.0	30.2	74.1	-24.49	575	
Blower Inlet	2/8/2023 07:57	36.6	34.6	4.0	24.8	46.7	-24.71	320	
Blower Inlet	2/14/2023 09:53	34.6	33.0	4.2	28.2	74.0	-24.32	333	
Blower Inlet	2/15/2023 09:28	36.7	33.3	3.8	26.2	74.9	-24.50	225	
Blower Inlet	2/16/2023 08:28	36.7	34.0	3.4	25.9	57.0	-24.61	232	
Blower Inlet	2/17/2023 08:36	35.1	35.1	3.6	26.2	46.6	-24.57	275	
Blower Inlet	2/20/2023 13:32	34.3	34.2	4.0	27.5	43.2	-24.65	255	
Blower Inlet	2/21/2023 08:41	33.5	33.3	4.6	28.6	53.8	-24.58	325	
Blower Inlet	2/22/2023 08:28	33.1	32.7	3.8	30.4	67.7	-24.70	325	
Blower Inlet	2/23/2023 08:54	33.2	32.6	4.2	30.0	67.7	-24.63	335	
Blower Inlet	2/24/2023 08:15	30.8	30.6	5.4	33.2	56.1	-24.65	285	
Blower Inlet	2/27/2023 14:11	33.7	34.0	4.2	28.1	64.0	-24.6	325	
Blower Inlet	2/28/2023 08:37	32.2	32.0	4.8	31.0	67.1	-24.5	333	
Blower Inlet	2/28/2023 14:05	31.9	32.1	4.8	31.2	76.0	-24.5	756	

Bristol Virginia Landfill - Calibration Record Data - 2/01/2023 to 2/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Comments
BRTL0000	2/1/2023 10:51	50.0	35.1	0.0	14.9	
BRTL0000	2/1/2023 11:55	0.2	0.1	20.9	78.8	
BRTL0000	2/1/2023 11:56	49.9	35.0	0.0	15.1	
BRTL0000	2/3/2023 08:57	50.0	35.2	0.0	14.8	
BRTL0000	2/3/2023 09:02	0.0	0.2	21.0	78.8	
BRTL0000	2/6/2023 10:58	0.0	0.1	20.9	79.0	
BRTL0000	2/6/2023 11:01	50.0	34.9	0.0	15.1	
BRTL0000	2/7/2023 09:03	0.0	0.1	20.9	79.0	
BRTL0000	2/7/2023 09:05	50.0	34.9	0.0	15.1	
BRTL0000	2/8/2023 07:50	0.1	0.2	20.9	78.8	
BRTL0000	2/8/2023 07:54	50.0	35.0	0.0	15.0	
BRTL0000	2/14/2023 09:20	0.0	0.1	20.9	79.0	
BRTL0000	2/14/2023 09:24	50.0	34.9	0.0	15.1	
BRTL0000	2/15/2023 09:20	0.0	0.1	20.9	79.0	
BRTL0000	2/15/2023 09:22	50.0	35.0	0.0	15.0	
BRTL0000	2/16/2023 08:21	0.0	0.2	20.9	78.9	
BRTL0000	2/16/2023 08:24	50.0	35.0	0.0	15.0	
BRTL0000	2/17/2023 08:30	0.0	0.2	20.9	78.9	
BRTL0000	2/17/2023 08:32	49.9	35.0	0.0	15.1	
BRTL0000	2/20/2023 13:24	0.0	0.2	20.9	78.9	
BRTL0000	2/20/2023 13:27	50.0	35.0	0.0	15.0	
BRTL0000	2/21/2023 08:11	0.0	0.2	20.9	78.9	
BRTL0000	2/21/2023 08:13	50.0	35.0	0.0	15.0	
BRTL0000	2/22/2023 08:15	0.0	0.2	20.9	78.9	
BRTL0000	2/22/2023 08:18	50.0	35.1	0.0	14.9	
BRTL0000	2/22/2023 14:26	0.0	0.0	20.9	79.1	
BRTL0000	2/22/2023 14:27	50.0	35.0	0.0	15.0	
BRTL0000	2/23/2023 08:42	0.0	0.1	20.9	79.0	
BRTL0000	2/23/2023 08:47	50.0	34.9	0.0	15.1	
BRTL0000	2/24/2023 07:47	0.0	0.1	20.9	79.0	

Bristol Virginia Landfill - Calibration Record Data - 2/01/2023 to 2/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Comments
BRTL0000	2/24/2023 07:58	50.0	35.0	0.0	15.0	
BRTL0000	2/27/2023 14:02	0.1	0.2	20.9	78.8	
BRTL0000	2/27/2023 14:04	50.0	34.9	0.0	15.1	
BRTL0000	2/28/2023 07:45	0.0	0.2	20.9	78.9	
BRTL0000	2/28/2023 07:47	50.0	35.0	0.0	15.0	

Attachment 2

Exceedance Detail Report

Exceedance Detail Report
Date Range: 02/01/2023 to 02/28/2023

Report Date: 03/06/2023
Site Name: Bristol Virginia Landfill

Point ID	Point Name	Record Date	Days Between Readings	Point Status	Effective Date	% by Volume		Temperature (°F)		Static Pressure		Operation Comments	CO Req	Total Days Open	Corrective Action Comments	Corrective Action Due Dates		
						CH4	O2	Initial Temp	Adjusted Temp	Initial Static Pressure (H2O)	Adjusted Static Pressure (H2O)							
BRTLGW37				**Active**				**>= 145**	**>= 145**	**>= 0**	**>= 0**				**NESHAP AAAA HOV 145**	**5 Day**	**15 Day**	**120 Day**
37		3/30/2022 12:20:33 PM	0			13.8	6.4	150	150	-1.24	-1.75	heck,,,,,,	N			4/3/2022	4/13/2022	7/27/2022
37		4/6/2022 12:14:16 PM	7			14.2	7.3	149	149	-1.98	-1.95	Comments:No Change,,,,,,,	N					
37		4/13/2022 1:45:11 PM	7			16.5	7	159	159	-1.70	-1.70	Comments:,,,,,,,	N					
37		4/13/2022 1:47:58 PM	0			16	7	159	159	-2.10	-2.14	Comments:,,,,,,,	N					
37		4/21/2022 7:24:55 AM	8			13.1	8.3	159	159	-2.35	-2.27	Comments:,,,,,,,	N					
37		5/4/2022 12:21:07 PM	13			13	7.3	149	149	-2.57	-2.42	Open,No Change,,,,,,	N					
37		5/16/2022 10:51:43 AM	12			11.6	9.8	150	150	-2.21	-2.39	Comments:Adjustment,,,,,,,	N					
37		5/16/2022 2:09:00 PM	0			14.9	9.8	159	159	-2.48	-2.48	Comments:,,,,,,,	N					
37		5/24/2022 10:23:52 AM	8			17	7.8	150	150	-3.44	-3.43	Comments:,,,,,,,	N					
37		5/24/2022 10:26:15 AM	0			17.3	7.9	150	150	-3.47	-3.44	Comments:,,,,,,,	N					
37		6/1/2022 12:43:16 PM	8			22	6.2	150	150	-2.89	-2.89	Comments:,,,,,,,	N					
37		6/8/2022 11:34:45 AM	7			6.5	14.8	155.8	155.9	-12.72	-12.63	Comments:,,,,,,,	N					
37		6/16/2022 1:35:06 PM	8			21.6	6.7	153.9	153.8	-2.56	-2.54	Comments:,,,,,,,	N					
37		7/6/2022 12:59:43 PM	20			19.2	6.6	154.2	153.8	-2.44	-2.43	Comments:,,,,,,,	N					
37		7/11/2022 1:31:12 PM	5			19.8	6.7	155.5	155.5	-2.25	-2.19	Comments:,,,,,,,	N					
37		7/11/2022 1:36:48 PM	0			19.6	6.5	155.7	155.8	-2.12	-2.10	Comments:,,,,,,,	N					
37		8/3/2022 12:31:49 PM	23			20	7.3	155.5	155.5	-2.39	-2.38	Comments:,,,,,,,	N					
37		8/3/2022 12:35:39 PM	0			20.2	7.3	155.4	155.4	-2.72	-2.77	Comments:,,,,,,,	N					
37		8/3/2022 2:29:58 PM	0			19.5	6.6	152.2	152.9	-3.03	-3.01	Comments:,,,,,,,	N					
37		8/24/2022 11:44:07 AM	21			19.2	7.6	152.7	152.8	-15.16	-15.14	Open,,,,,,,	N					
37		9/1/2022 11:37:46 AM	8			20.8	7.6	155	154.7	-3.14	-3.14	Comments:,,,,,,,	N					
37		9/1/2022 12:28:35 PM	0			18.9	7.9	152.7	152.7	-15.15	-15.13	Comments:,,,,,,,	N					
37		10/12/2022 10:08:08 AM	41			20.5	7.6	152	151.5	-2.69	-2.64	Comments:,,,,,,,	N					
37		10/12/2022 2:36:59 PM	0			28.3	7.1	151	151	-2.74	-2.75	Comments:,,,,,,,	N					
37		10/19/2022 10:59:40 AM	7			20	7.4	149	149.1	-2.94	-2.85	Comments:,,,,,,,	N					
37		11/10/2022 10:40:07 AM	22			18.2	7.1	147.6	147.7	-13.82	-13.78	Comments:Fully Open,,,,,,,	N					
37		11/17/2022 10:50:44 AM	7			18.4	7.3	147.2	147.3	-8.91	-8.90	Comments:Fully Open,,,,,,,	N					
37		12/8/2022 12:32:15 PM	21			18.7	6.3	151.2	150.8	-1.64	-1.61	Comments:,,,,,,,	N					
37		12/9/2022 9:19:24 AM	1			19	6.7	148.5	148.5	-1.51	-1.53	Comments:High Temp,,,,,,,	N					
37		12/14/2022 8:37:04 AM	5			17.4	6.2	148.6	148.6	-1.56	-1.57	Comments:,,,,,,,	N					
37		12/20/2022 11:19:00 AM	6			14.7	6.6	148.6	148.6	-1.45	-1.47	Comments:Fully Open,,,,,,,	N					
37		1/5/2023 1:34:21 PM	16			15.5	6.3	151.9	151.8	-2.26	-2.23	Comments:,,,,,,,	N					
37		1/6/2023 7:24:18 AM	1			16.1	6.7	149.2	149.2	-1.97	-1.95	Comments:,,,,,,,	N					
37		1/12/2023 12:18:14 PM	6			15	6.2	149.7	149.7	-8.51	-8.49	Comments:High Temp,,,,,,,	N					
37		1/18/2023 12:33:18 PM	6			14	6.8	149	149	-1.84	-1.82	Comments:High Temp,,,,,,,	N					
37		1/25/2023 11:53:12 AM	7			14.2	6.1	149.7	149.8	-1.82	-1.79	Comments:High Temp,,,,,,,	N					
37		2/1/2023 1:33:56 PM	7			18.2	6.3	150.9	150.9	-1.89	-1.86	Comments:,,,,,,,	N					
37		2/3/2023 10:18:21 AM	2			14.9	7.8	148.6	149	-1.75	-1.64	Comments:High Temp,,,,,,,	N					
37		2/7/2023 2:26:19 PM	4			17	6.6	150.4	150.5	-6.15	-6.47	Comments:No Change,,,,,,,	N					
37		2/8/2023 9:35:19 AM	1			16.7	6.3	149.1	149.1	-1.49	-1.50	Change,High Temp,,,,,,	N					
37		2/14/2023 12:54:47 PM	6			16.2	5.9	149.6	149.6	-1.50	-1.49	Comments:High O2,,,,,,,	N					
37		2/15/2023 10:32:47 AM	1			17.1	6.5	148.6	148.6	-1.42	-1.41	Comments:High O2,,,,,,,	N					
37		2/22/2023 2:36:29 PM	7			17.5	6.1	149.1	149.5	-1.51	-1.53	Change,,,,,,	N					
37		2/23/2023 9:25:10 AM	1			16.1	6	149	148.9	-1.41	-1.42	Comments:,,,,,,,	N	336				
BRTLGW53				**Active**				**>= 145**	**>= 145**	**>= 0**	**>= 0**				**NESHAP AAAA HOV 145**	**5 Day**	**15 Day**	**120 Day**

Exceedance Detail Report
Date Range: 02/01/2023 to 02/28/2023

Report Date: 03/06/2023
Site Name: Bristol Virginia Landfill

Point ID	Point Name	Record Date	Days Between Readings	Point Status	Effective Date	% by Volume		Temperature (°F)		Static Pressure		Operation Comments	CO Req	Total Days Open	Corrective Action Comments	Corrective Action Due Dates		
						CH4	O2	Initial Temp	Adjusted Temp	Initial Static Pressure (H2O)	Adjusted Static Pressure (H2O)							
	53	2/22/2023 10:52:35 AM	0			23.4	4.7	151.7	152.4	-11.44	-10.87	Temp,Increased	N		good reading on 03/01/2023	2/26/2023	3/8/2023	6/21/2023
	53	2/23/2023 9:28:48 AM	1			23	5	145.3	145.6	-12.74	-12.05	Comments:High Temp,,,,,,	N	7	good reading on 03/01/2023			
BRTLGW57				**Active**				**>= 145**	**>= 145**	**>= 0**	**>= 0**				**NESHAP AAAA HOV 145**	**5 Day**	**15 Day**	**120 Day**
	57	1/5/2023 2:43:59 PM	0			41.4	9.4	143.4	145.6	-20.55	-20.54	Comments:,,,,,,	N			1/9/2023	1/19/2023	5/4/2023
	57	1/6/2023 7:40:46 AM	1			48.1	0.1	148.1	148.4	-21.06	-21.04	Comments:,,,,,,	N					
	57	1/12/2023 12:36:07 PM	6			38	1.4	176.1	176.9	-12.83	-8.09	Comments:High Temp,,,,,,	N					
	57	1/18/2023 11:59:14 AM	6			6.4	16.9	172.4	172.4	0.04	0.04	Comments:High Temp,,,,,,	N					
	57	1/25/2023 12:05:49 PM	7			31.7	0.6	170	170.3	-20.15	-20.16	Sample,,,,,,	N					
	57	1/25/2023 12:05:49 PM	0			31.7	0.6	170	170.3	-20.15	-20.16	Sample,,,,,,	N					
	57	2/1/2023 11:27:35 AM	7			43.8	0.5	155.3	155.3	-21.19	-20.85	Comments:,,,,,,	N					
	57	2/3/2023 10:41:30 AM	2			40.2	0.1	150.8	150.9	-20.28	-20.29	Comments:High O2,,,,,,	N					
	57	2/7/2023 10:28:03 AM	4			41.5	0.3	153.2	153	-21.00	-20.99	Flow/Vacuum,High	N					
	57	2/8/2023 9:43:21 AM	1			42	0.3	152.5	152.4	-20.81	-20.78	Comments:High Temp,,,,,,	N					
	57	2/14/2023 11:27:21 AM	6			34.4	0.6	147.4	147.7	-20.74	-20.78	Comments:High Temp,,,,,,	N					
	57	2/15/2023 12:23:29 PM	1			40.1	0.5	149.6	149.7	-20.44	-20.46	Comments:High Temp,,,,,,	N					
	57	2/22/2023 10:19:10 AM	7			40.3	0	149.7	149.7	-18.57	-18.65	Comments:No Change,,,,,,	N					
	57	2/23/2023 9:38:29 AM	1			38.9	0.4	144.3	144.5	-17.61	-16.66	Comments:No Change,,,,,,	N	55				
BRTLGW62				**Active**				**>= 145**	**>= 145**	**>= 0**	**>= 0**				**NESHAP AAAA HOV 145**	**5 Day**	**15 Day**	**120 Day**
	62	2/3/2023 10:05:07 AM	0			54.3	0	45.3	49.9	0.29	-0.30	Comments:,,,,,,	N		good reading on 02/03/2023	2/7/2023	2/17/2023	6/2/2023
	62	2/3/2023 11:22:00 AM	0			12.2	14.8	57.2	67.7	-1.70	-1.68	Comments:,,,,,,	N	1				

Points with Exceedances	4
Closed Exceedances	1
Open Exceedances	3

Parameter exceeds rule (Exceedance)

Parameter in compliance (Exceedance cleared)

Attachment 3

Enhanced Monitoring Record Forms and Analytical Results

ENHANCED MONITORING RECORD FORM

- FORM TO BE COMPLETED IF ANY WELLHEAD TEMPERATURES OVER 145F THAT CANNOT BE CORRECTED IN 7 DAYS
- WEEKLY MONITORING MUST BEGIN WITHIN 7 DAYS OF EXCEEDANCE FOR CO AND VISUAL OBSERVATIONS
- TEMPERATURES AT OR ABOVE 165F REQUIRE ANNUAL DOWNHOLE TEMPERATURE MONITORING (10FT INTERVALS)
- TEMPERATURES AT OR ABOVE 170F REQUIRE 24-HOUR PADEP NOTIFICATION; IMMEDIATELY CONTACT ENGINEERS IN THIS CASE

Landfill Name: Bristol **Technician: Ryan Seymour**

Well ID	Date & Time	GEM Reading			If Temp >145F					If Temp ≥165F	If Temp ≥170F	Comments
		CH4 (%)	O2 (%)	Well Temp (°F)	Gas Sample Collected	Pickup Scheduled?	Visible Emissions (e.g. smoke)?	Smoldering Ash Observed?	Damage to Well?	Downhole Temp Monitoring Performed?	Contacted Engineers for Notification?	
					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	
57	2023-02-03 10:26:00	40.2	0.1	150.8	yes	yes	no	no	no	no	no	N/A
37	2023-02-03 10:28:00	14.9	7.8	148.6	yes	yes	no	no	no	no	no	N\A

ENHANCED MONITORING RECORD FORM

- FORM TO BE COMPLETED IF ANY WELLHEAD TEMPERATURES OVER 145F THAT CANNOT BE CORRECTED IN 7 DAYS
- WEEKLY MONITORING MUST BEGIN WITHIN 7 DAYS OF EXCEEDANCE FOR CO AND VISUAL OBSERVATIONS
- TEMPERATURES AT OR ABOVE 165F REQUIRE ANNUAL DOWNHOLE TEMPERATURE MONITORING (10FT INTERVALS)
- TEMPERATURES AT OR ABOVE 170F REQUIRE 24-HOUR PADEP NOTIFICATION; IMMEDIATELY CONTACT ENGINEERS IN THIS CASE

Landfill Name: Bristol **Technician: Ryan Seymour**

Well ID	Date & Time	GEM Reading			If Temp >145F					If Temp ≥165F	If Temp ≥170F	Comments
		CH4 (%)	O2 (%)	Well Temp (°F)	Gas Sample Collected	Pickup Scheduled?	Visible Emissions (e.g. smoke)?	Smoldering Ash Observed?	Damage to Well?	Downhole Temp Monitoring Performed?	Contacted Engineers for Notification?	
					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	
37	2023-02-08 09:30:00	16.7	6.3	149	yes	yes	no	no	no	no	no	N/A
57	2023-02-08 09:40:00	42.0	0.3	152	yes	yes	no	no	no	no	no	N/A

ENHANCED MONITORING RECORD FORM

- FORM TO BE COMPLETED IF ANY WELLHEAD TEMPERATURES OVER 145F THAT CANNOT BE CORRECTED IN 7 DAYS
- WEEKLY MONITORING MUST BEGIN WITHIN 7 DAYS OF EXCEEDANCE FOR CO AND VISUAL OBSERVATIONS
- TEMPERATURES AT OR ABOVE 165F REQUIRE ANNUAL DOWNHOLE TEMPERATURE MONITORING (10FT INTERVALS)
- TEMPERATURES AT OR ABOVE 170F REQUIRE 24-HOUR PADEP NOTIFICATION; IMMEDIATELY CONTACT ENGINEERS IN THIS CASE

Landfill Name: Bristol **Technician: Ryan Seymour**

Well ID	Date & Time	GEM Reading			If Temp >145F					If Temp ≥165F	If Temp ≥170F	Comments
		CH4 (%)	O2 (%)	Well Temp (°F)	Gas Sample Collected	Pickup Scheduled?	Visible Emissions (e.g. smoke)?	Smoldering Ash Observed?	Damage to Well?	Downhole Temp Monitoring Performed?	Contacted Engineers for Notification?	
					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	
37	2023-02-15 10:14:00	17.1	6.5	148.6	yes	yes	no	no	no	no	no	No comment

ENHANCED MONITORING RECORD FORM

- FORM TO BE COMPLETED IF ANY WELLHEAD TEMPERATURES OVER 145F THAT CANNOT BE CORRECTED IN 7 DAYS
- WEEKLY MONITORING MUST BEGIN WITHIN 7 DAYS OF EXCEEDANCE FOR CO AND VISUAL OBSERVATIONS
- TEMPERATURES AT OR ABOVE 165F REQUIRE ANNUAL DOWNHOLE TEMPERATURE MONITORING (10FT INTERVALS)
- TEMPERATURES AT OR ABOVE 170F REQUIRE 24-HOUR PADEP NOTIFICATION; IMMEDIATELY CONTACT ENGINEERS IN THIS CASE

Landfill Name: Bristol **Technician: Ryan Seymour**

Well ID	Date & Time	GEM Reading			If Temp >145F					If Temp ≥165F	If Temp ≥170F	Comments
		CH4 (%)	O2 (%)	Well Temp (°F)	Gas Sample Collected	Pickup Scheduled?	Visible Emissions (e.g. smoke)?	Smoldering Ash Observed?	Damage to Well?	Downhole Temp Monitoring Performed?	Contacted Engineers for Notification?	
					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	
57	2023-02-15 12:16:00	40.1	0.5	149.6	yes	yes	no	no	no	no	no	No comment

ENHANCED MONITORING RECORD FORM

- FORM TO BE COMPLETED IF ANY WELLHEAD TEMPERATURES OVER 145F THAT CANNOT BE CORRECTED IN 7 DAYS
- WEEKLY MONITORING MUST BEGIN WITHIN 7 DAYS OF EXCEEDANCE FOR CO AND VISUAL OBSERVATIONS
- TEMPERATURES AT OR ABOVE 165F REQUIRE ANNUAL DOWNHOLE TEMPERATURE MONITORING (10FT INTERVALS)
- TEMPERATURES AT OR ABOVE 170F REQUIRE 24-HOUR PADEP NOTIFICATION; IMMEDIATELY CONTACT ENGINEERS IN THIS CASE

Landfill Name: Bristol **Technician: Ryan Seymour**

Well ID	Date & Time	GEM Reading			If Temp >145F					If Temp ≥165F	If Temp ≥170F	Comments
		CH4 (%)	O2 (%)	Well Temp (°F)	Gas Sample Collected	Pickup Scheduled?	Visible Emissions (e.g. smoke)?	Smoldering Ash Observed?	Damage to Well?	Downhole Temp Monitoring Performed?	Contacted Engineers for Notification?	
					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	
37	2023-02-23 09:07:00	16.1	6.0	149.0	yes	yes	no	no	no	no	no	No comment
53	2023-02-23 09:13:00	23.0	5.0	145.3	yes	yes	no	no	no	no	no	No comment
57	2023-02-23 21:32:00	38.9	0.4	144.3	no	no	no	no	no	no	no	No comment

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 6, 2023 8:38
	4330 Lewis Road, Suite 1	Date Issued:	February 8, 2023 16:01
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 02/06/2023 08:38. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Technical Director

End Notes:

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

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

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

TNI Accredited
VELAP ID 460021

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	4330 Lewis Road, Suite 1	Date Issued:	February 8, 2023 16:01
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485

Client Site I.D.: Bristol

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
57	23B0248-01	Air	02/03/2023 10:45	02/06/2023 08:38
37	23B0248-02	Air	02/03/2023 10:25	02/06/2023 08:38

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 57

Sample ID: 23B0248-01

Sample Matrix: Air

Sampled: 2/3/2023 10:45

Sample Type: LV

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00476::15035

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 3.2

Receipt Vacuum(in Hg): 3.2

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	288	90.0	90.0		9	1	2/6/23 13:16	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	33.9	0.45	0.45		9	1	2/6/23 13:16	MER
Carbon dioxide, as received	51.7	0.45	0.45		9	1	2/6/23 13:16	MER
Oxygen (O2), as received	1.05	0.45	0.45		9	1	2/6/23 13:16	MER
Hydrogen (H2), as received	5.03	0.36	0.36		18	1	2/6/23 14:58	MER
Nitrogen (N2), as received	ND	9.00	9.00		9	1	2/6/23 13:16	MER
Carbon Monoxide, as received	0.03	0.009	0.009		9	1	2/6/23 13:16	MER

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Final Report

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 37

Sample ID: 23B0248-02

Sample Matrix: Air

Sampled: 2/3/2023 10:25

Sample Type: LV

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00477::15036

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 4.6

Receipt Vacuum(in Hg): 4.6

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	152	90.0	90.0		9	1	2/6/23 14:07	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	12.0	0.45	0.45		9	1	2/6/23 14:07	MER
Carbon dioxide, as received	25.9	0.45	0.45		9	1	2/6/23 14:07	MER
Oxygen (O2), as received	6.70	0.45	0.45		9	1	2/6/23 14:07	MER
Hydrogen (H2), as received	2.36	0.18	0.18		9	1	2/6/23 14:07	MER
Nitrogen (N2), as received	45.0	18.0	18.0		18	1	2/6/23 15:14	MER
Carbon Monoxide, as received	0.02	0.009	0.009		9	1	2/6/23 14:07	MER

ENTHALPY ANALYTICAL

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Certificate of Analysis

Final Report

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			**Preparation Method:**	**No Prep VOC GC Air**	
23B0248-01	1.00 mL / 1.00 mL	ALT-145	BGB0022	SGB0191	AG00026
23B0248-02	1.00 mL / 1.00 mL	ALT-145	BGB0022	SGB0191	AG00026
23B0248-01	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026
23B0248-01RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026
23B0248-02	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026
23B0248-02RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026

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Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Blank (BGB0022-BLK1)					Prepared & Analyzed: 02/01/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Oxygen (O2)	<	0.05	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Nitrogen (N2)	<	1.00	Vol%							
Carbon Monoxide	<	0.001	Vol%							
Carbon Monoxide	<	10.0	ppmv							
LCS (BGB0022-BS1)					Prepared & Analyzed: 02/01/2023					
Methane	4080	500	ppmv	5000		81.6	0-200			
Methane	4080	0.05	ppmv	5000		81.6	70-130			
Carbon dioxide	4450	500	ppmv	5000		89.0	0-200			
Carbon dioxide	4450	0.05	ppmv	5000		89.0	70-130			
Oxygen (O2)	5370	500	ppmv	5000		107	0-200			
Oxygen (O2)	5370	0.05	ppmv	5000		107	70-130			
Hydrogen (H2)	5890	200	ppmv	5100		116	0-200			
Nitrogen (N2)	5840	2000	ppmv	5000		117	0-200			
Nitrogen (N2)	5840	1	ppmv	5000		117	70-130			
Hydrogen (H2)	5890	0.02	ppmv	5100		116	70-130			
Carbon Monoxide	4970	0.001	ppmv	5000		99.4	70-130			
Carbon Monoxide	4970	10	ppmv	5000		99.4	0-200			
Duplicate (BGB0022-DUP1)					**Source: 23A1447-05** Prepared & Analyzed: 02/01/2023					
Methane	42.0	0.45	Vol%		41.9			0.231	5	
Methane	420000	4500	ppmv		419000			0.231	25	
Carbon dioxide	440000	4500	ppmv		437000			0.623	25	
Carbon dioxide	44.0	0.45	Vol%		43.7			0.623	5	
Oxygen (O2)	4750	4500	ppmv		4890			2.94	25	
Oxygen (O2)	0.47	0.45	Vol%		0.49			2.94	5	
Nitrogen (N2)	38200	18000	ppmv		38400			0.400	25	
Hydrogen (H2)	32700	1800	ppmv		32100			1.94	25	
Hydrogen (H2)	3.27	0.18	Vol%		3.21			1.94	5	

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Duplicate (BGB0022-DUP1)				**Source: 23A1447-05**	Prepared & Analyzed: 02/01/2023					
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Duplicate (BGB0022-DUP2)				**Source: 23B0113-01**	Prepared & Analyzed: 02/03/2023					
Methane	221000	4500	ppmv		223000			0.972	25	
Methane	22.1	0.45	Vol%		22.3			0.972	5	
Carbon dioxide	400000	4500	ppmv		401000			0.357	25	
Carbon dioxide	40.0	0.45	Vol%		40.1			0.357	5	
Oxygen (O2)	83700	4500	ppmv		84400			0.856	25	
Oxygen (O2)	8.37	0.45	Vol%		8.44			0.856	5	
Nitrogen (N2)	322000	18000	ppmv		324000			0.779	25	
Hydrogen (H2)	19600	1800	ppmv		19400			0.928	25	
Hydrogen (H2)	1.96	0.18	Vol%		1.94			0.928	5	
Nitrogen (N2)	32.2	9.00	Vol%		32.4			0.779	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Duplicate (BGB0022-DUP3)				**Source: 23B0113-02**	Prepared & Analyzed: 02/03/2023					
Methane	290000	4500	ppmv		290000			0.305	25	
Methane	29.0	0.45	Vol%		29.0			0.305	5	
Carbon dioxide	320000	4500	ppmv		319000			0.215	25	
Carbon dioxide	32.0	0.45	Vol%		31.9			0.215	5	
Oxygen (O2)	17100	4500	ppmv		16500			3.11	25	
Oxygen (O2)	1.71	0.45	Vol%		1.65			3.11	5	
Nitrogen (N2)	256000	18000	ppmv		256000			0.0254	25	
Hydrogen (H2)	65700	1800	ppmv		65500			0.262	25	
Nitrogen (N2)	25.6	9.00	Vol%		25.6			0.0254	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	

ENTHALPY ANALYTICAL

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Duplicate (BGB0022-DUP4)			**Source: 23B0113-03**		Prepared & Analyzed: 02/03/2023					
Methane	38.4	0.45	Vol%		38.1			0.726	5	
Methane	384000	4500	ppmv		381000			0.726	25	
Carbon dioxide	384000	4500	ppmv		381000			0.842	25	
Carbon dioxide	38.4	0.45	Vol%		38.1			0.842	5	
Oxygen (O2)	8.59	0.45	Vol%		8.54			0.608	5	
Oxygen (O2)	85900	4500	ppmv		85400			0.608	25	
Nitrogen (N2)	11.3	9.00	Vol%		11.3			0.598	5	
Nitrogen (N2)	113000	18000	ppmv		113000			0.598	25	
Hydrogen (H2)	64700	1800	ppmv		63600			1.73	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Duplicate (BGB0022-DUP5)			**Source: 23B0248-01**		Prepared & Analyzed: 02/06/2023					
Methane	33.9	0.45	Vol%		33.9			0.0304	5	
Methane	339000	4500	ppmv		339000			0.0304	25	
Carbon dioxide	519000	4500	ppmv		517000			0.314	25	
Carbon dioxide	51.9	0.45	Vol%		51.7			0.314	5	
Oxygen (O2)	10400	4500	ppmv		10500			0.876	25	
Oxygen (O2)	1.04	0.45	Vol%		1.05			0.876	5	
Hydrogen (H2)	51400	1800	ppmv		51200			0.527	25	
Nitrogen (N2)	33900	18000	ppmv		34300			1.30	25	
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Carbon Monoxide	289	90.0	ppmv		288			0.280	25	
Carbon Monoxide	0.03	0.009	Vol%		0.03			0.280	5	
Duplicate (BGB0022-DUP6)			**Source: 23B0248-02**		Prepared & Analyzed: 02/06/2023					
Methane	120000	4500	ppmv		120000			0.545	25	
Methane	12.0	0.45	Vol%		12.0			0.545	5	
Carbon dioxide	260000	4500	ppmv		259000			0.443	25	
Carbon dioxide	26.0	0.45	Vol%		25.9			0.443	5	
Oxygen (O2)	67100	4500	ppmv		67000			0.0471	25	
Oxygen (O2)	6.71	0.45	Vol%		6.70			0.0471	5	
Nitrogen (N2)	457000	18000	ppmv		456000			0.240	25	
Hydrogen (H2)	2.32	0.18	Vol%		2.36			1.71	5	
Hydrogen (H2)	23200	1800	ppmv		23600			1.71	25	

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Duplicate (BGB0022-DUP6)				**Source: 23B0248-02**	Prepared & Analyzed: 02/06/2023					
Carbon Monoxide	152	90.0	ppmv		152			0.178	25	
Carbon Monoxide	0.02	0.009	Vol%		0.02			0.178	5	

Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
EPA 3C in Air			
Methane	VELAP		
Oxygen (O2)	VELAP		
Nitrogen (N2)	VELAP		

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	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume

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.

All EPA method 3C results are reported as normalized values when the sum total of all evaluated constituents is outside ± 10% of the absolute.

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AIR ANALYSIS
CHAIN OF CUSTODY

Equipment due 2/17/2023

COMPANY NAME: SCS Field Services - Harrisburg	INVOICE TO: **Same**	PROJECT NAME/Quote #: **Bristol**
CONTACT:	INVOICE CONTACT:	SITE NAME: Bristol
ADDRESS:	INVOICE ADDRESS:	PROJECT NUMBER: 07220028.00
PHONE #:	INVOICE PHONE #:	P.O. #:
FAX #: EMAIL:		Pretreatment Program:
Is sample for compliance reporting? YES (NO)	**Regulatory State:** VA	Is sample from a chlorinated supply? ~~YES~~ (NO) PWS I.D. #:
SAMPLER NAME (PRINT): Ryan Seymour	SAMPLER SIGNATURE: Ryan Seymour	**Turn Around Time:** Circle: 10 (5 Days) or __ Day

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other_____

063-23A-0011

	CLIENT SAMPLE I.D.	Regulator Info: Flow Controller ID	Regulator Info: Cal Flow (mL/min)	Canister Information: Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Sampling Start Information: Barometric Pres. (in Hg): Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Sampling Stop Information: Barometric Pres. (in Hg): Stop Date	Stop Time (24hr clock)	Final Canister Vacuum (in Hg)	Ending Sample Temp °F	Matrix (See Codes)	ANALYSIS: Alt 145 CO	Hydrocarbons	3C
1)	57	ST005		15035	1.4	221220-02	21.4	~~10~~ 3.2	2/3/23	10:41 AM	28	150	2/3/23	10:45 AM	10	150	LG	x	X	X
2)	37	↓		15036	1.4	221220-02	21.4	~~17~~ 4.6	2/3/23	10:18 AM	28	148	2/3/23	10:25 AM	11	148	LG	x	X	X
3)				15037	1.4	221220-02	21.4										LG	x		
4)				15040	1.4	221220-02	21.4										LG	x		

SCS Field Services 23B0248
Bristol
Recd: 02/06/2023 Due: 02/13/2023
v130325002

RELINQUISHED: Ryan Seymour	DATE / TIME 2/3/23	RECEIVED: FedEx E	DATE / TIME
RELINQUISHED: FedEx E	DATE / TIME	RECEIVED: M Stever	DATE / TIME 2/6/23 0830
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME

Q
Level I ☐
Level II ☐
Level III ☐
Level IV ☐

LAB USE ONLY

310
19.8°C
no sul
no re

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Sample Conditions Checklist

Samples Received at:	**19.80°C**
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
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?	No
Are all volatile organic and TOX containers free of headspace?	NA
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.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments

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Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 9, 2023 14:00
	4330 Lewis Road, Suite 1	Date Issued:	February 16, 2023 14:27
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 02/09/2023 14:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Technical Director

End Notes:

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

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

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

TNI Accredited
VELAP ID 460021

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 9, 2023 14:00
	4330 Lewis Road, Suite 1	Date Issued:	February 16, 2023 14:27
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485

Client Site I.D.: Bristol

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
37	23B0613-01	Air	02/08/2023 09:38	02/09/2023 14:00
57	23B0613-02	Air	02/08/2023 09:48	02/09/2023 14:00

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 37

Sample ID: 23B0613-01

Sample Matrix: Air

Sampled: 2/8/2023 09:38

Sample Type: LG

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00478::15037

Canister Size: 1.4

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 3

Receipt Vacuum(in Hg): 3

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	Result (ppmv)	MDL (ppmv)	LOQ (ppmv)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	158	90.0	90.0		9	1	2/13/23 15:45	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Result (Vol%)	MDL (Vol%)	LOQ (Vol%)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	12.6	0.45	0.45		9	1	2/13/23 15:45	MER
Carbon dioxide, as received	27.2	0.45	0.45		9	1	2/13/23 15:45	MER
Oxygen (O2), as received	6.64	0.45	0.45		9	1	2/13/23 15:45	MER
Hydrogen (H2), as received	2.54	0.18	0.18		9	1	2/13/23 15:45	MER
Nitrogen (N2), as received	45.3	18.0	18.0		18	1	2/14/23 10:49	MER
Carbon Monoxide, as received	0.02	0.009	0.009		9	1	2/13/23 15:45	MER

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 57

Sample ID: 23B0613-02

Sample Matrix: Air

Sampled: 2/8/2023 09:48

Sample Type: LG

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00479::15040

Canister Size: 1.4

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 4.4

Receipt Vacuum(in Hg): 4.4

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	272	90.0	90.0		9	1	2/13/23 16:37	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	35.0	0.45	0.45		9	1	2/13/23 16:37	MER
Carbon dioxide, as received	51.3	0.45	0.45		9	1	2/13/23 16:37	MER
Oxygen (O2), as received	1.11	0.45	0.45		9	1	2/13/23 16:37	MER
Hydrogen (H2), as received	4.67	0.36	0.36		18	1	2/14/23 11:04	MER
Nitrogen (N2), as received	ND	9.00	9.00		9	1	2/13/23 16:37	MER
Carbon Monoxide, as received	0.03	0.009	0.009		9	1	2/13/23 16:37	MER

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			**Preparation Method:**	**No Prep VOC GC Air**	
23B0613-01	1.00 mL / 1.00 mL	ALT-145	BGB0413	SGB0435	AG00026
23B0613-02	1.00 mL / 1.00 mL	ALT-145	BGB0413	SGB0435	AG00026
23B0613-01	1.00 mL / 1.00 mL	EPA 3C	BGB0413	SGB0435	AG00026
23B0613-02	1.00 mL / 1.00 mL	EPA 3C	BGB0413	SGB0435	AG00026
23B0613-01RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0432	SGB0457	AG00026
23B0613-02RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0432	SGB0457	AG00026

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0413 - No Prep VOC GC Air										
Blank (BGB0413-BLK1)					Prepared & Analyzed: 02/13/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Oxygen (O2)	<	0.05	Vol%							
Nitrogen (N2)	<	1.00	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Carbon Monoxide	<	10.0	ppmv							
Carbon Monoxide	<	0.001	Vol%							
LCS (BGB0413-BS1)					Prepared & Analyzed: 02/13/2023					
Methane	4220	500	ppmv	5000		84.3	0-200			
Methane	4220	0.05	ppmv	5000		84.3	80-120			
Carbon dioxide	4930	500	ppmv	5000		98.6	0-200			
Carbon dioxide	4930	0.05	ppmv	5000		98.6	80-120			
Oxygen (O2)	5040	500	ppmv	5000		101	0-200			
Oxygen (O2)	5040	0.05	ppmv	5000		101	80-120			
Nitrogen (N2)	5280	2000	ppmv	5000		106	0-200			
Nitrogen (N2)	5280	1	ppmv	5000		106	80-120			
Hydrogen (H2)	5920	200	ppmv	5100		116	0-200			
Hydrogen (H2)	5920	0.02	ppmv	5100		116	80-120			
Carbon Monoxide	4840	10	ppmv	5000		96.8	0-200			
Carbon Monoxide	4840	0.001	ppmv	5000		96.8	80-120			
Duplicate (BGB0413-DUP1)					**Source: 23B0613-01** Prepared & Analyzed: 02/13/2023					
Methane	125000	4500	ppmv		126000			1.29	25	
Methane	12.5	0.45	Vol%		12.6			1.29	5	
Carbon dioxide	269000	4500	ppmv		272000			1.10	25	
Carbon dioxide	26.9	0.45	Vol%		27.2			1.10	5	
Oxygen (O2)	6.57	0.45	Vol%		6.64			1.09	5	
Oxygen (O2)	65700	4500	ppmv		66400			1.09	25	
Hydrogen (H2)	2.52	0.18	Vol%		2.54			0.978	5	
Hydrogen (H2)	25200	1800	ppmv		25400			0.978	25	
Nitrogen (N2)	445000	18000	ppmv		450000			0.959	25	

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0413 - No Prep VOC GC Air										
Duplicate (BGB0413-DUP1)				**Source: 23B0613-01**			Prepared & Analyzed: 02/13/2023			
Carbon Monoxide	153	90.0	ppmv		158			3.47	25	
Carbon Monoxide	0.02	0.009	Vol%		0.02			3.47	5	
Duplicate (BGB0413-DUP2)				**Source: 23B0613-02**			Prepared & Analyzed: 02/13/2023			
Methane	349000	4500	ppmv		350000			0.407	25	
Methane	34.9	0.45	Vol%		35.0			0.407	5	
Carbon dioxide	51.3	0.45	Vol%		51.3			0.116	5	
Carbon dioxide	513000	4500	ppmv		513000			0.116	25	
Oxygen (O2)	1.10	0.45	Vol%		1.11			0.589	5	
Oxygen (O2)	11000	4500	ppmv		11100			0.589	25	
Hydrogen (H2)	47700	1800	ppmv		48200			0.992	25	
Nitrogen (N2)	36100	18000	ppmv		36500			1.09	25	
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Carbon Monoxide	0.03	0.009	Vol%		0.03			0.165	5	
Carbon Monoxide	273	90.0	ppmv		272			0.165	25	
Batch BGB0432 - No Prep VOC GC Air										
Blank (BGB0432-BLK1)							Prepared & Analyzed: 02/14/2023			
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Oxygen (O2)	<	0.05	Vol%							
Nitrogen (N2)	<	1.00	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Carbon Monoxide	<	0.001	Vol%							
LCS (BGB0432-BS1)							Prepared & Analyzed: 02/14/2023			
Methane	4030	0.05	ppmv	5000		80.5	80-120			
Carbon dioxide	4580	0.05	ppmv	5000		91.5	80-120			
Oxygen (O2)	5130	0.05	ppmv	5000		103	80-120			
Nitrogen (N2)	5400	1	ppmv	5000		108	80-120			
Hydrogen (H2)	5940	0.02	ppmv	5100		116	80-120			
Carbon Monoxide	4930	0.001	ppmv	5000		98.6	80-120			

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0432 - No Prep VOC GC Air										
Duplicate (BGB0432-DUP1)				**Source: 23B0621-01**	Prepared & Analyzed: 02/14/2023					
Methane	58.0	0.45	Vol%		57.6			0.645	5	
Carbon dioxide	24.8	0.45	Vol%		24.7			0.373	5	
Oxygen (O2)	1.21	0.45	Vol%		1.20			0.825	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Nitrogen (N2)	13.0	9.00	Vol%		12.9			0.606	5	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Duplicate (BGB0432-DUP2)				**Source: 23B0621-02**	Prepared & Analyzed: 02/15/2023					
Methane	50.0	0.45	Vol%		51.1			2.25	5	
Carbon dioxide	38.6	0.45	Vol%		37.3			3.35	5	
Oxygen (O2)	0.72	0.45	Vol%		0.74			2.53	5	
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	

Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
EPA 3C in Air			
Methane	VELAP		
Oxygen (O2)	VELAP		
Nitrogen (N2)	VELAP		

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

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	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume

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.

All EPA method 3C results are reported as normalized values when the sum total of all evaluated constituents is outside ± 10% of the absolute.

ENTHALPY ANALYTICAL
formerly Air, Water & Soil Laboratories

AIR ANALYSIS
CHAIN OF CUSTODY

Equipment due 2/17/2023

COMPANY NAME: SCS Field Services - Harrisburg	INVOICE TO: Same	PROJECT NAME/Quote #: Bristol
CONTACT:	INVOICE CONTACT:	SITE NAME: Bristol
ADDRESS:	INVOICE ADDRESS:	PROJECT NUMBER: 07220028.00
PHONE #:	INVOICE PHONE #:	P.O. #:
FAX #:	EMAIL:	Pretreatment Program:
Is sample for compliance reporting? YES NO	Regulatory State: VA	Is sample from a chlorinated supply? YES NO
SAMPLER NAME (PRINT): Ryan Seymour	SAMPLER SIGNATURE: Ryan Seymour	PWS I.D. #:
		Turn Around Time: Circle: 10 **5 Days** or __ Day

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other_____

063-23A-0011

	CLIENT SAMPLE I.D.	Regulator Info: Flow Controller ID	Regulator Info: Cal Flow (mL/min)	Canister Information: Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Sampling Start Information (Barometric Pres. (in Hg): 30.04): Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Sampling Stop Information (Barometric Pres. (in Hg): 30.04): Stop Date	Stop Time (24hr clock)	Final Canister Vacuum (in Hg)	Ending Sample Temp °F	Matrix (See Codes)	ANALYSIS: Alt 145 CO	Hydrogen Sulfide	3C
1)	57	ST005		15035	1.4	221220-02	21.4	10	2/3/23	10:41 AM	28	150	2/3/23	10:45 AM	10	150	LG	x	x	x
2)	37			15036	1.4	221220-02	21.4	11	2/3/23	10:18 AM	28	148	2/3/23	10:25 AM	11	148	LG	x	x	x
3)	37			15037	1.4	221220-02	21.4	~~10~~ 3.0	2/8/23	9:30 AM	27	149	2/8/23	9:38 AM	10	149	LG	x	X	X
4)	57			15040	1.4	221220-02	21.4	~~H~~ 4.4	2/8/23	9:40 Am	28	152	2/8/23	9:48 Am	11	152	LG	x	X	X

310, 20.5°C, no ice, no seal

RELINQUISHED: Ryan Seymour 2/3/23	RECEIVED: CSB FedEx E DATE / TIME	QC Data Package	LAB USE ONLY
RELINQUISHED: Ryan Seymour DATE / TIME 2/8/23	RECEIVED: FedEx E DATE / TIME	Level I ☐	
RELINQUISHED: FedEx E DATE / TIME	RECEIVED: CSB 2/9/23 1400 DATE / TIME	Level II ☐ Level III ☐ Level IV ☐	

23B0613

SCS Field Services 23B0613
Bristol
Recd: 02/09/2023 Due: 02/16/2023

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Sample Conditions Checklist

Samples Received at:	**20.50°C**
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
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?	No
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?	No
Are all volatile organic and TOX containers free of headspace?	NA
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.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1140

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 17, 2023 9:35
	4330 Lewis Road, Suite 1	Date Issued:	February 24, 2023 16:23
	Harrisburg, PA 17111	Project Number:	07283016.00
Submitted To:	Ryan Seymour	Purchase Order:	07-SO04485
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 02/17/2023 09:35. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Technical Director

End Notes:

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

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

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

TNI Accredited
VELAP ID 460021

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1140

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 17, 2023 9:35
	4330 Lewis Road, Suite 1	Date Issued:	February 24, 2023 16:23
	Harrisburg, PA 17111	Project Number:	07283016.00
Submitted To:	Ryan Seymour	Purchase Order:	07-SO04485

Client Site I.D.: Bristol

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
37	23B1140-01	Air	02/15/2023 10:35	02/17/2023 09:35
57	23B1140-02	Air	02/15/2023 12:30	02/17/2023 09:35

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Final Report

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 37

Sample ID: 23B1140-01

Sample Matrix: Air

Sampled: 2/15/2023 10:35

Sample Type:

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00268::13370

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.2

Final Vacuum(in Hg): 4.2

Receipt Vacuum(in Hg): 4.2

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
ALT-145

Analyte	Result (ppmv)	MDL (ppmv)	LOQ (ppmv)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	147	90.0	90.0		9	1	2/20/23 16:09	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
EPA 3C

Analyte	Result (Vol%)	MDL (Vol%)	LOQ (Vol%)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	12.4	0.45	0.45		9	1	2/20/23 16:09	MER
Carbon dioxide, as received	26.5	0.45	0.45		9	1	2/20/23 16:09	MER
Hydrogen (H2), as received	2.48	0.18	0.18		9	1	2/20/23 16:09	MER

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Certificate of Analysis

Final Report

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 57

Sample ID: 23B1140-02

Sample Matrix: Air

Sampled: 2/15/2023 12:30

Sample Type:

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00364::13958

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.2

Final Vacuum(in Hg): 5.2

Receipt Vacuum(in Hg): 5.2

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	Result (ppmv)	MDL (ppmv)	LOQ (ppmv)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	373	90.0	90.0		9	1	2/20/23 17:00	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Result (Vol%)	MDL (Vol%)	LOQ (Vol%)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	31.2	0.45	0.45		9	1	2/20/23 17:00	MER
Carbon dioxide, as received	51.9	0.45	0.45		9	1	2/20/23 17:00	MER
Hydrogen (H2), as received	5.51	0.36	0.36		18	1	2/21/23 14:23	MER

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Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			**Preparation Method:**	**No Prep VOC GC Air**	
23B1140-01RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0663	SGB0757	AG00026
23B1140-02RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0663	SGB0757	AG00026
23B1140-01	1.00 mL / 1.00 mL	ALT-145	BGB0692	SGB0731	AG00026
23B1140-02	1.00 mL / 1.00 mL	ALT-145	BGB0692	SGB0731	AG00026
23B1140-01	1.00 mL / 1.00 mL	EPA 3C	BGB0692	SGB0731	AG00026
23B1140-02	1.00 mL / 1.00 mL	EPA 3C	BGB0692	SGB0731	AG00026

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Final Report

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Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0663 - No Prep VOC GC Air										
Blank (BGB0663-BLK1)					Prepared & Analyzed: 02/20/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
LCS (BGB0663-BS1)					Prepared & Analyzed: 02/20/2023					
Methane	4670	0.05	ppmv	5000		93.4	80-120			
Carbon dioxide	4350	0.05	ppmv	5000		87.0	80-120			
Hydrogen (H2)	5970	0.02	ppmv	5100		117	80-120			
Duplicate (BGB0663-DUP1)				**Source: 23B0710-04**	Prepared & Analyzed: 02/20/2023					
Methane	36.7	0.45	Vol%		36.8			0.364	5	
Carbon dioxide	26.5	0.45	Vol%		26.6			0.342	5	
Hydrogen (H2)	0.62	0.18	Vol%		0.65			4.22	5	
Duplicate (BGB0663-DUP2)				**Source: 23B0710-05**	Prepared & Analyzed: 02/20/2023					
Methane	43.6	0.45	Vol%		43.6			0.0718	5	
Carbon dioxide	31.3	0.45	Vol%		31.3			0.00374	5	
Hydrogen (H2)	0.93	0.18	Vol%		0.97			3.68	5	
Duplicate (BGB0663-DUP3)				**Source: 23B0788-02**	Prepared & Analyzed: 02/20/2023					
Methane	33.8	0.45	Vol%		33.7			0.372	5	
Carbon dioxide	26.7	0.45	Vol%		26.7			0.00502	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP4)				**Source: 23B0788-01**	Prepared & Analyzed: 02/21/2023					
Methane	<	0.45	Vol%		<0.45			NA	5	
Carbon dioxide	<	0.45	Vol%		<0.45			NA	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	

ENTHALPY ANALYTICAL

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Certificate of Analysis

Final Report

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0663 - No Prep VOC GC Air										
Duplicate (BGB0663-DUP5)				**Source: 23B0788-03**	Prepared & Analyzed: 02/21/2023					
Methane	10.4	0.45	Vol%		10.3			1.14	5	
Carbon dioxide	8.21	0.45	Vol%		8.11			1.21	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP6)				**Source: 23B0765-01**	Prepared & Analyzed: 02/22/2023					
Methane	59.9	0.45	Vol%		60.3			0.712	5	
Carbon dioxide	32.1	0.45	Vol%		32.3			0.485	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP7)				**Source: 23B0765-02**	Prepared & Analyzed: 02/22/2023					
Methane	27.8	0.45	Vol%		27.7			0.218	5	
Carbon dioxide	17.8	0.45	Vol%		17.7			0.548	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP8)				**Source: 23B0869-01**	Prepared & Analyzed: 02/22/2023					
Methane	5.91	0.45	Vol%		5.83			1.42	5	
Hydrogen (H2)	<	0.18	Vol%		0.20			NA	5	
Batch BGB0692 - No Prep VOC GC Air										
Blank (BGB0692-BLK1)					Prepared & Analyzed: 02/20/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Carbon Monoxide	<	10.0	ppmv							
LCS (BGB0692-BS1)					Prepared & Analyzed: 02/20/2023					
Methane	4670	500	ppmv	5000		93.4	0-200			
Methane	4670	0.05	ppmv	5000		93.4	80-120			
Carbon dioxide	4350	500	ppmv	5000		87.0	0-200			
Carbon dioxide	4350	0.05	ppmv	5000		87.0	80-120			
Oxygen (O2)	5080	500	ppmv	5000		102	0-200			
Hydrogen (H2)	5970	200	ppmv	5100		117	0-200			
Nitrogen (N2)	5340	2000	ppmv	5000		107	0-200			
Hydrogen (H2)	5970	0.02	ppmv	5100		117	80-120			
Carbon Monoxide	4860	10	ppmv	5000		97.2	0-200			

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Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0692 - No Prep VOC GC Air										
Duplicate (BGB0692-DUP1)			**Source: 23B1140-01**		Prepared & Analyzed: 02/20/2023					
Methane	12.3	0.45	Vol%		12.4			0.0538	5	
Methane	123000	4500	ppmv		124000			0.0538	25	
Carbon dioxide	266000	4500	ppmv		265000			0.448	25	
Carbon dioxide	26.6	0.45	Vol%		26.5			0.448	5	
Oxygen (O2)	66500	4500	ppmv		66100			0.634	25	
Hydrogen (H2)	2.52	0.18	Vol%		2.48			1.40	5	
Hydrogen (H2)	25200	1800	ppmv		24800			1.40	25	
Nitrogen (N2)	442000	18000	ppmv		439000			0.607	25	
Carbon Monoxide	150	90.0	ppmv		147			1.64	25	
Duplicate (BGB0692-DUP2)			**Source: 23B1140-02**		Prepared & Analyzed: 02/20/2023					
Methane	311000	4500	ppmv		312000			0.119	25	
Methane	31.1	0.45	Vol%		31.2			0.119	5	
Carbon dioxide	520000	4500	ppmv		519000			0.193	25	
Carbon dioxide	52.0	0.45	Vol%		51.9			0.193	5	
Oxygen (O2)	12700	4500	ppmv		12700			0.166	25	
Hydrogen (H2)	57800	1800	ppmv		57400			0.773	25	
Nitrogen (N2)	41900	18000	ppmv		41900			0.0550	25	
Carbon Monoxide	376	90.0	ppmv		373			0.961	25	

Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
EPA 3C in Air			
Methane	VELAP		

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Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

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	07/31/2023
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PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume

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ENTHALPY ANALYTICAL
formerly *Air, Water & Soil Laboratories*

Please make everything out to Ryan Seymour for delivery orders.

AIR ANALYSIS
CHAIN OF CUSTODY

Equipment due 2/6/2023

COMPANY NAME: SCS Field Services - Harrisburg	INVOICE TO: **Same**	PROJECT NAME/Quote #: **Bristol**
CONTACT:	INVOICE CONTACT:	SITE NAME: Bristol
ADDRESS:	INVOICE ADDRESS:	PROJECT NUMBER: 07223016.00
PHONE #:	INVOICE PHONE #:	P.O. #:
FAX #:	EMAIL:	Pretreatment Program:
Is sample for compliance reporting? (YES) NO — **Regulatory State:** VA	Is sample from a chlorinated supply? YES (NO)	PWS I.D. #:
SAMPLER NAME (PRINT): Ryan Seymour	SAMPLER SIGNATURE: Ryan Seymour	**Turn Around Time:** Circle: 10 (5 Days) or __ Day

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other LV

063-23A-0005

	Regulator Info		Canister Information					Sampling Start Information				Sampling Stop Information					ANALYSIS		
								Barometric Pres. (in Hg):				Barometric Pres. (in Hg):							
CLIENT SAMPLE I.D.	Flow Controller ID	Cal Flow (mL/min)	Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Stop Date	Stop Time (24hr clock)	Final Canister Vacuum (in Hg)	Ending Sample Temp °F	Matrix (See Codes)	Alt 145 CO	Hydrogen	[illegible]
1) 37	ST005		13370	1.4	221228-01	21.2	~~10~~ 4.2	2/15/23	10:32 AM	27	148	2/15/23	10:35 AM	10	148	LG	x	X	X
2) 57	↓		13958	1.4	221228-01	21.2	~~10~~ 5.2	2/15/23	12:20 PM	27	149	2/15/23	12:30 PM	10	149	LG	x	X	X
3)																			
4)																			

20.8°C, 310, no ice, no seal

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
Ryan Seymour	2/15/23 11:26 AM	Fedex E	
Fedex E		CSB	2/17/23 0935

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

LAB USE ONLY

SCS Field Services 23B1140
Bristol
Recd: 02/17/2023 Due: 02/24/2023

v130325002

063-23A-0005-Bristol CO in air 1-9-23

ENTHALPY ANALYTICAL

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1140

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Sample Conditions Checklist

Samples Received at:	**20.80°C**
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
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?	No
Are all volatile organic and TOX containers free of headspace?	NA
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.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 24, 2023 11:20
	4330 Lewis Road, Suite 1	Date Issued:	March 2, 2023 14:24
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 02/24/2023 11:20. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Technical Director

End Notes:

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

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

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

TNI Accredited
VELAP ID 460021

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 24, 2023 11:20
	4330 Lewis Road, Suite 1	Date Issued:	March 2, 2023 14:24
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485

Client Site I.D.: Bristol

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
37	23B1409-01	Air	02/23/2023 09:18	02/24/2023 11:20
53	23B1409-02	Air	02/23/2023 09:32	02/24/2023 11:20

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 37

Sample ID: 23B1409-01

Sample Matrix: Air

Sampled: 2/23/2023 09:18

Sample Type: LV

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00008::00324

Canister Size: 1.4L

Initial Vacuum(in Hg): 26

Final Vacuum(in Hg):

Receipt Vacuum(in Hg):

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	152	90.0	90.0		9	1	2/27/23 12:05	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	11.5	0.45	0.45		9	1	2/27/23 12:05	MER
Carbon dioxide, as received	26.9	0.45	0.45		9	1	2/27/23 12:05	MER
Hydrogen (H2), as received	2.61	0.18	0.18		9	1	2/27/23 12:05	MER

Volatile Organic Compounds by GCMS
EPA TO-15

Analyte	ppbv Results	MDL	LOQ	Flag/Qual	ug/M³ Results	MDL	LOQ	Dilution	PF	Date/Time Analyzed	Analyst
Benzene	67000	1750	4370		210000	5600	14000	8750	1	2/28/23 15:58	DFH

Surrogate(s)	% Recovery	% Recovery Limits	
4-Bromofluorobenzene (Surr)	109	80-120	2/28/23 15:58

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 53

Sample ID: 23B1409-02

Sample Matrix: Air

Sampled: 2/23/2023 09:32

Sample Type: LV

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00086::00287

Canister Size: 1.4L

Initial Vacuum(in Hg): 26

Final Vacuum(in Hg):

Receipt Vacuum(in Hg):

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	483	90.0	90.0		9	1	2/27/23 13:29	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	15.1	0.45	0.45		9	1	2/27/23 13:29	MER
Carbon dioxide, as received	38.0	0.45	0.45		9	1	2/27/23 13:29	MER
Hydrogen (H2), as received	6.92	0.36	0.36		18	1	2/27/23 15:11	MER

Volatile Organic Compounds by GCMS
EPA TO-15

Analyte	ppbv Results	MDL	LOQ	Flag/Qual	ug/M³ Results	MDL	LOQ	Dilution	PF	Date/Time Analyzed	Analyst
Benzene	142000	1750	4370		450000	5600	14000	8750	1	2/28/23 16:42	DFH

Surrogate(s)	% Recovery	% Recovery Limits	
4-Bromofluorobenzene (Surr)	108	80-120	2/28/23 16:42

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			**Preparation Method:**	**No Prep VOC GC Air**	
23B1409-01	1.00 mL / 1.00 mL	ALT-145	BGB0944	SGB0971	AG00026
23B1409-02	1.00 mL / 1.00 mL	ALT-145	BGB0944	SGB0971	AG00026
23B1409-01	1.00 mL / 1.00 mL	EPA 3C	BGB0944	SGB0971	AG00026
23B1409-02	1.00 mL / 1.00 mL	EPA 3C	BGB0944	SGB0971	AG00026
23B1409-02RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0944	SGB0971	AG00026

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**No Prep VOC Air**	
23B1409-01	400 mL / 400 mL	EPA TO-15	BGB0979	SGB1011	AK20003
23B1409-02	400 mL / 400 mL	EPA TO-15	BGB0979	SGB1011	AK20003

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0979 - No Prep VOC Air										
Blank (BGB0979-BLK1)				Prepared & Analyzed: 02/28/2023						
Benzene	<	0.50	ppbv							
Surr: 4-Bromofluorobenzene (Surr)	*5.45*		ppbv	*5.00*		*109*	*80-120*			
LCS (BGB0979-BS1)				Prepared & Analyzed: 02/28/2023						
1,1,1-Trichloroethane	4.97	0.5	ppbv	5.00		99.4	70-130			
1,1,2,2-Tetrachloroethane	5.99	0.5	ppbv	5.00		120	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane	4.88	0.5	ppbv	5.00		97.6	70-130			
1,1,2-Trichloroethane	5.03	0.5	ppbv	5.00		101	70-130			
1,1-Dichloroethane	4.22	0.5	ppbv	5.00		84.4	70-130			
1,1-Dichloroethylene	4.68	0.5	ppbv	5.00		93.6	70-130			
1,2,4-Trimethylbenzene	5.65	0.5	ppbv	5.00		113	70-130			
1,2-Dibromoethane (EDB)	6.09	0.5	ppbv	5.00		122	70-130			
1,2-Dichlorobenzene	6.19	0.5	ppbv	5.00		124	70-130			
1,2-Dichloroethane	4.37	0.5	ppbv	5.00		87.4	70-130			
1,2-Dichloropropane	4.57	0.5	ppbv	5.00		91.4	70-130			
1,2-Dichlorotetrafluoroethane	5.13	0.5	ppbv	5.00		103	70-130			
1,3,5-Trimethylbenzene	5.64	0.5	ppbv	5.00		113	70-130			
1,3-Butadiene	4.80	0.5	ppbv	5.00		96.0	70-130			
1,3-Dichlorobenzene	6.29	0.5	ppbv	5.00		126	70-130			
1,4-Dichlorobenzene	6.27	0.5	ppbv	5.00		125	70-130			
1,4-Dioxane	4.75	0.5	ppbv	5.00		95.0	70-130			
2-Butanone (MEK)	4.47	0.5	ppbv	5.00		89.4	70-130			
4-Methyl-2-pentanone (MIBK)	5.03	0.5	ppbv	5.00		101	70-130			
Allyl chloride	4.67	0.5	ppbv	5.00		93.4	70-130			
Benzene	4.87	0.5	ppbv	5.00		97.4	70-130			
Benzyl Chloride	5.12	0.5	ppbv	5.00		102	70-130			
Bromodichloromethane	4.69	0.5	ppbv	5.00		93.8	70-130			
Bromoform	3.18	0.5	ppbv	5.00		63.6	70-130			L
Bromomethane	6.04	0.5	ppbv	5.00		121	70-130			
Carbon Disulfide	4.67	0.5	ppbv	5.00		93.4	70-130			

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0979 - No Prep VOC Air										
LCS (BGB0979-BS1)				Prepared & Analyzed: 02/28/2023						
Carbon Tetrachloride	4.80	0.5	ppbv	5.00		96.0	70-130			
Chlorobenzene	6.03	0.5	ppbv	5.00		121	70-130			
Chloroethane	5.33	0.5	ppbv	5.00		107	70-130			
Chloroform	4.47	0.5	ppbv	5.00		89.4	70-130			
Chloromethane	4.26	0.5	ppbv	5.00		85.2	70-130			
cis-1,2-Dichloroethylene	4.65	0.5	ppbv	5.00		93.0	70-130			
cis-1,3-Dichloropropene	4.90	0.5	ppbv	5.00		98.0	70-130			
Cyclohexane	4.89	0.5	ppbv	5.00		97.8	70-130			
Dichlorodifluoromethane	4.64	0.5	ppbv	5.00		92.8	70-130			
Ethyl acetate	4.65	0.5	ppbv	5.00		93.0	70-130			
Ethylbenzene	5.81	0.5	ppbv	5.00		116	70-130			
Heptane	4.05	0.5	ppbv	5.00		81.0	70-130			
Hexane	4.31	0.5	ppbv	5.00		86.2	70-130			
m+p-Xylenes	11.9	1	ppbv	10.0		119	70-130			
Methylene chloride	4.96	1	ppbv	5.00		99.2	70-130			
Methyl-t-butyl ether (MTBE)	4.28	0.5	ppbv	5.00		85.6	70-130			
Naphthalene	5.50	0.5	ppbv	5.00		110	60-140			
o-Xylene	5.86	0.5	ppbv	5.00		117	70-130			
Propylene	4.20	1	ppbv	5.00		84.0	70-130			
Styrene	5.77	0.5	ppbv	5.00		115	70-130			
Tetrachloroethylene (PCE)	6.22	0.5	ppbv	5.00		124	70-130			
Tetrahydrofuran	4.08	0.5	ppbv	5.00		81.6	70-130			
Toluene	4.92	0.5	ppbv	5.00		98.4	70-130			
trans-1,2-Dichloroethylene	4.61	0.5	ppbv	5.00		92.2	70-130			
trans-1,3-Dichloropropene	4.60	0.5	ppbv	5.00		92.0	70-130			
Trichloroethylene	5.00	0.5	ppbv	5.00		100	70-130			
Trichlorofluoromethane	4.30	0.5	ppbv	5.00		86.0	70-130			
Vinyl acetate	3.93	0.5	ppbv	5.00		78.6	70-130			
Vinyl bromide	5.82	0.5	ppbv	5.00		116	70-130			
Vinyl chloride	4.94	0.5	ppbv	5.00		98.8	70-130			
Surr: 4-Bromofluorobenzene (Surr)	*5.66*		ppbv	*5.00*		*113*	*70-130*			

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0979 - No Prep VOC Air										
LCS Dup (BGB0979-BSD1)				Prepared & Analyzed: 02/28/2023						
1,1,1-Trichloroethane	4.88	0.5	ppbv	5.00		97.6	70-130	1.83	25	
1,1,2,2-Tetrachloroethane	5.89	0.5	ppbv	5.00		118	70-130	1.68	25	
1,1,2-Trichloro-1,2,2-trifluoroethane	4.84	0.5	ppbv	5.00		96.8	70-130	0.823	25	
1,1,2-Trichloroethane	4.96	0.5	ppbv	5.00		99.2	70-130	1.40	25	
1,1-Dichloroethane	4.15	0.5	ppbv	5.00		83.0	70-130	1.67	25	
1,1-Dichloroethylene	4.64	0.5	ppbv	5.00		92.8	70-130	0.858	25	
1,2,4-Trimethylbenzene	5.55	0.5	ppbv	5.00		111	70-130	1.79	25	
1,2-Dibromoethane (EDB)	5.99	0.5	ppbv	5.00		120	70-130	1.66	25	
1,2-Dichlorobenzene	6.10	0.5	ppbv	5.00		122	70-130	1.46	25	
1,2-Dichloroethane	4.24	0.5	ppbv	5.00		84.8	70-130	3.02	25	
1,2-Dichloropropane	4.47	0.5	ppbv	5.00		89.4	70-130	2.21	25	
1,2-Dichlorotetrafluoroethane	5.03	0.5	ppbv	5.00		101	70-130	1.97	25	
1,3,5-Trimethylbenzene	5.54	0.5	ppbv	5.00		111	70-130	1.79	25	
1,3-Butadiene	4.64	0.5	ppbv	5.00		92.8	70-130	3.39	25	
1,3-Dichlorobenzene	6.20	0.5	ppbv	5.00		124	70-130	1.44	25	
1,4-Dichlorobenzene	6.17	0.5	ppbv	5.00		123	70-130	1.61	25	
1,4-Dioxane	4.62	0.5	ppbv	5.00		92.4	70-130	2.77	25	
2-Butanone (MEK)	4.47	0.5	ppbv	5.00		89.4	70-130	0.00	25	
4-Methyl-2-pentanone (MIBK)	4.84	0.5	ppbv	5.00		96.8	70-130	3.85	25	
Allyl chloride	4.55	0.5	ppbv	5.00		91.0	70-130	2.60	25	
Benzene	4.79	0.5	ppbv	5.00		95.8	70-130	1.66	25	
Benzyl Chloride	5.05	0.5	ppbv	5.00		101	70-130	1.38	25	
Bromodichloromethane	4.58	0.5	ppbv	5.00		91.6	70-130	2.37	25	
Bromoform	3.13	0.5	ppbv	5.00		62.6	70-130	1.58	25	L
Bromomethane	6.07	0.5	ppbv	5.00		121	70-130	0.495	25	
Carbon Disulfide	4.61	0.5	ppbv	5.00		92.2	70-130	1.29	25	
Carbon Tetrachloride	4.70	0.5	ppbv	5.00		94.0	70-130	2.11	25	
Chlorobenzene	5.91	0.5	ppbv	5.00		118	70-130	2.01	25	
Chloroethane	5.38	0.5	ppbv	5.00		108	70-130	0.934	25	
Chloroform	4.44	0.5	ppbv	5.00		88.8	70-130	0.673	25	
Chloromethane	4.16	0.5	ppbv	5.00		83.2	70-130	2.38	25	
cis-1,2-Dichloroethylene	4.55	0.5	ppbv	5.00		91.0	70-130	2.17	25	
cis-1,3-Dichloropropene	4.82	0.5	ppbv	5.00		96.4	70-130	1.65	25	

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0979 - No Prep VOC Air										
LCS Dup (BGB0979-BSD1)				Prepared & Analyzed: 02/28/2023						
Cyclohexane	4.81	0.5	ppbv	5.00		96.2	70-130	1.65	25	
Dichlorodifluoromethane	4.61	0.5	ppbv	5.00		92.2	70-130	0.649	25	
Ethyl acetate	4.65	0.5	ppbv	5.00		93.0	70-130	0.00	25	
Ethylbenzene	5.72	0.5	ppbv	5.00		114	70-130	1.56	25	
Heptane	3.98	0.5	ppbv	5.00		79.6	70-130	1.74	25	
Hexane	4.25	0.5	ppbv	5.00		85.0	70-130	1.40	25	
m+p-Xylenes	11.7	1	ppbv	10.0		117	70-130	1.44	25	
Methylene chloride	4.88	1	ppbv	5.00		97.6	70-130	1.63	25	
Methyl-t-butyl ether (MTBE)	4.21	0.5	ppbv	5.00		84.2	70-130	1.65	25	
Naphthalene	5.42	0.5	ppbv	5.00		108	60-140	1.47	25	
o-Xylene	5.77	0.5	ppbv	5.00		115	70-130	1.55	25	
Propylene	4.08	1	ppbv	5.00		81.6	70-130	2.90	25	
Styrene	5.67	0.5	ppbv	5.00		113	70-130	1.75	25	
Tetrachloroethylene (PCE)	6.07	0.5	ppbv	5.00		121	70-130	2.44	25	
Tetrahydrofuran	3.96	0.5	ppbv	5.00		79.2	70-130	2.99	25	
Toluene	4.84	0.5	ppbv	5.00		96.8	70-130	1.64	25	
trans-1,2-Dichloroethylene	4.62	0.5	ppbv	5.00		92.4	70-130	0.217	25	
trans-1,3-Dichloropropene	4.48	0.5	ppbv	5.00		89.6	70-130	2.64	25	
Trichloroethylene	4.94	0.5	ppbv	5.00		98.8	70-130	1.21	25	
Trichlorofluoromethane	4.31	0.5	ppbv	5.00		86.2	70-130	0.232	25	
Vinyl acetate	3.78	0.5	ppbv	5.00		75.6	70-130	3.89	25	
Vinyl bromide	6.33	0.5	ppbv	5.00		127	70-130	8.40	25	
Vinyl chloride	4.81	0.5	ppbv	5.00		96.2	70-130	2.67	25	
Surr: 4-Bromofluorobenzene (Surr)	*5.67*		ppbv	*5.00*		*113*	*70-130*			

ENTHALPY ANALYTICAL

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0944 - No Prep VOC GC Air										
Blank (BGB0944-BLK1)					Prepared & Analyzed: 02/27/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Carbon Monoxide	<	10.0	ppmv							
LCS (BGB0944-BS1)					Prepared & Analyzed: 02/27/2023					
Methane	4720	500	ppmv	5000		94.3	0-200			
Methane	4720	0.05	ppmv	5000		94.3	80-120			
Carbon dioxide	4460	500	ppmv	5000		89.2	0-200			
Carbon dioxide	4460	0.05	ppmv	5000		89.2	80-120			
Oxygen (O2)	5120	500	ppmv	5000		102	0-200			
Nitrogen (N2)	5350	2000	ppmv	5000		107	0-200			
Hydrogen (H2)	5940	200	ppmv	5100		117	0-200			
Hydrogen (H2)	5940	0.02	ppmv	5100		117	80-120			
Carbon Monoxide	4920	10	ppmv	5000		98.4	0-200			
Duplicate (BGB0944-DUP1)				**Source: 23B1409-01**	Prepared & Analyzed: 02/27/2023					
Methane	11.7	0.45	Vol%		11.5			1.26	5	
Methane	117000	4500	ppmv		115000			1.26	25	
Carbon dioxide	274000	4500	ppmv		269000			1.94	25	
Carbon dioxide	27.4	0.45	Vol%		26.9			1.94	5	
Oxygen (O2)	72000	4500	ppmv		71100			1.26	25	
Hydrogen (H2)	2.63	0.18	Vol%		2.61			0.597	5	
Hydrogen (H2)	26300	1800	ppmv		26100			0.597	25	
Nitrogen (N2)	460000	18000	ppmv		454000			1.40	25	
Carbon Monoxide	153	90.0	ppmv		152			0.354	25	
Duplicate (BGB0944-DUP2)				**Source: 23B1409-02**	Prepared & Analyzed: 02/27/2023					
Methane	151000	4500	ppmv		151000			0.295	25	
Methane	15.1	0.45	Vol%		15.1			0.295	5	
Carbon dioxide	378000	4500	ppmv		380000			0.359	25	
Carbon dioxide	37.8	0.45	Vol%		38.0			0.359	5	
Oxygen (O2)	71200	4500	ppmv		71200			0.0196	25	
Hydrogen (H2)	69500	1800	ppmv		69700			0.370	25	
Nitrogen (N2)	267000	18000	ppmv		267000			0.332	25	

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0944 - No Prep VOC GC Air										
Duplicate (BGB0944-DUP2)				**Source: 23B1409-02**			Prepared & Analyzed: 02/27/2023			
Carbon Monoxide	474	90.0	ppmv		483			1.96	25	

Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
EPA 3C in Air			
Methane	VELAP		
EPA TO-15 in Air			
Benzene	VELAP		

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	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Qualifiers and Definitions

L	LCS recovery is outside of established acceptance limits
RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume
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.

All EPA method 3C results are reported as normalized values when the sum total of all evaluated constituents is outside ± 10% of the absolute.

ENTHALPY ANALYTICAL
formerly *Air, Water & Soil Laboratories*

AIR ANALYSIS
CHAIN OF CUSTODY

Equipment due 5/27/22

COMPANY NAME: SCS Field Services - Harrisburg	INVOICE TO: **Same**	PROJECT NAME/Quote #: **Bristol**
CONTACT:	INVOICE CONTACT:	SITE NAME: Bristol
ADDRESS:	INVOICE ADDRESS:	PROJECT NUMBER: 07223016.00
PHONE #:	INVOICE PHONE #:	P.O. #:
FAX #: EMAIL:		Pretreatment Program:

Is sample for compliance reporting? (YES) NO | **Regulatory State:** VA | Is sample from a chlorinated supply? YES (NO) | PWS I.D. #:

SAMPLER NAME (PRINT): Ryan Seymour | SAMPLER SIGNATURE: Ryan Seymour | **Turn Around Time:** Circle: 10 (5 Days) or __ Day

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other LV

063-22E-0019

	CLIENT SAMPLE I.D.	Regulator Info: Flow Controller ID	Regulator Info: Cal Flow (mL/min)	Canister Information: Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Sampling Start Information — Barometric Pres. (in Hg): Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Sampling Stop Information — Barometric Pres. (in Hg): Stop Date	Stop Time (24hr clock)	Final Canister Vacuum (in Hg)	Ending Sample Temp °F	Matrix (See Codes)	ANALYSIS: Alt 145 CO	Hydrocarbons	CH4-C02 Biogenic
1)	37			324	1.4	1/19/23	21.0	4.8	2-23 2023	9:17	26	149	2-23 2023	9:18	10	148.9	LG	x	x	x
2)	53			287	1.4	1/19/23	21.0	3.8	2-23 2023	9:30	26	145.5	2-23 2023	9:32	10	145.5	LG	x	x	x
3)	57			11973		1/19/23			2-23 2023				2-23 2023							
4)																				

310 noise noseq 20.7c

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
Ryan Seymour	2/23/23	Fedex c	
RELINQUISHED: Fedex c	DATE / TIME 1:27pm	RECEIVED: Jami Hamrick	DATE / TIME 2/24/23 11:20
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME

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

LAB USE ONLY

SCS Field Services 23B1409
Bristol
Recd: 02/24/2023 Due: 03/03/2023

v130325002

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

Certificate of Analysis

Final Report

Laboratory Order ID 23B1409

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 24, 2023 11:20 March 2, 2023 14:24
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Sample Conditions Checklist

Samples Received at:	**20.70°C**
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
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?	No
Are all volatile organic and TOX containers free of headspace?	NA
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.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments

Attachment 4

Daily Logs

SCS FIELD SERVICES DAILY LOG

JOB NO.	07220028.00	**TASK NO.**	00001	**DATE**	2.3.23	**PROJECT NAME**	BRISTOL
TEMP	37	**WEATHER**	Clear	**B.P.**	30.01	**WIND**	4mph NE

SCS-FS LABOR	HOURS	OT		HOURS	OT	
Ryan Seymour	12					
			DAILY TOTAL	12		

EQUIP, SVCS, , MLG	QTY	UNITS		QTY	UNITS	
GEM 5000	1	Day	MX4	2	Day	
Truck	2	Day	Generator	1	Day	

INSTRUMENT CALIBRATION (CAL. GAS)		CH4 (%-VOL)	CH4 (%-LEL)	02 LOW CALE %-VOL)	CO2 (%-VOL)	H2S (PPM)	
MODEL	S/N						
5000	500399	50		20.9	35		

SUMMARY	
	Scs was on site for monthly monitoring and blower flare check.
	I spoke to the Plant techs. They were down 1 engine out of 4. They had 2 engines running.
	I calibrated my gem. I bump tested Mx4.

I monitored the rest of the quarry.

The only exceedances I saw was 57 and 37. As well as 46 was right on 145 degrees.

Will Fabre's well field notes:

40- flex hose has water in it.
55- too tall
35- water in flex hose
38- damaged
49- too tall
31R- system pressure surging
63- ignore first reading, pump disconnected.
41- unable to get temp reading, couldn't insert temp probe system pressure port clogged

I collected my 2 samples of alt 145. And hydrogen.

Blower reading: CH4- 33.3% CO2- 32.8% O2- 4.3% BAL- 29.7% in-vac- 24.48 FLOW- 600 scfm

Prepared by:
Ryan Seymour

ACCEPTED BY: _____

I understand that when performing a one person job assignment, I am acting as my own supervisor.

SCS FIELD SERVICES DAILY LOG

JOB NO.	07220028.00	**TASK NO.**	00001	**DATE**	2.7.23	**PROJECT NAME**	BRISTOL
TEMP	55	**WEATHER**	clear	**B.P.**	28.99	**WIND**	6mph NE

SCS-FS LABOR	HOURS	OT		HOURS	OT	
Ryan Seymour	10					
Billy Bellew	10					
			DAILY TOTAL	20		

EQUIP, SVCS, , MLG	QTY	UNITS		QTY	UNITS	
GEM 5000	1	Day	MX4	2	Day	
Truck	2	Day	Generator	1	Day	

INSTRUMENT CALIBRATION (CAL. GAS)		CH4 (%-VOL)	CH4 (%-LEL)	02 LOW CALE %-VOL)	CO2 (%-VOL)	H2S (PPM)	
MODEL	S/N						
5000	500399	50		20.9	35		

SUMMARY	Scs was on site for weekly monitoring and blower flare check.
	I calibrated my gem. I bump tested Mx4.

I monitored the quarry all but 6 wells. I had 2 exceedances im grabbing samples tomorrow. 37 and 57

57- broken check valve
66- broken system port
58- too tall, cant reach system side.
55- too tall, cracked hose barb test port needs replaced.
41- very little vacuum on system side
53- surging, water in flex hose. (flex hose too long)
40- flex hose too long
35- decreased vacuum 10%
51- replaced temp port, 100% open
39- closed down to 50% vacuum
68- fixed flex hose clamp
38- fixed static and impact test ports, no system test port (duct tape closed)
48- needs all new test ports, replaced 2 on it.
50- cant reach system side
36- too tall

Blower reading. CH4- 32.6% CO2- 32.2% O2- 5% BAL- 30.2% in vac- -24.49

Then we did some more training with Frank on the UTV. Loading and unloading the truck with the UTV

Prepared by:
Ryan Seymour

ACCEPTED BY: _____

I understand that when performing a one person job assignment, I am acting as my own supervisor.

SCS FIELD SERVICES DAILY LOG

JOB NO.	07220028.00	**TASK NO.**	00001	**DATE**	2.8.23	**PROJECT NAME**	BRISTOL
TEMP	46	**WEATHER**	overcast	**B.P.**	30.04	**WIND**	6 mph NW

SCS-FS LABOR	HOURS	OT		HOURS	OT	
Ryan Seymour	8					
Billy Bellew	8					
			DAILY TOTAL	16		

EQUIP, SVCS, , MLG	QTY	UNITS		QTY	UNITS	
GEM 5000	1	Day	MX4	2	Day	
Truck	2	Day	Generator	1	Day	

INSTRUMENT CALIBRATION (CAL. GAS)		CH4 (%-VOL)	CH4 (%-LEL)	02 LOW CALE %-VOL)	CO2 (%-VOL)	H2S (PPM)	
MODEL	S/N						
5000	500399	49.9		20.9	34.9		

SUMMARY	Scs was on site for monthly monitoring and blower flare check.
	I calibrated my gem. I bump tested Mx4.

Blower reading: CH4: 36.7% CO2: 33% O2: 3.3% BAL: 27.0% VAC: -24.63

Monitored the whole quarry(588).

I got exceedances finished and sent my samples to fedex

Prepared by:
Ryan Seymour

ACCEPTED BY: _____

I understand that when performing a one person job assignment, I am acting as my own supervisor.

SCS FIELD SERVICES DAILY LOG

JOB NO.	07223016.00	**TASK NO.**	00001	**DATE**	2.15.23	**PROJECT NAME**	BRISTOL
TEMP	65	**WEATHER**	Partly cloudy	**B.P.**	30.09	**WIND**	3mph NE

SCS-FS LABOR	HOURS	OT			HOURS	OT	
Ryan Seymour	8						
Zack Barton	8			DAILY TOTAL	16		

EQUIP, SVCS, , MLG	QTY	UNITS		QTY	UNITS	
GEM 5000	1	Day	MX4	2	Day	
Truck	2	Day	Generator	1	Day	

INSTRUMENT CALIBRATION (CAL. GAS)		CH4 (%-VOL)	CH4 (%-LEL)	02 LOW CALE %-VOL)	CO2 (%-VOL)	H2S (PPM)	
MODEL	S/N						
5000	500399	50		20.9	35		

SUMMARY	Scs was on site for monthly monitoring and blower flare check.
	I calibrated my gem. I bump tested Mx4.

Blower reading: CH4: 36.7 % CO2: 33.3% O2: 3.8 % BAL: 26.2 % VAC: -28.50 FLOW: 225 SCFM

Plant had no attendant when I walked in control room but seemed to be operating.

Terrain is very difficult to maneuver through due to straight mud and ruts from equipment. We definitely suggest re grading the terrain come spring and re seeding grass in quarry. Im noticing more erosion through the quarry after the many rain storms we've received as of late.

I grabbed exceedances 37 and 57.

37 was right where its been the whole year 148 degrees. After a year of sampling this well I believe it should be placed on an HOV

57 was at 149 degrees. I took sample.

We delivered samples to the nearest fedex after we finished that.

Filled the UTV up with fuel.

Prepared by:
Ryan Seymour

ACCEPTED BY: _____

I understand that when performing a one person job assignment, I am acting as my own supervisor.

SCS FIELD SERVICES DAILY LOG

JOB NO.	07223016.00	**TASK NO.**	00001	**DATE**	2.23.23	**PROJECT NAME**	BRISTOL
TEMP	54	**WEATHER**	Partly cloudy	**B.P.**	30.04	**WIND**	6mph NE

SCS-FS LABOR	HOURS	OT			HOURS	OT	
Ryan Seymour	8						
Billy Bellew	8						
Logan Calhun	8						
Zack Barton	8			DAILY TOTAL	36		

EQUIP, SVCS, , MLG	QTY	UNITS		QTY	UNITS	
GEM 5000	2	Day	MX4	4	Day	
Truck	2	Day	Generator	1	Day	

INSTRUMENT CALIBRATION (CAL. GAS)		CH4 (%-VOL)	CH4 (%-LEL)	02 LOW CALE %-VOL)	CO2 (%-VOL)	H2S (PPM)	
MODEL	S/N						
5000	500399	50		20.9	35		

SUMMARY	Scs was on site for monthly monitoring and blower flare check.
	I calibrated my gem. I bump tested Mx4.

Blower reading: CH4: 30.8% CO2: 30.6% O2: 5.4% BAL: 33.2% VAC: -24.65 FLOW: 285 scfm

221 reading: CH4: 30.4% CO2: 30.4% O2: 5.4% BAL: 33.8% VAC: -24.55 FLOW: 285 SCFM

Pulled pumps 54,52,67

Replaced pump in 67

Fixed well head in 221

Today we monitored the quarry exceedances.

Prepared by: Zac Barton

ACCEPTED BY: _____

I understand that when performing a one person job assignment, I am acting as my own supervisor.

SCS FIELD SERVICES DAILY LOG

JOB NO.	07223016.00	**TASK NO.**	00001	**DATE**	2.23.23	**PROJECT NAME**	BRISTOL
TEMP	70	**WEATHER**	Partly cloudy	**B.P.**	30.02	**WIND**	8 mph NE

SCS-FS LABOR	HOURS	OT			HOURS	OT	
Ryan Seymour	8						
Billy Bellew	8						
Logan Calhun	8						
Zack Barton	8			DAILY TOTAL	36		

EQUIP, SVCS, , MLG	QTY	UNITS		QTY	UNITS	
GEM 5000	2	Day	MX4	4	Day	
Truck	2	Day	Generator	1	Day	

INSTRUMENT CALIBRATION (CAL. GAS)		CH4 (%-VOL)	CH4 (%-LEL)	02 LOW CALE %-VOL)	CO2 (%-VOL)	H2S (PPM)	
MODEL	S/N						
5000	500399	50		20.9	35		

SUMMARY	Scs was on site for monthly monitoring and blower flare check.
	I calibrated my gem. I bump tested Mx4.

Blower reading: CH4: 33.2% CO2: 32.6% O2: 4.2% BAL: 30.0% VAC: -24.63 FLOW: 335 scfm

221 reading: CH4: 23.6% CO2: 17.2% O2: 11.0% BAL: 48.2% VAC: -24.45 FLOW: 335 SCFM

Today we monitored the quarry exceedances.

Bought air compressor for utv tires and maintenance at homedepot.

Billy fixed a well head on 221/ truck got stuck had to pull him out. X7

We connected power to our office with extension cord.

Gw 37 was 149 degrees. Gw 53 was 145.3 degrees. 57 was under temp so I didn't take a sample of it. It read 144.3

Pulled and swapped pump for 51, removed pump and flow head at 57 and 60

Shipped off samples at fedex in Blountville Tennessee.

Prepared by:
Ryan Seymour

ACCEPTED BY: _____

I understand that when performing a one person job assignment, I am acting as my own supervisor.

Appendix C

Solid Waste Permit #588 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 bi-monthly basis at a minimum.

As of the date of this report, the system is still undergoing commissioning and SCS staff is still conducting verification testing and making minor field modifications to this system. Some values reported may differ from recordings made by other field instrumentation. SCS may elect to report values gathered from other data sources (GEM, field thermometer) for regulatory purposes until commissioning is complete.

SCS ENGINEERS

07222143.00 | March 8, 2023

3160 Oregon Pike
Leola, PA 17540
717-550-6330

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

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	109.2	107.5	110.8
Feb 2	109.1	108.0	110.5
Feb 3	105.5	101.9	109.7
Feb 4	106.5	102.0	111.6
Feb 5	108.9	106.5	111.9
Feb 6	109.2	106.3	111.7
Feb 7	110.2	105.7	115.1
Feb 8	110.4	108.2	113.2
Feb 9	111.5	109.1	115.0
Feb 10	108.7	106.0	111.6
Feb 11	107.3	104.2	109.2
Feb 12	105.4	102.0	107.6
Feb 13	107.2	103.9	110.4
Feb 14	109.7	104.7	114.7
Feb 15	110.4	105.7	113.6
Feb 16	111.6	106.9	113.9
Feb 17	102.8	97.0	109.9
Feb 18	103.7	98.6	108.8
Feb 19	107.4	104.1	111.2
Feb 20	106.8	105.2	108.7
Feb 21	107.2	105.3	109.4
Feb 22	109.1	105.7	115.3
Feb 23	105.2	102.0	108.0
Feb 24	101.4	98.3	103.8
Feb 25	100.9	97.4	102.8
Feb 26	102.0	100.7	103.2
Feb 27	104.6	101.0	110.4
Feb 28	109.3	99.9	116.4
Summary	**107.2**	**100.9**	**111.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 35

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	39.1	35.5	43.6
Feb 2	39.7	37.5	42.6
Feb 3	33.6	26.4	38.8
Feb 4	34.4	26.4	49.4
Feb 5	37.5	26.4	50.2
Feb 6	43.4	33.3	58.8
Feb 7	46.8	31.3	66.8
Feb 8	47.7	35.3	59.3
Feb 9	56.6	42.7	71.1
Feb 10	48.9	42.9	58.3
Feb 11	44.1	34.5	53.1
Feb 12	36.9	33.2	40.0
Feb 13	40.6	33.2	54.3
Feb 14	47.6	29.5	70.8
Feb 15	54.1	41.4	70.2
Feb 16	60.1	52.0	71.7
Feb 17	43.4	30.5	56.7
Feb 18	36.4	26.4	55.1
Feb 19	46.2	31.2	62.1
Feb 20	44.1	38.0	49.7
Feb 21	51.2	41.0	64.5
Feb 22	61.4	41.3	79.5
Feb 23	61.3	51.5	70.5
Feb 24	53.3	49.4	59.3
Feb 25	47.2	45.6	49.3
Feb 26	48.6	46.6	51.6
Feb 27	57.0	49.1	69.6
Feb 28	59.3	44.9	74.6
Summary	**47.2**	**33.6**	**61.4**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 39

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	38.1	34.6	42.3
Feb 2	38.7	36.6	41.5
Feb 3	32.8	26.2	41.5
Feb 4	34.6	26.2	52.2
Feb 5	36.3	26.6	49.5
Feb 6	42.5	32.0	64.6
Feb 7	45.8	29.8	69.7
Feb 8	47.3	35.2	58.3
Feb 9	56.6	42.5	72.4
Feb 10	48.9	42.6	60.5
Feb 11	44.3	35.0	53.8
Feb 12	37.0	33.2	40.1
Feb 13	41.2	33.3	60.4
Feb 14	48.1	29.4	73.9
Feb 15	54.7	41.7	73.6
Feb 16	60.7	52.2	73.1
Feb 17	43.4	30.0	57.1
Feb 18	36.5	26.2	57.1
Feb 19	47.1	33.9	68.0
Feb 20	44.4	38.4	49.8
Feb 21	51.6	41.3	67.1
Feb 22	61.6	41.8	84.5
Feb 23	61.6	51.1	73.2
Feb 24	53.8	50.0	58.7
Feb 25	47.4	45.1	49.9
Feb 26	48.9	46.7	51.8
Feb 27	57.9	49.3	72.9
Feb 28	59.5	45.4	79.5
Summary	**47.2**	**32.8**	**61.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 40

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	107.5	103.3	113.0
Feb 2	107.2	104.4	109.5
Feb 3	102.1	97.7	108.5
Feb 4	86.0	45.8	109.5
Feb 5	109.5	105.5	113.6
Feb 6	112.0	108.7	117.5
Feb 7	116.1	106.2	127.0
Feb 8	120.2	116.8	123.3
Feb 9	119.7	117.2	123.1
Feb 10	118.5	115.4	121.8
Feb 11	116.8	115.2	118.4
Feb 12	109.7	107.3	112.5
Feb 13	115.9	112.4	121.2
Feb 14	118.9	111.9	127.9
Feb 15	120.4	115.3	124.8
Feb 16	121.1	114.3	124.7
Feb 17	108.0	102.5	114.9
Feb 18	111.7	104.2	121.2
Feb 19	113.5	109.4	119.5
Feb 20	108.8	104.7	111.8
Feb 21	108.0	104.1	112.0
Feb 22	112.3	104.5	122.3
Feb 23	109.9	105.0	117.1
Feb 24	106.8	101.6	111.2
Feb 25	100.0	96.3	104.1
Feb 26	99.3	97.2	102.3
Feb 27	111.8	98.0	127.6
Feb 28	114.3	108.8	119.3
Summary	**110.9**	**86.0**	**121.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 46

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	129.2	127.3	131.1
Feb 2	127.7	125.3	129.2
Feb 3	126.2	123.9	128.6
Feb 4	122.8	82.0	131.9
Feb 5	128.4	126.6	131.6
Feb 6	128.9	126.6	133.5
Feb 7	130.8	125.4	135.9
Feb 8	133.3	130.6	135.2
Feb 9	133.5	132.4	135.3
Feb 10	133.1	131.9	135.0
Feb 11	131.6	130.1	132.8
Feb 12	128.1	125.1	131.0
Feb 13	131.7	130.2	133.8
Feb 14	134.2	131.0	138.6
Feb 15	136.8	133.4	138.9
Feb 16	138.0	135.1	139.6
Feb 17	135.0	133.8	136.3
Feb 18	136.9	134.5	139.6
Feb 19	137.8	135.8	139.5
Feb 20	137.6	135.3	138.9
Feb 21	138.7	138.1	139.8
Feb 22	139.5	137.6	142.0
Feb 23	139.4	136.7	141.1
Feb 24	138.5	137.4	139.3
Feb 25	137.9	136.5	139.3
Feb 26	139.0	138.3	139.7
Feb 27	139.2	137.4	141.4
Feb 28	139.9	138.8	141.9
Summary	**134.1**	**122.8**	**139.9**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 47

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	61.5	57.0	65.6
Feb 2	61.5	57.1	64.0
Feb 3	55.2	47.3	62.6
Feb 4	59.6	46.7	74.9
Feb 5	63.0	53.7	75.2
Feb 6	68.0	60.3	85.8
Feb 7	69.9	57.1	85.0
Feb 8	72.4	62.9	81.3
Feb 9	76.9	68.0	88.5
Feb 10	70.9	64.5	79.0
Feb 11	66.2	60.7	71.7
Feb 12	55.5	51.4	61.5
Feb 13	61.3	54.0	77.5
Feb 14	68.4	53.2	87.4
Feb 15	74.1	64.0	90.0
Feb 16	77.7	69.4	85.7
Feb 17	55.8	44.0	70.0
Feb 18	52.2	40.8	76.2
Feb 19	61.1	47.3	77.6
Feb 20	60.1	55.7	65.0
Feb 21	66.7	59.6	80.3
Feb 22	74.9	58.9	92.6
Feb 23	75.5	67.1	89.8
Feb 24	67.4	63.2	73.7
Feb 25	61.8	59.2	63.9
Feb 26	64.3	61.9	66.9
Feb 27	70.1	63.3	80.8
Feb 28	72.8	63.9	88.3
Summary	**65.9**	**52.2**	**77.7**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 49

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	121.8	120.0	123.0
Feb 2	121.4	120.1	122.4
Feb 3	119.7	117.5	122.6
Feb 4	120.9	118.3	123.7
Feb 5	122.2	120.0	124.1
Feb 6	123.1	121.0	125.0
Feb 7	124.0	120.6	127.6
Feb 8	125.6	123.5	127.0
Feb 9	125.2	123.7	127.1
Feb 10	123.9	121.3	126.1
Feb 11	122.7	121.3	124.3
Feb 12	119.2	116.5	121.9
Feb 13	122.3	120.3	124.5
Feb 14	124.5	120.9	128.6
Feb 15	108.8	65.6	124.5
Feb 16	115.9	108.9	118.2
Feb 17	82.0	73.8	107.4
Feb 18	96.5	80.0	109.2
Feb 19	107.2	100.4	112.3
Feb 20	110.1	105.6	112.8
Feb 21	111.8	108.9	114.7
Feb 22	116.9	110.4	122.1
Feb 23	116.2	113.1	120.2
Feb 24	112.3	108.5	115.7
Feb 25	109.4	105.2	114.3
Feb 26	110.1	108.1	112.8
Feb 27	111.6	104.5	120.0
Feb 28	112.5	106.9	118.1
Summary	**115.6**	**82.0**	**125.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 50

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	98.5	95.2	101.9
Feb 2	99.6	96.2	102.6
Feb 3	99.9	97.0	103.5
Feb 4	101.2	95.5	106.8
Feb 5	101.0	97.8	104.1
Feb 6	101.7	98.6	107.0
Feb 7	106.6	98.2	114.5
Feb 8	111.5	109.0	112.6
Feb 9	111.8	109.3	114.7
Feb 10	110.2	108.2	113.1
Feb 11	107.7	105.1	109.3
Feb 12	103.4	100.3	107.2
Feb 13	104.5	102.8	107.2
Feb 14	106.9	100.3	114.6
Feb 15	108.6	106.1	110.9
Feb 16	110.0	108.6	111.7
Feb 17	103.6	98.6	110.2
Feb 18	101.8	98.0	108.9
Feb 19	104.9	99.9	110.2
Feb 20	106.4	104.6	108.3
Feb 21	106.7	103.7	109.9
Feb 22	108.3	103.5	113.6
Feb 23	107.6	105.7	111.3
Feb 24	104.4	102.6	106.5
Feb 25	102.8	100.6	104.7
Feb 26	104.1	103.1	105.2
Feb 27	106.6	103.7	109.1
Feb 28	114.9	105.4	121.2
Summary	**105.5**	**98.5**	**114.9**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 51

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	62.0	59.0	75.5
Feb 2	63.8	58.6	66.4
Feb 3	51.9	43.8	63.1
Feb 4	58.2	42.3	75.5
Feb 5	67.3	58.2	82.0
Feb 6	66.0	51.7	89.5
Feb 7	66.4	51.6	87.3
Feb 8	66.3	53.9	76.1
Feb 9	75.8	65.9	85.0
Feb 10	82.5	75.1	94.8
Feb 11	85.5	80.1	90.5
Feb 12	75.3	59.5	87.6
Feb 13	72.9	59.5	92.3
Feb 14	90.9	76.4	110.9
Feb 15	102.1	92.4	112.9
Feb 16	100.6	89.2	107.2
Feb 17	69.2	56.0	90.9
Feb 18	68.6	45.7	95.8
Feb 19	61.7	45.0	83.2
Feb 20	64.2	56.6	86.9
Feb 21	139.8	60.9	179.1
Feb 22	89.2	72.4	133.9
Feb 23	75.4	68.9	92.3
Feb 24	67.3	62.0	72.8
Feb 25	61.5	59.2	63.9
Feb 26	64.6	61.4	68.1
Feb 27	73.8	64.6	86.2
Feb 28	81.4	71.5	98.5
Summary	**75.1**	**51.9**	**139.8**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 52

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	98.7	93.7	102.2
Feb 2	119.3	96.6	140.6
Feb 3	119.1	88.6	141.3
Feb 4	117.4	113.1	123.4
Feb 5	114.9	109.8	118.0
Feb 6	109.6	88.1	119.8
Feb 7	107.3	78.2	118.2
Feb 8	109.0	87.7	118.2
Feb 9	92.7	83.9	105.9
Feb 10	83.2	70.2	92.0
Feb 11	77.3	65.4	86.7
Feb 12	72.4	60.2	86.3
Feb 13	74.5	58.4	87.0
Feb 14	78.9	57.3	99.8
Feb 15	84.1	67.0	96.5
Feb 16	90.4	76.8	103.2
Feb 17	74.7	56.9	89.6
Feb 18	81.1	64.7	98.5
Feb 19	89.4	79.1	100.3
Feb 20	87.3	83.7	90.4
Feb 21	89.9	84.5	95.3
Feb 22	93.4	82.3	108.6
Feb 23	90.3	82.1	101.0
Feb 24	79.7	73.4	85.5
Feb 25	76.8	72.8	80.9
Feb 26	77.6	74.7	80.5
Feb 27	82.7	76.8	93.2
Feb 28	89.0	74.9	104.1
Summary	**91.4**	**72.4**	**119.3**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 53

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	129.9	126.2	133.5
Feb 2	132.2	127.8	135.6
Feb 3	93.9	39.2	175.1
Feb 4	89.2	35.5	116.2
Feb 5	115.8	107.3	122.4
Feb 6	150.9	121.2	172.4
Feb 7	134.7	113.9	167.0
Feb 8	139.4	116.2	151.9
Feb 9	138.6	133.1	147.3
Feb 10	131.7	105.2	175.8
Feb 11	108.1	102.2	115.5
Feb 12	127.7	99.1	161.7
Feb 13	122.1	112.2	137.5
Feb 14	127.8	113.3	142.9
Feb 15	135.0	119.9	144.4
Feb 16	140.4	131.2	150.1
Feb 17	114.4	103.7	128.8
Feb 18	120.8	106.0	134.2
Feb 19	133.0	122.4	146.2
Feb 20	137.0	125.4	147.6
Feb 21	140.2	132.9	149.2
Feb 22	132.6	118.0	144.1
Feb 23	120.7	107.8	132.3
Feb 24	127.1	108.3	140.0
Feb 25	128.7	123.6	132.8
Feb 26	127.5	123.6	130.1
Feb 27	134.0	125.6	143.2
Feb 28	137.5	134.5	142.5
Summary	**127.5**	**89.2**	**150.9**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 54

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	100.8	92.9	111.6
Feb 2	100.7	90.3	114.2
Feb 3	95.7	86.9	106.9
Feb 4	104.6	88.2	113.0
Feb 5	105.9	100.3	114.3
Feb 6	107.2	101.1	120.0
Feb 7	108.4	98.7	119.6
Feb 8	111.6	104.4	118.0
Feb 9	110.4	106.7	116.6
Feb 10	106.2	97.5	116.6
Feb 11	100.3	95.2	104.2
Feb 12	84.9	78.1	93.0
Feb 13	98.5	87.3	109.7
Feb 14	108.5	95.9	126.0
Feb 15	113.9	104.5	121.0
Feb 16	116.1	104.8	120.8
Feb 17	95.3	83.9	107.4
Feb 18	100.4	84.9	120.4
Feb 19	106.2	80.5	117.4
Feb 20	102.5	73.9	115.2
Feb 21	96.5	68.3	113.2
Feb 22	95.2	72.2	126.6
Feb 23	93.1	79.4	111.5
Feb 24	99.6	81.8	108.8
Feb 25	98.4	90.7	104.4
Feb 26	98.9	93.7	103.5
Feb 27	96.2	73.0	111.5
Feb 28	101.6	82.9	116.8
Summary	**102.1**	**84.9**	**116.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 55

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	49.6	46.4	53.7
Feb 2	45.3	42.8	49.6
Feb 3	37.8	30.9	43.7
Feb 4	39.9	27.4	58.0
Feb 5	43.5	34.3	58.0
Feb 6	50.5	40.5	68.0
Feb 7	54.9	38.6	73.5
Feb 8	57.9	46.6	68.3
Feb 9	64.1	53.3	76.3
Feb 10	58.3	53.0	68.3
Feb 11	55.9	47.9	64.2
Feb 12	44.4	39.1	52.6
Feb 13	46.1	38.3	62.1
Feb 14	52.3	34.6	79.2
Feb 15	59.4	47.4	77.3
Feb 16	65.1	58.3	75.8
Feb 17	46.6	32.6	59.3
Feb 18	39.6	27.6	65.3
Feb 19	48.6	34.8	66.8
Feb 20	46.0	40.9	51.4
Feb 21	53.1	44.2	67.1
Feb 22	61.2	43.4	83.3
Feb 23	62.2	52.3	74.0
Feb 24	55.0	51.2	62.2
Feb 25	48.6	47.1	51.0
Feb 26	49.5	47.6	51.6
Feb 27	58.4	50.3	71.6
Feb 28	60.0	46.4	76.7
Summary	**51.9**	**37.8**	**65.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 56

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	110.8	106.9	113.0
Feb 2	111.5	108.8	114.8
Feb 3	106.6	103.1	112.0
Feb 4	98.8	74.4	111.3
Feb 5	111.7	108.2	115.5
Feb 6	113.6	111.0	117.1
Feb 7	115.6	108.2	120.9
Feb 8	118.0	115.2	121.3
Feb 9	118.6	116.6	121.8
Feb 10	116.1	113.8	117.9
Feb 11	113.9	110.3	115.8
Feb 12	109.7	105.5	113.5
Feb 13	115.0	113.1	117.4
Feb 14	117.1	112.7	122.5
Feb 15	118.8	113.0	122.4
Feb 16	120.0	113.2	122.7
Feb 17	111.8	108.2	116.3
Feb 18	112.4	107.5	116.8
Feb 19	116.3	111.9	120.2
Feb 20	115.8	112.0	118.3
Feb 21	117.9	116.3	119.5
Feb 22	118.7	115.6	123.2
Feb 23	116.7	113.9	119.1
Feb 24	112.6	109.5	115.2
Feb 25	110.8	105.8	114.1
Feb 26	113.9	113.0	115.5
Feb 27	115.0	110.3	119.9
Feb 28	115.0	112.0	120.7
Summary	**114.0**	**98.8**	**120.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 57

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	117.8	114.4	120.0
Feb 2	116.2	112.3	119.5
Feb 3	111.5	106.8	118.6
Feb 4	109.0	95.2	119.2
Feb 5	115.4	110.1	120.4
Feb 6	117.3	114.2	122.5
Feb 7	111.7	100.9	125.2
Feb 8	112.8	99.0	123.2
Feb 9	119.6	117.3	123.5
Feb 10	116.3	112.1	119.2
Feb 11	114.1	112.0	116.0
Feb 12	106.5	103.7	109.8
Feb 13	109.4	89.2	130.3
Feb 14	96.3	68.2	107.6
Feb 15	114.4	107.6	119.9
Feb 16	117.5	109.9	121.4
Feb 17	102.4	94.8	111.9
Feb 18	104.4	94.9	114.9
Feb 19	110.0	104.9	115.6
Feb 20	109.7	104.8	113.4
Feb 21	111.4	106.8	115.1
Feb 22	116.1	106.8	123.7
Feb 23	113.5	78.6	120.2
Feb 24	108.4	104.2	112.2
Feb 25	105.3	100.9	108.8
Feb 26	106.3	103.6	109.8
Feb 27	122.3	105.6	138.8
Feb 28	135.6	132.4	141.2
Summary	**112.5**	**96.3**	**135.6**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 58

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	105.2	102.3	108.1
Feb 2	101.3	100.0	102.8
Feb 3	100.2	95.0	102.6
Feb 4	95.7	61.5	105.3
Feb 5	104.4	100.4	108.6
Feb 6	101.8	97.0	107.5
Feb 7	101.5	96.8	108.1
Feb 8	93.3	83.7	97.5
Feb 9	72.4	57.9	88.6
Feb 10	73.4	42.9	105.7
Feb 11	105.9	102.3	108.2
Feb 12	97.4	95.0	100.0
Feb 13	92.0	77.3	96.7
Feb 14	70.8	56.7	93.2
Feb 15	57.2	48.0	71.7
Feb 16	59.9	51.8	73.3
Feb 17	42.9	26.2	57.1
Feb 18	36.2	26.2	57.5
Feb 19	45.5	26.2	65.9
Feb 20	44.0	37.8	49.9
Feb 21	51.6	40.7	66.4
Feb 22	61.0	41.3	82.7
Feb 23	60.1	26.1	71.2
Feb 24	52.3	26.1	58.3
Feb 25	47.1	45.6	49.5
Feb 26	46.0	26.1	51.2
Feb 27	53.6	26.1	72.4
Feb 28	56.9	26.1	74.6
Summary	**72.5**	**36.2**	**105.9**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 59

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	103.8	102.7	104.9
Feb 2	103.1	101.8	104.3
Feb 3	100.4	98.2	103.5
Feb 4	97.6	65.0	108.4
Feb 5	102.5	100.5	104.3
Feb 6	103.1	101.3	105.1
Feb 7	103.3	99.5	107.1
Feb 8	104.2	102.0	106.0
Feb 9	104.9	102.9	106.8
Feb 10	103.5	102.1	105.3
Feb 11	102.7	101.6	103.9
Feb 12	100.0	97.5	101.5
Feb 13	102.1	99.3	105.8
Feb 14	104.0	96.6	109.3
Feb 15	105.1	102.2	108.7
Feb 16	106.0	103.1	108.9
Feb 17	100.5	97.3	105.4
Feb 18	99.8	95.2	104.6
Feb 19	102.8	99.8	105.7
Feb 20	103.2	101.3	104.7
Feb 21	103.7	101.9	106.1
Feb 22	105.9	100.9	110.4
Feb 23	106.6	105.2	107.6
Feb 24	106.6	104.3	110.0
Feb 25	105.0	103.8	105.8
Feb 26	105.3	104.5	106.2
Feb 27	109.3	105.3	112.6
Feb 28	112.1	111.8	112.7
Summary	**103.8**	**97.6**	**112.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 60

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	85.4	81.1	88.0
Feb 2	85.0	82.6	87.6
Feb 3	79.6	74.6	85.5
Feb 4	82.9	76.4	90.1
Feb 5	86.2	81.8	90.6
Feb 6	88.5	84.0	93.2
Feb 7	94.5	83.4	104.3
Feb 8	100.1	97.4	103.2
Feb 9	100.8	96.9	104.3
Feb 10	99.3	96.2	102.7
Feb 11	97.7	95.8	99.3
Feb 12	93.5	91.2	96.3
Feb 13	96.3	92.7	99.6
Feb 14	99.8	93.6	106.5
Feb 15	102.0	98.8	105.6
Feb 16	102.3	97.9	105.1
Feb 17	93.8	88.1	99.8
Feb 18	93.3	87.9	98.4
Feb 19	96.4	92.0	101.0
Feb 20	97.3	95.5	98.9
Feb 21	98.1	96.1	100.4
Feb 22	100.8	96.0	105.1
Feb 23	99.0	96.2	101.5
Feb 24	95.8	93.6	98.1
Feb 25	94.1	92.6	96.0
Feb 26	94.4	93.2	95.7
Feb 27	97.5	94.6	101.6
Feb 28	107.7	95.3	115.6
Summary	**95.1**	**79.6**	**107.7**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 62

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	37.6	34.0	43.2
Feb 2	38.4	36.1	41.0
Feb 3	60.4	30.0	86.3
Feb 4	85.1	77.8	92.2
Feb 5	89.1	84.3	96.4
Feb 6	93.0	86.6	102.2
Feb 7	96.2	89.6	103.5
Feb 8	97.3	92.9	101.6
Feb 9	99.2	95.3	104.7
Feb 10	96.4	93.4	102.1
Feb 11	94.5	91.6	96.9
Feb 12	88.8	85.3	92.8
Feb 13	90.7	85.8	96.8
Feb 14	93.9	86.5	104.6
Feb 15	96.5	90.6	103.9
Feb 16	97.7	93.0	102.1
Feb 17	84.1	75.2	93.9
Feb 18	82.7	75.1	95.5
Feb 19	86.6	79.2	96.7
Feb 20	85.3	81.9	87.8
Feb 21	87.9	83.9	94.5
Feb 22	96.6	83.7	110.4
Feb 23	104.8	102.1	109.0
Feb 24	101.5	99.9	102.9
Feb 25	98.7	96.3	100.3
Feb 26	99.1	98.2	100.6
Feb 27	101.0	98.3	105.6
Feb 28	110.0	99.9	117.9
Summary	**89.0**	**37.6**	**110.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 63

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	102.8	98.1	106.9
Feb 2	102.2	97.9	105.0
Feb 3	96.4	91.1	102.7
Feb 4	100.2	92.7	108.3
Feb 5	103.6	98.3	109.5
Feb 6	105.9	98.5	113.5
Feb 7	107.8	100.2	115.1
Feb 8	108.4	103.8	112.1
Feb 9	108.7	104.8	112.9
Feb 10	106.3	100.4	112.5
Feb 11	103.4	100.0	107.7
Feb 12	97.3	91.8	101.5
Feb 13	103.2	97.8	109.6
Feb 14	106.7	99.3	117.0
Feb 15	107.8	99.2	113.4
Feb 16	108.9	100.2	112.9
Feb 17	94.6	85.6	103.0
Feb 18	96.7	85.7	108.8
Feb 19	101.8	93.6	110.0
Feb 20	100.9	96.4	104.3
Feb 21	102.9	98.8	109.1
Feb 22	107.7	99.8	116.5
Feb 23	106.4	99.9	112.7
Feb 24	100.8	97.5	105.0
Feb 25	98.5	93.3	102.0
Feb 26	100.5	97.9	102.8
Feb 27	103.0	99.3	111.4
Feb 28	113.0	99.7	124.4
Summary	**103.5**	**94.6**	**113.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 64

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	107.0	104.1	109.1
Feb 2	105.9	103.4	108.1
Feb 3	103.2	100.6	107.0
Feb 4	104.7	99.3	109.8
Feb 5	107.3	103.6	110.4
Feb 6	108.8	105.6	111.9
Feb 7	109.7	103.5	114.9
Feb 8	110.9	107.6	113.6
Feb 9	111.9	109.2	114.8
Feb 10	109.0	106.2	111.4
Feb 11	108.2	105.8	110.5
Feb 12	103.9	101.0	105.9
Feb 13	106.5	102.9	110.2
Feb 14	110.0	104.5	116.5
Feb 15	111.4	105.4	115.3
Feb 16	112.9	108.3	116.2
Feb 17	103.7	98.1	110.0
Feb 18	104.1	98.5	111.6
Feb 19	107.3	101.6	111.0
Feb 20	108.0	104.5	110.7
Feb 21	109.2	106.4	111.1
Feb 22	112.6	107.4	117.1
Feb 23	112.1	108.1	114.6
Feb 24	107.7	106.0	110.2
Feb 25	106.3	103.5	108.8
Feb 26	106.7	105.7	109.0
Feb 27	110.2	106.6	115.1
Feb 28	116.1	108.2	123.7
Summary	**108.4**	**103.2**	**116.1**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 65

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	81.1	76.9	85.3
Feb 2	82.0	77.1	85.9
Feb 3	79.5	73.1	86.8
Feb 4	80.7	71.4	91.4
Feb 5	84.3	77.3	93.4
Feb 6	87.8	82.1	96.3
Feb 7	89.5	79.4	98.7
Feb 8	90.9	85.3	94.6
Feb 9	93.9	86.7	100.8
Feb 10	88.8	82.9	98.0
Feb 11	86.0	82.8	91.4
Feb 12	77.9	73.9	82.6
Feb 13	85.2	77.6	95.4
Feb 14	90.8	77.6	104.7
Feb 15	94.8	85.7	101.8
Feb 16	97.0	89.0	101.2
Feb 17	79.0	69.5	92.5
Feb 18	80.2	69.9	93.6
Feb 19	86.7	77.2	97.1
Feb 20	86.3	82.0	89.8
Feb 21	90.5	85.6	95.8
Feb 22	96.7	86.7	106.7
Feb 23	96.8	90.9	100.6
Feb 24	89.5	85.8	94.1
Feb 25	85.8	80.2	90.0
Feb 26	86.3	84.5	89.9
Feb 27	90.7	85.5	97.9
Feb 28	92.8	87.0	101.2
Summary	**87.5**	**77.9**	**97.0**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 66

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	76.9	66.0	83.4
Feb 2	68.0	64.0	78.2
Feb 3	58.7	52.0	68.1
Feb 4	61.4	48.2	79.7
Feb 5	60.8	49.5	73.4
Feb 6	67.0	58.1	83.6
Feb 7	72.0	52.5	95.8
Feb 8	77.3	64.9	87.6
Feb 9	73.4	65.1	84.4
Feb 10	68.1	60.1	84.1
Feb 11	62.6	56.6	69.6
Feb 12	43.1	38.2	50.9
Feb 13	47.5	37.8	67.3
Feb 14	54.2	33.3	82.9
Feb 15	61.2	47.2	81.5
Feb 16	65.6	58.3	77.6
Feb 17	45.4	32.3	59.0
Feb 18	42.4	26.8	68.5
Feb 19	51.9	36.3	73.5
Feb 20	48.2	42.7	54.8
Feb 21	55.9	45.3	73.5
Feb 22	66.2	45.4	90.2
Feb 23	65.2	54.0	80.7
Feb 24	56.3	52.3	64.5
Feb 25	49.4	47.5	52.1
Feb 26	50.0	47.9	52.2
Feb 27	58.8	50.9	74.1
Feb 28	60.1	46.5	79.6
Summary	**59.6**	**42.4**	**77.3**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 67

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	83.1	73.7	88.4
Feb 2	86.0	76.3	101.5
Feb 3	72.2	59.6	93.8
Feb 4	78.0	56.7	95.2
Feb 5	79.9	68.0	89.6
Feb 6	82.6	74.3	96.2
Feb 7	79.1	66.2	91.8
Feb 8	83.2	71.8	93.3
Feb 9	87.3	80.0	99.4
Feb 10	114.9	75.2	151.9
Feb 11	154.4	152.3	155.4
Feb 12	155.2	150.8	158.7
Feb 13	152.9	145.3	160.3
Feb 14	136.2	126.7	143.7
Feb 15	132.6	118.6	143.3
Feb 16	133.9	125.1	140.9
Feb 17	114.1	97.9	135.7
Feb 18	113.9	99.2	127.8
Feb 19	119.2	98.5	129.1
Feb 20	123.3	115.7	127.5
Feb 21	121.5	112.6	127.6
Feb 22	138.4	117.6	156.8
Feb 23	160.9	156.3	165.4
Feb 24	100.0	47.5	167.0
Feb 25	46.5	44.5	48.0
Feb 26	48.6	46.1	53.1
Feb 27	56.7	48.3	74.7
Feb 28	60.1	43.5	85.4
Summary	**104.1**	**46.5**	**160.9**

Solid Waste Permit 588 Daily Wellhead Temperature Averages for Well 68

Bristol, Virginia

Date	Average (°F)	Minimum (°F)	Maximum (°F)
Feb 1	124.3	123.0	125.1
Feb 2	124.7	124.1	125.3
Feb 3	125.9	123.1	128.1
Feb 4	126.4	124.1	129.8
Feb 5	130.4	127.4	134.4
Feb 6	135.4	133.6	136.6
Feb 7	132.7	129.0	136.4
Feb 8	131.9	129.6	137.0
Feb 9	131.0	130.5	131.6
Feb 10	129.0	126.5	131.8
Feb 11	127.4	126.9	128.6
Feb 12	126.1	124.4	127.3
Feb 13	126.2	125.2	126.8
Feb 14	126.7	125.7	127.4
Feb 15	127.4	126.6	129.2
Feb 16	126.8	125.9	127.2
Feb 17	124.7	123.9	126.2
Feb 18	125.2	124.3	126.1
Feb 19	125.8	125.2	126.3
Feb 20	126.0	125.4	126.3
Feb 21	126.1	125.6	126.5
Feb 22	126.5	125.8	127.3
Feb 23	126.1	123.1	126.8
Feb 24	125.7	125.3	126.5
Feb 25	125.5	125.0	125.9
Feb 26	125.7	125.5	126.0
Feb 27	125.9	125.5	126.7
Feb 28	125.9	125.3	126.6
Summary	**127.2**	**124.3**	**135.4**

Appendix D

Changes to Landfill Gas Well Riser Pipe Dimensions

February 27, 2023

DECLARATION OF ROBERT E. DICK, PE

SUBJECT: Changes to Landfill Gas Well Riser Pipe Dimensions
Bristol Quarry Landfill, Bristol, Virginia

I, Robert E. Dick, under penalty of perjury, declare that the following statements are true and correct to the best of my knowledge, information and belief.

1) I, Robert E. Dick, PE, am a licensed Professional Engineer in the Commonwealth of Virginia (License No. 024815). I am a Senior Vice President with SCS Engineers and have over 33 years of landfill and landfill gas engineering experience at landfill facilities within Virginia.

2) I have worked on project assignments involving the design, construction, and operation of dual-phase (gas and liquid) landfill gas (LFG) vertical extraction wells at multiple landfill facilities that have exhibited elevated temperature conditions (often referred to as "ETLFs") for over 13 years.

3) I currently serve as one of the engineering consultants retained by the City of Bristol, Virginia to provide professional engineering services related to the Bristol Integrated Solid Waste Management Facility, including the waste disposal unit referred to as the Bristol Quarry Landfill (Solid Waste Permit No. 588).

4) I participated in the Expert Panel Meeting, convened by the Virginia Department of Environmental Quality (VDEQ), on March 21 – 22, 2022 as an observer on behalf of the City. I reviewed the Expert Panel Report, dated 4/25/22, and provided consultation to the City regarding implementation of the recommendations contained therein, including the statement on Page 11 that reads *"The Panel recommended installation of large-diameter (12-inch diameter) dual-phase extraction wells into the waste mass."*

5) I was involved in development of the document titled "Plan of Action in Response to Expert Panel Report", prepared by SCS Engineers, dated 7/6/22, including language that addresses proposed large-diameter dual-phase extraction wells. Please note that SCS' document did not identify a specific dimension or a specific material of construction for the well riser pipe associated with such wells, but stated the purpose to be to *"accommodate larger pumps and capable of extracting larger volumes of leachate."*

6) I have reviewed the Consent Decree, which VDEQ has issued to solicit public comment, and which contains the following statement in Appendix A, Item 1.iv: *"Install a minimum of 5 large-diameter, dual-phase extraction wells into the waste mass with a casing no less than 12-inches in diameter by June 30, 2023."*

7) I lead SCS's efforts related to the engineering design of the City's proposed expansion of the existing landfill gas collection system in the Bristol Quarry Landfill. The design includes the incorporation of dual-phase vertical LFG extraction wells. In November and early December, SCS drafted construction bid documents, and then, on or about 12/12/22, also advertised those documents in order to solicit bids from qualified contractors for the construction of the LFG collection system. On December 31, 2022, we submitted the overall design of the LFG system expansion to VDEQ. I served as the Professional Engineer who stamped/sealed both the construction bid documents and the Plan (Drawings) submitted to VDEQ. This documentation was intended to fulfill the specifications outlined in the Expert Panel Report and the Consent Decree.

8) During January 2023, SCS measured and recorded subsurface temperatures within the Quarry Landfill which indicated a reasonable probability that extraction wells installed to depths that exceeded the depths of the previously installed 37 or so wells (which are generally no deeper than approximately 120 feet below the landfill surface), and which are positioned in certain areas of the Quarry Landfill, will likely be exposed to subsurface temperatures that exceed the design rating of CPVC pipe (approximately 200 to 210 degrees F). Considering that these conditions may have a detrimental effect on the structural integrity of the proposed well riser pipes and impair their ability to function as intended, I engaged in discussions with the City, other SCS colleagues, and other consultants regarding the necessity to modify the material specification to be stainless steel rather CPVC for select wells.

9) On 2/13/23, I delivered a presentation to VDEQ and Office of Attorney General (OAG) personnel that outlined the technical basis for SCS' recommendation to the City to proceed with installing select dual-phase vertical extraction wells that would be equipped with an 8-inch diameter stainless steel well riser pipe in lieu of 12-inch diameter CPVC pipe. During this presentation, I stated that my professional opinion, which was derived in consultation with colleagues at SCS, was that installation of 12-inch diameter stainless steel well riser piping is believed to be infeasible, impractical, ill-advised, and unwarranted based on the following considerations:

   a) The weight of 12-inch SCH 40 stainless steel pipe is approximately 54 pounds per foot (lb/ft). Upon completion of drilling the borehole, the typical procedure is for the drill rig to lift and suspend the well riser pipe while additional spool pieces are attached, and then lower it into the borehole. While this is readily accomplished with plastic pipe (PVC, CPVC, HDPE, etc.), the lengths of piping for the deeper wells proposed for the Bristol Quarry Landfill (greater than 150 feet), along with the excessive weight of 12-inch diameter SCH 40 stainless steel piping, would require the drill rig to suspend a weight that may approach 10,000 pounds (equivalent to 5 tons), which would exceed the payload and ballast provided by the drill rig equipment. Introducing an additional crane or other equipment or other method capable of safely handling the load would greatly complicate the well installation procedure. Thus, the requirement to utilize 12-inch diameter piping imposes a constructability impediment that does not exist with smaller-diameter piping. For reference, the weight of 8-inch SCH 40 stainless steel is

approximately 29 lb/ft, which represents nearly 50 percent less weight than 12-inch pipe.

b) It has been demonstrated that landfill gas wells typically tend to remain in a fixed vertical position while the buried waste settles and consolidates. However, SCS has concerns regarding the potential pressure that a nearly 200-foot length of 12-inch stainless steel well riser pipe will exert on the lower waste lifts, which are likely fully decomposed and saturated. The weight of the pipe (nearly 5 tons) could induce the pipe to move downward through the waste in close proximity to the bottom liner system, which poses risk to the integrity of the containment system. Although this circumstance typically does not occur at other landfills (the vast majority of which utilize plastic well piping), SCS is unaware of any landfill that has installed 12-inch SCH 40 stainless steel pipe in deep wells (greater than 150 feet).

c) The ability of the well to yield increased quantities of extracted fluids (gas and liquid) from within the waste mass is not dependent on the size of the well riser pipe (except in cases of an extremely small diameter pipe), but rather is more closely correlated to the dimension of the borehole. Considering that the size of the borehole remains unchanged regardless of whether an 8-inch or 12-inch riser pipe is installed, the functionality and extracted fluids quantities should not be affected by using an 8-inch diameter pipe. Furthermore, considering the pneumatic pumps being proposed are only 4-inch diameter (or less in the case of Blackhawk top-mounted pumps), this proposed decrease in the well riser pipe should not reduce the capacity of the well to extract LFG and leachate.

d) Based on the Contractor's bid pricing, the incremental additional cost to install 12-inch stainless steel is 63 percent greater than the incremental additional cost to install 8-inch stainless steel. This has the potential to impose $1.6 million in additional cost for the wells designated to be constructed using stainless steel pipe.

Accordingly, on behalf of the City, SCS requests that the language in Item 1.iv of Appendix A in the Consent Decree be modified to read as follows: *"Install a minimum of 5 large-diameter, dual-phase extraction wells into the waste mass with a suitable casing pipe ~~no less than 12 inches in~~ diameter by June 30, 2023."*

Robert E. Dick, PE

Date: February 27, 2023

Appendix E

Milestone Date Extension for Perimeter Gas Collection System Installation

February 27, 2023

DECLARATION OF ROBERT E. DICK, PE

SUBJECT: Milestone Date Extension for Perimeter Gas Collection System Installation
Bristol Quarry Landfill, Bristol, Virginia

I, Robert E. Dick, under penalty of perjury, declare that the following statements are true and correct to the best of my knowledge, information and belief.

1) I, Robert E. Dick, PE, am a licensed Professional Engineer in the Commonwealth of Virginia (License No. 024815). I am a Senior Vice President with SCS Engineers and have over 33 years of landfill and landfill gas engineering experience at landfill facilities within Virginia.

2) I have worked on project assignments involving the design, construction, and operation of dual-phase (gas and liquid) landfill gas (LFG) vertical extraction wells at multiple landfill facilities that have exhibited elevated temperature conditions (often referred to as "ETLFs") for over 13 years.

3) I currently serve as one of the engineering consultants retained by the City of Bristol, Virginia to provide professional engineering services related to the Bristol Integrated Solid Waste Management Facility, including the waste disposal unit referred to as the Bristol Quarry Landfill (Solid Waste Permit No. 588).

4) I participated in the Expert Panel Meeting, convened by the Virginia Department of Environmental Quality (VDEQ), on March 21 – 22, 2022 as an observer on behalf of the City. I reviewed the Expert Panel Report, dated 4/25/22, and provided consultation to the City regarding implementation of the recommendations contained therein, including the statement on Page 11 that reads *"The Panel also discussed the installation of deeper vertical wells targeted near the Landfill perimeter to immediately address sideway emissions while the proposed lateral gas collection system is tested, designed, and constructed."*

5) I was involved in development of the document titled "Plan of Action in Response to Expert Panel Report", prepared by SCS Engineers, dated 7/6/22, including language that addresses proposed installation of additional LFG extraction wells to reduce emissions and temperatures.

6) I have reviewed the Consent Decree, which VDEQ has issued to solicit public comment, and which contains the following statement in Appendix A, Item 2.i: *"Design and install a perimeter gas collection system near the sidewalls by March 15, 2023, with the intent of drawing gas away from sidewall to reduce sidewall emissions."*

7) I lead SCS's efforts related to the engineering design of the City's proposed expansion of the existing landfill gas collection system in the Bristol Quarry Landfill. The design includes the incorporation of dual-phase vertical LFG extraction wells positioned in relative close proximity to the sidewalls in order to reduce potential fugitive LFG emissions in the vicinity of the sidewall. In November and early December, SCS drafted construction bid documents, and then, on or about 12/12/22, also advertised those documents in order to solicit bids from qualified contractors for the construction of the LFG collection system. On December 31, 2022, we submitted the overall design of the LFG system expansion to VDEQ. I served as the Professional Engineer who stamped/sealed both the construction bid documents and the Plan (Drawings) submitted to VDEQ. This documentation was intended to fulfill the requirement to "design" a perimeter gas collection system as outlined in Item 2.i in Appendix A of the Consent Decree.

8) During January 2023, SCS measured and recorded subsurface temperatures within the Quarry Landfill that exceeded 200 to 210 degrees F, which is the published design rating for CPVC pipe. If subsurface temperatures exceeding this range are encountered during drilling, it would require the use of stainless steel rather CPVC for select perimeter wells in certain areas of the landfill. Thus, SCS had to make a modification to its original design and specifications for the perimeter wells.

9) The City received one bid for the project on 1/20/23. The process of reviewing bids, obtaining bonds, and contract negotiation/award was completed when the City issued an executed contract to the Contractor on or about 2/15/23. On 2/15/23, SCS issued a memorandum to the Contractor to communicate instructions and decisions for various scenarios related to quantities, dimensions, materials, and models pertaining to proposed LFG well riser piping and dewatering pumps, which was necessary to enable the Contractor to initiate material procurement. On 2/22/23, SCS issued an updated well schedule to the Contractor and the Surveyor to facilitate material procurement and for pre-construction stakeout and surveying. The updated well schedule incorporated the following changes:

   - Well riser pipe dimension is maintained as 8-inch for all wells;

   - Well riser pipe materials for perimeter wells have been changed from PVC to CPVC, and interior wells have been changed from CPVC to Stainless Steel;

   - The maximum proposed well depth has been truncated to be 180 feet to coincide with the rig capabilities. This reduced the cumulative drilling depth and piping length for the project.

   - The offset between the bottom of the borehole and the liner system has been increased from 20 feet to 25 feet to be more conservative, which resulted in decreased proposed depths and piping lengths;

   - 9 well locations were moved slightly to be positioned outside of the sidewall berm "footprint", which resulted in increased proposed depths. Also, 2 of these wells (EW-75 and EW-77) will be deep enough to justify changing materials to be stainless steel.

- The proposed location for well EW-70 is where significant regrading for future fill is proposed. The proposed location for well EW-92 is where significant regrading for future cut is proposed. The solid/perforated transitions for these wells were modified to reflect the future anticipated conditions.

10) Based on discussions with the Contractor's Vice President of Construction that addressed material procurement lead times and equipment mobilization schedules, SCS understands the anticipated construction schedule related to the proposed perimeter LFG system infrastructure to be as follows:

a) Week of March 6th - Perform pre-construction stakeout and surveying and initiate repositioning of proposed wells, piping, and other elements, as warranted;

b) Week of March 13th – Mobilize construction personnel to receive delivery of materials associated with drilling of perimeter wells (specifically CPVC pipe, aggregate, etc.), and perform preparatory site work in advance of well drilling and trench excavation;

c) Week of March 20th – Mobilize drill rig and other construction equipment and commence drilling of perimeter wells. Anticipated duration is approximately 3 weeks;

d) Week of April 10th – Complete drilling and well construction activities related to perimeter wells equipped with CPVC well casing pipe. Receive delivery of materials associated with drilling of interior wells (specifically stainless steel pipe, etc.) and commence/complete drilling of perimeter wells requiring stainless steel casing pipe, if any;

e) Week of April 17th – Commence excavation for LFG/air/forcemain piping and associate valve installation. Accomplish connection tie-ins to existing collection piping network. Anticipated duration is 2 weeks.

f) Week of April 24th – Install perimeter wellheads and initiate activation of perimeter wellfield.

g) May 1st – Complete installation of perimeter gas collection system.

Accordingly, on behalf of the City, SCS requests that the language in Item 2.i of Appendix A in the Consent Decree be modified to read as follows: *"Design and install a perimeter gas collection system near the sidewalls by ~~March 15~~May 1, 2023, with the intent of drawing gas away from sidewall to reduce sidewall emissions."*

Robert E. Dick, PE

Date: February 27, 2023

Appendix F

Sample Collection Log and Lab Report

Appendix F

Sample Collection Log

Lab Report

Historical LFG-EW Leachate Monitoring Results Summary

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-49									
EW-50									
EW-51									
EW-52									
EW-53									
EW-54									
EW-55									
EW-56									
EW-57									
EW-58									
EW-59									
EW-60									
EW-61									
EW-62									
EW-63									
EW-64									
EW-65									
EW-67									
EW-68	01011	1415	53.9	7.58	11.66	0.15	-157.9	7100	

Sampler: L. Howard, T. Smith
Log Checked By: J. Robb (SCS)
Samples Shipped By: Courier
Laboratory: Enthalpy Analytical

TNI Accredited
VELAP ID 460021

ENTHALPY ANALYTICAL

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

Certificate of Analysis

Final Report

Laboratory Order ID 23B0489

Client Name:	SCS Engineers-Winchester 296 Victory Road Winchester, VA 22602	Date Received:	February 9, 2023 8:00
		Date Issued:	March 6, 2023 15:43
		Project Number:	02218208.15 Task 1
Submitted To:	Jennifer Robb	Purchase Order:	
Client Site I.D.:	City of Bristol Semi-Annual		

Enclosed are the results of analyses for samples received by the laboratory on 02/09/2023 08:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

M. Mishra

Mandy Mishra
Laboratory Director

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

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

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

Enthalpy Analytical
1941 Reymet Road
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Analysis Detects Report

Client Name: SCS Engineers-Winchester
Client Site ID: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

Laboratory Sample ID: **23B0489-01** **Client Sample ID:** **EW-68**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
Arsenic	01RE1	SW6020B	290		5.0	10	10	ug/L
Barium	01RE1	SW6020B	1040		10.0	50.0	10	ug/L
Cadmium	01	SW6020B	0.297	J	0.100	1.00	1	ug/L
Chromium	01RE1	SW6020B	277		4.00	10.0	10	ug/L
Copper	01	SW6020B	3.65		0.300	1.00	1	ug/L
Lead	01	SW6020B	6.0		1.0	1.0	1	ug/L
Nickel	01	SW6020B	172.6		1.000	1.000	1	ug/L
Selenium	01	SW6020B	1.99		0.850	1.00	1	ug/L
Zinc	01	SW6020B	85.1		2.50	5.00	1	ug/L
2-Butanone (MEK)	01RE1	SW8260D	14400		600	2000	200	ug/L
Acetone	01RE1	SW8260D	23900		1400	2000	200	ug/L
Benzene	01	SW8260D	1370		4.00	10.0	10	ug/L
Ethylbenzene	01	SW8260D	151		4.00	10.0	10	ug/L
Tetrahydrofuran	01RE1	SW8260D	3760		2000	2000	200	ug/L
Toluene	01	SW8260D	224		5.00	10.0	10	ug/L
Xylenes, Total	01	SW8260D	240		10.0	30.0	10	ug/L
Ammonia as N	01	EPA350.1 R2.0	1490		100	100	1000	mg/L
BOD	01	SM22 5210B-2011	7230		0.2	2.0	1	mg/L
COD	01	SM22 5220D-2011	9210		1000	1000	100	mg/L
Nitrite as N	01	SM22 4500-NO2B-2011	0.48	H, J	0.25	1.25	1	mg/L
TKN as N	01	EPA351.2 R2.0	1870		16.8	50.0	100	mg/L
Total Recoverable Phenolics	01	EPA420.1	22.4		1.50	2.50	50	mg/L

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

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Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EW-68	23B0489-01	Waste Water	02/07/2023 14:15	02/09/2023 08:00
Trip Blank	23B0489-02	Non-Potable Water	01/09/2023 14:30	02/09/2023 08:00

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

ENTHALPY ANALYTICAL

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Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

Client Sample ID: **EW-68** **Laboratory Sample ID:** **23B0489-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Metals (Total) by EPA 6000/7000 Series Methods												
Silver	01	7440-22-4	SW6020B	02/14/2023 17:00	02/22/2023 16:18	BLOD		0.0600	1.00	1	ug/L	AB
Arsenic	01RE1	7440-38-2	SW6020B	02/14/2023 17:00	02/22/2023 16:07	290		5.0	10	10	ug/L	AB
Barium	01RE1	7440-39-3	SW6020B	02/14/2023 17:00	02/22/2023 16:07	1040		10.0	50.0	10	ug/L	AB
Cadmium	01	7440-43-9	SW6020B	02/14/2023 17:00	02/22/2023 16:18	0.297	J	0.100	1.00	1	ug/L	AB
Chromium	01RE1	7440-47-3	SW6020B	02/14/2023 17:00	02/22/2023 16:07	277		4.00	10.0	10	ug/L	AB
Copper	01	7440-50-8	SW6020B	02/14/2023 17:00	02/22/2023 16:18	3.65		0.300	1.00	1	ug/L	AB
Mercury	01	7439-97-6	SW7470A	02/14/2023 12:15	02/14/2023 16:58	BLOD		0.00040	0.00040	1	mg/L	SGT
Nickel	01	7440-02-0	SW6020B	02/14/2023 17:00	02/22/2023 16:18	172.6		1.000	1.000	1	ug/L	AB
Lead	01	7439-92-1	SW6020B	02/14/2023 17:00	02/22/2023 16:18	6.0		1.0	1.0	1	ug/L	AB
Selenium	01	7782-49-2	SW6020B	02/14/2023 17:00	02/22/2023 16:18	1.99		0.850	1.00	1	ug/L	AB
Zinc	01	7440-66-6	SW6020B	02/14/2023 17:00	02/22/2023 16:18	85.1		2.50	5.00	1	ug/L	AB
Volatile Organic Compounds by GCMS												
2-Butanone (MEK)	01RE1	78-93-3	SW8260D	02/13/2023 15:41	02/13/2023 15:41	14400		600	2000	200	ug/L	BMR
Acetone	01RE1	67-64-1	SW8260D	02/13/2023 15:41	02/13/2023 15:41	23900		1400	2000	200	ug/L	BMR
Benzene	01	71-43-2	SW8260D	02/13/2023 15:15	02/13/2023 15:15	1370		4.00	10.0	10	ug/L	BMR
Ethylbenzene	01	100-41-4	SW8260D	02/13/2023 15:15	02/13/2023 15:15	151		4.00	10.0	10	ug/L	BMR
Toluene	01	108-88-3	SW8260D	02/13/2023 15:15	02/13/2023 15:15	224		5.00	10.0	10	ug/L	BMR
Xylenes, Total	01	1330-20-7	SW8260D	02/13/2023 15:15	02/13/2023 15:15	240		10.0	30.0	10	ug/L	BMR
Tetrahydrofuran	01RE1	109-99-9	SW8260D	02/13/2023 15:41	02/13/2023 15:41	3760		2000	2000	200	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	*01*	*106 %*	*70-120*	*02/13/2023 15:15*	*02/13/2023 15:15*							
Surr: 4-Bromofluorobenzene (Surr)	*01*	*100 %*	*75-120*	*02/13/2023 15:15*	*02/13/2023 15:15*							
Surr: Dibromofluoromethane (Surr)	*01*	*104 %*	*70-130*	*02/13/2023 15:15*	*02/13/2023 15:15*							
Surr: Toluene-d8 (Surr)	*01*	*100 %*	*70-130*	*02/13/2023 15:15*	*02/13/2023 15:15*							
Surr: 1,2-Dichloroethane-d4 (Surr)	*01RE1*	*99.4 %*	*70-120*	*02/13/2023 15:41*	*02/13/2023 15:41*							
Surr: 4-Bromofluorobenzene (Surr)	*01RE1*	*99.5 %*	*75-120*	*02/13/2023 15:41*	*02/13/2023 15:41*							

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Certificate of Analysis

Client Name: SCS Engineers-Winchester
Client Site I.D.: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

Client Sample ID: **EW-68** **Laboratory Sample ID:** **23B0489-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Volatile Organic Compounds by GCMS												
Surr: Dibromofluoromethane (Surr)	*01RE1*	*92.7 %*	*70-130*	*02/13/2023 15:41*	*02/13/2023 15:41*							
Surr: Toluene-d8 (Surr)	*01RE1*	*101 %*	*70-130*	*02/13/2023 15:41*	*02/13/2023 15:41*							
Semivolatile Organic Compounds by GCMS												
Anthracene	01	120-12-7	SW8270E	02/14/2023 09:00	02/16/2023 18:45	BLOD		187	374	20	ug/L	BMS
Surr: 2,4,6-Tribromophenol (Surr)	*01*	*%*	*5-136*	*02/14/2023 09:00*	*02/16/2023 18:45*							*DS*
Surr: 2-Fluorobiphenyl (Surr)	*01*	*52.8 %*	*9-117*	*02/14/2023 09:00*	*02/16/2023 18:45*							
Surr: 2-Fluorophenol (Surr)	*01*	*%*	*5-60*	*02/14/2023 09:00*	*02/16/2023 18:45*							*DS*
Surr: Nitrobenzene-d5 (Surr)	*01*	*%*	*5-151*	*02/14/2023 09:00*	*02/16/2023 18:45*							*DS*
Surr: Phenol-d5 (Surr)	*01*	*2.00 %*	*5-60*	*02/14/2023 09:00*	*02/16/2023 18:45*							*DS*
Surr: p-Terphenyl-d14 (Surr)	*01*	*%*	*5-141*	*02/14/2023 09:00*	*02/16/2023 18:45*							*DS*

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Client Sample ID: **EW-68** **Laboratory Sample ID:** **23B0489-01**

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Ammonia as N	01	7664-41-7	EPA350.1 R2.0	02/13/2023 16:36	02/13/2023 16:36	1490		100	100	1000	mg/L	MKS
BOD	01	E1640606	SM22 5210B-2011	02/09/2023 12:28	02/09/2023 12:28	7230		0.2	2.0	1	mg/L	NBT
COD	01	NA	SM22 5220D-2011	02/22/2023 10:30	02/22/2023 10:30	9210		1000	1000	100	mg/L	MJRL
Nitrate as N	01	14797-55-8	Calc.	02/22/2023 16:00	02/22/2023 16:00	BLOD		0.350	1.35	1	mg/L	AAL
Nitrate+Nitrite as N	01	E701177	SM22 4500-NO3F-2011	02/22/2023 16:00	02/22/2023 16:00	BLOD		0.10	0.10	1	mg/L	MKS
Nitrite as N	01	14797-65-0	SM22 4500-NO2B-2011	02/15/2023 09:00	02/15/2023 09:00	0.48	H, J	0.25	1.25	1	mg/L	AAL
Total Recoverable Phenolics	01	NA	EPA420.1	02/15/2023 14:45	02/15/2023 14:45	22.4		1.50	2.50	50	mg/L	MKS
TKN as N	01	E17148461	EPA351.2 R2.0	02/22/2023 16:42	02/22/2023 16:42	1870		16.8	50.0	100	mg/L	MGC

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Client Site I.D.: City of Bristol Semi-Annual
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Client Sample ID: **Trip Blank** **Laboratory Sample ID:** **23B0489-02**

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	02/13/2023 13:00	02/13/2023 13:00	BLOD		3.00	10.0	1	ug/L	BMR
Acetone	02	67-64-1	SW8260D	02/13/2023 13:00	02/13/2023 13:00	BLOD		7.00	10.0	1	ug/L	BMR
Benzene	02	71-43-2	SW8260D	02/13/2023 13:00	02/13/2023 13:00	BLOD		0.40	1.00	1	ug/L	BMR
Ethylbenzene	02	100-41-4	SW8260D	02/13/2023 13:00	02/13/2023 13:00	BLOD		0.40	1.00	1	ug/L	BMR
Toluene	02	108-88-3	SW8260D	02/13/2023 13:00	02/13/2023 13:00	BLOD		0.50	1.00	1	ug/L	BMR
Xylenes, Total	02	1330-20-7	SW8260D	02/13/2023 13:00	02/13/2023 13:00	BLOD		1.00	3.00	1	ug/L	BMR
Tetrahydrofuran	02	109-99-9	SW8260D	02/13/2023 13:00	02/13/2023 13:00	BLOD		10.0	10.0	1	ug/L	BMR
Surr: 1,2-Dichloroethane-d4 (Surr)	*02*	*107 %*	*70-120*	*02/13/2023 13:00*	*02/13/2023 13:00*							
Surr: 4-Bromofluorobenzene (Surr)	*02*	*101 %*	*75-120*	*02/13/2023 13:00*	*02/13/2023 13:00*							
Surr: Dibromofluoromethane (Surr)	*02*	*94.8 %*	*70-130*	*02/13/2023 13:00*	*02/13/2023 13:00*							
Surr: Toluene-d8 (Surr)	*02*	*99.5 %*	*70-130*	*02/13/2023 13:00*	*02/13/2023 13:00*							

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Date Issued: 3/6/2023 3:43:56PM

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

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0444 - SW7470A										
Blank (BGB0444-BLK1)				Prepared & Analyzed: 02/14/2023						
Mercury	ND	0.00020	mg/L							
LCS (BGB0444-BS1)				Prepared & Analyzed: 02/14/2023						
Mercury	0.00244	0.00020	mg/L	0.00250		97.7	80-120			
Matrix Spike (BGB0444-MS1)	**Source: 23B0318-07**			Prepared & Analyzed: 02/14/2023						
Mercury	0.00250	0.00020	mg/L	0.00250	BLOD	99.8	80-120			
Matrix Spike (BGB0444-MS2)	**Source: 23B0368-04**			Prepared & Analyzed: 02/14/2023						
Mercury	0.00248	0.00020	mg/L	0.00250	BLOD	99.1	80-120			
Matrix Spike Dup (BGB0444-MSD1)	**Source: 23B0318-07**			Prepared & Analyzed: 02/14/2023						
Mercury	0.00245	0.00020	mg/L	0.00250	BLOD	98.0	80-120	1.87	20	
Matrix Spike Dup (BGB0444-MSD2)	**Source: 23B0368-04**			Prepared & Analyzed: 02/14/2023						
Mercury	0.00248	0.00020	mg/L	0.00250	BLOD	99.2	80-120	0.0666	20	
Batch BGB0458 - EPA200.8 R5.4										
Blank (BGB0458-BLK1)				Prepared: 02/14/2023 Analyzed: 02/16/2023						
Arsenic	ND	1.0	ug/L							
Barium	ND	5.00	ug/L							
Cadmium	ND	1.00	ug/L							
Chromium	ND	1.00	ug/L							
Copper	ND	1.00	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	1.000	ug/L							
Selenium	ND	1.00	ug/L							
Silver	ND	1.00	ug/L							

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

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0458 - EPA200.8 R5.4										
Blank (BGB0458-BLK1)				Prepared: 02/14/2023 Analyzed: 02/16/2023						
Zinc	ND	5.00	ug/L							
LCS (BGB0458-BS1)				Prepared: 02/14/2023 Analyzed: 02/16/2023						
Arsenic	54	1.0	ug/L	50.0		108	80-120			
Barium	52.5	5.00	ug/L	50.0		105	80-120			
Cadmium	53.7	1.00	ug/L	50.0		107	80-120			
Chromium	52.1	1.00	ug/L	50.0		104	80-120			
Copper	50.9	1.00	ug/L	50.0		102	80-120			
Lead	52	1.0	ug/L	50.0		105	80-120			
Nickel	50.55	1.000	ug/L	50.0		101	80-120			
Selenium	56.4	1.00	ug/L	50.0		113	80-120			
Silver	9.94	1.00	ug/L	10.0		99.4	80-120			E
Zinc	54.3	5.00	ug/L	50.0		109	80-120			
Matrix Spike (BGB0458-MS1)	**Source: 23B0556-01**			Prepared: 02/14/2023 Analyzed: 02/22/2023						
Arsenic	51	1.0	ug/L	50.0	BLOD	103	75-125			
Cadmium	51.8	1.00	ug/L	50.0	0.255	103	75-125			
Chromium	52.6	1.00	ug/L	50.0	BLOD	105	75-125			
Copper	52.4	1.00	ug/L	50.0	3.10	98.5	75-125			
Lead	52	1.0	ug/L	50.0	BLOD	103	75-125			
Nickel	65.06	1.000	ug/L	50.0	16.24	97.6	75-125			
Selenium	48.7	1.00	ug/L	50.0	BLOD	97.3	75-125			
Silver	10.1	1.00	ug/L	10.0	BLOD	101	75-125			E
Zinc	50.2	5.00	ug/L	50.0	BLOD	100	75-125			
Matrix Spike (BGB0458-MS2)	**Source: 23B0597-01**			Prepared: 02/14/2023 Analyzed: 02/16/2023						
Arsenic	56	1.0	ug/L	50.0	3.2	106	75-125			

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

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0458 - EPA200.8 R5.4										
Matrix Spike (BGB0458-MS2)	**Source: 23B0597-01**			Prepared: 02/14/2023 Analyzed: 02/16/2023						
Barium	71.9	5.00	ug/L	50.0	18.5	107	75-125			M
Cadmium	52.4	1.00	ug/L	50.0	BLOD	105	75-125			
Chromium	52.6	1.00	ug/L	50.0	BLOD	105	75-125			
Copper	50.6	1.00	ug/L	50.0	1.35	98.4	75-125			
Lead	51	1.0	ug/L	50.0	BLOD	101	75-125			
Nickel	50.97	1.000	ug/L	50.0	1.832	98.3	75-125			
Selenium	55.0	1.00	ug/L	50.0	1.19	108	75-125			
Silver	9.85	1.00	ug/L	10.0	BLOD	98.5	75-125			E
Zinc	53.2	5.00	ug/L	50.0	47.0	12.3	75-125			M
Matrix Spike (BGB0458-MS3)	**Source: 23B0556-01RE2**			Prepared: 02/14/2023 Analyzed: 02/22/2023						
Barium	247	10.0	ug/L	50.0	197	99.1	75-125			
Matrix Spike Dup (BGB0458-MSD1)	**Source: 23B0556-01**			Prepared: 02/14/2023 Analyzed: 02/22/2023						
Arsenic	53	1.0	ug/L	50.0	BLOD	105	75-125	2.23	20	
Cadmium	52.1	1.00	ug/L	50.0	0.255	104	75-125	0.560	20	
Chromium	52.5	1.00	ug/L	50.0	BLOD	105	75-125	0.181	20	
Copper	53.2	1.00	ug/L	50.0	3.10	100	75-125	1.56	20	
Lead	52	1.0	ug/L	50.0	BLOD	103	75-125	0.323	20	
Nickel	66.24	1.000	ug/L	50.0	16.24	100	75-125	1.79	20	
Selenium	50.4	1.00	ug/L	50.0	BLOD	101	75-125	3.52	20	
Silver	10.1	1.00	ug/L	10.0	BLOD	101	75-125	0.0917	20	E
Zinc	51.1	5.00	ug/L	50.0	BLOD	102	75-125	1.84	20	
Matrix Spike Dup (BGB0458-MSD2)	**Source: 23B0597-01**			Prepared: 02/14/2023 Analyzed: 02/16/2023						
Arsenic	54	1.0	ug/L	50.0	3.2	101	75-125	4.44	20	
Barium	69.8	5.00	ug/L	50.0	18.5	102	75-125	3.00	20	

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Client Site I.D.: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

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

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0458 - EPA200.8 R5.4										
Matrix Spike Dup (BGB0458-MSD2)	**Source: 23B0597-01**			Prepared: 02/14/2023 Analyzed: 02/16/2023						
Cadmium	51.5	1.00	ug/L	50.0	BLOD	103	75-125	1.76	20	
Chromium	51.6	1.00	ug/L	50.0	BLOD	103	75-125	2.06	20	
Copper	48.7	1.00	ug/L	50.0	1.35	94.7	75-125	3.69	20	
Lead	50	1.0	ug/L	50.0	BLOD	99.9	75-125	1.60	20	
Nickel	49.84	1.000	ug/L	50.0	1.832	96.0	75-125	2.24	20	
Selenium	54.3	1.00	ug/L	50.0	1.19	106	75-125	1.30	20	
Silver	9.78	1.00	ug/L	10.0	BLOD	97.8	75-125	0.698	20	E
Zinc	52.4	5.00	ug/L	50.0	47.0	10.7	75-125	1.49	20	M
Matrix Spike Dup (BGB0458-MSD3)	**Source: 23B0556-01RE2**			Prepared: 02/14/2023 Analyzed: 02/22/2023						
Barium	248	10.0	ug/L	50.0	197	102	75-125	0.601	20	

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Certificate of Analysis

Client Name: SCS Engineers-Winchester
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Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

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 BGB0386 - SW5030B-MS										
Blank (BGB0386-BLK1)				Prepared & Analyzed: 02/13/2023						
2-Butanone (MEK)	ND	10.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.00	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
Xylenes, Total	ND	3.00	ug/L							
Tetrahydrofuran	ND	10.0	ug/L							
Surr: 1,2-Dichloroethane-d4 (Surr)	*50.5*		ug/L	*50.0*		*101*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*50.1*		ug/L	*50.0*		*100*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*47.0*		ug/L	*50.0*		*94.1*	*70-130*			
Surr: Toluene-d8 (Surr)	*49.4*		ug/L	*50.0*		*98.7*	*70-130*			
LCS (BGB0386-BS1)				Prepared & Analyzed: 02/13/2023						
1,1,1,2-Tetrachloroethane	47.1	0.4	ug/L	50.0		94.1	80-130			
1,1,1-Trichloroethane	43.2	1	ug/L	50.0		86.5	65-130			
1,1,2,2-Tetrachloroethane	47.0	0.4	ug/L	50.0		94.1	65-130			
1,1,2-Trichloroethane	49.6	1	ug/L	50.0		99.3	75-125			
1,1-Dichloroethane	40.9	1	ug/L	50.0		81.8	70-135			
1,1-Dichloroethylene	37.2	1	ug/L	50.0		74.4	70-130			
1,1-Dichloropropene	43.7	1	ug/L	50.0		87.3	75-135			
1,2,3-Trichlorobenzene	48.8	1	ug/L	50.0		97.6	55-140			
1,2,3-Trichloropropane	47.0	1	ug/L	50.0		94.1	75-125			
1,2,4-Trichlorobenzene	53.0	1	ug/L	50.0		106	65-135			
1,2,4-Trimethylbenzene	52.5	1	ug/L	50.0		105	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	54.2	1	ug/L	50.0		108	50-130			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
LCS (BGB0386-BS1)				Prepared & Analyzed: 02/13/2023						
1,2-Dibromoethane (EDB)	47.1	1	ug/L	50.0		94.3	80-120			
1,2-Dichlorobenzene	46.6	0.5	ug/L	50.0		93.2	70-120			
1,2-Dichloroethane	38.5	1	ug/L	50.0		76.9	70-130			
1,2-Dichloropropane	47.4	0.5	ug/L	50.0		94.8	75-125			
1,3,5-Trimethylbenzene	51.0	1	ug/L	50.0		102	75-125			
1,3-Dichlorobenzene	48.3	1	ug/L	50.0		96.6	75-125			
1,3-Dichloropropane	47.4	1	ug/L	50.0		94.9	75-125			
1,4-Dichlorobenzene	47.4	1	ug/L	50.0		94.8	75-125			
2,2-Dichloropropane	46.0	1	ug/L	50.0		92.0	70-135			
2-Butanone (MEK)	40.0	10	ug/L	50.0		79.9	30-150			
2-Chlorotoluene	48.1	1	ug/L	50.0		96.2	75-125			
2-Hexanone (MBK)	51.0	5	ug/L	50.0		102	55-130			
4-Chlorotoluene	50.4	1	ug/L	50.0		101	75-130			
4-Isopropyltoluene	50.1	1	ug/L	50.0		100	75-130			
4-Methyl-2-pentanone (MIBK)	53.6	5	ug/L	50.0		107	60-135			
Acetone	39.7	10	ug/L	50.0		79.4	40-140			
Benzene	48.3	1	ug/L	50.0		96.6	80-120			
Bromobenzene	48.2	1	ug/L	50.0		96.4	75-125			
Bromochloromethane	44.4	1	ug/L	50.0		88.8	65-130			
Bromodichloromethane	50.5	0.5	ug/L	50.0		101	75-120			
Bromoform	47.6	1	ug/L	50.0		95.3	70-130			
Bromomethane	35.6	1	ug/L	50.0		71.3	30-145			
Carbon disulfide	40.3	10	ug/L	50.0		80.5	35-160			
Carbon tetrachloride	43.6	1	ug/L	50.0		87.3	65-140			
Chlorobenzene	46.9	1	ug/L	50.0		93.8	80-120			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
LCS (BGB0386-BS1)				Prepared & Analyzed: 02/13/2023						
Chloroethane	43.1	1	ug/L	50.0		86.2	60-135			
Chloroform	37.0	0.5	ug/L	50.0		74.1	65-135			
Chloromethane	41.2	1	ug/L	50.0		82.5	40-125			
cis-1,2-Dichloroethylene	40.9	1	ug/L	50.0		81.8	70-125			
cis-1,3-Dichloropropene	40.2	1	ug/L	50.0		80.5	70-130			
Dibromochloromethane	47.4	0.5	ug/L	50.0		94.8	60-135			
Dibromomethane	49.2	1	ug/L	50.0		98.4	75-125			
Dichlorodifluoromethane	35.4	1	ug/L	50.0		70.8	30-155			
Ethylbenzene	51.4	1	ug/L	50.0		103	75-125			
Hexachlorobutadiene	50.8	0.8	ug/L	50.0		102	50-140			
Isopropylbenzene	47.1	1	ug/L	50.0		94.2	75-125			
m+p-Xylenes	97.2	2	ug/L	100		97.2	75-130			
Methylene chloride	38.6	4	ug/L	50.0		77.2	55-140			
Methyl-t-butyl ether (MTBE)	46.0	1	ug/L	50.0		92.0	65-125			
Naphthalene	57.2	1	ug/L	50.0		114	55-140			
n-Butylbenzene	53.3	1	ug/L	50.0		107	70-135			
n-Propylbenzene	52.0	1	ug/L	50.0		104	70-130			
o-Xylene	48.8	1	ug/L	50.0		97.6	80-120			
sec-Butylbenzene	53.2	1	ug/L	50.0		106	70-125			
Styrene	46.7	1	ug/L	50.0		93.4	65-135			
tert-Butylbenzene	50.3	1	ug/L	50.0		101	70-130			
Tetrachloroethylene (PCE)	48.7	1	ug/L	50.0		97.5	45-150			
Toluene	44.6	1	ug/L	50.0		89.2	75-120			
trans-1,2-Dichloroethylene	39.4	1	ug/L	50.0		78.7	60-140			
trans-1,3-Dichloropropene	43.8	1	ug/L	50.0		87.6	55-140			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
LCS (BGB0386-BS1)				Prepared & Analyzed: 02/13/2023						
Trichloroethylene	46.7	1	ug/L	50.0		93.4	70-125			
Trichlorofluoromethane	48.3	1	ug/L	50.0		96.6	60-145			
Vinyl chloride	42.3	0.5	ug/L	50.0		84.6	50-145			
Surr: 1,2-Dichloroethane-d4 (Surr)	*48.1*		ug/L	*50.0*		*96.1*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*52.0*		ug/L	*50.0*		*104*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*44.9*		ug/L	*50.0*		*89.8*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.6*		ug/L	*50.0*		*101*	*70-130*			
Duplicate (BGB0386-DUP1)	**Source: 23B0463-03**			Prepared & Analyzed: 02/13/2023						
1,1,1,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,1-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1,2,2-Tetrachloroethane	ND	0.40	ug/L		BLOD			NA	30	
1,1,2-Trichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	
1,1-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2,3-Trichloropropane	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trichlorobenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2,4-Trimethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dibromo-3-chloropropane (DBCP)	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dibromoethane (EDB)	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichlorobenzene	ND	0.50	ug/L		BLOD			NA	30	
1,2-Dichloroethane	ND	1.00	ug/L		BLOD			NA	30	
1,2-Dichloropropane	ND	0.50	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
Duplicate (BGB0386-DUP1)	**Source: 23B0463-03**			Prepared & Analyzed: 02/13/2023						
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	
cis-1,2-Dichloroethylene	ND	1.00	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
Duplicate (BGB0386-DUP1)	**Source: 23B0463-03**			Prepared & Analyzed: 02/13/2023						
cis-1,3-Dichloropropene	ND	1.00	ug/L		BLOD			NA	30	
Dibromochloromethane	ND	0.50	ug/L		BLOD			NA	30	
Dibromomethane	ND	1.00	ug/L		BLOD			NA	30	
Dichlorodifluoromethane	ND	1.00	ug/L		BLOD			NA	30	
Di-isopropyl ether (DIPE)	ND	5.00	ug/L		BLOD			NA	30	
Ethylbenzene	ND	1.00	ug/L		BLOD			NA	30	
Hexachlorobutadiene	ND	0.80	ug/L		BLOD			NA	30	
Iodomethane	ND	10.0	ug/L		BLOD			NA	30	
Isopropylbenzene	ND	1.00	ug/L		BLOD			NA	30	
m+p-Xylenes	ND	2.00	ug/L		BLOD			NA	30	
Methylene chloride	ND	4.00	ug/L		BLOD			NA	30	
Methyl-t-butyl ether (MTBE)	ND	1.00	ug/L		BLOD			NA	30	
Naphthalene	ND	1.00	ug/L		BLOD			NA	30	
n-Butylbenzene	ND	1.00	ug/L		BLOD			NA	30	
n-Propylbenzene	ND	1.00	ug/L		BLOD			NA	30	
o-Xylene	ND	1.00	ug/L		BLOD			NA	30	
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	ND	1.00	ug/L		BLOD			NA	30	
Trichlorofluoromethane	ND	1.00	ug/L		BLOD			NA	30	

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
Duplicate (BGB0386-DUP1)	**Source: 23B0463-03**			Prepared & Analyzed: 02/13/2023						
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)	*52.4*		ug/L	*50.0*		*105*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*49.9*		ug/L	*50.0*		*99.7*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*49.6*		ug/L	*50.0*		*99.3*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.2*		ug/L	*50.0*		*100*	*70-130*			
Matrix Spike (BGB0386-MS1)	**Source: 23B0463-02**			Prepared & Analyzed: 02/13/2023						
1,1,1,2-Tetrachloroethane	49.4	0.4	ug/L	50.0	BLOD	98.9	80-130			
1,1,1-Trichloroethane	46.9	1	ug/L	50.0	BLOD	93.8	65-130			
1,1,2,2-Tetrachloroethane	48.7	0.4	ug/L	50.0	BLOD	97.4	65-130			
1,1,2-Trichloroethane	49.5	1	ug/L	50.0	BLOD	99.0	75-125			
1,1-Dichloroethane	47.7	1	ug/L	50.0	BLOD	95.4	70-135			
1,1-Dichloroethylene	43.2	1	ug/L	50.0	BLOD	86.5	50-145			
1,1-Dichloropropene	51.3	1	ug/L	50.0	BLOD	103	75-135			
1,2,3-Trichlorobenzene	59.2	1	ug/L	50.0	BLOD	118	55-140			
1,2,3-Trichloropropane	50.1	1	ug/L	50.0	BLOD	100	75-125			
1,2,4-Trichlorobenzene	56.3	1	ug/L	50.0	BLOD	113	65-135			
1,2,4-Trimethylbenzene	54.3	1	ug/L	50.0	BLOD	109	75-130			
1,2-Dibromo-3-chloropropane (DBCP)	60.4	1	ug/L	50.0	BLOD	121	50-130			
1,2-Dibromoethane (EDB)	49.4	1	ug/L	50.0	BLOD	98.8	80-120			
1,2-Dichlorobenzene	50.7	0.5	ug/L	50.0	BLOD	101	70-120			
1,2-Dichloroethane	39.9	1	ug/L	50.0	BLOD	79.8	70-130			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
Matrix Spike (BGB0386-MS1)	**Source: 23B0463-02**			Prepared & Analyzed: 02/13/2023						
1,2-Dichloropropane	48.1	0.5	ug/L	50.0	BLOD	96.1	75-125			
1,3,5-Trimethylbenzene	52.5	1	ug/L	50.0	BLOD	105	75-124			
1,3-Dichlorobenzene	50.4	1	ug/L	50.0	BLOD	101	75-125			
1,3-Dichloropropane	48.2	1	ug/L	50.0	BLOD	96.3	75-125			
1,4-Dichlorobenzene	50.1	1	ug/L	50.0	BLOD	100	75-125			
2,2-Dichloropropane	48.3	1	ug/L	50.0	BLOD	96.7	70-135			
2-Butanone (MEK)	43.0	10	ug/L	50.0	BLOD	86.0	30-150			
2-Chlorotoluene	51.4	1	ug/L	50.0	BLOD	103	75-125			
2-Hexanone (MBK)	57.0	5	ug/L	50.0	BLOD	114	55-130			
4-Chlorotoluene	50.3	1	ug/L	50.0	BLOD	101	75-130			
4-Isopropyltoluene	54.0	1	ug/L	50.0	BLOD	108	75-130			
4-Methyl-2-pentanone (MIBK)	55.9	5	ug/L	50.0	BLOD	112	60-135			
Acetone	45.6	10	ug/L	50.0	BLOD	91.2	40-140			
Benzene	49.4	1	ug/L	50.0	BLOD	98.8	80-120			
Bromobenzene	49.1	1	ug/L	50.0	BLOD	98.2	75-125			
Bromochloromethane	43.7	1	ug/L	50.0	BLOD	87.4	65-130			
Bromodichloromethane	50.2	0.5	ug/L	50.0	BLOD	100	75-136			
Bromoform	49.0	1	ug/L	50.0	BLOD	97.9	70-130			
Bromomethane	31.0	1	ug/L	50.0	BLOD	61.9	30-145			
Carbon disulfide	48.3	10	ug/L	50.0	BLOD	96.6	35-160			
Carbon tetrachloride	49.0	1	ug/L	50.0	BLOD	98.1	65-140			
Chlorobenzene	49.6	1	ug/L	50.0	BLOD	99.3	80-120			
Chloroethane	43.6	1	ug/L	50.0	BLOD	87.3	60-135			
Chloroform	37.1	0.5	ug/L	50.0	BLOD	74.1	65-135			
Chloromethane	34.5	1	ug/L	50.0	BLOD	69.0	40-125			

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Client Site I.D.: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
Matrix Spike (BGB0386-MS1)	**Source: 23B0463-02**			Prepared & Analyzed: 02/13/2023						
cis-1,2-Dichloroethylene	48.0	1	ug/L	50.0	BLOD	96.0	70-125			
cis-1,3-Dichloropropene	39.8	1	ug/L	50.0	BLOD	79.7	47-136			
Dibromochloromethane	47.5	0.5	ug/L	50.0	BLOD	95.0	60-135			
Dibromomethane	48.8	1	ug/L	50.0	BLOD	97.5	75-125			
Dichlorodifluoromethane	39.5	1	ug/L	50.0	BLOD	78.9	30-155			
Ethylbenzene	53.5	1	ug/L	50.0	BLOD	107	75-125			
Hexachlorobutadiene	58.3	0.8	ug/L	50.0	BLOD	117	50-140			
Isopropylbenzene	48.2	1	ug/L	50.0	BLOD	96.4	75-125			
m+p-Xylenes	102	2	ug/L	100	BLOD	102	75-130			
Methylene chloride	43.4	4	ug/L	50.0	BLOD	86.8	55-140			
Methyl-t-butyl ether (MTBE)	47.4	1	ug/L	50.0	BLOD	94.8	65-125			
Naphthalene	70.4	1	ug/L	50.0	BLOD	141	55-140			M
n-Butylbenzene	55.4	1	ug/L	50.0	BLOD	111	70-135			
n-Propylbenzene	54.0	1	ug/L	50.0	BLOD	108	70-130			
o-Xylene	51.0	1	ug/L	50.0	BLOD	102	80-120			
sec-Butylbenzene	55.0	1	ug/L	50.0	BLOD	110	70-125			
Styrene	48.8	1	ug/L	50.0	BLOD	97.7	65-135			
tert-Butylbenzene	52.2	1	ug/L	50.0	BLOD	104	70-130			
Tetrachloroethylene (PCE)	52.6	1	ug/L	50.0	BLOD	105	51-231			
Toluene	45.3	1	ug/L	50.0	BLOD	90.5	75-120			
trans-1,2-Dichloroethylene	47.0	1	ug/L	50.0	BLOD	94.0	60-140			
trans-1,3-Dichloropropene	43.9	1	ug/L	50.0	BLOD	87.9	55-140			
Trichloroethylene	48.4	1	ug/L	50.0	BLOD	96.9	70-125			
Trichlorofluoromethane	49.8	1	ug/L	50.0	BLOD	99.5	60-145			
Vinyl chloride	46.4	0.5	ug/L	50.0	BLOD	92.7	50-145			

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Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0386 - SW5030B-MS										
Matrix Spike (BGB0386-MS1)	**Source: 23B0463-02**			Prepared & Analyzed: 02/13/2023						
Surr: 1,2-Dichloroethane-d4 (Surr)	*48.1*		ug/L	*50.0*		*96.2*	*70-120*			
Surr: 4-Bromofluorobenzene (Surr)	*51.4*		ug/L	*50.0*		*103*	*75-120*			
Surr: Dibromofluoromethane (Surr)	*49.8*		ug/L	*50.0*		*99.7*	*70-130*			
Surr: Toluene-d8 (Surr)	*50.1*		ug/L	*50.0*		*100*	*70-130*			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
Blank (BGB0439-BLK1)				Prepared & Analyzed: 02/14/2023						
Anthracene	ND	10.0	ug/L							
Surr: 2,4,6-Tribromophenol (Surr)	*58.1*		ug/L	*100*		*58.1*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*37.5*		ug/L	*50.0*		*75.0*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*44.7*		ug/L	*100*		*44.7*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*41.7*		ug/L	*50.0*		*83.4*	*5-151*			
Surr: Phenol-d5 (Surr)	*31.5*		ug/L	*100*		*31.5*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*47.6*		ug/L	*50.0*		*95.2*	*5-141*			
LCS (BGB0439-BS1)				Prepared & Analyzed: 02/14/2023						
1,2,4-Trichlorobenzene	34.6	10.0	ug/L	50.0		69.1	57-130			
1,2-Dichlorobenzene	32.2	10.0	ug/L	50.0		64.3	22-115			
1,3-Dichlorobenzene	30.1	10.0	ug/L	50.0		60.2	22-112			
1,4-Dichlorobenzene	32.5	10.0	ug/L	50.0		65.0	13-112			
2,4,6-Trichlorophenol	37.8	10.0	ug/L	50.0		75.6	52-129			
2,4-Dichlorophenol	40.0	10.0	ug/L	50.0		80.0	53-122			
2,4-Dimethylphenol	40.2	5.00	ug/L	50.0		80.3	42-120			
2,4-Dinitrophenol	26.8	50.0	ug/L	50.0		53.7	48-127			
2,4-Dinitrotoluene	41.2	10.0	ug/L	50.0		82.4	10-173			
2,6-Dinitrotoluene	40.1	10.0	ug/L	50.0		80.2	68-137			
2-Chloronaphthalene	35.7	10.0	ug/L	50.0		71.3	65-120			
2-Chlorophenol	38.4	10.0	ug/L	50.0		76.8	36-120			
2-Nitrophenol	41.0	10.0	ug/L	50.0		81.9	45-167			
3,3'-Dichlorobenzidine	22.7	10.0	ug/L	50.0		45.4	10-213			
4,6-Dinitro-2-methylphenol	34.6	50.0	ug/L	50.0		69.1	53-130			
4-Bromophenyl phenyl ether	38.1	10.0	ug/L	50.0		76.3	65-120			

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Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
LCS (BGB0439-BS1)				Prepared & Analyzed: 02/14/2023						
4-Chlorophenyl phenyl ether	35.2	10.0	ug/L	50.0		70.4	38-145			
4-Nitrophenol	11.4	50.0	ug/L	50.0		22.7	13-129			
Acenaphthene	36.6	10.0	ug/L	50.0		73.2	60-132			
Acenaphthylene	35.3	10.0	ug/L	50.0		70.6	54-126			
Acetophenone	37.2	20.0	ug/L	50.0		74.3	0-200			
Anthracene	37.4	10.0	ug/L	50.0		74.8	43-120			
Benzidine	ND	50.0	ug/L	50.0			12-309			L
Benzo (a) anthracene	39.8	10.0	ug/L	50.0		79.6	42-133			
Benzo (a) pyrene	41.7	10.0	ug/L	50.0		83.4	32-148			
Benzo (b) fluoranthene	39.4	10.0	ug/L	50.0		78.8	42-140			
Benzo (g,h,i) perylene	35.5	10.0	ug/L	50.0		71.0	10-195			
Benzo (k) fluoranthene	42.7	10.0	ug/L	50.0		85.4	25-146			
bis (2-Chloroethoxy) methane	37.8	10.0	ug/L	50.0		75.7	49-165			
bis (2-Chloroethyl) ether	36.6	10.0	ug/L	50.0		73.1	43-126			
2,2'-Oxybis (1-chloropropane)	39.8	10.0	ug/L	50.0		79.6	63-139			
bis (2-Ethylhexyl) phthalate	44.7	10.0	ug/L	50.0		89.4	29-137			
Butyl benzyl phthalate	41.9	10.0	ug/L	50.0		83.8	10-140			
Chrysene	44.0	10.0	ug/L	50.0		88.1	44-140			
Dibenz (a,h) anthracene	40.8	10.0	ug/L	50.0		81.6	10-200			
Diethyl phthalate	38.1	10.0	ug/L	50.0		76.2	10-120			
Dimethyl phthalate	36.5	10.0	ug/L	50.0		73.0	10-120			
Di-n-butyl phthalate	38.7	10.0	ug/L	50.0		77.5	10-120			
Di-n-octyl phthalate	43.8	10.0	ug/L	50.0		87.5	19-132			
Fluoranthene	37.9	10.0	ug/L	50.0		75.9	43-121			
Fluorene	38.2	10.0	ug/L	50.0		76.4	70-120			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
LCS (BGB0439-BS1)				Prepared & Analyzed: 02/14/2023						
Hexachlorobenzene	37.9	1.00	ug/L	50.0		75.8	10-142			
Hexachlorobutadiene	33.4	10.0	ug/L	50.0		66.7	38-120			
Hexachlorocyclopentadiene	19.7	10.0	ug/L	50.0		39.4	10-76			
Hexachloroethane	31.6	10.0	ug/L	50.0		63.2	55-120			
Indeno (1,2,3-cd) pyrene	41.1	10.0	ug/L	50.0		82.1	10-151			
Isophorone	22.8	10.0	ug/L	50.0		45.5	47-180			L
Naphthalene	33.3	5.00	ug/L	50.0		66.6	36-120			
Nitrobenzene	41.7	10.0	ug/L	50.0		83.4	54-158			
n-Nitrosodimethylamine	ND	10.0	ug/L	50.0			10-85			L
n-Nitrosodi-n-propylamine	37.8	10.0	ug/L	50.0		75.6	14-198			
n-Nitrosodiphenylamine	32.9	10.0	ug/L	50.0		65.8	12-97			
p-Chloro-m-cresol	37.7	10.0	ug/L	50.0		75.4	10-142			
Pentachlorophenol	29.4	20.0	ug/L	50.0		58.8	38-152			
Phenanthrene	39.7	10.0	ug/L	50.0		79.4	65-120			
Phenol	15.8	10.0	ug/L	50.5		31.3	17-120			
Pyrene	42.7	10.0	ug/L	50.0		85.4	70-120			
Pyridine	19.7	10.0	ug/L	50.0		39.4	10-103			
Surr: 2,4,6-Tribromophenol (Surr)	*71.7*		ug/L	*100*		*71.7*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*37.6*		ug/L	*50.0*		*75.3*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*47.7*		ug/L	*100*		*47.7*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*44.0*		ug/L	*50.0*		*88.1*	*5-151*			
Surr: Phenol-d5 (Surr)	*34.0*		ug/L	*100*		*34.0*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*43.4*		ug/L	*50.0*		*86.9*	*5-141*			
Matrix Spike (BGB0439-MS1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
Matrix Spike (BGB0439-MS1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						
1,2,4-Trichlorobenzene	25.6	10.0	ug/L	50.0	BLOD	51.2	44-142			
1,2-Dichlorobenzene	23.0	10.0	ug/L	50.0	BLOD	46.1	22-115			
1,3-Dichlorobenzene	21.6	10.0	ug/L	50.0	BLOD	43.2	22-112			
1,4-Dichlorobenzene	23.4	10.0	ug/L	50.0	BLOD	46.8	13-112			
2,4,6-Trichlorophenol	27.8	10.0	ug/L	50.0	BLOD	55.5	37-144			
2,4-Dichlorophenol	29.2	10.0	ug/L	50.0	BLOD	58.3	39-135			
2,4-Dimethylphenol	29.5	5.00	ug/L	50.0	BLOD	59.0	32-120			
2,4-Dinitrophenol	18.8	50.0	ug/L	50.0	BLOD	37.7	39-139			M
2,4-Dinitrotoluene	33.0	10.0	ug/L	50.0	BLOD	66.0	10-191			
2,6-Dinitrotoluene	32.3	10.0	ug/L	50.0	BLOD	64.6	50-158			
2-Chloronaphthalene	27.8	10.0	ug/L	50.0	BLOD	55.6	60-120			M
2-Chlorophenol	26.7	10.0	ug/L	50.0	BLOD	53.3	23-134			
2-Nitrophenol	29.4	10.0	ug/L	50.0	BLOD	58.9	29-182			
3,3'-Dichlorobenzidine	ND	10.0	ug/L	50.0	BLOD		10-262			M
4,6-Dinitro-2-methylphenol	25.7	50.0	ug/L	50.0	BLOD	51.3	10-181			
4-Bromophenyl phenyl ether	31.4	10.0	ug/L	50.0	BLOD	62.7	53-127			
4-Chlorophenyl phenyl ether	28.0	10.0	ug/L	50.0	BLOD	56.1	25-158			
4-Nitrophenol	8.39	50.0	ug/L	50.0	BLOD	16.8	10-132			
Acenaphthene	28.3	10.0	ug/L	50.0	BLOD	56.6	47-145			
Acenaphthylene	27.9	10.0	ug/L	50.0	BLOD	55.8	33-145			
Acetophenone	ND	20.0	ug/L	50.0	BLOD		0-200			
Anthracene	30.1	10.0	ug/L	50.0	BLOD	60.3	27-133			
Benzidine	ND	50.0	ug/L	50.0	BLOD		12-309			M
Benzo (a) anthracene	33.0	10.0	ug/L	50.0	BLOD	66.0	33-143			
Benzo (a) pyrene	34.1	10.0	ug/L	50.0	BLOD	68.1	17-163			

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Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
Matrix Spike (BGB0439-MS1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						
Benzo (b) fluoranthene	34.1	10.0	ug/L	50.0	BLOD	68.1	24-159			
Benzo (g,h,i) perylene	29.1	10.0	ug/L	50.0	BLOD	58.1	10-219			
Benzo (k) fluoranthene	31.4	10.0	ug/L	50.0	BLOD	62.7	11-162			
bis (2-Chloroethoxy) methane	28.6	10.0	ug/L	50.0	BLOD	57.3	33-184			
bis (2-Chloroethyl) ether	25.9	10.0	ug/L	50.0	9.60	32.5	12-158			
2,2'-Oxybis (1-chloropropane)	27.2	10.0	ug/L	50.0	BLOD	54.4	36-166			
bis (2-Ethylhexyl) phthalate	35.0	10.0	ug/L	50.0	BLOD	70.1	10-158			
Butyl benzyl phthalate	35.2	10.0	ug/L	50.0	BLOD	70.5	10-152			
Chrysene	34.7	10.0	ug/L	50.0	BLOD	69.4	17-169			
Dibenz (a,h) anthracene	32.2	10.0	ug/L	50.0	BLOD	64.5	10-227			
Diethyl phthalate	31.2	10.0	ug/L	50.0	BLOD	62.4	10-120			
Dimethyl phthalate	29.7	10.0	ug/L	50.0	BLOD	59.4	10-120			
Di-n-butyl phthalate	31.0	10.0	ug/L	50.0	BLOD	62.0	10-120			
Di-n-octyl phthalate	38.9	10.0	ug/L	50.0	BLOD	77.7	10-146			
Fluoranthene	30.4	10.0	ug/L	50.0	BLOD	60.7	26-137			
Fluorene	30.8	10.0	ug/L	50.0	BLOD	61.6	59-121			
Hexachlorobenzene	31.4	1.00	ug/L	50.0	BLOD	62.8	10-152			
Hexachlorobutadiene	25.9	10.0	ug/L	50.0	BLOD	51.7	24-120			
Hexachlorocyclopentadiene	12.7	10.0	ug/L	50.0	BLOD	25.4	10-90			
Hexachloroethane	23.0	10.0	ug/L	50.0	BLOD	45.9	40-120			
Indeno (1,2,3-cd) pyrene	32.8	10.0	ug/L	50.0	BLOD	65.5	10-171			
Isophorone	17.4	10.0	ug/L	50.0	BLOD	34.9	21-196			
Naphthalene	26.0	5.00	ug/L	50.0	BLOD	52.1	21-133			
Nitrobenzene	29.4	10.0	ug/L	50.0	BLOD	58.9	35-180			
n-Nitrosodimethylamine	15.2	10.0	ug/L	50.0	BLOD	30.4	10-85			

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Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
Matrix Spike (BGB0439-MS1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						
n-Nitrosodi-n-propylamine	27.3	10.0	ug/L	50.0	BLOD	54.6	10-230			
n-Nitrosodiphenylamine	26.4	10.0	ug/L	50.0	BLOD	52.9	12-111			
p-Chloro-m-cresol	28.8	10.0	ug/L	50.0	BLOD	57.7	10-127			
Pentachlorophenol	21.2	20.0	ug/L	50.0	BLOD	42.5	14-176			
Phenanthrene	32.5	10.0	ug/L	50.0	BLOD	65.1	54-120			
Phenol	10.8	10.0	ug/L	50.5	BLOD	21.3	10-120			
Pyrene	36.1	10.0	ug/L	50.0	BLOD	72.2	52-120			
Pyridine	15.7	10.0	ug/L	50.0	BLOD	31.4	10-110			
Surr: 2,4,6-Tribromophenol (Surr)	*54.3*		ug/L	*100*		*54.3*	*5-136*			
Surr: 2-Fluorobiphenyl (Surr)	*28.4*		ug/L	*50.0*		*56.8*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*31.5*		ug/L	*100*		*31.5*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*30.3*		ug/L	*50.0*		*60.7*	*5-151*			
Surr: Phenol-d5 (Surr)	*23.0*		ug/L	*100*		*23.0*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*36.0*		ug/L	*50.0*		*72.0*	*5-141*			
Matrix Spike Dup (BGB0439-MSD1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						
1,2,4-Trichlorobenzene	18.4	10.0	ug/L	50.0	BLOD	36.9	44-142		20	M
1,2-Dichlorobenzene	17.1	10.0	ug/L	50.0	BLOD	34.2	22-115		20	
1,3-Dichlorobenzene	16.0	10.0	ug/L	50.0	BLOD	32.0	22-112		20	
1,4-Dichlorobenzene	17.2	10.0	ug/L	50.0	BLOD	34.3	13-112		20	
2,4,6-Trichlorophenol	22.7	10.0	ug/L	50.0	BLOD	45.4	37-144		20	
2,4-Dichlorophenol	21.9	10.0	ug/L	50.0	BLOD	43.8	39-135		20	
2,4-Dimethylphenol	22.3	5.00	ug/L	50.0	BLOD	44.5	32-120		20	
2,4-Dinitrophenol	22.9	50.0	ug/L	50.0	BLOD	45.8	39-139		20	
2,4-Dinitrotoluene	35.7	10.0	ug/L	50.0	BLOD	71.5	10-191		20	

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Date Issued: 3/6/2023 3:43:56PM

Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
Matrix Spike Dup (BGB0439-MSD1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						
2,6-Dinitrotoluene	31.3	10.0	ug/L	50.0	BLOD	62.6	50-158		20	
2-Chloronaphthalene	21.7	10.0	ug/L	50.0	BLOD	43.5	60-120		20	M
2-Chlorophenol	19.7	10.0	ug/L	50.0	BLOD	39.3	23-134		20	
2-Nitrophenol	21.6	10.0	ug/L	50.0	BLOD	43.3	29-182		20	
3,3'-Dichlorobenzidine	ND	10.0	ug/L	50.0	BLOD		10-262		20	M
4,6-Dinitro-2-methylphenol	30.7	50.0	ug/L	50.0	BLOD	61.3	10-181		20	
4-Bromophenyl phenyl ether	30.4	10.0	ug/L	50.0	BLOD	60.8	53-127		20	
4-Chlorophenyl phenyl ether	25.3	10.0	ug/L	50.0	BLOD	50.6	25-158		20	
4-Nitrophenol	10.3	50.0	ug/L	50.0	BLOD	20.6	10-132		20	
Acenaphthene	23.9	10.0	ug/L	50.0	BLOD	47.9	47-145		20	
Acenaphthylene	23.4	10.0	ug/L	50.0	BLOD	46.7	33-145		20	
Acetophenone	ND	20.0	ug/L	50.0	BLOD		0-200		20	
Anthracene	34.6	10.0	ug/L	50.0	BLOD	69.3	27-133		20	
Benzidine	ND	50.0	ug/L	50.0	BLOD		12-309		20	M
Benzo (a) anthracene	34.7	10.0	ug/L	50.0	BLOD	69.3	33-143		20	
Benzo (a) pyrene	36.5	10.0	ug/L	50.0	BLOD	72.9	17-163		20	
Benzo (b) fluoranthene	35.4	10.0	ug/L	50.0	BLOD	70.7	24-159		20	
Benzo (g,h,i) perylene	33.4	10.0	ug/L	50.0	BLOD	66.8	10-219		20	
Benzo (k) fluoranthene	35.0	10.0	ug/L	50.0	BLOD	69.9	11-162		20	
bis (2-Chloroethoxy) methane	21.0	10.0	ug/L	50.0	BLOD	41.9	33-184		20	
bis (2-Chloroethyl) ether	19.1	10.0	ug/L	50.0	9.60	19.0	12-158		20	
2,2'-Oxybis (1-chloropropane)	19.7	10.0	ug/L	50.0	BLOD	39.4	36-166		20	
bis (2-Ethylhexyl) phthalate	37.4	10.0	ug/L	50.0	BLOD	74.8	10-158		20	
Butyl benzyl phthalate	36.7	10.0	ug/L	50.0	BLOD	73.5	10-152		20	
Chrysene	37.8	10.0	ug/L	50.0	BLOD	75.5	17-169		20	

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
Matrix Spike Dup (BGB0439-MSD1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						
Dibenz (a,h) anthracene	37.6	10.0	ug/L	50.0	BLOD	75.2	10-227		20	
Diethyl phthalate	32.1	10.0	ug/L	50.0	BLOD	64.3	10-120		20	
Dimethyl phthalate	28.8	10.0	ug/L	50.0	BLOD	57.5	10-120		20	
Di-n-butyl phthalate	34.0	10.0	ug/L	50.0	BLOD	68.0	10-120		20	
Di-n-octyl phthalate	39.6	10.0	ug/L	50.0	BLOD	79.2	10-146		20	
Fluoranthene	33.2	10.0	ug/L	50.0	BLOD	66.4	26-137		20	
Fluorene	28.5	10.0	ug/L	50.0	BLOD	57.0	59-121		20	M
Hexachlorobenzene	32.1	1.00	ug/L	50.0	BLOD	64.2	10-152		20	
Hexachlorobutadiene	18.2	10.0	ug/L	50.0	BLOD	36.5	24-120		20	
Hexachlorocyclopentadiene	9.03	10.0	ug/L	50.0	BLOD	18.1	10-90		20	
Hexachloroethane	16.2	10.0	ug/L	50.0	BLOD	32.3	40-120		20	M
Indeno (1,2,3-cd) pyrene	37.7	10.0	ug/L	50.0	BLOD	75.3	10-171		20	
Isophorone	13.0	10.0	ug/L	50.0	BLOD	26.0	21-196		20	
Naphthalene	20.1	5.00	ug/L	50.0	BLOD	40.2	21-133		20	
Nitrobenzene	21.8	10.0	ug/L	50.0	BLOD	43.5	35-180		20	
n-Nitrosodimethylamine	11.5	10.0	ug/L	50.0	BLOD	23.0	10-85		20	
n-Nitrosodi-n-propylamine	19.8	10.0	ug/L	50.0	BLOD	39.7	10-230		20	
n-Nitrosodiphenylamine	27.0	10.0	ug/L	50.0	BLOD	54.1	12-111		20	
p-Chloro-m-cresol	24.2	10.0	ug/L	50.0	BLOD	48.3	10-127		20	
Pentachlorophenol	24.8	20.0	ug/L	50.0	BLOD	49.7	14-176		20	
Phenanthrene	34.3	10.0	ug/L	50.0	BLOD	68.6	54-120		20	
Phenol	8.25	10.0	ug/L	50.5	BLOD	16.3	10-120		20	
Pyrene	38.1	10.0	ug/L	50.0	BLOD	76.3	52-120		20	
Pyridine	11.9	10.0	ug/L	50.0	BLOD	23.7	10-110		20	
Surr: 2,4,6-Tribromophenol (Surr)	*55.3*		ug/L	*100*		*55.3*	*5-136*			

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Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0439 - SW3510C/EPA600-MS										
Matrix Spike Dup (BGB0439-MSD1)	**Source: 23B0618-01**			Prepared & Analyzed: 02/14/2023						
Surr: 2-Fluorobiphenyl (Surr)	*21.8*		ug/L	*50.0*		*43.5*	*9-117*			
Surr: 2-Fluorophenol (Surr)	*23.7*		ug/L	*100*		*23.7*	*5-60*			
Surr: Nitrobenzene-d5 (Surr)	*22.1*		ug/L	*50.0*		*44.2*	*5-151*			
Surr: Phenol-d5 (Surr)	*17.5*		ug/L	*100*		*17.5*	*5-60*			
Surr: p-Terphenyl-d14 (Surr)	*37.1*		ug/L	*50.0*		*74.1*	*5-141*			

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0273 - No Prep Wet Chem										
Blank (BGB0273-BLK1)				Prepared & Analyzed: 02/09/2023						
BOD	ND	2.0	mg/L							
LCS (BGB0273-BS1)				Prepared & Analyzed: 02/09/2023						
BOD	202	2	mg/L	198		102	84.6-115.4			
Duplicate (BGB0273-DUP1)	**Source: 23B0405-01**			Prepared & Analyzed: 02/09/2023						
BOD	3.4	2.0	mg/L		BLOD			NA	20	
Batch BGB0422 - No Prep Wet Chem										
Blank (BGB0422-BLK1)				Prepared & Analyzed: 02/13/2023						
Ammonia as N	ND	0.10	mg/L							
LCS (BGB0422-BS1)				Prepared & Analyzed: 02/13/2023						
Ammonia as N	1.99	0.1	mg/L	2.00		99.4	90-110			
Matrix Spike (BGB0422-MS1)	**Source: 23B0290-07**			Prepared & Analyzed: 02/13/2023						
Ammonia as N	1.71	0.10	mg/L	2.00	BLOD	85.6	89.3-131			M
Matrix Spike (BGB0422-MS2)	**Source: 23B0368-01**			Prepared & Analyzed: 02/13/2023						
Ammonia as N	1.91	0.10	mg/L	2.00	BLOD	95.7	89.3-131			
Matrix Spike Dup (BGB0422-MSD1)	**Source: 23B0290-07**			Prepared & Analyzed: 02/13/2023						
Ammonia as N	1.71	0.10	mg/L	2.00	BLOD	85.5	89.3-131	0.117	20	M
Matrix Spike Dup (BGB0422-MSD2)	**Source: 23B0368-01**			Prepared & Analyzed: 02/13/2023						
Ammonia as N	1.89	0.10	mg/L	2.00	BLOD	94.6	89.3-131	1.10	20	

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0499 - No Prep Wet Chem										
Blank (BGB0499-BLK1)				Prepared & Analyzed: 02/15/2023						
Nitrite as N	ND	0.05	mg/L							
LCS (BGB0499-BS1)				Prepared & Analyzed: 02/15/2023						
Nitrite as N	0.10	0.05	mg/L	0.100		104	80-120			
Matrix Spike (BGB0499-MS1)	**Source: 23B0763-01**			Prepared & Analyzed: 02/15/2023						
Nitrite as N	0.10	0.05	mg/L	0.100	BLOD	100	80-120			
Matrix Spike Dup (BGB0499-MSD1)	**Source: 23B0763-01**			Prepared & Analyzed: 02/15/2023						
Nitrite as N	0.10	0.05	mg/L	0.100	BLOD	97.0	80-120	3.05	20	
Batch BGB0514 - No Prep Wet Chem										
Blank (BGB0514-BLK1)				Prepared & Analyzed: 02/15/2023						
Total Recoverable Phenolics	ND	0.050	mg/L							
LCS (BGB0514-BS1)				Prepared & Analyzed: 02/15/2023						
Total Recoverable Phenolics	0.47	0.050	mg/L	0.500		93.6	80-120			
Matrix Spike (BGB0514-MS1)	**Source: 23B0707-02**			Prepared & Analyzed: 02/15/2023						
Total Recoverable Phenolics	0.46	0.050	mg/L	0.500	BLOD	92.8	70-130			
Matrix Spike Dup (BGB0514-MSD1)	**Source: 23B0707-02**			Prepared & Analyzed: 02/15/2023						
Total Recoverable Phenolics	0.45	0.050	mg/L	0.500	BLOD	90.4	70-130	2.62	20	
Batch BGB0787 - No Prep Wet Chem										
Blank (BGB0787-BLK1)				Prepared & Analyzed: 02/22/2023						
COD	ND	10.0	mg/L							

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0787 - No Prep Wet Chem										
LCS (BGB0787-BS1)				Prepared & Analyzed: 02/22/2023						
COD	45.8	10.0	mg/L	50.0		91.5	88-119			
Matrix Spike (BGB0787-MS1)		**Source: 23B1143-01**		Prepared & Analyzed: 02/22/2023						
COD	64.8	10.0	mg/L	50.0	13.6	102	72.4-130			
Matrix Spike Dup (BGB0787-MSD1)		**Source: 23B1143-01**		Prepared & Analyzed: 02/22/2023						
COD	63.4	10.0	mg/L	50.0	13.6	99.5	72.4-130	2.17	20	
Batch BGB0811 - No Prep Wet Chem										
Blank (BGB0811-BLK1)				Prepared & Analyzed: 02/22/2023						
Nitrate+Nitrite as N	ND	0.10	mg/L							
LCS (BGB0811-BS1)				Prepared & Analyzed: 02/22/2023						
Nitrate+Nitrite as N	1.03	0.1	mg/L	1.00		103	90-110			
Matrix Spike (BGB0811-MS1)		**Source: 23B0587-02**		Prepared & Analyzed: 02/22/2023						
Nitrate+Nitrite as N	1.44	0.10	mg/L	1.00	0.45	99.0	90-110			
Matrix Spike (BGB0811-MS2)		**Source: 23B0999-01**		Prepared & Analyzed: 02/22/2023						
Nitrate+Nitrite as N	1.43	0.10	mg/L	1.00	0.63	80.0	90-110			M
Matrix Spike Dup (BGB0811-MSD1)		**Source: 23B0587-02**		Prepared & Analyzed: 02/22/2023						
Nitrate+Nitrite as N	1.45	0.10	mg/L	1.00	0.45	99.4	90-110	0.318	20	
Matrix Spike Dup (BGB0811-MSD2)		**Source: 23B0999-01**		Prepared & Analyzed: 02/22/2023						
Nitrate+Nitrite as N	1.43	0.10	mg/L	1.00	0.63	79.6	90-110	0.287	20	M

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Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0820 - No Prep Wet Chem										
Blank (BGB0820-BLK1)				Prepared & Analyzed: 02/22/2023						
TKN as N	ND	0.50	mg/L							
LCS (BGB0820-BS1)				Prepared & Analyzed: 02/22/2023						
TKN as N	10.8	0.50	mg/L	10.0		108	90-110			
Matrix Spike (BGB0820-MS1)	**Source: 23B0730-02**			Prepared & Analyzed: 02/22/2023						
TKN as N	11.1	0.50	mg/L	10.0	1.47	96.5	90-110			
Matrix Spike (BGB0820-MS2)	**Source: 23B1111-01**			Prepared & Analyzed: 02/22/2023						
TKN as N	12.1	0.50	mg/L	10.0	2.01	101	90-110			
Matrix Spike Dup (BGB0820-MSD1)	**Source: 23B0730-02**			Prepared & Analyzed: 02/22/2023						
TKN as N	11.0	0.50	mg/L	10.0	1.47	95.5	90-110	0.903	20	
Matrix Spike Dup (BGB0820-MSD2)	**Source: 23B1111-01**			Prepared & Analyzed: 02/22/2023						
TKN as N	10.9	0.50	mg/L	10.0	2.01	88.5	90-110	10.8	20	M

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Analytical Summary

23B0489-01 Subcontract

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**EPA200.8 R5.4**	
23B0489-01	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0866	AB30162
23B0489-01RE1	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0866	AB30162

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
23B0489-01	300 mL / 300 mL	SM22 5210B-2011	BGB0273	SGB0461	
23B0489-01	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
23B0489-01	1.00 mL / 25.0 mL	SM22 4500-NO2B-2011	BGB0499	SGB0552	AJ20138
23B0489-01	5.00 mL / 10.0 mL	EPA420.1	BGB0514	SGB0546	AL20103
23B0489-01	2.00 mL / 2.00 mL	SM22 5220D-2011	BGB0787	SGB0832	AA30078
23B0489-01	5.00 mL / 5.00 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
23B0489-01	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGB0820	SGB0893	AB30181

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Organic Compounds by GCMS			**Preparation Method:**	**SW3510C/EPA600-MS**	
23B0489-01	1070 mL / 2.00 mL	SW8270E	BGB0439	SGB0632	AB30070

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
23B0489-01	5.00 mL / 5.00 mL	SW8260D	BGB0386	SGB0436	AB30066
23B0489-01RE1	5.00 mL / 5.00 mL	SW8260D	BGB0386	SGB0436	AB30066

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
23B0489-02	5.00 mL / 5.00 mL	SW8260D	BGB0386	SGB0436	AB30066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**SW7470A**	
23B0489-01	10.0 mL / 20.0 mL	SW7470A	BGB0444	SGB0504	AB30111

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QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**EPA200.8 R5.4**	
BGB0458-BLK1	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0581	AB30125
BGB0458-BS1	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0581	AB30125
BGB0458-MS1	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0818	AB30162
BGB0458-MS2	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0581	AB30125
BGB0458-MS3	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0818	AB30162
BGB0458-MSD1	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0818	AB30162
BGB0458-MSD2	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0581	AB30125
BGB0458-MSD3	50.0 mL / 50.0 mL	SW6020B	BGB0458	SGB0818	AB30162

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
BGB0273-BLK1	300 mL / 300 mL	SM22 5210B-2011	BGB0273	SGB0461	
BGB0273-BS1	300 mL / 300 mL	SM22 5210B-2011	BGB0273	SGB0461	
BGB0273-DUP1	300 mL / 300 mL	SM22 5210B-2011	BGB0273	SGB0461	
BGB0422-BLK1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
BGB0422-BS1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
BGB0422-MRL1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
BGB0422-MS1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
BGB0422-MS2	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
BGB0422-MSD1	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
BGB0422-MSD2	6.00 mL / 6.00 mL	EPA350.1 R2.0	BGB0422	SGB0450	AB30104
BGB0499-BLK1	25.0 mL / 25.0 mL	SM22 4500-NO2B-2011	BGB0499	SGB0552	AJ20138
BGB0499-BS1	25.0 mL / 25.0 mL	SM22 4500-NO2B-2011	BGB0499	SGB0552	AJ20138

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Certificate of Analysis

Client Name: SCS Engineers-Winchester
Date Issued: 3/6/2023 3:43:56PM
Client Site I.D.: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			**Preparation Method:**	**No Prep Wet Chem**	
BGB0499-MRL1	25.0 mL / 25.0 mL	SM22 4500-NO2B-2011	BGB0499	SGB0552	AJ20138
BGB0499-MS1	25.0 mL / 25.0 mL	SM22 4500-NO2B-2011	BGB0499	SGB0552	AJ20138
BGB0499-MSD1	25.0 mL / 25.0 mL	SM22 4500-NO2B-2011	BGB0499	SGB0552	AJ20138
BGB0514-BLK1	5.00 mL / 10.0 mL	EPA420.1	BGB0514	SGB0546	AL20103
BGB0514-BS1	5.00 mL / 10.0 mL	EPA420.1	BGB0514	SGB0546	AL20103
BGB0514-MRL1	5.00 mL / 10.0 mL	EPA420.1	BGB0514	SGB0546	AL20103
BGB0514-MS1	5.00 mL / 10.0 mL	EPA420.1	BGB0514	SGB0546	AL20103
BGB0514-MSD1	5.00 mL / 10.0 mL	EPA420.1	BGB0514	SGB0546	AL20103
BGB0787-BLK1	2.00 mL / 2.00 mL	SM22 5220D-2011	BGB0787	SGB0832	AA30078
BGB0787-BS1	2.00 mL / 2.00 mL	SM22 5220D-2011	BGB0787	SGB0832	AA30078
BGB0787-MS1	2.00 mL / 2.00 mL	SM22 5220D-2011	BGB0787	SGB0832	AA30078
BGB0787-MSD1	2.00 mL / 2.00 mL	SM22 5220D-2011	BGB0787	SGB0832	AA30078
BGB0811-BLK1	5.00 mL / 5.00 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
BGB0811-BS1	5.00 mL / 5.00 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
BGB0811-MRL1	5.00 mL / 5.00 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
BGB0811-MS1	25.0 mL / 25.0 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
BGB0811-MS2	25.0 mL / 25.0 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
BGB0811-MSD1	25.0 mL / 25.0 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
BGB0811-MSD2	25.0 mL / 25.0 mL	SM22 4500-NO3F-2011	BGB0811	SGB0862	AB30174
BGB0820-BLK1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGB0820	SGB0893	AB30181
BGB0820-BS1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGB0820	SGB0893	AB30181
BGB0820-MS1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGB0820	SGB0893	AB30181
BGB0820-MS2	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGB0820	SGB0893	AB30181
BGB0820-MSD1	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGB0820	SGB0893	AB30181
BGB0820-MSD2	25.0 mL / 25.0 mL	EPA351.2 R2.0	BGB0820	SGB0893	AB30181

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Organic Compounds by GCMS			**Preparation Method:**	**SW3510C/EPA600-MS**	

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Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Organic Compounds by GCMS			**Preparation Method:**	**SW3510C/EPA600-MS**	
BGB0439-BLK1	1000 mL / 1.00 mL	SW8270E	BGB0439	SGB0510	AB30070
BGB0439-BS1	1000 mL / 1.00 mL	SW8270E	BGB0439	SGB0510	AB30070
BGB0439-MS1	1000 mL / 1.00 mL	SW8270E	BGB0439	SGB0510	AB30070
BGB0439-MSD1	1000 mL / 1.00 mL	SW8270E	BGB0439	SGB0510	AB30070

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GCMS			**Preparation Method:**	**SW5030B-MS**	
BGB0386-BLK1	5.00 mL / 5.00 mL	SW8260D	BGB0386	SGB0436	AB30066
BGB0386-BS1	5.00 mL / 5.00 mL	SW8260D	BGB0386	SGB0436	AB30066
BGB0386-DUP1	5.00 mL / 5.00 mL	SW8260D	BGB0386	SGB0436	AB30066
BGB0386-MS1	5.00 mL / 5.00 mL	SW8260D	BGB0386	SGB0436	AB30066

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Metals (Total) by EPA 6000/7000 Series Methods			**Preparation Method:**	**SW7470A**	
BGB0444-BLK1	20.0 mL / 20.0 mL	SW7470A	BGB0444	SGB0504	AB30111
BGB0444-BS1	20.0 mL / 20.0 mL	SW7470A	BGB0444	SGB0504	AB30111
BGB0444-MS1	20.0 mL / 20.0 mL	SW7470A	BGB0444	SGB0504	AB30111
BGB0444-MS2	20.0 mL / 20.0 mL	SW7470A	BGB0444	SGB0504	AB30111
BGB0444-MSD1	20.0 mL / 20.0 mL	SW7470A	BGB0444	SGB0504	AB30111
BGB0444-MSD2	20.0 mL / 20.0 mL	SW7470A	BGB0444	SGB0504	AB30111

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Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

Certified Analyses included in this Report

Analyte	Certifications
EPA350.1 R2.0 in Non-Potable Water	
Ammonia as N	VELAP,NCDEQ,PADEP,WVDEP
EPA351.2 R2.0 in Non-Potable Water	
TKN as N	VELAP,NCDEQ,WVDEP
EPA420.1 in Non-Potable Water	
Total Recoverable Phenolics	VELAP,NCDEQ,WVDEP
SM22 4500-NO2B-2011 in Non-Potable Water	
Nitrite as N	VELAP,WVDEP
SM22 4500-NO3F-2011 in Non-Potable Water	
Nitrate+Nitrite as N	VELAP,WVDEP
SM22 5210B-2011 in Non-Potable Water	
BOD	VELAP,NCDEQ,WVDEP
SM22 5220D-2011 in Non-Potable Water	
COD	VELAP,NCDEQ,PADEP,WVDEP
SW6020B in Non-Potable Water	
Arsenic	VELAP,WVDEP
Barium	VELAP,WVDEP
Cadmium	VELAP,WVDEP
Chromium	VELAP,WVDEP
Copper	VELAP,WVDEP
Lead	VELAP,WVDEP
Nickel	VELAP,WVDEP
Selenium	VELAP,WVDEP
Silver	VELAP,WVDEP
Zinc	VELAP,WVDEP

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Certified Analyses included in this Report

Analyte	Certifications
SW7470A in Non-Potable Water	
Mercury	VELAP,NCDEQ,WVDEP
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
Toluene	VELAP,NCDEQ,PADEP,WVDEP
Xylenes, Total	VELAP,NCDEQ,PADEP,WVDEP
Tetrahydrofuran	VELAP,PADEP
SW8270E in Non-Potable Water	
Anthracene	VELAP,PADEP,NCDEQ,WVDEP

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	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

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Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

Qualifiers and Definitions

DS	Surrogate concentration reflects a dilution factor.
E	Estimated concentration, outside calibration range
H	Analysis was performed outside of the method prescribed holding time.
J	The reported result is an estimated value.
L	LCS recovery is outside of established acceptance limits
M	Matrix spike recovery is outside established acceptance limits
RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
LOD	Limit of Detection
BLOD	Below Limit of Detection
LOQ	Limit of Quantitation
DF	Dilution Factor
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

ENTHALPY ANALYTICAL

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

CHAIN OF CUSTODY

COMPANY NAME: SCS Engineers	INVOICE TO: SAME	PROJECT NAME/Quote #:
CONTACT: Jennifer Robb	INVOICE CONTACT:	SITE NAME: City of Bristol Landfill
ADDRESS: 11260 Roger Bacon Drive,	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.15 Task 1
Ste. 300, Reston VA 20190	INVOICE PHONE #:	P.O. #:
PHONE #: 703-471-6150 / EMAIL: jrobb@scsengineers.com		Pretreatment Program:
Is sample for compliance reporting? (YES) NO	Regulatory State: V A	Is sample from a chlorinated supply? YES (NO)	PWS I.D. #:
SAMPLER NAME (PRINT): Logan Howard Ty Smith	SAMPLER SIGNATURE:	Turn Around Time: 10 Day(s)

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

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	Ammonia - EPA 350.1	BOD - SM22 5210B-2021	COD - SM22 5220D-2011	Nitrate SM22 450-NO3F-2011	Nitrite SM22 450-NO3F-2011	SVOC (Anthracene) 8270	Total Metals (As, Ba, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn) 6010	Mercury - 7470	Total Recoverable Phenolics - 9065	V. Fatty Acids (See List) 8015	VOCs (See List) 8260
1) EW-68	X					020723	1415		GW	12											
2)									GW												
3)									GW												
4)									GW												
5)									GW												
6)									GW												
7)									GW												
8)									GW												
9)					0909 23				GW												
10) Trip Blank	X					020723	1430		DI	2										X	

ANALYSIS / (PRESERVATIVE)

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

COMMENTS

Note VOC 8260 no HCl

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

RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME
[signature]	020823/1300	LCN	
LCN		JH	2/9/23 0800

QC Data Package
Level III ☐
Level IV ☐

LAB USE ONLY
Custody Seals used and intact? (Ø N)
Therm ID: 271
COOLER TEMP 1.2 °C
Received on ice? (Ø / N)

SCS-W **23B0489**
City of Bristol Semi-Annual
Recd: 02/09/2023 Due: 02/23/2023

v130325002

ENTHALPY ANALYTICAL

Sample Preservation Log

Order ID 23B0489 Date Performed: 2/9/23 Analyst Performing Check: MJ

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 pH as Received Other	Pest/PCB Final pH	Phenolics pH as Received <2	Phenolics pH as Received Other	Phenolics Final pH	COD pH as Received <2	COD pH as Received Other	COD Final pH
01	A		7	<2																																							
01	B											7	<2		7	<2					7	<2																			7	<2
01	F																																					7	<2				
01	G																												X														

NaOH ID: _____ HNO3 ID: 2L025226

H2SO4 ID: 2L01944 Na2S2O3 ID: 8E003603

HCL ID: _____ Na2SO3 ID: _____

CrVI preserved date/time: _____
* pH must be adjusted between 9.3 - 9.7
Buffer Sol'n ID: _____
1N NaOH ID: _____

Metals were received with pH = 7. HNO3 was added at 1:27 on 9 FEB 2023 by DLJ 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.

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Certificate of Analysis

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Client Site I.D.: City of Bristol Semi-Annual
Submitted To: Jennifer Robb

Date Issued: 3/6/2023 3:43:56PM

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Laboratory Order ID: 23B0489

Sample Conditions Checklist

Samples Received at:	**1.20°C**
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	No
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	No
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.	No

Jennifer Robb notified via email
Samples preserved with H2SO4 were received requring pH adjustment
Samples logged per WW
Log fot TKN per sampling plan

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JnH 2/9/2023

Notified by client that they wanted Nitrate and Nitrite reported separately.
Client notiffied sample was out of hold time.
Told to proceed per Jen Robb and Logan Howard.
DFE 2/14/2023 1051

WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

Work Orders:	3B10078	**Report Date:**	3/03/2023
		Received Date:	2/10/2023
Project:	23B0489	**Turnaround Time:**	Normal
		Phones:	(804) 358-8295
		Fax:	
Attn:	JP Verheul	**P.O. #:**	040877
Client:	Enthalpy Analytical - Richmond VA 1941 Reymet Road Richmond, VA 23237	**Billing Code:**	

DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • ISO17025 ANAB #L2457.01 • LACSD #10143

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear JP Verheul,

Enclosed are the results of analyses for samples received 2/10/23 with the Chain-of-Custody document. The samples were received in good condition, at 2.6 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

Alejandra D. Gomez
Project Manager

14859 Clark Avenue,City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634
www.wecklabs.com

Enthalpy Analytical - Richmond VA
1941 Reymet Road
Richmond, VA 23237

Project Number: 23B0489

Project Manager: JP Verheul

Reported:
03/03/2023 16:38

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
232B0489: EW-68	Client	3B10078-01	Water	02/07/23 14:15	

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Project Number: 23B0489

Project Manager: JP Verheul

Reported:
03/03/2023 16:38

Sample Results

Sample: 232B0489: EW-68
3B10078-01RE1 (Water)

Sampled: 02/07/23 14:15 by Client

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Alcohols by GC/FID						
Method: EPA 8015M		**Instr:** GC09				
Batch ID: W3B2103 **Preparation:** _NONE (SVOC)		**Prepared:** 02/24/23 15:17				**Analyst:** ecs
Acetic acid	ND	500	mg/l	50	02/25/23	M-05
Butyric acid	ND	500	mg/l	50	02/25/23	M-05
Heptanoic acid	ND	500	mg/l	50	02/25/23	M-05
Hexanoic acid	ND	500	mg/l	50	02/25/23	M-05
Isobutyric acid	ND	500	mg/l	50	02/25/23	M-05
Isocaproic acid	ND	500	mg/l	50	02/25/23	M-05
Isovaleric acid	ND	500	mg/l	50	02/25/23	M-05
Propionic acid	ND	500	mg/l	50	02/25/23	M-05
Valeric acid	ND	500	mg/l	50	02/25/23	M-05

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Project Number: 23B0489

Project Manager: JP Verheul

Reported: 03/03/2023 16:38

Quality Control Results

Alcohols by GC/FID

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W3B2103 - EPA 8015M										
Blank (W3B2103-BLK1)				**Prepared & Analyzed: 02/24/23**						
Acetic acid	ND	10	mg/l							
Butyric acid	ND	10	mg/l							
Heptanoic acid	ND	10	mg/l							
Hexanoic acid	ND	10	mg/l							
Isobutyric acid	ND	10	mg/l							
Isocaproic acid	ND	10	mg/l							
Isovaleric acid	ND	10	mg/l							
Propionic acid	ND	10	mg/l							
Valeric acid	ND	10	mg/l							
LCS (W3B2103-BS1)				**Prepared & Analyzed: 02/24/23**						
Acetic acid	53.4	10	mg/l	50.0		107	50-150			
Butyric acid	51.1	10	mg/l	50.0		102	50-150			
Heptanoic acid	47.2	10	mg/l	50.0		94	50-150			
Hexanoic acid	45.2	10	mg/l	50.0		90	50-150			
Isobutyric acid	50.6	10	mg/l	50.0		101	50-150			
Isocaproic acid	45.7	10	mg/l	50.0		91	50-150			
Isovaleric acid	48.8	10	mg/l	50.0		98	50-150			
Propionic acid	43.6	10	mg/l	50.0		87	50-150			
Valeric acid	50.2	10	mg/l	50.0		100	50-150			
Matrix Spike (W3B2103-MS1)	**Source: 3B16127-01RE1**			**Prepared: 02/24/23 Analyzed: 02/25/23**						
Acetic acid	279	50	mg/l	250	ND	112	50-150			M-05
Butyric acid	260	50	mg/l	250	ND	104	50-150			M-05
Heptanoic acid	247	50	mg/l	250	ND	99	50-150			M-05
Hexanoic acid	236	50	mg/l	250	ND	94	50-150			M-05
Isobutyric acid	258	50	mg/l	250	ND	103	50-150			M-05
Isocaproic acid	238	50	mg/l	250	ND	95	50-150			M-05
Isovaleric acid	256	50	mg/l	250	ND	102	50-150			M-05
Propionic acid	221	50	mg/l	250	ND	89	50-150			M-05
Valeric acid	263	50	mg/l	250	ND	105	50-150			M-05
Matrix Spike Dup (W3B2103-MSD1)	**Source: 3B16127-01RE1**			**Prepared & Analyzed: 02/24/23**						
Acetic acid	273	50	mg/l	250	ND	109	50-150	2	25	M-05
Butyric acid	251	50	mg/l	250	ND	100	50-150	4	25	M-05
Heptanoic acid	230	50	mg/l	250	ND	92	50-150	7	25	M-05
Hexanoic acid	225	50	mg/l	250	ND	90	50-150	5	25	M-05
Isobutyric acid	251	50	mg/l	250	ND	100	50-150	3	25	M-05
Isocaproic acid	220	50	mg/l	250	ND	88	50-150	8	25	M-05
Isovaleric acid	239	50	mg/l	250	ND	95	50-150	7	25	M-05
Propionic acid	218	50	mg/l	250	ND	87	50-150	2	25	M-05
Valeric acid	243	50	mg/l	250	ND	97	50-150	8	25	M-05

Enthalpy Analytical - Richmond VA
1941 Reymet Road
Richmond, VA 23237

Project Number: 23B0489

Project Manager: JP Verheul

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Quality Control Results

(Continued)

Alcohols by GC/FID (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W3B2103 - EPA 8015M (Continued)										
Matrix Spike Dup (W3B2103-MSD1)	**Source: 3B16127-01RE1**			**Prepared & Analyzed: 02/24/23**						

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1941 Reymet Road
Richmond, VA 23237

Project Number: 23B0489

Project Manager: JP Verheul

Reported:
03/03/2023 16:38

Notes and Definitions

Item	Definition
M-05	Due to the nature of matrix interferences, sample was diluted prior to analysis. The MDL and MRL were raised due to the dilution.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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Historical LFG-EW Leachate Monitoring Results Summary

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

Historical LFG-EW Leachate Monitoring Results Summary

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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-57	EW-58	EW-59	EW-60	EW-61	EW-65	EW-67	EW-68	LOD	LOQ
Parameter	Monitoring Event	Concentration											
TOTAL METALS (mg/L)													
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
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
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
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
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
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
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
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-57	EW-58	EW-59	EW-60	EW-61	EW-65	EW-67	EW-68	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
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
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
Pyruvic Acid	November-2022	---	---	---	---	---	---	**46 J**	---	---	---	12	100
		---	---	---	---	**98 J**	---	---	ND	---	---	30	250
	December-2022	ND	---	---	---	---	---	---	---	---	---	30	250
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

Historical LFG-EW Leachate Monitoring Results Summary

Well ID		EW-50	EW-52	EW-57	EW-58	EW-59	EW-60	EW-61	EW-65	EW-67	EW-68	LOD	LOQ
Parameter	Monitoring Event	Concentration											
VOLATILE ORGANIC COMPOUNDS (ug/L)													
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
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
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
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
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
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

--- = 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

Design Engineer Certification
Pilot Sidewall Odor Mitigation System

February 10, 2023
File No. 02218208.11

Mr. Jonathan Chapman
Enforcement Specialist
VA DEQ – Southwest Regional Office
355-A Deadmore Street
Abingdon, Virginia

Subject: Design Engineer Certification – Pilot Sidewall Odor Mitigation System
Integrated Solid Waste Management Facility – Solid Waste Permit #588
Bristol, Virginia

Dear Mr. Chapman:

SCS Engineers (SCS) served as Design Engineer and conducted periodic site visits to observe construction of an approximately 220-foot section of the Sidewall Odor Mitigation System (SOMS) at the Integrated Solid Waste Management Facility (ISMWF) operated by the City of Bristol, Virginia (City). This initial section is referred to as the pilot sidewall odor mitigation system or Phase 1 and is located within the Solid Waste Permit #588 Landfill. Our site visits to observe construction activities occurred primarily during December of 2022, January of 2023, and February of 2023. Please refer to SCS' correspondence, dated November 1, 2022 and titled "Sidewall Odor Mitigation System Design" for general background regarding the construction project.

Phase 1 of the SOMS was substantially complete on January 31, 2023. Substantial completion was determined as a point at which the system could begin testing and operation. Once Phase 1 of the system was substantially complete, SCS began testing of the system using the LSC CF-10 Solar Spark Flare. SCS understands that installation and operation of the flare was exempt from air permitting based on email communications between the Virginia Department of Environmental Quality (VDEQ or Department) and the City's previous consultant Draper Aden Associates (DAA) entitled "EMO - 22 0120 - Bazyk (DEQ SWRO) - Bristol VA ISWMF - Solar Powered Flare CF-10 - Exempt from Air Permitting" dated January 20, 2022.

On January 31, 2023, the landfill gas (LFG) collected from the Phase 1 horizontal collectors was conveyed to the flare and the unit commenced initial ignition. Gas quality measurements were obtained using field instrumentation which indicated that methane concentrations were approximately 30 to 40 percent of gas composition and that oxygen concentrations represented approximately 2 to 3 percent of gas composition. During the initial start-up, the LFG being conveyed to the flare was supplemented with approximately 4 psi of propane.

SCS continued to operate the flare on an intermittent basis during the remainder of the week. Some minor repairs (replacement of sample ports) and modifications (addition of J-trap and adjustments to ball valves) were made to the flare to improve performance and remove liquids from the flare. During this time, measurements using field instrumentation continued to indicate that methane represented approximately 30 to 40 percent of the gas and that oxygen represented less than 2 percent of gas composition. Propane supplementation was reduced to less than 2 psi.

SCS coordinated with the City, and the construction contractor (SCS Field Services) regarding the following field modifications prior to and during the construction of Phase 1 of the SOMS:

- The rockfall protection system was not able to be removed as depicted on Detail 1 on Sheet 4 of the design drawings. Removal of the rockfall protection system presented a safety hazard to those constructing the SOMS and to future landfill staff and contractors working in the landfill. Additional shotcrete and concrete was used to cover at least 2 vertical feet of the rock fall protection system to improve the interface between the rock wall and the soil.

- At the time of this certification the depth of the soil identified as General Fill has not achieved 2 feet. Placement of the general fill is intended for long term protection of the geomembrane component of the system and as demonstrated by operation of the flare, is not necessary for operation and testing of Phase 1 of the SOMS.

- Phase 1 of the SOMS is not connected to the Landfill's primary blower/flare station at this time. This connection will be made after sufficient data collection using the alternate blower/flare has been completed.

SCS will continue to collect data regarding the operation of Phase 1 of the SOMS and the composition of gas collected for at least 3 months. During this time, construction of Phase 2 will continue.

SCS will prepare a Design Engineer Certification for the entire project and a Construction Quality Assurance (CQA) Report upon completion of Phase 2 of the SOMS. The CQA report will include relevant supporting data such as photographs, lab tests, and field reports.

Based on the information described above and review of design plans, the following certification statement is submitted for your consideration and determination of compliance with item 2.iii of Appendix A of the Consent Decree between the Department and the City:

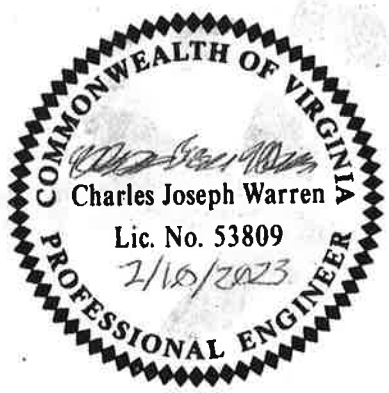
> I hereby certify as the Design Engineer that the construction of the pilot sidewall odor mitigation system has been completed in substantial accordance, with the exception of the changes outlined in this letter, with the drawings entitled "Sidewall Odor Mitigation System Bristol, Virginia Integrated Solid Waste Management Facility Solid Waste Permit #588" dated November 1, 2022.

If you have questions, please contact either of the undersigned at the letterhead address.

Sincerely,

Charles J. Warren, PE
Project Manager
SCS Engineers
Virginia PE #053809

Victoria A. Essex, PE
Project Engineer
SCS Engineers



CJW/VAE

cc: Randall Eads, City of Bristol
Mike Martin, City of Bristol
Joey Lamie, City of Bristol
Jake Chandler, City of Bristol
Jon Hayes, City of Bristol
Jeff Hurst, VDEQ
Susan Blalock, VDEQ
Stacy Bowers, VDEQ
Daniel Scott, VDEQ

Appendix H

Notification of Data Availability
Waste Temperature Monitoring System

February 16, 2023
File No. 02218208.12

Mr. Jonathan Chapman
Enforcement Specialist
VA DEQ – Southwest Regional Office
355-A Deadmore Street
Abingdon, Virginia

Subject: Notification of Data Availability – Waste Temperature Monitoring System
Integrated Solid Waste Management Facility – Solid Waste Permit #588
Bristol, Virginia

Dear Mr. Chapman:

SCS Engineers (SCS) is providing this letter on behalf of the City of Bristol, Virginia (City) to notify the Virginia Department of Environmental Quality (VDEQ or Department) that waste temperature data collection has begun at the Integrated Solid Waste Management Facility (ISMWF). Waste temperatures are being collected as of February 15, 2023 using temperature sensors placed within the waste mass at nine locations in the Solid Waste Permit (SWP) #588 Landfill as outlined in item 3.i of Appendix A of the Consent Decree between the Department and the City.

SCS provided the system design documentation to the Department on November 30, 2022. SCS provided the Department with notification of completion of the construction of the system on December 31, 2023.

SCS has completed the installation of the replacement borehole temperature sensors and control hardware at the SWP #588 landfill. Temperatures were measured for a full 24-hour period on February 15, 2023. The daily averages of temperatures measured at each interval at the nine locations is shown in Table 1.

SCS will provide updates on waste temperatures during meetings between SCS, the City, the Department, and the United States Environmental Protection Agency (USEPA). SCS will also provide a monthly summary of average daily waste temperatures in the SWP #588 Monthly Compliance Reports submitted to the Department.

Table 1. Average Daily Waste Temperatures (°F) Measured on February 15, 2023

Depth (Feet)	TP-1	TP-2	TP-3	TP-4	TP-5	TP-6	TP-7	TP-8	TP-9
25	207	194	207	234	148	207	199	171	123
50	207	261	232	234	204	236	254	175	148
75	207	265	234	234	205	237	227	176	147
100	207	303	254	233	207	239	268	176	151
125	208	290	262	241	226	240	272	179	149
150	223	269	269	268	244	[1]	241	182	133
175	[2]	[3]	270	278	253	-	237	182	119
200	-	-	256	191	189	-	259	180	109

SCS will prepare a Construction Quality Assurance (CQA) Report to the Department at a later date. The CQA report will include relevant supporting data such as photographs, as-built drawings, and field reports.

If you have questions, please contact either of the undersigned at the letterhead address.

Sincerely,

Charles J. Warren, PE
Project Manager
SCS Engineers

Robert E. Dick, PE, BCEE
Senior Vice President
SCS Engineers

CJW/RED

cc: Randall Eads, City of Bristol
Mike Martin, City of Bristol
Joey Lamie, City of Bristol
Jake Chandler, City of Bristol
Jon Hayes, City of Bristol
Jeff Hurst, VDEQ
Susan Blalock, VDEQ
Stacy Bowers, VDEQ
Daniel Scott, VDEQ

[1] An obstruction in TP-6 prevented placement of sensors below 125 feet.
[2] The casing of TP-1 does not extend beyond 160 feet.
[3] The casing of TP-2 does not extend beyond 160 feet.

Appendix I

Solid Waste Permit 588 Daily Borehole Temperature Averages

Solid Waste Permit 588 Daily Borehole Temperature Averages

SCS ENGINEERS

07222155.00 | March 8, 2023

3160 Oregon Pike
Leola, PA 17540
717-550-6330

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 1

Bristol, Virginia

	Depth from Surface					
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**
Feb 15	207.2	207.2	207.2	207.3	207.6	222.8
Feb 16						
Feb 17	274.2	264.3			265.2	
Feb 18	207.0	207.1	207.3	207.3	207.4	224.9
Feb 19	206.9	207.0	207.2	207.2	207.4	226.3
Feb 20						
Feb 21	206.3	221.8	221.9	222.2	222.6	245.3
Feb 22	206.9	207.2	207.3	207.3	207.4	228.9
Feb 23	206.9	207.2	207.4	207.5	207.7	229.4
Feb 24	207.2	207.4	207.8	207.8	207.9	230.0
Feb 25	207.0	207.0	207.0	207.0	208.0	229.0
Feb 26	206.7	207.0	207.0	207.1	207.9	229.1
Feb 27	237.1	233.1	237.4	206.9	207.1	264.3
Feb 28	206.7	206.8	206.9	206.9	207.4	229.5
Average	**253.2**	**254.6**	**258.9**	**255.6**	**253.5**	**280.1**

On February 16th and 20th a software issue prevented accurate reporting of temperatures in TP-1.
On February 17th a software issue prevented accurate reporting of tempertatures at select depths in TP-1.

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 2

Bristol, Virginia

	Depth from Surface					
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**
Feb 15	193.5	241.7	242.4	270.9	258.5	268.6
Feb 16	194.1	239.3	239.6	268.2	255.7	268.5
Feb 17	191.9	238.7	239.2	267.4	255.2	268.0
Feb 18	192.2	248.1	248.5	277.6	265.1	278.6
Feb 19	185.5	239.5	240.1	267.7	255.5	268.5
Feb 20	187.1	238.9	239.4	267.6	255.2	268.0
Feb 21	188.1	272.0	272.7	305.1	256.9	269.7
Feb 22	187.5	242.2	263.8	269.5	258.5	293.9
Feb 23	183.5	240.3	240.8	268.3	255.9	268.8
Feb 24	179.3	240.1	240.5	268.1	255.6	268.3
Feb 25	175.8	239.9	240.2	268.0	255.0	268.0
Feb 26	175.7	240.0	240.6	268.0	255.5	268.0
Feb 27	177.7	240.7	241.0	268.2	256.0	268.5
Feb 28	179.1	274.4	242.0	269.1	256.7	269.5
Average	**185.1**	**245.4**	**245.1**	**271.7**	**256.8**	**271.1**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 3

Bristol, Virginia

	Depth from Surface							
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**	**175 ft**	**200 ft**
Feb 15	206.9	233.1	234.4	254.3	261.8	268.5	269.7	256.1
Feb 16	206.3	234.0	234.9	253.5	261.6	267.9	269.3	257.0
Feb 17	207.5	208.6	209.4	255.2	262.8	268.6	270.6	256.0
Feb 18	206.8	207.5	208.5	253.1	261.3	267.6	268.9	255.8
Feb 19	206.0	207.4	208.5	252.5	261.1	267.4	268.6	256.1
Feb 20	205.0	206.6	208.9	252.2	260.8	267.1	268.3	255.8
Feb 21	205.5	207.2	209.1	253.1	261.4	267.8	268.9	256.2
Feb 22	206.3	208.5	209.9	253.7	262.3	268.5	269.7	256.7
Feb 23	206.4	211.3	213.3	253.0	262.2	268.4	269.5	256.5
Feb 24	206.8	208.1	210.3	252.3	262.1	268.2	269.5	256.6
Feb 25	206.5	216.4	216.7	252.7	262.0	268.4	269.5	256.3
Feb 26	206.4	224.4	225.4	252.8	262.1	268.4	269.6	256.7
Feb 27	236.0	214.8	247.1	292.6	303.2	268.7	273.1	297.6
Feb 28	206.8	224.6	224.3	253.1	262.6	268.9	270.1	257.0
Average	**208.5**	**215.2**	**218.6**	**256.0**	**264.8**	**268.2**	**269.7**	**259.3**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 4

Bristol, Virginia

	Depth from Surface							
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**	**175 ft**	**200 ft**
Feb 15	239.0	209.4	239.1	241.3	216.9	277.5	284.5	196.4
Feb 16	207.7	239.2	207.3	239.3	246.4	220.8	284.5	196.7
Feb 17	206.9	206.7	206.7	207.0	213.2	209.0	237.7	171.1
Feb 18	201.1	207.5	207.5	207.5	217.3	232.2	244.5	171.2
Feb 19	190.7	207.2	207.3	207.2	221.9	238.0	244.7	171.5
Feb 20	187.2	206.2	206.2	206.2	231.6	240.7	244.6	171.0
Feb 21	185.9	206.5	206.6	206.6	233.5	242.9	245.0	171.5
Feb 22	184.5	207.2	207.3	207.4	234.6	244.4	245.6	172.0
Feb 23	182.2	207.4	207.4	207.5	236.1	245.2	245.4	171.9
Feb 24	180.4	207.5	207.7	207.7	236.6	246.0	245.2	171.6
Feb 25	179.1	207.0	207.0	207.0	238.3	246.5	245.0	171.0
Feb 26	178.7	207.0	207.0	207.0	239.8	247.1	245.0	171.5
Feb 27	178.3	206.6	206.8	206.8	241.5	248.3	245.2	171.9
Feb 28	177.1	206.7	206.8	207.0	242.3	249.0	245.6	172.0
Average	**191.3**	**209.4**	**209.3**	**211.8**	**232.1**	**242.0**	**250.2**	**175.1**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 5

Bristol, Virginia

	Depth from Surface							
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**	**175 ft**	**200 ft**
Feb 15	147.5	204.0	204.7	207.4	226.3	244.0	252.5	189.2
Feb 16	148.1	206.0	207.0	207.3	226.3	244.1	252.4	189.3
Feb 17	147.5	206.2	206.8	207.0	225.9	243.4	252.0	188.8
Feb 18	146.7	205.8	206.7	207.5	226.4	243.4	252.3	188.8
Feb 19	146.3	206.7	207.3	207.5	226.5	243.9	252.4	189.1
Feb 20	146.0	206.2	206.5	207.0	226.5	243.9	252.0	188.9
Feb 21	146.0	206.4	206.6	206.9	226.6	244.3	252.2	189.2
Feb 22	156.2	222.5	222.7	231.0	244.7	273.5	272.6	203.7
Feb 23	146.0	207.2	207.3	207.5	227.0	244.7	252.4	189.5
Feb 24	146.6	207.4	207.8	208.0	227.1	244.5	252.2	189.3
Feb 25	146.8	207.0	207.0	207.4	226.6	244.0	252.0	189.0
Feb 26	146.0	207.0	207.0	207.0	226.6	244.0	252.0	189.1
Feb 27	146.3	206.5	206.6	207.0	226.7	244.2	252.1	189.3
Feb 28	146.3	206.7	206.7	207.2	226.5	244.3	251.9	189.5
Average	**147.3**	**207.5**	**207.9**	**209.0**	**227.8**	**246.2**	**253.6**	**190.2**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 6

Bristol, Virginia

	Depth from Surface				
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**
Feb 15	207.1	236.3	236.4	238.8	240.3
Feb 16	207.2	236.3	236.4	238.8	240.3
Feb 17	206.6	220.6	231.5	238.3	240.0
Feb 18	236.0	271.4	236.1	238.6	240.4
Feb 19	209.1	236.4	238.5	241.1	240.5
Feb 20	206.0	234.6	235.3	238.0	240.0
Feb 21	206.5	235.5	236.1	238.7	240.4
Feb 22	206.9	236.2	236.5	239.3	240.7
Feb 23	207.2	236.1	236.6	239.4	240.6
Feb 24	207.6	235.8	236.0	238.9	240.3
Feb 25	207.0	235.4	236.0	238.5	240.0
Feb 26	206.9	235.6	236.0	238.9	240.0
Feb 27	208.2	235.6	235.9	272.3	240.3
Feb 28	206.6	235.9	236.0	239.0	240.7
Average	**209.2**	**237.3**	**236.0**	**241.3**	**240.3**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 7

Bristol, Virginia

	Depth from Surface							
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**	**175 ft**	**200 ft**
Feb 15	203.1	262.2	227.3	276.4	244.9	241.3	237.3	265.3
Feb 16	177.0	227.2	227.3	240.1	242.4	241.4	237.3	230.4
Feb 17	173.4	226.6	227.0	239.5	242.0	241.0	236.9	229.8
Feb 18	173.6	226.6	227.3	239.5	242.1	240.9	236.9	229.8
Feb 19	174.2	227.3	227.5	239.7	242.3	241.4	237.2	229.8
Feb 20	173.1	227.0	227.3	239.5	242.0	241.0	236.9	229.5
Feb 21	173.2	227.4	227.8	239.9	242.3	241.5	237.5	229.9
Feb 22	173.3	227.3	227.5	240.0	243.0	241.6	236.9	229.8
Feb 23	173.0	226.7	226.9	239.7	243.4	241.8	236.5	229.0
Feb 24	172.5	226.0	226.4	239.3	243.2	241.8	236.3	228.9
Feb 25	171.8	226.0	226.0	239.0	243.0	241.5	236.0	228.1
Feb 26	171.0	226.0	226.0	239.0	243.2	241.9	236.0	228.3
Feb 27	179.4	226.0	226.2	246.4	243.7	242.1	236.2	228.4
Feb 28	171.2	225.9	226.2	239.5	243.9	242.2	236.6	228.6
Average	**175.7**	**229.2**	**226.9**	**242.7**	**243.0**	**241.5**	**236.8**	**231.8**

Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 8

Bristol, Virginia

	Depth from Surface							
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**	**175 ft**	**200 ft**
Feb 15	170.7	175.3	175.7	176.0	178.8	181.6	182.1	180.2
Feb 16	170.5	175.5	176.0	176.0	179.0	181.9	182.0	180.3
Feb 17	170.4	175.0	175.5	176.0	178.5	181.2	181.9	180.0
Feb 18	170.9	175.3	175.5	176.1	178.6	181.4	181.8	179.9
Feb 19	179.7	175.4	175.5	185.3	178.8	181.5	191.4	180.2
Feb 20	170.3	175.0	175.4	176.0	178.5	181.0	181.9	179.9
Feb 21	170.3	175.3	175.7	176.2	178.8	181.5	181.9	180.0
Feb 22	170.5	175.6	176.2	176.2	178.8	181.6	182.2	180.3
Feb 23	172.2	175.8	176.1	176.2	178.5	181.5	182.1	180.3
Feb 24	172.2	175.3	176.0	176.0	178.3	181.1	182.0	180.0
Feb 25	171.8	175.0	175.9	176.0	178.0	181.0	181.9	180.0
Feb 26	171.3	175.2	176.0	176.0	178.4	181.2	182.0	180.0
Feb 27	171.2	175.4	176.0	176.1	178.3	181.2	182.0	180.0
Feb 28	171.4	175.6	175.8	176.0	178.5	181.4	181.8	179.9
Average	**171.7**	**175.3**	**175.8**	**176.7**	**178.6**	**181.4**	**182.6**	**180.1**

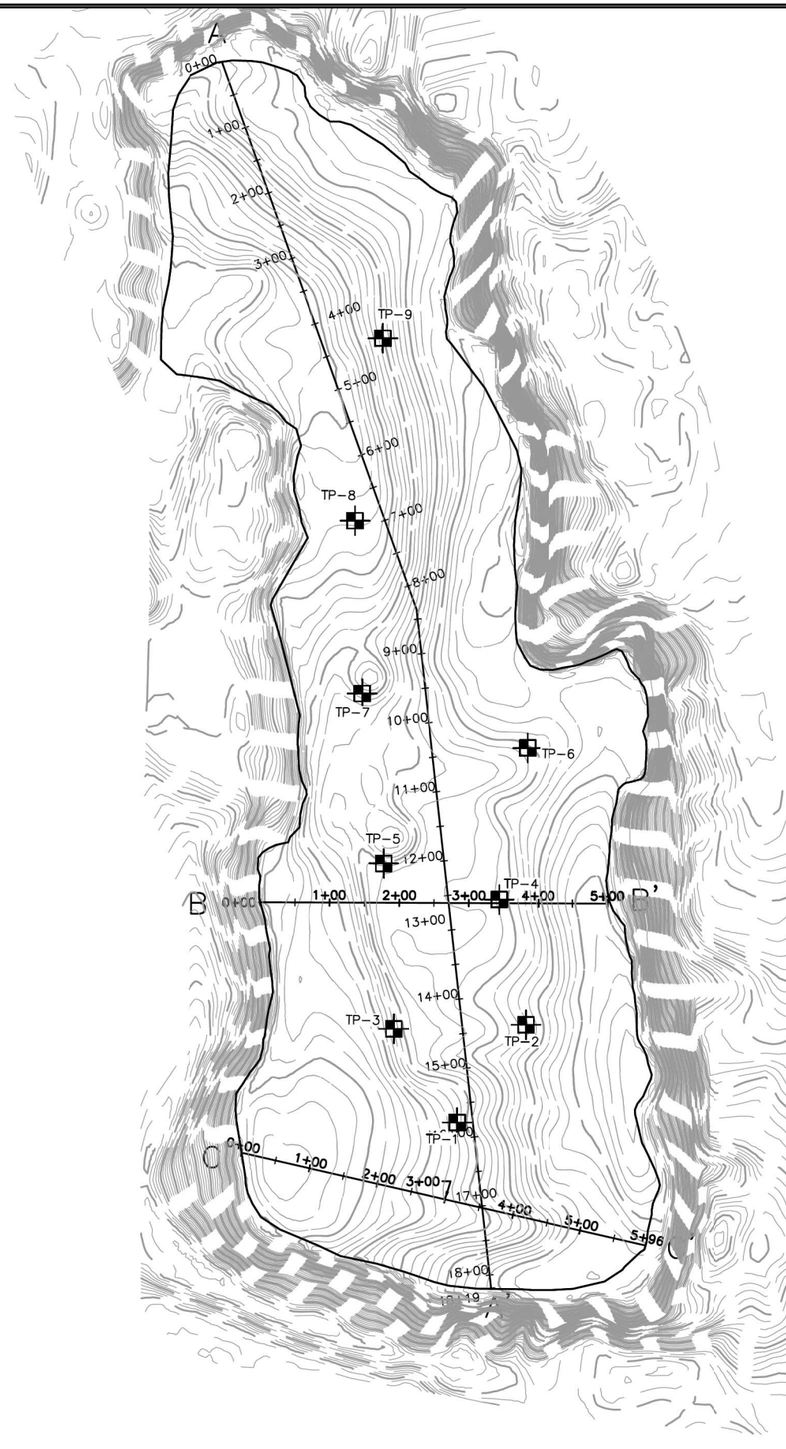
Solid Waste Permit 588 Daily Borehole Temperature Averages for Borehole 9

Bristol, Virginia

	Depth from Surface							
Date	**25 ft**	**50 ft**	**75 ft**	**100 ft**	**125 ft**	**150 ft**	**175 ft**	**200 ft**
Feb 15	123.0	148.2	147.1	150.9	149.3	132.7	119.0	108.9
Feb 16	123.3	149.3	148.3	151.6	149.3	133.0	119.2	109.3
Feb 17	122.1	148.5	147.5	151.3	148.8	132.3	117.0	108.6
Feb 18	122.6	148.7	148.0	151.3	148.6	132.3	116.6	109.6
Feb 19	121.2	148.3	146.9	151.1	149.0	132.4	116.9	109.9
Feb 20	145.5	159.6	157.6	175.7	173.8	153.0	116.9	110.6
Feb 21	120.2	147.2	145.3	150.4	149.5	132.5	117.5	110.0
Feb 22	121.0	147.7	145.9	150.9	149.8	132.8	118.2	110.4
Feb 23	121.5	148.1	146.6	151.3	149.8	132.9	118.3	110.4
Feb 24	121.4	148.1	146.9	151.2	149.3	132.6	118.0	110.0
Feb 25	120.0	146.8	145.2	150.2	149.0	132.0	118.0	109.1
Feb 26	121.0	147.2	145.7	150.6	149.1	132.0	118.0	109.1
Feb 27	125.4	147.0	153.3	159.2	158.2	139.8	122.5	114.9
Feb 28	121.3	147.2	145.9	150.7	149.7	132.7	118.2	109.5
Average	**123.5**	**148.7**	**147.9**	**153.3**	**151.7**	**134.5**	**118.2**	**110.0**

Appendix J

Monthly Topography Analysis



LEGEND

- MAJOR CONTOURS (EVERY 10')
- MINOR CONTOURS (EVERY 2')
- APPROX. SIDEWALL LOCATION

NOTES:

1. GRADES SHOWN AS CONTOUR LINES ONLY WITHIN THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON JANUARY 10, 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 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
JANUARY 2023 LANDFILL TOPO

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

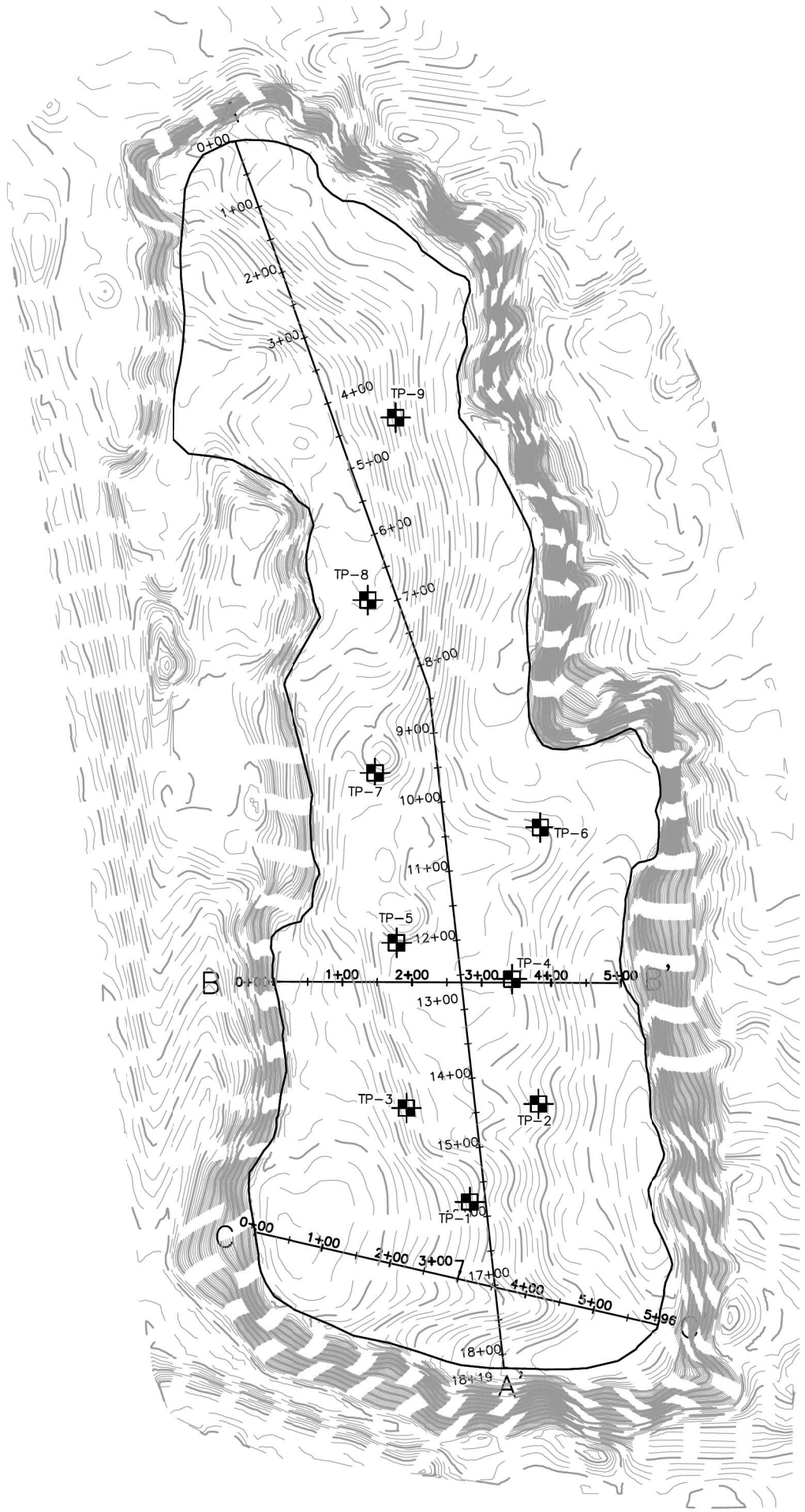
PROJ. NO.
DSN. BY: SRB
DWG. BY: SRB
CHK. BY: CJW
S/A RVW BY: CJW
APP. BY: CJW

CADD FILE:

DATE: 2/13/2023

SCALE: 1" = 100'

DRAWING NO.
1 of **5**



LEGEND

- MAJOR CONTOURS (EVERY 10')
- MINOR CONTOURS (EVERY 2')
- APPROX. SIDEWALL LOCATION

NOTES:

1. GRADES SHOWN AS CONTOUR LINES ONLY WITHIN THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON FEBRUARY 7, 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 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
FEBRUARY 2023 LANDFILL TOPO

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

CLIENT
CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY
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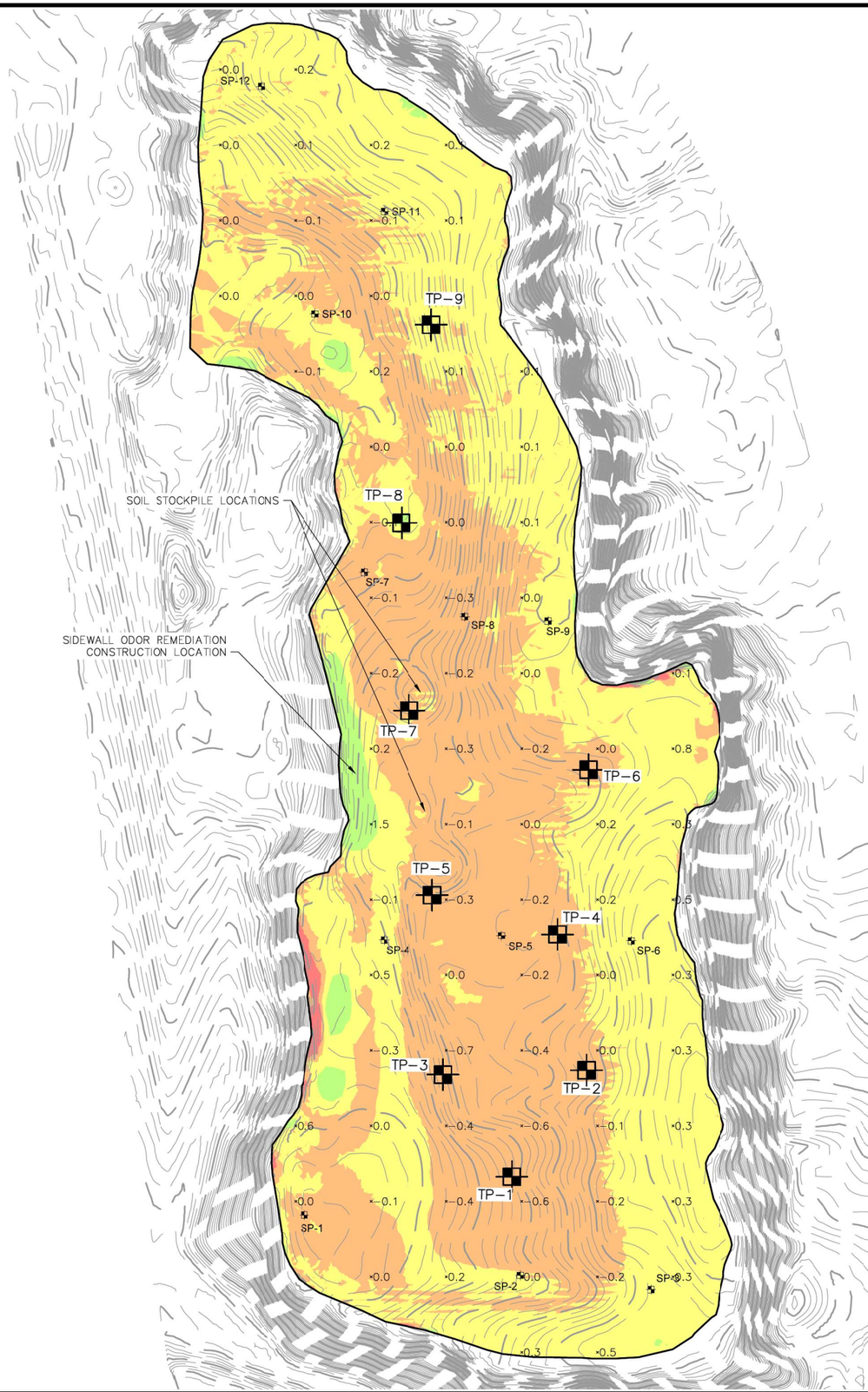
PROJ. NO.	DSN. BY: SRB	CHK. BY: CJW	QA/QC BY: CJW	APP. BY: CJW
	DRN. BY: SRB			

CADD FILE:

DATE: 2/13/2023

SCALE: 1"=100'

DRAWING NO.
2 of **5**



Volume

Base Surface	1-10-23 TOPO
Comparison Surface	2-7-23 TOPO
Cut volume	2831.22 Cu. Yd.
Fill volume	3920.60 Cu. Yd.
Net Fill	1089.38 Cu.

Elevation Changes		
Color	Min. Elevation	Max. Elevation
	-5.00'	-1.00'
	-1.00'	0.00'
	0.00'	1.00'
	1.00'	5.00'

NOTES:

1. THE ELEVATION CHANGES ARE CALCULATED BETWEEN THE AREIAL TOPOGRAPHY DATA CAPTURED ON JANUARY 10, 2023 AND THE AERIAL TOPOGRAPHY DATA CAPTURED ON FEBRUARY 7, 2023 BY SCS ENGINEERS. POSITIVE VALUE (+) INDICATES FILL AND NEGATIVE VALUES (-) INDICATE 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. SETTLEMENT PLATE LOCATIONS AND COORDINATES ARE BASED ON A SITE SPECIFIC COORDINATE SYSTEM.
4. THE HORIZONTAL DATUM IS STATE PLANE VIRGINIA SOUTH ZONE NAD-83 (2011)
5. THE VERTICAL DATUM IS BASED UPON NAVD-88

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

LEGEND

- MAJOR CONTOURS (EVERY 10')
- MINOR CONTOURS (EVERY 2')
- APPROX. SIDEWALL LOCATION
- SP-XX SETTLEMENT PLATE

NO.	REVISION	DATE

SHEET TITLE: VOLUME CHANGE JANUARY 2022

PROJECT TITLE: MONTHLY TOPOGRAPHY ANALYSIS SOLID WASTE PERMIT #588

CLIENT: CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FCILITY
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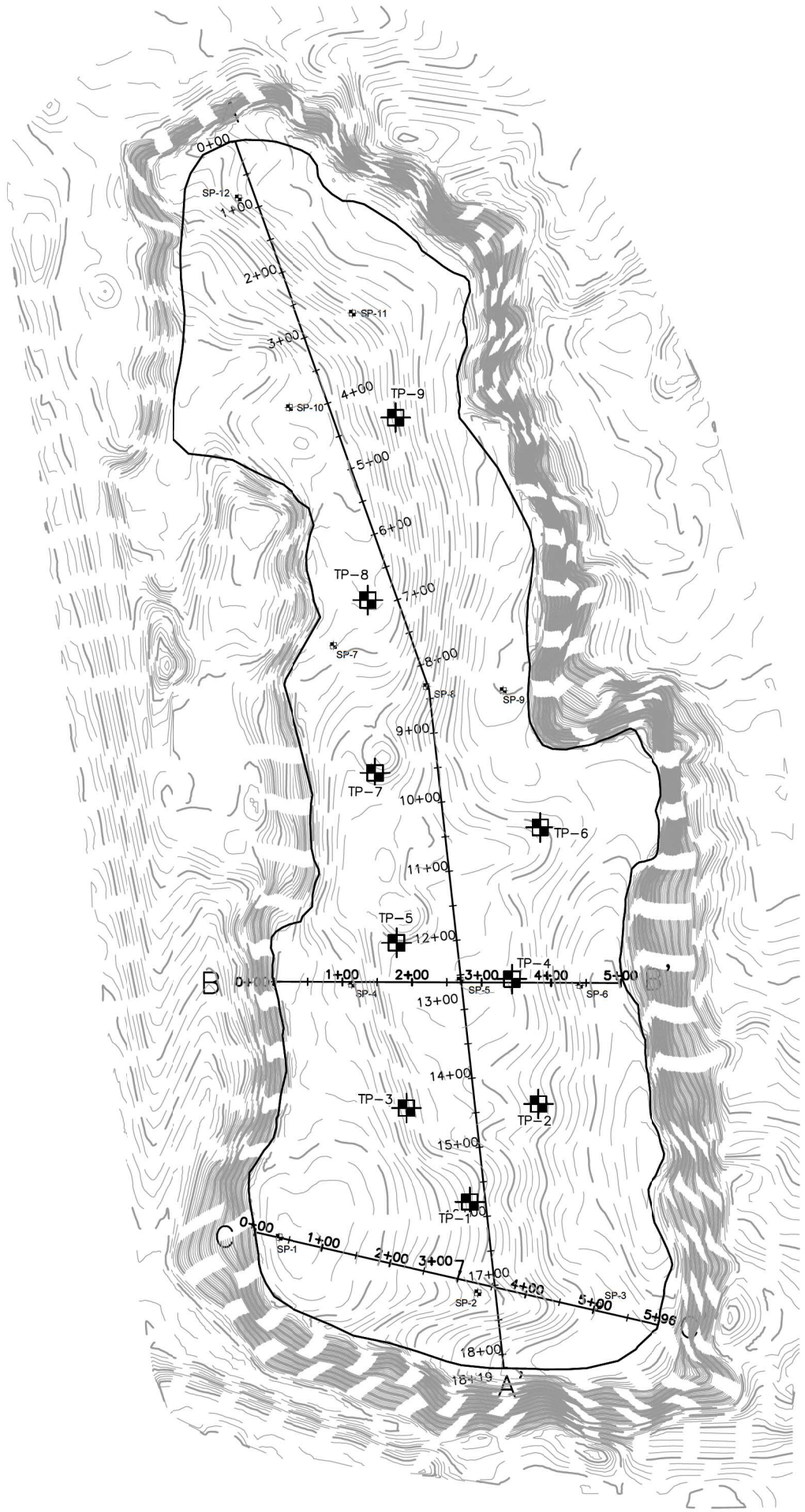
PROJ. NO: 02218208.05
DSN. BY: SRB
DWN. BY: SRB
CHK. BY: C.W
QA/A PVW BY: C.W
APP. BY: C.W

CADD FILE:

DATE: 2/13/2023

SCALE: 1"=100'

DRAWING NO. 3 of 5



NOTES:

1. SETTLEMENT PLATES INSTALLED ON NOVEMBER 7, 2022 BY SCS FIELD SERVICES.
2. SETTLEMENT PLATES SURVEYED ON NOVEMBER 14, 2022 BY CITY OF BRISTOL, VIRGINIA.
3. SETTLEMENT PLATE LOCATIONS AND COORDINATES ARE BASED ON A SITE SPECIFIC COORDINATE SYSTEM.
4. THE HORIZONTAL DATUM OF THE SURROUNDING TOPOGRAPHY IS VIRGINIA STATE PLANE SOUTH ZONE NAD-83 (2011).
5. THE VERTICAL DATUM OF THE SURROUNDING TOPOGRAPHY IS BASED UPON NAVD-88.

LEGEND

- MAJOR CONTOURS (EVERY 10')
- MINOR CONTOURS (EVERY 2')
- APPROX. SIDEWALL LOCATION
- SP-XX SETTLEMENT PLATE

100 50 0 100 200

SCALE: 1"=100'

NO.	REVISION	DATE

SHEET TITLE
SETTLEMENT PLATE AS-BUILT

PROJECT TITLE
MONTHLY TOPOGRAPHY ANALYSIS
SOLID WASTE PERMIT #588

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PROJ. NO. 02218208.05 | DSN. BY: SRB | DWN. BY: SRB | CHK. BY: CJW | QA/QC BY: CJW | APP. BY: CJW

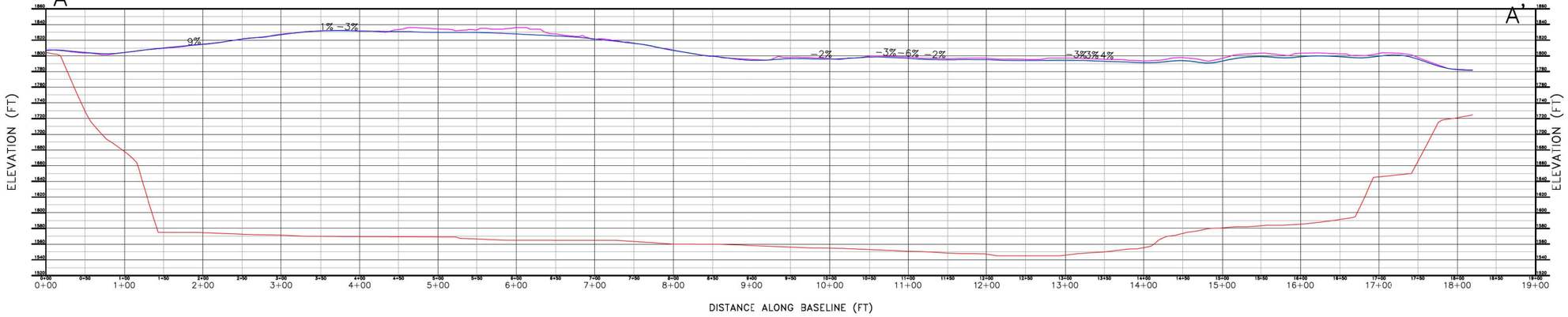
CADD FILE:

DATE: 2/13/2023

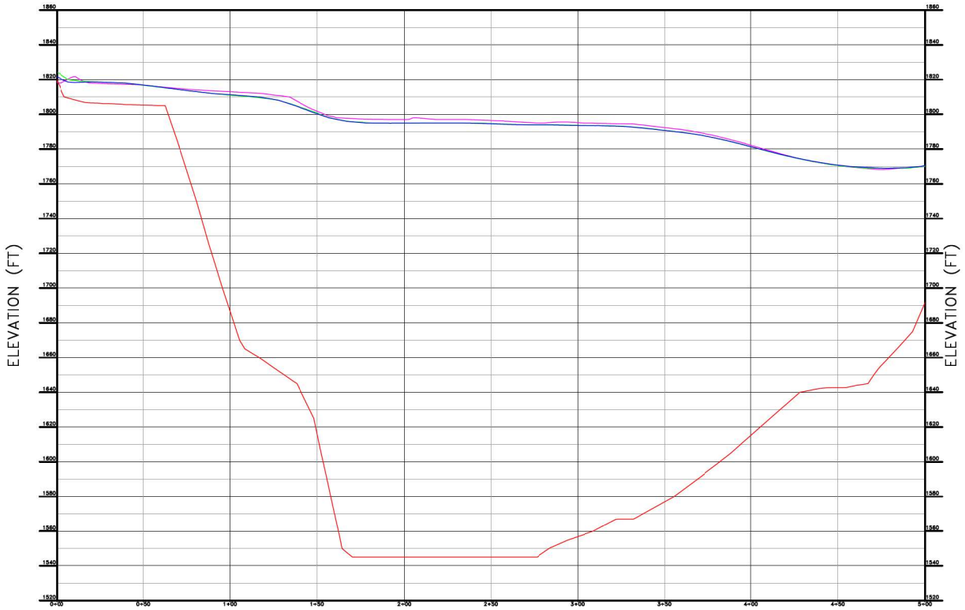
SCALE: 1"=100'

DRAWING NO.
4 of **5**

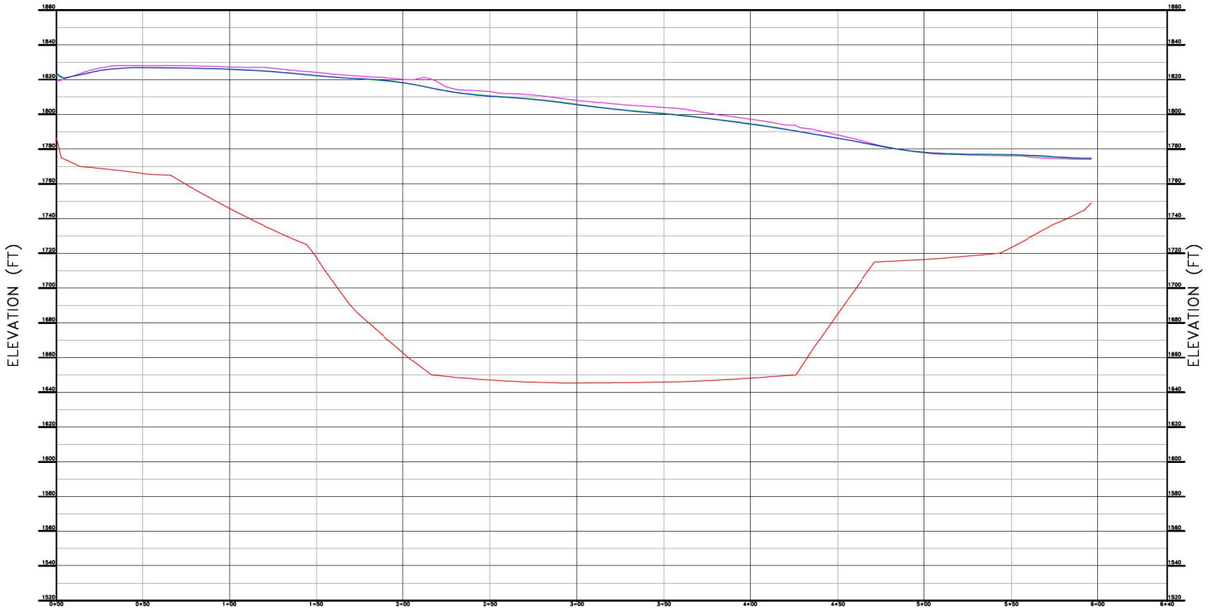
LONGITUDINAL PROFILE ALIGNMENT A



LONGITUDINAL PROFILE ALIGNMENT B



LONGITUDINAL PROFILE ALIGNMENT C



LEGEND

- BOTTOM LINER GRADES
- OCTOBER 2022 FLYOVER TOPO
- JANUARY 2023 FLYOVER TOPO
- FEBRUARY 2023 FLYOVER TOPO

NO.	REVISION	DATE

SHEET TITLE: **PROFILES**

PROJECT TITLE: **MONTHLY TOPOGRAPHY ANALYSIS SOLID WASTE PERMIT #588**

CLIENT: **CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FCILITY**
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PROJ. NO: 02218208.05
DSN. BY: SRB
DWN. BY: SRB
CHK. BY: C.W
QA/A PM BY: C.W
APP. BY: C.W

CADD FILE:

DATE: 2/13/2023

SCALE: AS NOTED

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