May 2025 Monthly Compliance Report

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



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- Appendix E Monthly Topography Analysis
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- Appendix G LFG Dewatering Pump Stroke Data Analysis

INTRODUCTION

On behalf of the City of Bristol, Virginia (City), SCS Engineers has prepared this report to the Virginia Department of Environmental Quality (VDEQ) in accordance with Item 8.iii in Appendix A of the Consent Decree between the City and VDEQ. This report provides updates regarding the progress towards completion of the items outlined in Appendix A of the Consent Decree between the City and VDEQ. The following sections outline progress during the month of May 2025 related to Solid Waste Permit (SWP) No. 588.

1.0 GAS COLLECTION

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

1.1 SURFACE AND LEACHATE COLLECTION EMISSIONS

1.1.1 Surface Emissions

SCS performed surface emissions monitoring on May 7, 2025; May 19, 2025; May 22, 2025; and May 27, 2025. These weekly surface emissions monitoring (SEM) events were performed in accordance with Item 1.i in Appendix A of the Consent Decree between the City and VDEQ. Due to unforeseen circumstances, the weekly monitoring event for the week of May 12, 2025 was unable to be completed during that calendar week due to a vehicle malfunction. The malfunction was reported to the EPA, and the monitoring event was conducted on May 19, 2025. SCS also performs quarterly SEM at the landfill in accordance with regulatory requirements.

The details and results of the SEM are included in Appendix A. A summary of the outcomes is provided in Table 1.

Description	May 7, 2025	May 19, 2025	May 22, 2025	May 27, 2025
Number of Points Sampled	168	167	167	168
Number of Points in Serpentine Route	100	100	100	100
Number of Points at Surface Cover Penetrations	68	67	67	68
Number of Exceedances	4	4	2	3
Number of Serpentine Exceedances	0	0	0	0
Number of Pipe Penetration Exceedances	4	4	2	3

Table 1. Summary of May Surface Emissions Monitoring

In response to the SEM results, the City and the City's operations, monitoring, and maintenance contractor, SCS Field Services O&M (SCS-FS or SCS-FS) took the following actions:

- In response to a pipe penetration exceedance at EW-82, SCS-FS increased the vacuum at EW-82. Monitoring of this well during a follow-up event did not result in an exceedance.
- In response to pipe penetration exceedances at EW-54, EW-66, EW-67, and EW-95, the City ordered bentonite and wellbore skirts and plans to install those items at these locations.

1.1.2 Monitoring of Leachate Collection Components

SCS Field Services (SCS-FS) visited the Bristol Landfill on May 27, 2025, and performed monitoring of the leachate, witness zone, northern cleanouts, and gradient control cleanouts at the southern end of the landfill. The results of that monitoring are included in Table 2.

Description	ID#	Record Date	CH4 (% by Vol)	CO2 (% by Vol)	O2 (% by Vol)	Balance Gas (% by Vol)	Initial Temp (°F)	Adj Temp (°F)	Initial Static Pressure (in H2O)	Adj Static Pressure (in H2O)	System Pressure (in H2O)
Southern Cleanouts Gradient West	LC01	5/27/2025 11:52:49 AM	57.9	38.7	0.1	3.3	65.9	65.8	-14.87	-14.87	-14.83
Southern Cleanouts Gradient East	LC02	5/27/2025 11:55:44 AM	25.2	23.9	9.8	41.1	69.3	69.4	-14.83	-14.70	-14.50
Southern Cleanouts Leachate Center	LC03	5/27/2025 11:58:20 AM	8.0	5.3	18.3	68.4	70.7	71.2	-14.59	-14.86	-14.81
Southern Cleanouts Witness East	LC04	5/27/2025 12:01:24 PM	5.2	2.1	18.6	74.2	73.2	72.8	-12.51	-12.84	-15.17
Southern Cleanouts Leachate West	LC05	5/27/2025 12:14:43 PM	48.3	40.9	1.5	9.3	71.3	71.3	-14.70	-14.87	-14.62
Southern Cleanouts Gradient Center West	LC06	5/27/2025 12:12:20 PM	13.3	6.3	16.5	63.9	74.8	74.8	-7.11	-7.10	-14.83
Southern Cleanouts Leachate East	LC08	5/27/2025 12:04:21 PM	33.6	23.8	10.7	31.9	72.6	73.2	-14.87	-14.87	-14.83
Southern Cleanouts Gradient Center East	LC09	5/27/2025 12:09:53 PM	46.5	27.7	4.9	21.0	76.3	76.6	-14.92	-14.93	-14.74
Southern Cleanouts Leachate West	LC10	5/27/2025 12:07:05 PM	13.6	8.0	16.5	62.0	75.8	76.1	-14.87	-14.87	-14.75
Northern Cleanouts Leachate East	NC01	5/27/2025 11:25:52 AM	0.1	0.0	20.8	79.1	71.2	69.7	-8.11	-8.11	0.00
Northern Cleanouts Leachate Center	NC02	5/27/2025 11:26:54 AM	0.1	0.0	20.8	79.1	72.3	73.1	-8.11	-8.11	-0.04
Northern Cleanouts Leachate West	NC03	5/27/2025 11:28:41 AM	0.1	0.0	20.9	79.0	74.7	76.7	-8.11	-7.80	0.00
Northern Cleanouts Witness East	NC04	5/27/2025 11:30:22 AM	21.5	20.6	4.9	53.0	72.4	73.2	-8.11	-8.11	0.00
Northern Cleanouts Witness Center	NC05	5/27/2025 11:32:03 AM	28.3	26.6	0.4	44.8	74.9	75.0	-8.11	-8.10	0.00
Northern Cleanouts Witness West	NC06	5/27/2025 11:34:05 AM	0.2	0.2	20.7	78.9	71.7	73.5	-8.11	-8.11	0.00
Northern Cleanouts Gradient East	NC07	5/27/2025 11:36:49 AM	30.9	26.3	0.3	42.6	71.1	71.5	-6.80	-6.76	0.00
Northern Cleanouts Gradient Center East	NC08	5/27/2025 11:38:21 AM	50.2	40.7	0.0	9.1	68.2	68.6	-6.78	-6.77	0.00

Table 2. Leachate Cleanout Pipe Monitoring Results

Description	ID#	Record Date	CH4 (% by Vol)	CO2 (% by Vol)	O2 (% by Vol)	Balance Gas (% by Vol)	Initial Temp (°F)	Adj Temp (°F)	Initial Static Pressure (in H2O)	Adj Static Pressure (in H2O)	System Pressure (in H2O)
Northern Cleanouts	NC09	5/27/2025	50.0	38.9	0.0	11.1	67.1	66.6	-6.76	-6.76	0.00
Gradient Center West		11:40:05 AM									
Northern Cleanouts	NC10	5/27/2025	0.5	0.5	20.8	78.2	67.3	67.9	-6.76	-6.76	0.00
Gradient West		11:41:34 AM									

1.2 EXISTING GAS EXTRACTION SYSTEM PERFORMANCE

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

Additional actions taken by SCS-FS include the following:

- Adjustments to LFGCCS
- Maintenance of air lines and pressurized air infrastructure
- Maintenance of wellhead and other gas collection infrastructure
- Removal of liquids from landfill gas headers
- Replacement of a section of blocked forcemain
- Temporary relocation of header pipes to facilitate placement of additional soil.

1.3 REMOTE MONITORING SYSTEM

In the Fall of 2022, SCS Remote Monitoring & Control (SCS-RMC) installed 25 industrial internet of things (IIoT) temperature sensors in the landfill gas wellheads. The purpose of the sensors is to record and transmit wellhead gas temperatures via cellular connection to a database managed by SCS-RMC. Since the initial installation, some sensors have been relocated and additional sensors have been added to the network. There are currently 59 wellhead temperature sensors operating within the wellfield.

The City is providing the minimum, maximum, and average daily temperature recorded by each sensor to VDEQ on a daily basis via email. Minimum, maximum, and average daily temperatures recorded by the remote monitoring system during the month of May are included in Appendix C. In addition, SCS previously prepared semi-monthly status updates to satisfy the conditions of compliance provision no. 2 of the Environmental Protection Agency (EPA) Region III letter, Approval of Higher Operating Temperature Values for Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Management Facility, dated August 23, 2021. On August 2, 2023, VDEQ requested that such updates be included in the monthly compliance reports. Accordingly, this section is a summary of temperature monitoring activities during the monthly monitoring period of May 2025.

1.3.1 Automated Wellhead Temperature Measurements

SCS reviewed the automated hourly temperature measurements from May 2025, and observed the following:

- Wells with recently installed sensors: The City contracted with SCS to increase the number of wells with automated wellhead temperature sensors in November of 2024. Many of these wells are located in portions of the landfill known to exhibit higher temperatures. The higher temperatures in this region of the landfill are reflected in higher monthly average temperatures. The wells with sensors installed in November 2024 are shown in green in Figure 1, while wells with older sensors are shown in blue.
- Wells with higher than usual temperatures: Towards the end of the month, temperatures at EW- 77 and EW-89 increased to greater than 200°F for extended periods (6 hours or more). EW-77 has been temporarily taken offline, along with some of the surrounding wells, as a precautionary measure while investigations into the cause are conducted. The pump in EW-89 was replaced in May in an effort to increase the removal of excess heat.
- Maintenance:
 - The temperature sensor in EW-58 was replaced following ice bucket testing to verify accuracy.
 - A new temperature sample port was installed on EW-77 to facilitate more accurate temperature measurements in the stainless-steel casing.
 - \circ $\;$ Temperature sensors were reset and batteries replaced as required.



Figure 1. Monthly Average Automated Wellhead Temperatures¹

¹ 145°F is the NESHAP AAAA compliance threshold for well temperature, included here for reference.

1.3.2 Comparison with Manual Temperature Measurements

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

Each well demonstrated compliant readings within the $\pm 8\,^{\circ}$ F deviation lines during this reporting period.



Figure 2. Automated vs. Manual Temperature Measurements

1.3.3 Monthly Regulatory Wellhead Temperature Measurements

Routine monthly temperature monitoring was conducted on May 6, 2025 to comply with 40 CFR 60.36f(a)(5). Table 3 provides the status of exceedances recorded during this monitoring period.

Well ID	Initial Exceedance Date	Compliant Reading	Most Recent Reading	Duration of Exceedance	Status as of 6/1/2025
EW-56	5/29/25	N/A	5/29/25 162.8°F	2 days	Ongoing, within 15-day timeline
EW-60	5/6/25	5/7/25 135.1°F	5/21/25 133.2°F	2 days	Resolved within 15- day timeline
EW-60	5/20/25	5/21/25 133.2°F	5/21/25 °F	2 days	Resolved within 15- day timeline
EW-66	5/6/25	5/15/25 160.4°F	5/21/25 159.4°F	10 days	Resolved within 15- day timeline
EW-66	5/20/25	5/21/25 159.4°F	5/21/25 159.4°F	2 days	Resolved within 15- day timeline
EW-77	5/27/25	5/29/25 94.3°F	5/30/25 86.4°F	3 days	Resolved within 15- day timeline
EW-79	4/8/25	5/29/25 144.1°F	5/30/25 74.2°F	52 days	Resolved within 60- day timeline
EW-92	5/20/25	5/21/25 128.2°F	5//25 °F	2 days	Resolved within 15- day timeline

Table 3.May Temperature Exceedance Summary

1.3.4 LFG Sampling

SCS collected weekly LFG samples from wells with temperature exceedances lasting more than seven days using 1.5-L Summa canisters. The samples were sent to Enthalpy Analytical for laboratory analysis of carbon monoxide (CO) and hydrogen (H₂) content. As of June 4, 2025, the City has received lab results for sampling on April 23, 2025, May 1, 2025, May 7, 2025, and May 15, 2025, and May 21, 2025, to fulfill the requirement in 40 CFR 63.1961(a)(5). The lab data are summarized in Table 4.

Sample Date		4/23/25	5/1/25	5/7/25	5/15/25	5/21/25
	CO (ppmv)					400
EVV-50	H2 (Vol. %)					16.2
	CO (ppmv)			656		
EW-66	H2 (Vol. %)			19.4		
EW-79	CO (ppmv)	ND	ND	ND	ND	ND
	H2 (Vol. %)	3.10	3.00	3.26	3.09	2.78

Table 4.	LFG Wellhead Sampling Summary
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The presence of hydrogen in the samples collected during this monitoring period indicates that combustion reactions are unlikely. As shown in Figure 3, the carbon monoxide and hydrogen data collected during this period appear to be generally consistent with the data collected previously in 2024 and 2025.



Figure 3. CO vs H₂ Concentration from gas wells in May 2025 with historical data.

2.0 SIDEWALL ODOR MITIGATION

On the City's behalf, SCS designed and constructed a system to control fugitive emissions emanating from the quarry sidewalls.

2.1 PERIMETER GAS COLLECTION SYSTEM

Refer to the April 2023 Monthly Compliance Report for the SWP No. 588 Landfill, for information about the perimeter gas extraction wells.

2.2 SIDEWALL ODOR MITIGATION SYSTEM

Refer to the October 2022 Monthly Compliance Report for the SWP No. 588 Landfill, for information about the design of the sidewall odor mitigation system.

2.3 PILOT SYSTEM CONSTRUCTION

Refer to the February 2023 Monthly Compliance Report for the SWP No. 588 Landfill, for information about the design of the construction of the pilot sidewall odor mitigation system.

2.4 FULL SYSTEM CONSTRUCTION

Operation of the sidewall odor mitigation system is monitored on a monthly basis. SCS-FS collected monitoring data at each wellhead under vacuum in May. A summary of system averages during the month is shown in Table 5.

Record Dates	Average CH₄ [%]	Average CO2 [%]	Average O2 [%]	Average Bal Gas [%]
5/14/2025	5.7	8.6	16.0	69.6
5/29/2025	5.1	8.4	16.5	70.0

Table 5.	Average SOMS Gas	Composition
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The sidewall system average gas composition indicates lower methane content than other components in the LFGCCS. These gas composition measurements indicate that the SOMS is collecting a mixture of LFG escaping the sidewall and ambient air.

3.0 WASTE TEMPERATURE MONITORING

SCS designed a 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 SUMMARY OF WASTE TEMPERATURE MONITORING

Installation of the in-situ Landfill Temperature Monitoring System began in October of 2022 and installation of replacement sensors was completed in February of 2023. Details of construction progress can be found in the monthly compliance reports for the SWP No. 588 Landfill. The locations of the temperature probes are shown in Figure 4.



Figure 4. Temperature Monitoring Probe Locations

SCS began collecting temperature data daily on February 15, 2023.

Average daily temperatures recorded by the sensors for the month of May are included in Appendix D. Each week the average temperatures from a select day of that week are downloaded and compared to temperatures recorded during the previous week. Average daily temperatures recorded on select days during the month of May are shown in Appendix B. The average temperatures recorded for March 2023, March 2024, March 2025, April 2025, and May 2025 are shown in Figures 5 through 11 on the following pages.

Overall, these data indicate that temperatures within the landfill are generally stable and are typical of those observed at elevated temperature landfills (ETLFs). The temperatures recorded are substantially lower than those associated with landfill fires or other combustion processes, which can exceed 1000°F. This is further evidence that the elevated temperatures are due to sources other than combustion.

3.1.1 Operational Challenges

TP-3 began having sensor reading issues at the 25-foot and 150-foot depth at the end of 2024. These issues continued through December 2024. Sensor readings resumed at the 25-foot depth in early December; however, sensor reading issues arose at the 125-foot and 175-foot depths in the latter half of December.

In January 2025, all sensors in TP-3 below the 75-foot level appeared to record erroneous temperatures intermittently. There was no improvement to the temperature signals after replacing the thermocouple interface card at TP-3 in January. This may indicate that the thermocouples are damaged. TP-2 stopped recording on February 14, 2025, indicating thermocouple failure. Measurements at the 75-foot level and 150-foot level appeared erroneous in January as well.

SCS coordinated with the City in March to pull the string of thermocouples from TP-2 and TP-3, but were unable to remove the strings in either probe due to suspected pinching of the casings. The City is considering alternative methods to record temperatures to replace the loss of TP-2 and TP-3, such as utilizing nearby well casings as housing for the thermocouples.

3.1.2 Temperature Profiles

During the month of June, SCS has observed variations in measurements of temperatures reported by TP-6 and intends to perform additional analysis and potentially troubleshooting to determine the cause of these variations. The data may be revised upon further review.



Figure 5. TP-1 Average Temperatures for the Months of March 2023, March 2024, March 2025, April 2025, and May 2025



Figure 6. TP-3 Average Temperatures for the Months of March 2023, March 2024, March 2025, April 2025, and May 2025



Figure 7. TP-6 Average Temperatures for the Months of March 2023, March 2024, March 2025, April 2025, and May 2025

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Figure 8. TP-8 Average Temperatures for the Months of March 2023, March 2024, March 2025, April 2025, and May 2025



Figure 9. TP-9 Average Temperatures for the Months of March 2023, March 2024, March 2025, April 2025, and May 2025



Figure 10. TP-5 Average Temperatures for the Months of March 2023, April 2024, March 2025, April 2025, and May 2025



Figure 11. TP-7 Average Temperatures for the Months of March 2023, March 2024, March 2025, April 2025, and May 2025

4.0 LEACHATE EXTRACTION AND MONITORING

The City is continuously taking steps to maintain and 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. Refer to Appendix G for narrative sections without updates.

4.1 DEWATERING PUMP OPERATIONS AND MAINTENANCE

4.1.1 Total LFG Liquids Removal

To improve the accuracy of the total landfill gas liquids flow rate, two flow meters were installed on the landfill gas liquid forcemains in December 2023. One flow meter was installed on the SWP No. 588 primary landfill gas liquid forcemain. The other was installed on the SWP No. 588 alternate landfill gas liquids forcemain, which also serves as the conduit for condensate from the SWP No. 498 landfill gas liquids and the SWP No. 588 stormwater pump.

Figure 12 illustrates landfill gas liquids removal over the past year. During September, November, and December 2024 through April 2025, the liquids data recorded by the flowmeter were replaced with estimates from stroke counter data (colored in blue in Figure 12). These replacements were due to either the use of stormwater liquids for cleaning the dewatering forcemain or air intrusion in the dewatering forcemain, which caused the flowmeter readings to be nonrepresentative or erroneous.

SCS and the City continue to address the air intrusion into liquids force mains, which interferes with the LFG liquids flowmeter, by installing additional air release valves and cleanouts to decrease interruptions to its function. Stroke counts indicate approximately 138,000 gallons of liquid were pumped out of the landfill in May, while the flowmeter indicated approximately 247,000 gallons of flow removed in May. However, removing 113,000 gallons were recorded by the flow meter on May 21, when the system was flushed. When this flush volume is removed, the total leachate flow from the flowmeter is 134,000 gallons for May, which similar to the flow computed form the stroke counts data. The flow from the flowmeter discounting the flush water is plotted in Figure 12 for May 2025.





4.1.2 Status of LFG Liquids Pumps

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. Figure 13 shows a pump damaged from extended use in one of the LFG wells.



Figure 13. Damaged Landfill Gas Liquids Extraction Pump

Daily pump checks and maintenance of spare pumps will continue regularly, along with pump replacements as needed. The City, along with SCS-FS, have found that the best pumps for the landfill's current conditions are QED pumps designed for high temperature operation. The City received eight additional QED pumps in October 2024; some were installed in new wells and others were reserved to swap/replace existing pumps for cleaning. The additional pumps will help with the rotation of field pumps needing maintenance and replacement going forward.

Estimated volumes of liquids removed at each pump are presented in **Table G-1**, **Appendix G**. SCS has prepared the summary below to outline the operating conditions and specific challenges associated with each pump.

Pump Maintenance Activities

- Based on a review of the stroke counter data, the pump in EW-52 did not pump liquid during the month of May 2025. The air line was unable to be disconnected to deenergize the pump in April 2025, and the pump is shut off and will be pulled for maintenance or replacement.
- The pump in EW-53 Iremoved 56 gallons of liquid in March 2025 and has not pumped since then. The air line was shut off in May.
- The pump in EW-59 was swapped in May.
- The pump in EW-61 was swapped in May.
- The pump in EW-62 is offline due to a damaged airline. SCS-FS will evaluate the extent of damage and will coordinate with the City to procure materials needed for the repair.
- The pump in EW-66 was swapped in May.
- Multiple pumps have been installed in EW-74 and EW-75 and all pump types experience buildup on the intake screens preventing pump operation.
- The Blackhawk pump in EW-82 is disconnected and the scheduled to be removed and replaced with a PumpOne or QED pump.
- The pump in EW-85 was swapped in May for repairs.
- The pump in EW-88 was swapped in May, and the tri-tubing was replaced.
- The Jeneer pump was removed from EW-89 in May, and a new pump was installed. The pump was also pulled and replaced to repair tri-tubing.
- EW-91 is now accessible, and liquid level measurement in May indicates it is a good candidate for potential use as a conduit for in waste temperature sensors. A pump may no longer be placed in this well to prevent interference with the temperature sensors.
- The pump was swapped at EW-94 in May, and the tri-tubing and cycle counter were also repaired.
- The pumps in EW-33B, EW-76, and EW-87 are stuck in the well casing and have been disconnected. SCS-FS is coordinating with the City to attempt to pull the pumps with a piece of heavy equipment.
- The casings of EW-36A, EW-49, EW-81, EW-83, and EW-96 extend too high above the existing ground level for a pump to be safely accessed. These are stainless steel wells that cannot be lowered through conventional means. SCS-FS and the City are coordinating placement of additional soil around the wells to provide safe access.
 - Soil was added around EW-36A in April, and SCS-FS intends to replace the pump.
- The pumps in EW-51, EW-57, EW-90, and EW-100 are permanently stuck in the wells.
- The pumps in EW-54, EW-55 and EW-67 were unable to be operated in May due to a clogged forcemain line. All were disconnected, and the pumps were removed from EW-54 and EW-55 in May 2025. SCS-FS and the City are coordinating efforts to clean the forcemain in June.

In addition to the challenges associated with the individual pumps, SCS-FS has generally observed high forcemain pressures and significant build-up of solids within the forcemain. An example of solids build-up within the forcemain is shown in Figure 14. This results in SCS-FS dedicating substantial amounts of time to relieving air pressure on the system. The City issued a solicitation for bids for installation of additional cleanouts and air release valves in the wellfield to address the issue on February 18, 2025. The contract has been awarded as of May 27, 2025.



Figure 14. Solids in Landfill Gas Liquids Forcemain

4.2 SAMPLING AND ANALYSIS PLAN

On May 20, 2025, SCS collected a leachate sample from two Dual Phase LFG extraction wells (EW-88 and EW-89). Field measurements for dissolved oxygen, oxidation-reduction potential, pH, specific conductance, temperature, and turbidity were taken and recorded at the time of sample collection. The associated field logs are included in **Appendix F**. In May 2025, SCS field staff were not able to collect samples from the wells summarized in **Table 6**. Additional details about the condition of these wells and planned maintenance activities are included in Section 4.1.2.

Table 6.Summary Wells Unable to be Sampled for Leachate

The samples were delivered to Enthalpy Analytical (Enthalpy) in Richmond, Virginia for analysis. The samples were analyzed for the parameters utilizing the analytical methods described in the Dual Phase Landfill Gas Extraction Well Leachate Monitoring Plan, December 1, 2022, prepared by SCS Engineers. At the time of preparation of this report, laboratory analytical results were not available for the May 2025 monitoring event. The May 2025 analytical results will be provided in the June 2025 Monthly Compliance Report.

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. Refer to Appendix G for narrative sections without updates.

5.1 SETTLEMENT MONITORING AND MANAGEMENT PLAN

Information about the Settlement Monitoring and Management Plan for the SWP No. 588 Landfill and a copy of the plan can be found in the November 2022 Compliance Report for the SWP No. 588 Landfill.

5.2 MONTHLY SURVEYS

5.2.1 Topographic Data Collection

SCS collected topographic data of the Solid Waste Permit No. 588 Landfill using photogrammetric methods via an unmanned aerial vehicle (UAV or drone) on May 15, 2025. Aerial imagery collected on May 15, 2025, is depicted in Figure 15. The topographic data collected is shown on Sheet 4 in Appendix E.





The topography within the landfill footprint was compared to topographic data collected by SCS using photogrammetric methods on April 16, 2025. A drawing depicting the April 16, 2025 topography is included as Sheet 3 in Appendix E.

Based on a comparison of the topographic data collected on those two dates, the data shows a fill of 1,600 cubic yards across the site. Fill may have been placed on the site to address differential settlement, surface emissions, and to provide access to LFG collection vertical wells. During that same time period, calculations indicate a "cut" volume of approximately 3,500 cubic yards. Cut volumes are typically attributed to settlement. This resulted in a net volume decrease of approximately 2,000 cubic yards.

Vegetation can obscure topography when elevations are measured by photogrammetric methods. While the extent of vegetation within the landfill is limited, vegetation growth during the spring growing season may have given the appearance of increasing surface elevations in portions of the landfill.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 16. Areas in yellow, orange, and red indicate where elevations decreased and areas in green indicate areas where elevations have increased. Darker colors indicate greater changes in elevation. This drawing is also included as Sheet 5 in Appendix E.



Figure 16. 1-Month Elevation Change Map

The locations of in-waste temperature monitoring probes are also shown on Figure 17, Figure 18, and Figure 19. The circles around the probes in each of these figures are indicative of the average borehole temperature. The circles shown are offset from the probes for clarity only and do not necessarily indicate temperatures measured at locations away from the probe. Probes with a blue circle around them typically have an average temperature less than 200°F across the full depth of the probe. Probes with an orange circle around them typically have an average temperature greater than 200°F and less than 250°F across the full depth of the probe. Probes with no circle around them represent no temperature readings for this month due to sensor malfunctions. There were no probes measuring average temperatures greater than 250°F and less than 300°F during the month of April 2025.

SCS calculated the waste footprint for purposes of analysis to be 752,610 square feet. Based on that area and the net volume change, the average elevation decrease between the flyover dates was 0.1 feet.

SCS also compared the topographic data collected in May to the topographic data collected on February 18, 2025. 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 20,400 cubic yards. During that same time period calculations indicate approximately 700 cubic yards of fill were placed on the landfill, for a net decrease in waste volume of 20,800 cubic yards.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 17. Areas in orange/yellow indicate where elevations decreased and areas in green indicate areas where elevations have increased. Darker colors indicate greater changes in elevation. This drawing is also included as Sheet 6 in Appendix E.



Figure 17. 3-Month Elevation Change Map

Based on the area of the landfill and the net volume change, the average elevation decrease was approximately 0.7 feet.

SCS also compared the topographic data collected in May 2025 to the drone topographic data collected on May 21, 2024. 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 38,600 cubic yards. During that same time period approximately 1,800 cubic yards of construction-related fill were placed on the landfill. This fill was primarily soil placed as part of the sidewall odor mitigation system construction and ongoing maintenance (i.e. filling to compensate for settlement). This resulted in a net volume decrease of approximately 36,800 cubic yards.

A visual depiction of settlement and filling at the landfill during this time is depicted in Figure 18. Areas in red indicate where elevations decreased and areas in green indicate areas where elevations have increased. Darker colors indicate greater changes in elevation. This drawing is also included as Sheet 7 in Appendix E.





The largest settlement occurred primarily at the southern end of the landfill where the waste settled by 4 feet or more in some areas. Significant settlements are typical of elevated temperature landfill conditions. The landfill perimeter exhibited an increase in elevation, likely due to soil placement associated with construction and/or ongoing maintenance of the Sidewall Odor Mitigation System. There were variations in elevation associated with soil stockpiling operations.

Based on the landfill area and the net volume change, the average elevation decrease was approximately 1.3 feet.

SCS will collect topographic data covering the landfill surface again in June using photogrammetric methods via UAV. This data will be compared to the data collected in June 2024, March 2025, and May 2025.

5.2.2 Settlement Plate Surveys

On November 7, 2022, SCS field services installed 12 settlement plates on the Solid Waste Permit No. 588 landfill. Five new settlement plates (SP-2A, SP-3A, SP-4A, SP-7A, and SP-9A) installed during June 2024 are intended to replace non-operational settlement plates. The settlement plate locations are depicted in Figure 19 and on Sheet 1 in Appendix E. The construction and installation of the settlement plates generally conforms to the design outline in the Settlement Monitoring and Management Plan.





The locations of the settlement plates were initially surveyed on November 14, 2022, and have been surveyed monthly thereafter. The survey coordinates and elevation changes of the settlement plates are shown in Table 8.

Table 7. Ele	evation and Strain	Data at Settleme	nt Plate Locations
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Settlement Plate	Northing	Easting	Elevation on June 2, 2025 (ff)	Elevation Change Since Apr. 24, 2025 (ft)	Strain ² Since Apr. 24, 2024	Elevation Change Since Installation (ft)
SP-1	3397887.6	10,412,080.8	1,828.8	-0.1	-0.1%	-5.7
SP-2A	3,397,823.1	10,412,370.6	1,793.0	-0.2	-0.1%	-2.8

² Strain is defined as the change in elevation divided by the estimated waste depth.

Settlement Plate	Northing	Easting	Elevation on June 2, 2025 (ft)	Elevation Change Since Apr. 24, 2025 (ft)	Strain ² Since Apr. 24, 2024	Elevation Change Since Installation (ft)
SP-3A	3,397,820.2	10,412,498.2	1,779.1	-0.1	-0.1%	-1.1
SP-4A	3,398,247.0	10,412,207.1	1,802.6	-0.3	-0.2%	-2.5
SP-5	3,398,255.8	10,412,339.6	1,788.3	-0.2	-0.1%	-12.5
SP-6	3,398,248.7	10,412,509.9	1,772.9	-0.1	-0.1%	-4.7
SP-7A	3,398,731.5	10,412,158.1	1,822.2	-0.1	-0.1%	-1.2
SP-8	3,398,678.1	10,412,290.8	1,799.8	-0.1	-0.0%	-7.6
SP-9A	3,398,644.2	10,412,416.1	1,788.1	-0.0	-0.0%	-0.6
SP-10	3,399,080.1	10,412,093.3	1,836.8	-0.1	-0.0%	-3.4
SP-11	3,399,216.3	10,412,183.7	1,814.5	-0.1	-0.0%	-1.9
SP-12	3,399,381.7	10,412,019.6	1,809.6	-0.1	-0.1%	-1.0

Prior to April 2024, the City's in-house surveyor read the settlement plate elevations. Starting April 2024, the settlement plate elevations were measured by FEI Civil Engineers and Land Surveyors.

Settlement Plates 2A and 4A demonstrated larger strains due to settlement than at other locations. Settlement Plates 2A and 4A are in the middle/southern end of the landfill. This area is the location of the gas wells and temperature probes exhibiting higher temperatures. These higher strains are typical of elevated temperature landfill conditions.

The strains at the other settlement plates were lower during this monthly measurement period compared to Settlement Plates 2A and 4A.

Figure 20 shows the changes in elevation of select settlement plates over time. For the purposes of recording data in this figure, times are reported in days since the landfill was required to stop accepting waste.



Figure 20. Elevation Change of Select Settlement Plates Over Time

The settlement plates will be surveyed again during June 2025. The elevations surveyed will be compared to the elevations surveyed the previous months.

6.0 INTERMEDIATE COVER AND EVOH COVER SYSTEM

The City has taken steps to provide intermediate and temporary cover of the wastes in the landfill. The sections below describe the steps taken by the City and future plans related to cover.

6.1 INTERMEDIATE COVER INSTALLATION

A summary of the intermediate cover installation can be found in the October 2022 Monthly Compliance Report for the SWP No. 588 Landfill.

6.2 EVOH COVER SYSTEM DESIGN

An amendment to the Consent Decree was issued on March 21, 2024 which requires an ethylene vinyl alcohol (EVOH) deployment no later than December 1, 2026. The amended Consent Decree also requires regular settlement assessments, and the EVOH deployment may occur earlier if settlement rates appear acceptable. The first of these assessments was submitted to VDEQ on April 11, 2024. The most recent assessment was submitted on April 10, 2025. The next assessment will be submitted on or before July 10, 2025.
6.3 EVOH COVER SYSTEM PROCUREMENT

Information about the procurement of materials for the EVOH cover system can be found in the January 2023 Monthly Compliance Report for the SWP No. 588 Landfill.

6.4 EVOH COVER SYSTEM INSTALLATION

As outlined in the amendment to the Consent Decree dated March 21, 2024, the deadline for EVOH Cover System installation has been extended. The City is conducting the assessments described in Section 6.2 to determine the appropriate time for installation.

7.0 STORMWATER MANAGEMENT

Information about the most recent stormwater management plans, basin location, plan implementation, long-term control, and stormwater monitoring for the SWP No. 588 Landfill can be found in the December 2023 Monthly Compliance Report for the SWP No. 588 Landfill.

8.0 MISCELLANEOUS

8.1 CEASE WASTE ACCEPTANCE

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

8.2 LONG-TERM PLAN

Refer to the December 2022 and March 2023 Monthly Compliance Reports for the SWP No. 588 Landfill for additional information about the development and implementation of the Monitoring, Maintenance, and Repair Plan.

8.3 MONTHLY COMPLIANCE REPORTS

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

8.4 COMMUNITY OUTREACH PROGRAM

The City's consultant leading community outreach, McGuireWoods Consulting, prepared a summary of the actions taken as part of their community outreach efforts. For the month of May 2025, those actions include:

- Ongoing basis: Four (4) posts on each the BristalVALandfill.org site and the existing City of Bristol Landfill Notifications and Information page covering important updates including:
 - Progress updates related to remediation efforts and normal maintenance activities at the Quarry Landfill.

- Updates at the Quarry Landfill included extensive maintenance on the leachate extraction system, including the installation of additional leachate pumps, to improve system efficiency; crews pulled and replaced two pumps from the dual phase extraction well, and also cleaned and repaired spare pumps that can be used for future pump exchanges in the system; removed an old leachate overflow tank in preparation for the installation of a new flare and equalization tank as part of the new and improved leachate treatment system; maintenance was conducted on the extraction wells and the Sidewall Odor Mitigation System (SOMS) well heads in the last week of May, with adjustments being made as needed; crews also pulled and replaced a pump from the dual phase extraction well, and condensation buildup was removed from the lateral lines in the gas extraction system.
- The City of Bristol has plans to conduct a review of actions taken and progress made to mitigate odors at the Quarry Landfill over the past three years. This process will include current and former experts who have advised the City on multiple elements of landfill management and best practices for closure. More details to follow as they become available.
- In the first week of May, the City responded to a written request for information about progress at the Quarry Landfill from the City of Bristol, Tennessee. Both letters can be found <u>here: https://bristolvalandfill.org/resources</u>
- After experiencing a temporary disruption in the second week of May, access to the City's "Solid Waste Facility Concerns & Odor Report" submission link was restored on its website www.bristolvalandfill.org.
- Posting of three articles, two from the Bristol Herald-Courier and one from WJHL, to both sites.
- The City hosted another community Open House on May 21 at 6 p.m. at City Council Chambers. The event was a success where attendees were able to ask questions and hear about updates from Dr. Craig Benson and Dr. Deb Gray (Stantec).
- Bristol City Council approved the Landfill's flare project bid at it's meeting in late May.
- Weekly updates on landing page on Bristolvalandfill.org titled "Air Sampling and Air Monitoring" that includes a summary of the air sampling and monitoring being conducted by Bristol, VA around the quarry landfill.
 - Website now includes weekly air monitoring reports starting from May 15, 2023, and running through March 30, 2025. Additional reports will be posted as the they are received.
- E-mail communication sent to the list of members of the public signed up through the Bristol, VA website, the BristolVALandfill.org website, or at subsequent Open Houses to receive information via e-mail
 - E-mails sent included weekly remediation progress update and links to website updates and latest news articles.
- E-mail communication sent to the list of members of the public signed up through the Bristol, VA website, the BristolVALandfill.org website, or at subsequent Open Houses to receive information via e-mail
 - E-mails sent included weekly remediation progress update and links to website updates and latest news articles.

Appendix A

Surface Emissions Monitoring Summary

Quarterly SEM

SCS performed the Second Quarter surface emissions monitoring event on May 27, 2025. The surface emission monitoring route included the entire waste footprint of the Permit No. 588 landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at all surface cover penetrations within the waste footprint outside of the active filling area.

No exceedances were detected during this quarterly monitoring event on the serpentine route, however, three exceedances were detected at surface cover pipe penetrations. This monitoring event also represented the weekly monitoring event for that week. A quarterly SEM report documenting exceedance locations, corrective actions, and re-monitoring results will be submitted to the VDEQ as part of the Semi-Annual Report. In addition, monitoring results were presented to the VDEQ in a letter dated June 4, 2025.

Weekly SEM

In addition to the standard regulatory quarterly surface emissions monitoring, the monitoring in May generally conformed 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 SEM route included the 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 applicable surface cover penetrations within the waste footprint.

The Facility submitted letters to VDEQ describing the results of the May monitoring events on May 14, 2025; May 21, 2025; May 28, 2025; and June 4, 2025. Copies of those letters are included in this Appendix.

The Facility continues to take proactive steps to limit fugitive surface emissions including dewatering activities, additional cover soil placement, and LFG system maintenance and tuning to increase gas extraction.

May 14, 2025 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 – May 7, 2025 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 Management Facility located in Bristol, Virginia on May 7, 2025. This Weekly Surface Emissions Monitoring (SEM) Event was performed in accordance with Appendix A.1.i of the Consent Decree between the Commonwealth of Virginia and the City of Bristol.

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

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



Table 1.	Summary	of Surface Emissions	Monitoring
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Description	Quantity
Number of Points Sampled	168
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	68
Number of Exceedances	4
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	4

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 retests.

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	5/7/25 Event	5/7/25 Event Result	Comments
EW-54	2/24/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-66	2/24/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-67	4/18/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-95	4/18/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)

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

Sincerely,

William J Film

Lucus D. Nachman

William J. Fabrie Project Professional SCS Engineers

LSN/WJF

- cc: Randall Eads, City of Bristol Jonathan Hayes, City of Bristol Laura Socia, City of Bristol Susan "Tracey" Blalock, VDEQ
- Encl. Surface Emissions Monitoring Results Bristol SEM Route Drawing

Lucas S. Nachman Senior Project Professional SCS Engineers

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 7, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA					
	Methane		GPS Co	ordinates	
ID #	Concentration	Compliance	Lat.	Long.	Comments
1	1.8 PPM	OK			Start Serpentine Route
2	1.6 PPM	OK			
3	4.2 PPM	OK			
4	1.6 PPM	OK			
5	1.6 PPM	OK			
6	1.5 PPM	OK			
7	1.5 PPM	OK			
8	1.5 PPM	OK			
9	1.5 PPM	ОК			
10	1.5 PPM	OK			
11	1.5 PPM	ОК			
12	1.5 PPM	OK			
13	1.4 PPM	OK			
14	1.4 PPM	OK			
15	1.5 PPM	OK			
16	2.0 PPM	OK			
17	1.5 PPM	ОК			
18	11.4 PPM	ОК			
19	1.8 PPM	ОК			
20	1.3 PPM	OK			
21	1.3 PPM	OK			
22	1.3 PPM	OK			
23	1.5 PPM	OK			
24	2.0 PPM	OK			
25	2.9 PPM	ОК			
26	2.5 PPM	ОК			
27	1.9 PPM	ОК			
28	1.9 PPM	OK			
29	2.3 PPM	ОК			
30	3.3 PPM	OK			
31	1.9 PPM	OK			
32	2.8 PPM	OK			
33	17.7 PPM	ОК			
34	9.0 PPM	ОК			
35	7.9 PPM	ОК			
36	22.1 PPM	ОК			
37	47.1 PPM	ОК			
38	10.8 PPM	ОК			
39	42.5 PPM	ОК			
40	5.5 PPM	ОК			
41	14.7 PPM	ОК			
42	50.2 PPM	OK			
43	52.3 PPM	OK			
44	2.9 PPM	OK			
45	5.2 PPM	OK			
46	2.3 PPM	OK			
47		OK			

WEEKLY MONITORING EVENT - MAY 7, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA					
	Methane				
ID #	Concentration	Compliance	Lat.	Long.	Comments
48	1.5 PPM	ОК			
49	1.0 PPM	OK			
50	1.0 PPM	OK			
51	0.9 PPM	OK			
52	1.1 PPM	OK			
53	2.7 PPM	OK			
54	2.2 PPM	OK			
55	1.1 PPM	ОК			
56	1.0 PPM	OK			
57	1.1 PPM	OK			
58	1.0 PPM	ОК			
59	0.9 PPM	OK			
60	0.9 PPM	OK			
61	1.2 PPM	OK			
62	1.0 PPM	OK			
63	1.0 PPM	OK			
64	0.9 PPM	OK			
65	0.9 PPM	OK			
66	0.7 PPM	OK			
67	3.2 PPM	OK			
68	12.8 PPM	OK			
69	2.2 PPM	OK			
70	4.4 PPM	OK			
71	22.9 PPM	OK			
72	16.1 PPM	OK			
73	1.9 PPM	OK			
74	12.5 PPM	OK			
75	1.1 PPM	OK			
76	4.6 PPM	OK			
77	1.1 PPM	OK			
78	2.1 PPM	OK			
79	1.8 PPM	OK			
80	1.0 PPM	OK			
81	0.9 PPM	OK			
82	5.4 PPM	OK			
83	72.3 PPM	OK			
84	1.5 PPM	OK			
85	2.5 PPM	OK			
86	0.8 PPM	OK			
87	1.0 PPM	OK			
88	8.4 PPM	OK			
89	0.8 PPM	OK			
90	1.0 PPM	OK			
91	14.8 PPM	OK			
92	7.7 PPM	OK			
93	36.8 PPM	OK			
01	3 / DDM	OK			

	BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA						
	Methane		GPS Co	ordinates			
ID #	Concentration	Compliance	Lat.	Long.	Comments		
95	60.1 PPM	ОК					
96	1.3 PPM	OK					
97	9.2 PPM	OK					
98	1.1 PPM	OK					
99	1.4 PPM	OK					
100	1.5 PPM	OK			End Serpentine Route		
101	435.0 PPM	OK			EW-52		
102	14.6 PPM	OK			TP-4		
103	206.0 PPM	OK			EW-60		
104	10.6 PPM	OK			EW-48		
105	0.8 PPM	OK			TP-6		
106	4.7 PPM	OK			EW-61		
107	1.3 PPM	OK			EW-50		
108	3393.0 PPM	HIGH_ALRM	36.59866	-82.14775	EW-67		
109	11.2 PPM	OK			EW-47		
110	5277.0 PPM	HIGH_ALRM	36.59866	-82.14742	EW-54		
111	6.3 PPM	OK			EW-55		
112	67.2 PPM	OK			EW-92		
113	6.2 PPM	OK			EW-91		
114	2.3 PPM	OK			EW-96		
115	30.5 PPM	OK			TP-2		
116	5279.0 PPM	HIGH_ALRM	36.59848	-82.14748	EW-66		
117	21.5 PPM	OK			EW-58		
118	22.6 PPM	OK			EW-57		
119	2.2 PPM	OK			TP-1		
120	61.3 PPM	OK			EW-59		
121	2.6 PPM	OK			EW-100		
122	13.9 PPM	OK			EW-56		
123	1.5 PPM	OK			EW-97		
124	273.0 PPM	OK			EW-53		
125	6.8 PPM	OK			TP-3		
126	61.9 PPM	OK			EW-51		
127	1.4 PPM	OK			TP-5		
128	1.4 PPM	OK			EW-68		
129	83.1 PPM	OK			EW-87		
130	1.2 PPM	OK			EW-38		
131	115.0 PPM	ОК			TP-7		
132	3.8 PPM	ОК			EW-49		
133	0.7 PPM	ОК			EW-83		
134	0.6 PPM	ОК			EW-65		
135	0.2 PPM	ОК			EW-81		
136	0.3 PPM	ОК			TP-8		
137	0.1 PPM	ОК			EW-64		
138	0.2 PPM	OK			EW-63		
139	0.6 PPM	ОК			EW-42		
140	50 0 DDAA	OK			E\M/ 76		

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 7, 2025 **BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA** Methane **GPS** Coordinates Concentration ID # Compliance Lat. Comments Long. 36.0 PPM TP-9 141 ОК 142 0.1 PPM OK EW-62 143 0.0 PPM OK EW-74 EW-32R 144 0.0 PPM OK 145 0.0 PPM OK EW-69 146 0.1 PPM OK EW-71 147 0.0 PPM OK EW-72 148 0.0 PPM OK EW-70 149 0.9 PPM OK EW-73 150 0.0 PPM OK EW-78 151 0.0 PPM OK EW-82 152 0.1 PPM OK EW-36A 0.4 PPM OK EW-85 153 154 0.2 PPM OK EW-88 155 224.0 PPM OK EW-89 156 1.0 PPM OK EW-93 157 21.5 PPM OK EW-94 158 0.1 PPM OK EW-98 159 0.7 PPM OK EW-99 160 2582.0 PPM HIGH_ALRM 36.59837 -82.14835 EW-95 60.9 PPM OK EW-90 161 162 31.1 PPM OK EW-86 163 0.1 PPM OK EW-84 0.1 PPM OK EW-80 164 OK EW-79 165 0.1 PPM 166 0.2 PPM OK EW-77 167 0.0 PPM OK EW-33B 168 0.0 PPM OK EW-75 Number of locations sampled: 168 4 Number of exceedance locations: NOTES: Points 1 through 100 represent serpentine SEM route. Points 101 through 168 represent SEM at Pipe Penetrations Weather Conditions: Overcast, 69°F Wind: 7 mph SW Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm 5/7/2025 11:16 ZERO 0.2 PPM 5/7/2025 SPAN 502.0 11:17 PPM **Background Reading:** 11:19 2.3 PPM 5/7/2025 Upwind 5/7/2025 11:22 Downwind 2.1 PPM



May 21, 2025 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 – May 19, 2025 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 Management Facility located in Bristol, Virginia on May 19, 2025. 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.

Note, that due to unforeseen circumstances, this weekly monitoring event was unable to be completed during the week of May 12, 2025, and was thus conducted on, Monday, May 19, 2025. The weekly monitoring event for the week of May 19, 2025 will be performed separately, as prescribed.

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

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



Table 1.	Summary	of Surface Emissions I	Monitoring
----------	---------	------------------------	------------

Description	Quantity
Number of Points Sampled	167
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	67
Number of Exceedances	4
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	4

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 retests.

Table 2. Ongoing Weekly SEM Exceedances

Point ID	Initial Exceedance Date	5/19/25 Event	5/19/25 Event Result	Comments
EW-54	2/24/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-66	2/24/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-67	4/18/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-95	4/18/25	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)

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

Sincerely,

Wylie R Aichlin

Wylie R Hicklin Staff Professional SCS Engineers

LSN/WRH

- cc: Randall Eads, City of Bristol Jonathan Hayes, City of Bristol Laura Socia, City of Bristol Susan "Tracey" Blalock, VDEQ
- Encl. Surface Emissions Monitoring Results Bristol SEM Route Drawing

Lucus D. Nachman

Lucas S. Nachman Senior Project Professional SCS Engineers

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 19, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA					
	Methane		GPS Co	ordinates	
ID #	Concentration	Compliance	Lat.	Long.	Comments
1	0.0 PPM	ОК			Start Serpentine Route
2	0.1 PPM	OK			
3	0 4 PPM	OK			
4	0.0 PPM	OK			
5	0.0 PPM	OK			
6	0.0 PPM	OK			
7	0.1 PPM	OK			
, 8	0.0 PPM	OK			
9	0.0 PPM	OK			
10	0.1 PPM	OK			
11	0.1 11M	OK			
10	0.5 11/1	OK			
12					
13		OK			
14	0.7 PPM	OK			
13		OK			
10	0.3 PPM	OK			
17	0.2 PPM	OK			
18	0.0 PPM	OK			
19	1.7 PPM	OK			
20	3.5 PPM	OK			
21	4.3 PPM	OK			
22	0.0 PPM	OK			
23	0.3 PPM	OK			
24	0.1 PPM	OK			
25	0.2 PPM	OK			
26	0.2 PPM	OK			
27	4.7 PPM	OK			
28	0.4 PPM	OK			
29	29.0 PPM	OK			
30	24.0 PPM	OK			
31	1.5 PPM	OK			
32	137.0 PPM	OK			
33	35.6 PPM	OK			
34	4.6 PPM	OK			
35	3.9 PPM	OK			
36	0.4 PPM	OK			
37	1.4 PPM	OK			
38	0.0 PPM	OK			
39	4.5 PPM	OK			
40	0.5 PPM	OK			
41	0.2 PPM	OK			
42	0.1 PPM	OK			
43	0.2 PPM	OK			
44	0.2 PPM	OK			
45	0.0 PPM	OK			
46	1.5 PPM	OK			
17		OK			

WEEKLY MONITORING EVENT - MAY 19, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA						
	Methane		GPS Co	ordinates		
ID #	Concentration	Compliance	Lat.	Long.	Comments	
48	0.0 PPM	ОК				
49	0.1 PPM	OK				
50	1.3 PPM	OK				
51	0.2 PPM	OK				
52	0.2 PPM	ОК				
53	0.1 PPM	OK				
54	0.1 PPM	OK				
55	0.3 PPM	ОК				
56	0.2 PPM	OK				
57	0.0 PPM	OK				
58	0.2 PPM	OK				
59	0.8 PPM	OK				
60	0.0 PPM	OK				
61	4.7 PPM	OK				
62	3.3 PPM	OK				
63	0.2 PPM	OK				
64	1.0 PPM	OK				
65	0.1 PPM	OK				
66	0.1 PPM	OK				
67	1.5 PPM	OK				
68	0.3 PPM	OK				
69	13.0 PPM	OK				
70	1.5 PPM	OK				
71	2.3 PPM	OK				
72	0.3 PPM	OK				
73	0.0 PPM	OK				
74	1.3 PPM	OK				
75	1.5 PPM	OK				
76	3.8 PPM	OK				
77	0.3 PPM	OK				
78	0.4 PPM	OK				
79	0.0 PPM	OK				
80	0.0 PPM	OK				
81	0.0 PPM	OK				
82	0.2 PPM	OK				
83	0.1 PPM	OK				
84	0.2 PPM	OK				
85	0.1 PPM	OK				
86	0.1 PPM	OK				
87	0.1 PPM	OK				
88	0.1 PPM	OK				
89	0.3 PPM	OK				
90	1.2 PPM	OK				
91	3.0 PPM	OK				
92	0.3 PPM	OK				
93	0.1 PPM	OK				
01		OK				

	EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 19, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA						
	Methane		GPS Co				
ID #	Concentration	Compliance	Lat.	Long.	Comments		
95	0.1 PPM	ОК					
96	0.1 PPM	OK					
97	0.2 PPM	OK					
98	0.2 PPM	OK					
99	0.3 PPM	OK					
100	0.4 PPM	OK			End Serpentine Route		
101	0.2 PPM	OK			EW-69		
102	0.0 PPM	OK			EW-71		
103	0.0 PPM	OK			EW-32R		
104	0.7 PPM	OK			EW-72		
105	0.3 PPM	OK			EW-62		
106	0.0 PPM	OK			EW-33B		
107	0.0 PPM	OK			EW-63		
108	0.0 PPM	OK			EW-77		
100	0.1 PPM	OK			EW-64		
110	0.0 PPM	OK			E W - 04		
110	0.0 00	OK					
111	0.2 FFM	OK			EVV 01		
112	0.3 PPM	OK					
113	0.1 PPM	OK					
114	0.2 PPM	OK			EVV-04		
115	0.4 PPM	OK			EVV-83		
110	0.9 PPM	OK			EVV-65		
11/	0.7 PPM	OK			EW-49		
118	92.4 PPM	OK					
119	0.5 PPM	OK			EW-50		
120	8.9 PPM	OK			IP-6		
121	0.4 PPM	OK			EW-61		
122	0.2 PPM	OK			EW-85		
123	1.9 PPM	OK			EW-88		
124	22.8 PPM	OK			EW-48		
125	0.5 PPM	OK			EW-38		
126	475.0 PPM	OK			EW-86		
127	188.0 PPM	OK			EW-87		
128	161.0 PPM	OK			EW-60		
129	5.1 PPM	OK			EW-89		
130	0.2 PPM	OK			EW-93		
131	306.0 PPM	OK			EW-92		
132	5.2 PPM	OK			TP-4		
133	263.0 PPM	OK			EW-52		
134	0.6 PPM	OK			EW-68		
135	0.5 PPM	OK			TP-5		
136	11.2 PPM	OK			EW-51		
137	27.5 PPM	OK			EW-91		
138	7918.0 PPM	HIGH_ALRM	36.59866	-82.14775	EW-67		
139	6.0 PPM	OK			EW-47		
140	57000.0 PPM	HIGH ALRM	36.59866	-82,14742	EW-54		

					
ID #	Methane Concentration	Compliance	GPS Co Lat.	ordinates Long.	Comments
141	474 0 PPM	OK			TP_2
141	2 Q PPM	OK			FW-55
142	5 0 PPM	OK			EW-94
143	5.1 PPM	OK			TP-3
145	3.8 PPM	OK			FW-53
146	1.8 PPM	OK			EW-96
147	1.2 PPM	OK			TP-1
148	7.2 PPM	OK			EW-57
149	2405.0 PPM	HIGH ALRM	36.59848	-82.14748	EW-66
150	2.0 PPM	OK			EW-58
151	1.3 PPM	OK			EW-98
152	12.1 PPM	OK			EW-59
153	3.5 PPM	OK			EW-100
154	0.7 PPM	OK			EW-56
155	0.1 PPM	OK			EW-99
156	0.1 PPM	ОК			EW-97
157	0.3 PPM	ОК			EW-95
158	0.2 PPM	OK			EW-90
159	0.2 PPM	OK			EW-36A
160	940.0 PPM	HIGH_ALRM	36.60038	-82.14767	EW-82
161	0.0 PPM	OK			EW-78
162	6.6 PPM	OK			EW-42
163	117.0 PPM	OK			EW-76
164	57.0 PPM	OK			TP-9
165	3.7 PPM	OK			EW-73
166	0.0 PPM	OK			EW-74
167	0.0 PPM	OK			EW-75
	Number of lo	cations sampled.	167		
	Number of excee	edance locations:	4		
IOTES: oints 1 throug	h 100 represent serper	tine SEM route.			
oints 101 thro Veather Conc	ough 167 represent SEA ditions: Sunny, 73°F Win	1 at Pipe Penetratio d: 6 mph NE	ons		
ampling Calil	oration: Methane - 500	ppm, Zero Air - 0.0	<u>) ppm</u>		
5/19/2025	10:12 ZERO	0.1	PPM		
5/19/2025	10-17 SPAN	500.0	PPM		



May 28, 2025 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 – May 22, 2025 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 Management Facility located in Bristol, Virginia on May 22, 2025. This Weekly Surface Emissions Monitoring (SEM) Event was performed in accordance with Appendix A.1.i of the Consent Decree between the Commonwealth of Virginia and the City of Bristol.

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

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



Table 1.	Summary	of Surface	Emissions	Monitoring
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Description	Quantity
Number of Points Sampled	167
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	67
Number of Exceedances	2
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	2

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 retests.

able 2.	Ongoing Weekly SEM Exceedances
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Point ID	Initial Exceedance Date	5/22/25 Event	5/22/25 Event Result	Comments
EW-54	2/24/25	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-66	2/24/25	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-67	4/18/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-95	4/18/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-82	5/19/25	10-Day Retest	Passed	Requires 1-Month Retest

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

Sincerely,

Wylin R Aichlin

Wylie R Hicklin Staff Professional SCS Engineers

LSN/WRH

- cc: Randall Eads, City of Bristol Jonathan Hayes, City of Bristol Laura Socia, City of Bristol Susan "Tracey" Blalock, VDEQ
- Encl. Surface Emissions Monitoring Results Bristol SEM Route Drawing

Lucus D. Nachman

Lucas S. Nachman Senior Project Professional SCS Engineers

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 22, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA					
	Methane		GPS Co	ordinates	
ID #	Concentration	Compliance	Lat.	Long.	Comments
1	0.6 PPM	ОК			Start Serpentine Route
2	0.0 PPM	OK			
- 3	0.0 PPM	OK			
4	0.0 PPM	OK			
5	0.3 PPM	OK			
6	0.0 PPM	OK			
7	0.2 PPM	OK			
8	0.3 PPM	OK			
9	0.3 PPM	OK			
10	0.2 PPM	OK			
11	0.2 PPM	OK			
12	0.2 FTM	OK			
12	0.1 PPM	OK			
13		OK			
14		OK			
15		OK			
10	0.2 FFM	OK			
17		OK			
10	0.2 PPM	OK			
19	1.3 PP/M	OK			
20	1.0 PPM	OK			
21	4.0 PPM	OK			
22	5.8 PPM	OK			
23	2.9 PPM	OK			
24	2.1 PPM	OK			
25	T.O PPM	OK			
26	0.4 PPM	OK			
2/	0.3 PPM	OK			
28	I.8 PPM	OK			
29	53.6 PPM	OK			
30	6.3 PPM	OK			
31	79.8 PPM	OK			
32	5.3 PPM	OK			
33	1.4 PPM	OK			
34	8.8 PPM	OK			
35	2.4 PPM	OK			
36	0.7 PPM	OK			
37	2.3 PPM	OK			
38	0.3 PPM	OK			
39	0.3 PPM	OK			
40	0.5 PPM	OK			
41	0.3 PPM	OK			
42	0.0 PPM	OK			
43	0.2 PPM	OK			
44	0.2 PPM	OK			
45	0.1 PPM	OK			
46	0.0 PPM	OK			
47		OK			

WEEKLY MONITORING EVENT - MAY 22, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA					
	Methane		GPS Co	ordinates	
ID #	Concentration	Compliance	Lat.	Long.	Comments
48	0.0 PPM	ОК			
49	0.0 PPM	OK			
50	0.0 PPM	OK			
51	0.0 PPM	OK			
52	0.0 PPM	OK			
53	0.0 PPM	OK			
54	0.0 PPM	ОК			
55	0.0 PPM	ОК			
56	0.0 PPM	ОК			
57	0.0 PPM	ОК			
58	0.0 PPM	ОК			
59	0.0 PPM	OK			
60	0.1 PPM	OK			
61	0.2 PPM	OK			
62	0.4 PPM	OK			
63	1.3 PPM	ОК			
64	2.3 PPM	ОК			
65	1.1 PPM	ОК			
66	1.1 PPM	OK			
67	1.1 PPM	OK			
68	4.3 PPM	ОК			
69	2.1 PPM	ОК			
70	2.7 PPM	ОК			
71	2.0 PPM	ОК			
72	1.3 PPM	OK			
73	0.8 PPM	OK			
74	5.3 PPM	OK			
75	1.3 PPM	OK			
76	0.3 PPM	OK			
77	3.9 PPM	OK			
78	0.4 PPM	OK			
79	0.4 PPM	OK			
80	0.1 PPM	OK			
81	0.7 PPM	OK			
82	0.0 PPM	OK			
83	0.6 PPM	OK			
84	0.0 PPM	OK			
85	0.8 PPM	OK			
86	0.1 PPM	OK			
87	0.0 PPM	OK			
88	0.0 PPM	OK			
89	0.0 PPM	OK			
90	0.6 PPM	OK			
91	0.0 PPM	OK			
92	0.6 PPM	OK			
93	1.1 PPM	OK			
01		OK			

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 22, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA						
	Methane		GPS Co	ordinates		
ID #	Concentration	Compliance	Lat.	Long.	Comments	
95	0.0 PPM	ОК				
96	2.6 PPM	OK				
97	2.2 PPM	OK				
98	0.4 PPM	OK				
99	0.2 PPM	OK				
100	0.6 PPM	OK			End Serpentine Route	
101	0.1 PPM	OK			EW-69	
102	0.1 PPM	OK			EW-71	
103	0.1 PPM	OK			EW-32R	
104	0.1 PPM	OK			EW-72	
105	0.1 PPM	OK			EW-62	
106	0.1 PPM	OK			EW-33B	
107	0.1 PPM	OK			EW-63	
108	1.1 PPM	OK			EW-77	
109	0.0 PPM	OK			EW-64	
110	0.0 PPM	OK			EW-79	
111	0.2 PPM	OK			TP-8	
112	0.0 PPM	ОК			EW-81	
113	3.0 PPM	ОК			EW-80	
114	0.1 PPM	OK			EW-84	
115	0.0 PPM	OK			EW-83	
116	0.0 PPM	OK			EW-65	
117	0.0 PPM	OK			EW-36A	
118	0.0 PPM	OK			EW-49	
119	2.8 PPM	OK			TP-7	
120	0.0 PPM	OK			EW-50	
121	22.2 PPM	OK			TP-6	
122	0.0 PPM	OK			EW-61	
123	0.0 PPM	OK			EW-85	
124	0.0 PPM	OK			EW-88	
125	1.9 PPM	OK			EW-48	
126	0.2 PPM	OK			EW-38	
127	470.0 PPM	OK			EW-86	
128	5.1 PPM	OK			EW-87	
129	18.9 PPM	OK			EW-60	
130	0.8 PPM	OK			EW-89	
131	4.7 PPM	OK			EW-93	
132	2.4 PPM	OK			EW-92	
133	6.1 PPM	OK			TP-4	
134	63.6 PPM	OK			EW-52	
135	1.7 PPM	OK			EW-68	
136	0.2 PPM	OK			TP-5	
137	17.8 PPM	OK			EW-90	
138	130.0 PPM	OK			EW-51	
139	253.0 PPM	OK			EW-91	
140	11500 0 PPM		36 59866	-82 14775	EW-67	

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 22, 2025 **BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA** Methane **GPS** Coordinates Concentration ID # Compliance Comments Lat. Long. EW-47 141 3.4 PPM ОК 33.4 PPM OK EW-54 142 79.9 PPM OK TP-2 143 144 2.5 PPM OK EW-55 145 1.0 PPM OK EW-94 146 0.6 PPM OK EW-98 3.0 PPM OK EW-58 147 148 0.8 PPM OK EW-66 149 0.7 PPM OK EW-96 150 OK 0.9 PPM TP-3 151 11.6 PPM OK EW-53 152 1.1 PPM OK TP-1 3.0 PPM OK EW-57 153 EW-59 154 13.6 PPM OK 155 4.0 PPM OK EW-100 156 1.6 PPM OK EW-56 157 2.2 PPM OK EW-97 158 2.0 PPM OK EW-99 159 4072.0 PPM HIGH_ALRM -82.14835 EW-95 36.59837 160 1.0 PPM OK EW-82 0.0 PPM OK EW-78 161 162 0.4 PPM OK EW-42 EW-76 163 0.4 PPM OK 5.2 PPM OK TP-9 164 OK EW-73 165 0.0 PPM 166 0.0 PPM OK EW-74 167 0.0 PPM OK EW-75 167 Number of locations sampled: Number of exceedance locations: 2 NOTES: Points 1 through 100 represent serpentine SEM route. Points 101 through 167 represent SEM at Pipe Penetrations Weather Conditions: Partly Sunny, 62°F Wind: 20 mph E Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm 5/22/2025 9:44 ZERO 0.2 PPM 5/22/2025 9:52 SPAN 500.0 PPM **Background Reading:** PPM 5/22/2025 9:54 Upwind 2.2 5/22/2025 10:01 PPM Downwind 0.1



June 4, 2025 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 – May 27, 2025 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 Management Facility located in Bristol, Virginia on May 27, 2025. This Weekly Surface Emissions Monitoring (SEM) Event was performed in accordance with Appendix A.1.i of the Consent Decree between the Commonwealth of Virginia and the City of Bristol.

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

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



Table 1.	Summary	of Surface	Emissions	Monitoring
----------	---------	------------	-----------	------------

Description	Quantity
Number of Points Sampled	168
Number of Points in Serpentine Route	100
Number of Points at Surface Cover Penetrations	68
Number of Exceedances	3
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	3

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 retests.

Table 2.	Ongoing Weekly SEM Exceedances
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Point ID	Initial Exceedance Date	5/27/25 Event	5/27/25 Event Result	Comments
EW-54	2/24/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-66	2/24/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-67	4/18/25	N/A	Failed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-95	4/18/25	N/A	Passed	Subject to 40 CFR 63.1960(c)(4)(v)
EW-82	5/19/25	N/A	Passed	Requires 1-Month Retest

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

Sincerely,

Wylin R Aichlin

Wylie R Hicklin Staff Professional SCS Engineers

LSN/WRH

- cc: Randall Eads, City of Bristol Jonathan Hayes, City of Bristol Laura Socia, City of Bristol Susan "Tracey" Blalock, VDEQ
- Encl. Surface Emissions Monitoring Results Bristol SEM Route Drawing

Lucus D. Nachman

Lucas S. Nachman Senior Project Professional SCS Engineers

	EXHIBIT 1. S WEEKLY BRISTOL INTEGRA	JRFACE EMISSIONS MONITORING RESULTS MONITORING EVENT - MAY 27, 2025 TED SOLID WASTE FACILITY - BRISTOL, VIRGINIA				
	Methane	GPS Coordinates				
ID #	Concentration	Compliance	Lat.	Long.	Comments	
1	0.6 PPM	OK			Start Serpentine Route	
2	0.6 PPM	ОК			·	
3	1.2 PPM	OK				
4	0.5 PPM	OK				
5	0.4 PPM	OK				
6	0.4 PPM	OK				
7	0.4 PPM	OK				
8	0.3 PPM	OK				
9	0.3 PPM	OK				
10	1.8 PPM	OK				
11	0.3 PPM	OK				
12	1.5 PPM	OK				
13	1.9 PPM	OK				
14	1.6 PPM	OK				
15	1.5 PPM	OK				
16	2.8 PPM	OK				
17	1.2 PPM	OK				
18	0.9 PPM	OK				
19	2.2 PPM	OK				
20	1.2 PPM	OK				
20	1.4 PPM	OK				
21	1 3 PPM	OK				
22	1.6 PPM	OK				
20	1.0 PPM	OK				
24	2 4 PPM	OK				
26	1 4 PPM	OK				
20	124 PPM	OK				
28	4.6 PPM	OK				
20	3.5 PPM	OK				
30	3.4 PPM	OK				
31	3.3 PPM	OK				
32	0.8 PPM	OK				
33	2.4 PPM	OK				
34	5.3 PPM	OK				
35	3.3 PPM	OK				
36	5.2 PPM	OK				
37	8.2 PPM	OK				
38	30.1 PPM	OK				
39	1.9 PPM	OK				
40	2.7 PPM	OK				
40	0.1 PPM	OK				
<u>⊿</u> 2	0.2 PPM	OK				
43	164.0 PPM	OK				
40	0.2 PPM	OK				
45	126.0 PPM	OK				
46	58.8 PPM	OK				
47	2.2 PPM	OK				

WEEKLY MONITORING EVENT - MAY 27, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA					
	Methane		GPS Coordinator		
ID #	Concentration	Compliance	Lat.	Long.	Comments
48	0.6 PPM	ОК			
49	1.9 PPM	ОК			
50	2.2 PPM	ОК			
51	0.7 PPM	OK			
52	0.7 PPM	ОК			
53	0.8 PPM	ОК			
54	0.1 PPM	OK			
55	0.0 PPM	OK			
56	0.0 PPM	OK			
57	0.0 PPM	OK			
58	0.0 PPM	OK			
59	0.8 PPM	OK			
60	0.0 PPM	OK			
61	0.2 PPM	OK			
62	1.1 PPM	OK			
63	1.5 PPM	OK			
64	4.8 PPM	OK			
65	144.0 PPM	OK			
66	0.8 PPM	OK			
67	0.9 PPM	OK			
68	2.3 PPM	OK			
69	9.3 PPM	OK			
70	14.9 PPM	OK			
71	33.5 PPM	OK			
72	3.0 PPM	OK			
73	86.6 PPM	OK			
74	13.7 PPM	OK			
75	1.5 PPM	OK			
76	6.8 PPM	OK			
77	1.7 PPM	OK			
78	1.7 PPM	OK			
79	9.7 PPM	OK			
80	1.3 PPM	OK			
81	2.7 PPM	OK			
82	0.7 PPM	OK			
83	8.2 PPM	OK			
84	2.3 PPM	OK			
85	2.4 PPM	OK			
86	1.9 PPM	OK			
87	1.3 PPM	OK			
88	0.6 PPM	OK			
89	1.1 PPM	OK			
90	0.5 PPM	OK			
91	1.0 PPM	OK			
92	0.6 PPM	OK			
93	3.1 PPM	OK			
91	20 2 PPM	OK			

	BRISTOL INTEGRA	Y MONITORING E	E EMISSIONS MONITORING RESULTS TORING EVENT - MAY 27, 2025 DLID WASTE FACILITY - BRISTOL, VIRGINIA				
	Methane		GPS Co	ordinates			
ID #	Concentration	Compliance	Lat.	Long.	Comments		
95	36.5 PPM	ОК					
96	1.0 PPM	OK					
97	5.9 PPM	OK					
98	8.0 PPM	OK					
99	0.7 PPM	OK					
100	1.6 PPM	OK			End Serpentine Route		
101	164.0 PPM	OK			EW-52		
102	42.5 PPM	OK			TP-4		
103	155.0 PPM	OK			EW-60		
104	81.6 PPM	OK			EW-48		
105	5.1 PPM	OK			TP-6		
106	2.5 PPM	OK			EW-61		
107	0.4 PPM	OK			EW-50		
108	3332.0 PPM	HIGH_ALRM	36.59866	-82.14775	EW-67		
109	2.6 PPM	OK			EW-47		
110	2378.0 PPM	HIGH_ALRM	36.59866	-82.14742	EW-54		
111	0.5 PPM	OK			EW-55		
112	75.0 PPM	OK			EW-92		
113	13.8 PPM	OK			EW-91		
114	2.9 PPM	OK			EW-96		
115	0.7 PPM	OK			TP-2		
116	1761.0 PPM	HIGH_ALRM	36.59848	-82.14748	EW-66		
117	0.2 PPM	OK			EW-58		
118	6.9 PPM	OK			EW-57		
119	0.0 PPM	OK			TP-1		
120	92.1 PPM	OK			EW-59		
121	1.1 PPM	OK			EW-100		
122	0.1 PPM	OK			EW-56		
123	0.1 PPM	OK			EW-97		
124	32.0 PPM	OK			EW-53		
125	4.1 PPM	OK			TP-3		
126	1.7 PPM	OK			EW-51		
127	1.9 PPM	OK			TP-5		
128	5.5 PPM	OK			EW-68		
129	130.0 PPM	OK			EW-87		
130	2.5 PPM	OK			EW-38		
131	46.4 PPM	OK			TP-7		
132	0.6 PPM	OK			EW-49		
133	0.4 PPM	OK			EW-83		
134	0.3 PPM	OK			EW-65		
135	0.9 PPM	OK			EW-81		
136	0.1 PPM	OK			TP-8		
137	0.0 PPM	OK			EW-64		
138	0.2 PPM	OK			EW-63		
139	5.5 PPM	OK			EW-42		
140	160 0 PPM	OK			F\M/ 76		

EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS WEEKLY MONITORING EVENT - MAY 27, 2025 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA

	Methone	- .	GPS Co	ordinates	-
ID #	Concentration	Compliance	Lat.	Long.	Comments
1 4 1	11 2 DDAA	OK			TD O
141		OK			EVV/ 40
142	1.9 PPM	OK			
143	0.2 PPM	OK			EVV-/4
144	0.0 PPM	OK			EVV-32R
145	0.5 PPM	OK OK			EVV-69
140	0.1 PPM	OK OK			EVV-71
147	0.2 PPM	OK			EW-72
148	0.4 PPM	OK			EW-70
149	0.2 PPM	OK			EW-73
150	7.6 PPM	OK			EW-78
151	0.5 PPM	OK			EW-82
152	0.8 PPM	OK			EW-36A
153	1.6 PPM	OK			EW-85
154	1.4 PPM	OK			EW-88
155	284.0 PPM	OK			EW-89
156	0.0 PPM	OK			EW-93
157	54.3 PPM	OK			EW-94
158	0.8 PPM	OK			EW-98
159	0.0 PPM	OK			EW-99
160	1.2 PPM	OK			EW-95
161	78.5 PPM	OK			EW-90
162	159.0 PPM	OK			EW-86
163	3.8 PPM	OK			EW-84
164	0.1 PPM	OK			EW-80
165	0.3 PPM	OK			EW-79
166	0.4 PPM	ОК			EW-77
167	0.2 PPM	ОК			EW-33B
168	0.1 PPM	OK			EW-75
	N		149]	
		ations samplea:	3		
	Number of exceed	dance locations:	5		
NOTES: Points 1 through	100 represent serpent	ine SFM route			
Points 101 throu	ugh 168 represent SEM	at Pipe Penetration	s		
Weather Condit	tions: Overcast, 62°F W	'ind: 12 mph NW	•		
Sampling Calibr	ration: Methane - 500 p	opm, Zero Air - 0.0	ppm		
5/27/2025	11:33 ZERO	0.2	PPM		
5/2//2025	11:35 SPAN	502.0	PPM		
<u>Background Rec</u>	ading:				
5/27/2025	11:37 Upwind	1.3	PPM		
5/27/2025	11.47 Downwin	A 0 6	PPM		


Appendix B

In-Waste Temperatures on Select Days in May

Appendix B Figures

Figure B - 1 Average Temperatures Recorded by TP-1 on May 7, 2025B-	.3
Figure B - 2 Average Temperatures Recorded by TP-1 on May 14, 2025 B-	.3
Figure B - 3 Average Temperatures Recorded by TP-1 on May 21, 2025B-	-4
Figure B - 4 Average Temperatures Recorded by TP-1 on May 28, 2025B-	-4
Figure B - 11 Average Temperatures Recorded by TP-3 on May 7, 2025 B-	.5
Figure B - 12 Average Temperatures Recorded by TP-3 on May 14, 2025 B-	.5
Figure B - 13 Average Temperatures Recorded by TP-3 on May 21, 2025 B-	-6
Figure B - 14 Average Temperatures Recorded by TP-3 on May 28, 2025 B-	-6
Figure B - 16 Average Temperatures Recorded by TP-5 on May 7, 2025 B-	.7
Figure B - 17 Average Temperatures Recorded by TP-5 on May 14, 2025 B-	.7
Figure B - 18 Average Temperatures Recorded by TP-5 on May 21, 2025 B-	.8
Figure B - 19 Average Temperatures Recorded by TP-5 on May 28, 2025 B-	.8
Figure B - 21 Average Temperatures Recorded by TP-6 on May 7, 2025 B-	.9
Figure B - 22 Average Temperatures Recorded by TP-6 on May 14, 2025 B-	.9
Figure B - 23 Average Temperatures Recorded by TP-6 on May 21, 2025B-1	0.
Figure B - 24 Average Temperatures Recorded by TP-6 on May 28, 2025B-1	0.
Figure B - 26 Average Temperatures Recorded by TP-7 on May 7, 2025B-1	.1
Figure B - 27 Average Temperatures Recorded by TP-7 on May 14, 2025B-1	.1
Figure B - 28 Average Temperatures Recorded by TP-7 on May 21, 2025B-1	.2
Figure B - 29 Average Temperatures Recorded by TP-7 on May 28, 2025B-1	.2
Figure B - 31 Average Temperatures Recorded by TP-8 on May 7, 2025B-1	.3
Figure B - 32 Average Temperatures Recorded by TP-8 on May 14, 2025B-1	.3
Figure B - 33 Average Temperatures Recorded by TP-8 on May 21, 2025B-1	.4
Figure B - 34 Average Temperatures Recorded by TP-8 on May 28, 2025B-1	.4
Figure B - 36 Average Temperatures Recorded by TP-9 on May 7, 2025B-1	.5
Figure B - 37 Average Temperatures Recorded by TP-9 on May 14, 2025B-1	.5
Figure B - 38 Average Temperatures Recorded by TP-9 on May 21, 2025B-1	.6
Figure B - 39 Average Temperatures Recorded by TP-9 on May 28, 2025B-1	.6



Figure B - 1 Average Temperatures Recorded by TP-1 on May 7, 2025







Figure B - 3 Average Temperatures Recorded by TP-1 on May 21, 2025







Figure B - 5 Average Temperatures Recorded by TP-3 on May 7, 2025







Figure B - 7 Average Temperatures Recorded by TP-3 on May 21, 2025







Figure B - 9 Average Temperatures Recorded by TP-5 on May 7, 2025







Figure B - 11 Average Temperatures Recorded by TP-5 on May 21, 2025







Figure B - 13 Average Temperatures Recorded by TP-6 on May 7, 2025







Figure B - 15 Average Temperatures Recorded by TP-6 on May 21, 2025







Figure B - 17 Average Temperatures Recorded by TP-7 on May 7, 2025







Figure B - 19 Average Temperatures Recorded by TP-7 on May 21, 2025







Figure B - 21 Average Temperatures Recorded by TP-8 on May 7, 2025







Figure B - 23 Average Temperatures Recorded by TP-8 on May 21, 2025







Figure B - 25 Average Temperatures Recorded by TP-9 on May 7, 2025







Figure B - 27 Average Temperatures Recorded by TP-9 on May 21, 2025

Figure B - 28 Average Temperatures Recorded by TP-9 on May 28, 2025



Appendix C

Daily Wellhead Temperature Averages

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

SCS ENGINEERS

07222143.00 | June 2, 2025

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

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	105.0	101.5	109.2
May 2	103.7	97.7	110.9
May 3	103.2	96.5	108.0
May 4	100.7	94.1	105.5
May 5	99.5	97.1	103.2
May 6	97.2	91.7	102.9
May 7	95.6	88.3	103.2
May 8	96.2	90.9	105.9
May 9	94.8	89.1	101.2
May 10	93.4	84.7	103.4
May 11	96.0	90.5	103.5
May 12	94.9	90.8	98.7
May 13	97.6	92.9	105.0
May 14	97.1	92.2	104.4
May 15	99.7	94.8	107.1
May 16	99.2	95.2	103.9
May 17	97.5	86.3	104.2
May 18	97.6	92.6	103.9
May 19	98.4	91.4	105.4
May 20	98.9	91.7	107.6
May 21	92.3	85.5	98.3
May 22	89.1	82.8	95.8
May 23	86.7	80.7	94.2
May 24	86.8	75.8	96.5
May 25	90.4	78.7	101.2
May 26	84.3	78.9	91.9
May 27	85.6	79.5	96.7
May 28	87.8	81.6	98.2
May 29	91.1	86.6	97.9
May 30	91.0	83.0	97.5
Summary	95.0	84.3	105.0

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	96.6	92.0	105.7
May 2	92.8	81.4	102.8
May 3	87.6	72.1	95.1
May 4	75.1	66.9	84.3
May 5	67.4	60.4	79.9
May 6	91.8	53.5	128.7
May 7	124.1	122.4	126.6
May 8	121.5	120.0	123.7
May 9	119.0	117.4	120.6
May 10	118.5	116.7	120.1
May 11	118.2	115.8	119.9
May 12	117.7	115.0	119.2
May 13	118.3	115.4	121.0
May 14	118.8	117.3	120.1
May 15	118.9	117.4	120.8
May 16	118.7	117.5	120.1
May 17	116.8	108.8	119.0
May 18	118.2	117.5	118.9
May 19	118.5	117.1	120.5
May 20	117.7	113.1	121.5
May 21	114.0	106.5	115.6
May 22	113.4	110.6	115.3
May 23	112.9	110.1	114.8
May 24	114.4	110.9	117.2
May 25	115.5	111.5	118.9
May 26	111.7	108.6	114.8
May 27	112.2	106.7	116.6
May 28	113.9	109.8	117.6
May 29	89.4	62.9	116.0
May 30	66.3	57.4	78.9
Summary	108.0	66.3	124.1

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	73.9	63.1	88.0
May 2	73.3	63.1	91.4
May 3	66.6	57.1	76.8
May 4	63.9	55.2	77.0
May 5	61.8	53.9	73.1
May 6	63.3	51.0	81.1
May 7	65.9	50.2	85.0
May 8	68.5	58.4	91.7
May 9	67.6	56.0	83.5
May 10	67.0	49.3	86.6
May 11	71.2	59.8	88.4
May 12	66.5	63.8	73.6
May 13	69.6	61.3	86.4
May 14	70.7	61.1	87.9
May 15	76.6	64.8	94.9
May 16	74.9	68.1	83.5
May 17	73.1	61.2	87.3
May 18	72.9	60.5	87.9
May 19	72.8	58.1	91.2
May 20	75.2	65.0	91.2
May 21	72.4	64.8	82.7
May 22	67.6	57.1	78.7
May 23	64.4	54.1	79.0
May 24	64.5	47.5	83.9
May 25	70.7	54.2	89.1
May 26	64.4	59.0	73.1
May 27	66.6	58.6	81.2
May 28	66.9	58.6	85.1
May 29	69.3	64.0	79.3
May 30	66.8	59.4	76.1
Summary	69.0	61.8	76.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	96.7	94.1	99.9
May 2	96.4	92.4	100.8
May 3	93.3	87.7	96.4
May 4	91.3	87.7	96.0
May 5	91.1	89.4	94.3
May 6	91.6	88.3	96.4
May 7	93.3	88.4	98.9
May 8	94.3	90.8	100.7
May 9	93.2	90.6	98.9
May 10	93.6	88.1	99.9
May 11	95.2	92.1	100.2
May 12	93.1	91.1	95.8
May 13	95.5	92.2	100.8
May 14	96.0	93.1	100.4
May 15	98.8	95.0	104.2
May 16	99.0	97.1	100.8
May 17	97.6	92.2	101.2
May 18	98.5	96.3	102.2
May 19	98.7	95.2	102.6
May 20	99.5	96.8	103.5
May 21	99.9	94.5	102.6
May 22	96.5	93.2	98.7
May 23	94.5	91.9	99.0
May 24	96.1	90.9	101.1
May 25	98.1	93.4	103.5
May 26	95.5	92.7	98.6
May 27	96.1	93.2	100.0
May 28	97.8	93.7	103.7
May 29	99.6	97.3	102.7
May 30	98.7	95.7	100.6
Summary	96.0	91.1	99.9

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	110.8	109.6	112.3
May 2	110.4	107.6	112.7
May 3	109.9	107.9	111.5
May 4	109.3	108.0	110.8
May 5	109.3	108.5	110.6
May 6	109.8	108.3	111.7
May 7	110.7	108.9	112.7
May 8	111.0	109.6	113.6
May 9	110.9	109.3	112.8
May 10	111.1	109.1	113.7
May 11	112.0	110.5	114.3
May 12	111.6	110.8	112.5
May 13	112.2	111.1	114.4
May 14	112.5	111.2	114.3
May 15	113.1	111.9	115.1
May 16	113.1	112.3	114.6
May 17	112.6	110.2	114.2
May 18	112.9	111.8	114.5
May 19	113.2	111.8	115.2
May 20	114.1	112.5	115.9
May 21	113.8	112.7	114.6
May 22	113.3	112.8	114.7
May 23	113.4	112.1	114.7
May 24	113.8	112.2	115.8
May 25	114.6	113.0	116.3
May 26	114.1	113.2	115.6
May 27	114.4	113.3	116.0
May 28	114.5	113.6	116.1
May 29	115.2	114.3	116.3
May 30	114.9	113.5	115.7
Summary	112.4	109.3	115.2

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	75.3	65.0	89.2
May 2	74.2	64.7	87.7
May 3	68.9	58.3	78.6
May 4	65.8	56.9	78.1
May 5	62.7	54.8	75.2
May 6	62.9	51.9	79.0
May 7	66.3	48.6	84.9
May 8	67.5	58.3	87.8
May 9	66.3	55.1	81.6
May 10	64.3	46.7	85.8
May 11	71.3	59.0	89.0
May 12	66.4	62.8	72.6
May 13	69.6	61.5	87.2
May 14	70.0	60.9	86.4
May 15	76.4	65.0	92.6
May 16	75.3	68.2	86.4
May 17	73.2	61.7	87.8
May 18	73.2	60.3	88.2
May 19	73.4	58.7	92.0
May 20	77.1	66.1	93.2
May 21	75.4	66.3	85.2
May 22	69.2	59.0	79.8
May 23	64.6	52.5	79.0
May 24	65.6	47.7	83.3
May 25	72.3	56.1	89.4
May 26	64.8	59.5	72.4
May 27	66.5	59.2	80.8
May 28	68.1	59.4	88.2
May 29	71.9	66.7	81.8
May 30	68.6	59.6	78.5
Summary	69.6	62.7	77.1

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	71.3	59.9	86.9
May 2	71.1	61.5	86.3
May 3	64.3	53.7	75.7
May 4	60.7	51.6	74.5
May 5	57.3	48.7	71.2
May 6	59.1	45.2	78.9
May 7	62.8	44.7	82.9
May 8	64.8	55.5	87.2
May 9	64.2	52.1	81.8
May 10	61.9	43.2	84.7
May 11	69.4	55.7	85.9
May 12	64.4	60.9	71.8
May 13	67.4	57.7	84.4
May 14	67.5	58.2	84.0
May 15	75.3	61.7	91.5
May 16	72.7	65.2	83.7
May 17	71.3	59.3	84.5
May 18	69.4	55.1	86.9
May 19	70.0	53.1	88.8
May 20	73.9	61.6	93.2
May 21	71.1	62.4	82.9
May 22	64.8	51.1	77.1
May 23	60.6	48.0	77.1
May 24	59.7	41.0	82.6
May 25	68.3	49.0	89.4
May 26	61.2	54.8	70.9
May 27	63.3	55.1	78.9
May 28	64.1	54.5	84.5
May 29	67.3	61.9	79.1
May 30	63.7	55.0	73.7
Summary	66.1	57.3	75.3

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	153.8	152.2	156.5
May 2	152.3	147.2	154.8
May 3	152.6	140.8	154.7
May 4	150.4	147.3	152.4
May 5	151.7	149.7	155.2
May 6	151.6	150.3	153.8
May 7	152.9	149.8	155.9
May 8	153.4	151.6	155.9
May 9	151.9	150.2	153.6
May 10	151.5	149.1	154.4
May 11	151.6	148.1	154.0
May 12	151.2	148.5	153.9
May 13	152.5	149.8	155.6
May 14	153.0	150.8	154.8
May 15	153.7	150.9	156.1
May 16	153.5	150.8	155.0
May 17	151.1	144.4	154.1
May 18	152.5	150.4	154.2
May 19	153.1	151.3	155.8
May 20	153.4	150.9	156.1
May 21	151.2	144.6	153.8
May 22	149.9	144.6	153.7
May 23	146.9	121.8	151.0
May 24	93.4	73.4	127.7
May 25	84.4	70.7	98.9
May 26	72.9	64.1	81.2
May 27	72.2	62.1	79.9
May 28	112.6	63.5	166.7
May 29	100.0	89.1	121.3
May 30	135.0	88.8	169.7
Summary	138.9	72.2	153.8

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	98.8	92.6	106.7
May 2	97.8	92.4	103.7
May 3	94.9	87.4	98.5
May 4	92.8	89.6	97.4
May 5	95.3	89.8	103.7
May 6	94.9	90.0	102.7
May 7	96.2	88.4	104.6
May 8	97.1	92.7	105.1
May 9	95.5	90.3	102.6
May 10	94.0	88.7	100.3
May 11	95.5	92.5	100.1
May 12	96.0	92.8	102.3
May 13	97.0	93.0	104.2
May 14	96.5	93.9	101.0
May 15	99.9	94.6	106.7
May 16	100.0	97.3	105.7
May 17	97.2	92.8	100.6
May 18	97.3	94.7	100.3
May 19	98.8	93.4	105.8
May 20	99.2	95.8	105.4
May 21	98.7	93.7	105.9
May 22	95.9	90.8	101.4
May 23	90.1	71.7	97.7
May 24	67.5	52.5	79.6
May 25	69.9	55.1	86.7
May 26	62.9	57.5	71.4
May 27	64.4	57.3	76.9
May 28	75.7	56.9	103.1
May 29	71.4	66.4	80.4
May 30	87.2	63.8	107.6
Summary	90.6	62.9	100.0

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	72.5	60.9	89.4
May 2	72.7	62.1	89.1
May 3	65.5	54.9	77.6
May 4	61.5	52.8	76.3
May 5	58.3	49.7	72.8
May 6	59.4	45.6	77.6
May 7	64.3	45.4	84.7
May 8	75.9	65.7	100.3
May 9	71.1	59.5	90.3
May 10	70.7	49.7	97.9
May 11	77.9	65.2	99.0
May 12	69.8	65.7	78.7
May 13	76.4	67.1	96.4
May 14	77.4	65.4	97.2
May 15	84.6	71.7	102.7
May 16	84.0	75.9	96.1
May 17	79.5	64.0	95.5
May 18	80.4	67.6	99.3
May 19	79.1	62.1	96.3
May 20	83.0	70.0	102.2
May 21	78.3	68.2	93.4
May 22	71.1	60.1	83.5
May 23	65.3	51.6	83.5
May 24	66.7	43.7	89.8
May 25	74.4	53.7	99.6
May 26	64.4	57.6	73.7
May 27	66.2	57.7	83.9
May 28	68.8	57.4	92.1
May 29	73.4	65.8	85.8
May 30	68.8	58.3	81.1
Summary	72.0	58.3	84.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	152.5	150.8	153.9
May 2	152.0	148.1	154.0
May 3	152.2	146.8	154.1
May 4	150.8	149.1	152.2
May 5	151.1	149.8	152.7
May 6	151.2	149.8	153.0
May 7	152.4	148.8	154.6
May 8	153.2	151.7	156.0
May 9	152.5	151.0	153.7
May 10	152.9	149.4	156.3
May 11	153.7	152.6	156.3
May 12	153.0	151.3	154.8
May 13	154.6	152.9	156.6
May 14	155.0	153.6	156.4
May 15	155.7	154.5	157.2
May 16	155.7	154.8	156.4
May 17	154.0	150.7	156.5
May 18	153.7	152.3	155.0
May 19	153.9	151.8	155.6
May 20	155.1	153.2	157.1
May 21	152.9	151.7	154.0
May 22	153.2	151.5	154.5
May 23	153.2	151.6	154.8
May 24	154.4	152.0	156.2
May 25	155.9	153.7	158.4
May 26	154.2	152.6	155.5
May 27	154.8	152.5	156.8
May 28	156.0	153.7	158.8
May 29	157.0	155.6	158.1
May 30	156.2	154.1	157.5
Summary	153.8	150.8	157.0

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	99.7	89.7	111.4
May 2	99.3	86.4	112.9
May 3	95.2	79.2	104.7
May 4	92.9	77.9	110.3
May 5	91.2	84.2	103.0
May 6	90.2	79.2	105.3
May 7	94.7	79.3	112.7
May 8	98.5	88.0	117.1
May 9	96.6	87.5	112.9
May 10	96.5	80.6	116.8
May 11	100.6	90.4	120.0
May 12	90.3	83.7	100.8
May 13	99.2	86.4	118.6
May 14	99.5	87.1	115.1
May 15	105.4	95.4	120.2
May 16	106.1	100.9	113.2
May 17	97.7	81.0	113.1
May 18	98.5	86.0	114.4
May 19	99.1	84.4	114.6
May 20	104.3	94.0	118.9
May 21	96.3	84.9	110.3
May 22	93.7	85.0	107.5
May 23	91.5	81.8	107.3
May 24	94.8	77.3	114.2
May 25	101.9	87.1	121.5
May 26	92.6	82.7	101.4
May 27	93.7	82.1	109.9
May 28	97.6	86.1	115.3
May 29	102.3	94.5	111.5
May 30	99.6	89.9	109.2
Summary	97.3	90.2	106.1

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	80.4	69.6	96.1
May 2	79.5	66.7	93.7
May 3	73.5	62.4	85.5
May 4	68.9	59.6	81.9
May 5	64.0	56.2	76.2
May 6	63.8	51.3	78.6
May 7	67.6	50.5	88.1
May 8	71.3	60.1	94.4
May 9	68.6	55.8	84.4
May 10	64.6	46.6	91.3
May 11	72.1	59.8	92.4
May 12	66.5	63.1	75.1
May 13	71.9	62.4	90.6
May 14	72.2	62.1	89.1
May 15	77.7	65.8	94.8
May 16	76.5	68.7	85.2
May 17	73.9	60.9	88.7
May 18	73.7	61.9	90.8
May 19	72.5	56.5	90.8
May 20	77.6	67.0	95.0
May 21	74.8	65.5	87.1
May 22	67.5	56.5	80.5
May 23	62.2	50.1	77.4
May 24	62.2	43.6	83.5
May 25	70.0	52.2	90.6
May 26	63.3	57.4	72.0
May 27	65.5	57.1	79.5
May 28	66.5	57.1	84.2
May 29	70.9	64.8	82.1
May 30	67.8	57.5	78.3
Summary	70.3	62.2	80.4

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	119.0	116.7	122.0
May 2	117.5	110.9	122.9
May 3	117.7	106.3	121.9
May 4	114.4	109.2	118.7
May 5	115.5	112.6	118.1
May 6	115.0	109.2	119.2
May 7	118.6	111.9	124.8
May 8	120.9	117.4	128.6
May 9	120.0	116.6	124.8
May 10	120.3	114.1	126.9
May 11	122.5	120.1	127.6
May 12	121.8	117.6	124.4
May 13	123.7	118.1	128.6
May 14	124.7	122.0	128.4
May 15	126.5	123.5	131.7
May 16	126.9	124.9	129.0
May 17	123.2	112.3	127.1
May 18	125.2	122.1	128.0
May 19	126.0	122.1	130.6
May 20	127.5	124.5	132.6
May 21	123.7	117.8	126.5
May 22	120.4	115.5	125.2
May 23	120.3	113.2	126.2
May 24	123.5	118.6	130.5
May 25	127.9	122.4	133.6
May 26	124.9	119.8	128.1
May 27	126.1	122.1	131.3
May 28	128.4	124.3	137.9
May 29	129.2	122.5	131.7
May 30	125.7	119.4	131.5
Summary	122.6	114.4	129.2

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	156.7	155.4	157.9
May 2	156.6	154.0	159.5
May 3	156.6	152.8	158.3
May 4	156.0	154.4	157.5
May 5	156.5	155.5	157.8
May 6	157.2	155.9	159.2
May 7	158.5	156.8	160.2
May 8	158.7	157.2	161.6
May 9	158.6	156.9	159.7
May 10	158.5	157.0	161.1
May 11	159.0	157.6	161.3
May 12	158.2	156.2	159.8
May 13	159.7	157.7	162.0
May 14	160.1	158.8	162.4
May 15	160.7	158.7	162.8
May 16	160.9	160.3	161.7
May 17	159.8	156.2	161.7
May 18	160.0	158.9	161.6
May 19	159.8	158.5	161.2
May 20	160.4	159.0	162.0
May 21	159.4	157.9	160.5
May 22	158.7	156.8	160.0
May 23	158.1	157.0	159.6
May 24	159.2	157.6	160.9
May 25	160.3	158.3	161.9
May 26	158.7	156.8	160.4
May 27	159.1	156.9	161.2
May 28	160.5	158.7	163.0
May 29	161.5	161.0	162.4
May 30	161.4	159.5	162.5
Summary	159.0	156.0	161.5

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	82.6	71.1	95.6
May 2	81.5	70.5	95.6
May 3	74.9	61.8	85.8
May 4	70.8	60.7	85.7
May 5	67.8	59.3	82.3
May 6	68.5	54.6	85.1
May 7	72.0	54.1	93.8
May 8	75.5	64.7	95.5
May 9	73.1	61.9	92.0
May 10	71.3	52.3	95.8
May 11	79.2	66.5	101.6
May 12	72.1	68.4	81.7
May 13	77.3	67.4	97.5
May 14	78.0	66.5	95.4
May 15	85.7	72.4	101.7
May 16	83.4	76.2	92.0
May 17	81.0	66.5	95.9
May 18	81.8	70.2	97.3
May 19	81.1	66.2	96.7
May 20	84.7	74.5	100.7
May 21	81.8	71.1	94.3
May 22	75.1	64.2	88.7
May 23	70.0	57.2	85.4
May 24	70.2	49.9	90.8
May 25	78.4	60.0	100.5
May 26	69.7	62.6	78.3
May 27	71.7	62.1	87.2
May 28	73.7	62.7	92.9
May 29	78.6	72.6	90.5
May 30	74.9	64.3	86.0
Summary	76.2	67.8	85.7

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	93.4	88.8	97.4
May 2	92.3	86.4	97.8
May 3	89.7	80.7	94.7
May 4	86.2	82.0	90.5
May 5	86.9	83.8	91.6
May 6	96.1	74.2	110.4
May 7	107.4	32.6	112.1
May 8	108.3	106.9	111.1
May 9	108.2	106.8	110.3
May 10	108.0	105.6	110.7
May 11	108.6	107.4	111.1
May 12	107.8	107.1	109.1
May 13	108.5	106.7	111.0
May 14	108.7	107.1	110.9
May 15	109.5	107.9	111.6
May 16	109.3	108.5	110.4
May 17	108.9	106.6	110.6
May 18	109.2	107.9	110.7
May 19	109.2	107.5	111.3
May 20	109.4	108.2	111.5
May 21	108.7	107.6	109.7
May 22	107.6	106.7	108.7
May 23	107.2	105.3	108.9
May 24	107.1	104.9	109.7
May 25	108.0	106.0	110.4
May 26	107.1	106.0	108.2
May 27	107.2	105.9	109.0
May 28	107.5	106.3	109.8
May 29	108.0	106.8	109.4
May 30	107.5	106.1	108.2
Summary	104.7	86.2	109.5

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	116.8	27.6	121.6
May 2	120.9	119.6	121.7
May 3	120.9	119.6	121.8
May 4	116.4	111.1	120.7
May 5	113.0	109.8	118.7
May 6	119.7	118.1	120.8
May 7	120.5	119.1	122.7
May 8	117.9	111.5	123.3
May 9	117.4	111.4	121.7
May 10	111.5	110.2	112.8
May 11	111.8	111.0	113.0
May 12	115.7	111.1	119.4
May 13	121.1	119.3	124.0
May 14	117.7	112.4	122.3
May 15	114.2	112.1	119.8
May 16	112.9	112.2	115.2
May 17	112.3	111.1	113.0
May 18	112.5	111.7	113.2
May 19	112.6	111.4	114.9
May 20	112.8	112.1	113.8
May 21	115.2	112.1	117.7
May 22	117.3	116.6	118.1
May 23	117.2	112.1	120.4
May 24	112.5	111.2	113.9
May 25	112.9	111.7	114.4
May 26	112.3	111.6	112.8
May 27	114.5	111.8	117.8
May 28	116.1	115.3	117.7
May 29	115.0	112.9	117.6
May 30	112.9	112.4	113.4
Summary	115.5	111.5	121.1
Date	Average (°F)	Minimum (°F)	Maximum (°F)
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May 1	126.5	118.3	150.3
May 2	126.3	114.2	155.4
May 3	119.7	110.9	123.1
May 4	116.0	113.0	119.0
May 5	123.8	114.7	154.2
May 6	126.2	116.5	155.5
May 7	129.9	117.5	152.6
May 8	131.0	120.6	154.9
May 9	125.6	119.9	151.0
May 10	121.6	117.8	127.5
May 11	122.4	119.6	126.5
May 12	127.9	119.9	149.8
May 13	125.1	121.8	143.6
May 14	124.3	121.9	127.7
May 15	125.2	122.6	129.2
May 16	130.4	123.7	156.1
May 17	124.2	118.0	127.2
May 18	125.1	123.3	127.6
May 19	132.7	121.8	158.7
May 20	132.1	125.5	157.2
May 21	129.8	121.6	157.2
May 22	130.9	124.3	154.8
May 23	128.2	121.6	154.8
May 24	125.0	121.0	128.8
May 25	126.2	122.2	130.4
May 26	123.4	120.5	125.5
May 27	127.8	121.0	149.9
May 28	129.3	123.0	149.2
May 29	129.9	125.2	151.3
May 30	128.8	123.6	150.7
Summary	126.5	116.0	132.7

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	170.2	169.5	171.0
May 2	169.9	168.6	170.8
May 3	169.7	167.8	170.7
May 4	169.1	168.4	169.9
May 5	168.7	168.3	169.2
May 6	168.3	167.7	169.3
May 7	168.5	167.4	169.5
May 8	168.6	167.9	170.1
May 9	168.1	167.5	169.0
May 10	167.7	166.8	168.9
May 11	167.9	167.2	168.8
May 12	167.7	167.0	168.5
May 13	168.1	167.2	169.0
May 14	167.2	166.5	168.2
May 15	167.5	166.6	168.6
May 16	167.5	167.0	168.2
May 17	166.7	165.2	167.8
May 18	165.8	165.0	166.6
May 19	166.3	165.0	167.6
May 20	160.4	147.2	167.4
May 21	142.7	139.3	147.7
May 22	139.5	137.5	146.8
May 23	138.7	137.5	140.5
May 24	139.5	137.9	141.0
May 25	140.2	138.2	141.6
May 26	139.2	138.3	140.1
May 27	139.3	137.8	140.6
May 28	145.6	137.9	166.1
May 29	163.7	163.0	164.3
May 30	164.2	163.5	165.1
Summary	160.2	138.7	170.2

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	100.9	99.0	103.6
May 2	100.3	96.6	104.0
May 3	99.4	95.2	101.7
May 4	98.5	95.4	101.3
May 5	98.0	96.7	100.6
May 6	97.8	95.9	101.0
May 7	98.4	94.2	102.7
May 8	99.6	96.7	105.4
May 9	99.1	96.4	103.3
May 10	98.6	94.1	104.5
May 11	100.6	97.3	104.8
May 12	99.9	98.0	102.3
May 13	101.6	99.0	106.5
May 14	102.1	99.1	107.2
May 15	103.5	100.2	108.2
May 16	103.0	101.3	105.5
May 17	102.4	95.9	106.5
May 18	102.7	99.8	106.6
May 19	103.2	99.6	107.3
May 20	103.5	97.6	108.8
May 21	100.4	94.8	104.9
May 22	98.5	95.1	103.9
May 23	97.3	92.8	103.3
May 24	97.9	91.0	104.9
May 25	100.3	92.8	108.4
May 26	97.3	93.6	103.1
May 27	97.9	90.9	105.8
May 28	99.6	94.2	106.9
May 29	101.4	97.3	106.4
May 30	99.8	92.9	103.3
Summary	100.1	97.3	103.5

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	86.9	79.2	96.7
May 2	85.3	75.5	96.8
May 3	80.8	69.4	89.6
May 4	77.3	67.7	87.2
May 5	75.6	69.9	86.2
May 6	81.0	67.2	97.5
May 7	89.9	81.0	101.3
May 8	90.8	85.2	102.6
May 9	88.5	82.0	97.0
May 10	87.0	76.4	99.3
May 11	90.6	83.4	100.5
May 12	86.1	82.1	92.1
May 13	88.1	81.9	98.7
May 14	88.7	81.1	99.1
May 15	91.7	84.1	101.5
May 16	89.7	84.8	97.5
May 17	86.9	73.6	96.4
May 18	87.2	78.8	97.2
May 19	86.7	76.2	99.1
May 20	95.6	81.4	112.3
May 21	104.2	99.7	108.0
May 22	101.8	98.4	105.3
May 23	100.4	96.6	105.5
May 24	100.6	93.6	107.2
May 25	102.9	97.7	109.4
May 26	100.3	97.9	105.0
May 27	100.6	95.2	108.1
May 28	100.8	97.1	107.5
May 29	82.5	62.5	101.4
May 30	64.2	53.8	75.6
Summary	89.8	64.2	104.2

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	121.2	117.3	124.2
May 2	119.8	110.0	124.4
May 3	119.2	109.9	124.8
May 4	116.4	111.9	121.0
May 5	116.5	113.3	120.6
May 6	116.5	113.9	120.0
May 7	118.1	113.4	123.6
May 8	118.0	114.1	125.4
May 9	116.8	111.9	122.0
May 10	117.2	111.2	125.4
May 11	119.0	115.3	125.0
May 12	116.9	113.0	120.5
May 13	119.1	114.4	125.3
May 14	119.7	114.2	125.4
May 15	121.4	117.0	126.5
May 16	121.1	118.6	125.1
May 17	117.7	106.6	122.2
May 18	119.1	115.5	123.9
May 19	119.9	114.1	124.8
May 20	125.6	117.7	134.8
May 21	126.2	122.3	128.4
May 22	124.0	121.1	126.7
May 23	122.8	118.9	126.6
May 24	124.1	119.9	128.1
May 25	125.4	122.1	129.8
May 26	122.9	119.3	126.9
May 27	122.8	118.1	128.0
May 28	123.5	119.7	128.3
May 29	91.4	61.2	125.0
May 30	63.2	53.9	72.7
Summary	117.5	63.2	126.2

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	138.6	133.4	141.9
May 2	138.6	133.0	142.3
May 3	133.4	128.1	135.4
May 4	129.2	126.3	131.1
May 5	130.2	125.9	134.6
May 6	135.9	128.0	144.4
May 7	138.3	134.6	140.8
May 8	138.0	135.2	141.1
May 9	137.2	134.4	139.9
May 10	135.2	133.8	136.8
May 11	135.4	134.6	136.4
May 12	137.4	134.9	139.9
May 13	137.4	134.3	140.8
May 14	135.7	134.5	136.9
May 15	137.3	135.2	140.6
May 16	136.6	135.5	140.3
May 17	135.0	132.7	136.1
May 18	135.4	134.4	136.4
May 19	137.2	134.3	140.1
May 20	136.3	133.7	140.1
May 21	134.5	132.5	139.0
May 22	134.4	132.7	137.9
May 23	134.1	132.5	137.4
May 24	133.7	132.0	135.1
May 25	134.9	133.0	137.0
May 26	133.5	132.3	134.6
May 27	135.9	132.6	139.9
May 28	135.2	133.2	138.4
May 29	135.4	133.9	139.0
May 30	135.5	133.1	139.1
Summary	135.5	129.2	138.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	172.2	170.1	174.1
May 2	173.1	167.8	175.7
May 3	157.5	140.4	164.2
May 4	144.6	138.4	148.5
May 5	148.3	139.5	162.1
May 6	166.0	161.4	170.1
May 7	168.6	160.6	174.0
May 8	165.3	156.4	173.7
May 9	167.1	158.8	173.1
May 10	172.1	163.7	178.3
May 11	159.1	152.9	163.6
May 12	163.5	153.5	171.9
May 13	174.6	168.4	179.4
May 14	164.4	159.6	168.2
May 15	161.1	156.4	165.1
May 16	163.0	161.2	164.2
May 17	160.0	154.8	163.3
May 18	162.1	159.8	164.9
May 19	168.2	163.0	172.1
May 20	171.9	170.6	173.5
May 21	162.2	156.6	171.1
May 22	157.9	153.7	161.6
May 23	156.2	152.3	159.4
May 24	155.3	151.7	157.4
May 25	156.7	153.4	159.4
May 26	153.5	147.7	155.7
May 27	155.6	152.6	158.8
May 28	156.9	153.8	161.4
May 29	157.6	148.6	160.3
May 30	155.9	149.2	159.1
Summary	161.7	144.6	174.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	135.8	131.6	139.4
May 2	134.6	125.3	140.1
May 3	133.6	116.8	138.4
May 4	128.4	119.6	133.6
May 5	128.9	124.0	134.3
May 6	127.9	123.0	132.6
May 7	132.3	124.5	140.0
May 8	134.8	129.9	144.3
May 9	131.9	125.9	135.4
May 10	130.7	120.9	140.9
May 11	132.8	127.9	140.2
May 12	126.5	118.2	133.0
May 13	130.6	111.3	140.0
May 14	134.5	129.5	139.8
May 15	137.4	132.8	141.8
May 16	138.4	135.2	142.2
May 17	131.2	117.4	137.8
May 18	134.6	132.3	139.2
May 19	136.1	128.8	142.0
May 20	139.4	135.3	145.7
May 21	123.8	91.7	132.5
May 22	126.4	119.2	130.9
May 23	125.8	120.6	131.9
May 24	129.6	121.2	136.0
May 25	134.6	126.8	142.3
May 26	125.9	112.6	131.2
May 27	127.4	118.8	135.8
May 28	135.0	125.6	145.4
May 29	140.1	132.0	143.0
May 30	135.5	125.9	140.5
Summary	132.2	123.8	140.1

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	139.2	137.0	143.0
May 2	138.3	136.3	140.3
May 3	138.1	133.0	139.6
May 4	137.2	135.6	139.0
May 5	138.5	136.4	144.2
May 6	137.2	135.7	140.3
May 7	138.6	136.1	142.9
May 8	138.7	136.1	141.7
May 9	137.7	135.8	139.1
May 10	137.5	133.8	140.7
May 11	137.7	136.2	139.8
May 12	138.1	135.9	142.9
May 13	138.7	136.0	141.3
May 14	138.4	136.8	139.9
May 15	139.7	137.6	145.4
May 16	141.0	138.1	148.6
May 17	138.7	134.0	140.5
May 18	138.3	137.2	139.4
May 19	139.1	137.5	143.3
May 20	138.6	135.3	139.7
May 21	137.7	134.3	140.7
May 22	135.7	132.5	139.8
May 23	134.6	132.3	136.5
May 24	136.4	133.9	140.2
May 25	138.8	135.3	141.8
May 26	135.2	132.7	136.8
May 27	136.0	134.0	137.6
May 28	137.2	135.1	140.1
May 29	138.7	136.4	142.4
May 30	137.6	134.7	139.2
Summary	137.9	134.6	141.0

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	102.3	99.6	106.6
May 2	101.4	98.3	106.6
May 3	98.9	93.7	102.5
May 4	97.4	92.5	103.8
May 5	96.5	93.4	102.7
May 6	95.8	91.5	102.2
May 7	95.8	89.5	102.6
May 8	95.6	92.6	103.9
May 9	93.6	88.2	102.3
May 10	92.1	83.6	100.9
May 11	93.5	87.4	103.2
May 12	89.0	86.7	94.3
May 13	91.9	86.8	100.8
May 14	91.6	86.4	99.2
May 15	93.6	87.9	102.8
May 16	92.4	88.4	98.0
May 17	90.9	82.0	99.5
May 18	91.6	84.6	100.3
May 19	90.8	82.6	99.8
May 20	91.6	85.4	100.2
May 21	90.2	84.3	98.5
May 22	88.2	81.6	97.5
May 23	85.4	78.4	97.7
May 24	84.0	73.1	96.3
May 25	86.9	74.6	98.8
May 26	79.7	74.6	88.4
May 27	80.4	73.8	93.6
May 28	81.3	73.7	95.9
May 29	85.3	81.6	93.1
May 30	83.3	76.7	93.8
Summary	91.0	79.7	102.3

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	71.7	61.2	88.6
May 2	71.3	63.2	89.5
May 3	65.8	58.8	73.3
May 4	64.5	55.8	78.2
May 5	61.2	53.1	78.2
May 6	61.7	50.2	77.6
May 7	62.3	48.5	80.3
May 8	65.6	57.7	87.3
May 9	66.2	54.7	85.0
May 10	62.9	46.2	87.6
May 11	70.5	55.4	94.5
May 12	64.6	61.8	70.3
May 13	68.5	60.6	91.7
May 14	68.9	59.9	86.2
May 15	75.3	62.3	91.9
May 16	73.1	65.5	84.2
May 17	72.0	61.4	88.0
May 18	70.7	57.3	89.6
May 19	70.6	56.5	90.4
May 20	73.2	62.6	93.1
May 21	72.0	63.8	84.1
May 22	66.3	56.0	82.6
May 23	64.7	52.3	81.8
May 24	62.8	46.8	84.1
May 25	67.0	51.5	93.5
May 26	63.2	58.1	73.5
May 27	65.2	57.5	81.4
May 28	64.5	57.6	77.1
May 29	67.7	64.0	77.3
May 30	65.8	59.4	74.9
Summary	67.3	61.2	75.3

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	136.1	132.5	137.1
May 2	135.6	133.9	137.6
May 3	135.6	132.9	136.7
May 4	134.9	133.5	135.9
May 5	135.1	133.8	135.6
May 6	135.5	134.5	137.2
May 7	136.6	135.4	137.5
May 8	136.6	135.9	138.3
May 9	136.0	134.9	136.7
May 10	136.0	134.6	137.3
May 11	136.1	134.6	137.3
May 12	135.5	134.7	136.4
May 13	136.4	135.2	137.9
May 14	136.5	135.8	137.5
May 15	136.8	136.0	137.7
May 16	136.8	135.7	137.6
May 17	135.7	132.4	137.0
May 18	136.4	135.8	137.0
May 19	136.6	135.9	137.6
May 20	137.1	136.4	138.0
May 21	136.1	134.1	136.9
May 22	135.9	135.3	136.4
May 23	135.9	134.9	136.7
May 24	136.4	135.6	137.4
May 25	136.7	134.6	137.8
May 26	134.6	133.0	136.8
May 27	135.0	133.4	137.2
May 28	136.2	134.3	138.2
May 29	137.1	136.6	137.7
May 30	136.7	135.7	137.5
Summary	136.1	134.6	137.1

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	135.3	134.5	137.1
May 2	134.3	131.6	136.4
May 3	134.3	128.1	136.1
May 4	133.0	130.2	134.0
May 5	133.2	130.9	134.5
May 6	133.5	131.7	135.2
May 7	134.9	133.4	136.9
May 8	135.3	134.1	138.0
May 9	134.0	132.0	135.2
May 10	134.2	132.4	136.3
May 11	135.0	133.5	136.8
May 12	134.6	132.9	135.7
May 13	135.7	133.6	137.9
May 14	135.9	134.9	137.3
May 15	136.2	134.6	137.8
May 16	136.3	134.8	137.4
May 17	134.3	129.2	136.6
May 18	135.3	134.4	136.2
May 19	136.1	135.1	137.5
May 20	136.8	135.2	138.2
May 21	134.3	130.3	136.3
May 22	133.6	131.8	135.1
May 23	133.6	132.2	134.8
May 24	134.6	133.0	135.9
May 25	135.5	132.6	137.4
May 26	132.8	130.7	135.7
May 27	133.2	131.1	136.8
May 28	134.8	132.6	137.8
May 29	136.1	134.6	136.9
May 30	135.5	133.6	137.2
Summary	134.7	132.8	136.8

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	110.3	109.6	111.5
May 2	109.6	108.2	111.5
May 3	108.9	106.6	109.9
May 4	107.7	106.9	109.0
May 5	106.9	105.9	108.1
May 6	104.6	100.7	106.8
May 7	101.4	99.1	104.9
May 8	101.0	99.1	104.9
May 9	99.8	97.7	103.3
May 10	98.8	95.5	103.3
May 11	99.9	97.3	103.5
May 12	97.9	96.6	99.6
May 13	98.5	96.5	102.8
May 14	99.0	96.6	102.4
May 15	99.9	97.8	103.0
May 16	99.4	98.1	101.1
May 17	98.6	95.1	101.5
May 18	98.9	96.6	102.2
May 19	99.0	96.5	102.8
May 20	103.0	98.0	108.3
May 21	107.0	106.1	107.9
May 22	106.5	105.8	107.3
May 23	106.2	105.0	107.6
May 24	106.2	105.0	107.7
May 25	106.8	105.5	108.5
May 26	106.3	105.6	107.2
May 27	106.3	105.2	108.2
May 28	106.4	105.8	108.0
May 29	106.7	106.1	107.7
May 30	106.4	105.4	107.0
Summary	103.6	97.9	110.3

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	123.8	119.0	126.6
May 2	121.4	113.1	126.8
May 3	122.5	113.4	126.9
May 4	119.0	112.1	122.6
May 5	118.4	115.1	120.4
May 6	117.2	113.8	120.6
May 7	119.9	114.8	123.5
May 8	121.2	117.2	127.9
May 9	118.6	113.4	121.6
May 10	118.2	113.9	123.3
May 11	118.1	113.5	122.3
May 12	119.4	114.0	123.4
May 13	123.2	118.2	128.0
May 14	123.1	119.5	126.2
May 15	124.7	120.8	129.1
May 16	123.5	119.1	125.5
May 17	119.4	102.9	125.3
May 18	122.3	120.5	124.7
May 19	123.3	119.9	126.7
May 20	128.6	124.2	134.4
May 21	127.0	123.8	130.1
May 22	124.4	122.1	126.9
May 23	123.1	120.9	124.6
May 24	124.1	121.8	125.8
May 25	125.3	121.0	128.4
May 26	121.8	117.6	124.6
May 27	122.5	119.7	126.7
May 28	124.9	120.0	128.2
May 29	126.2	124.2	127.5
May 30	126.6	122.5	128.8
Summary	122.4	117.2	128.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	128.1	127.1	128.9
May 2	127.8	126.5	128.7
May 3	127.8	125.6	128.6
May 4	127.0	125.6	128.0
May 5	127.0	126.1	127.6
May 6	126.6	125.7	127.6
May 7	127.0	126.0	128.2
May 8	126.8	125.9	128.7
May 9	126.2	125.7	126.8
May 10	126.6	125.6	128.0
May 11	126.8	126.1	127.7
May 12	126.5	125.6	127.0
May 13	126.8	125.9	128.2
May 14	126.9	126.3	128.0
May 15	127.4	126.2	128.5
May 16	127.2	126.5	128.1
May 17	126.3	123.6	127.3
May 18	127.1	126.2	127.8
May 19	127.0	125.8	127.9
May 20	126.9	126.0	128.0
May 21	125.6	124.5	126.0
May 22	125.3	124.8	125.7
May 23	125.3	124.8	125.7
May 24	125.9	125.4	126.3
May 25	126.3	125.1	127.8
May 26	125.0	124.1	125.9
May 27	125.0	124.3	126.2
May 28	125.7	124.8	127.3
May 29	126.3	125.6	126.9
May 30	125.8	124.8	126.4
Summary	126.5	125.0	128.1

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	128.4	128.2	128.7
May 2	128.3	127.9	128.7
May 3	128.2	127.9	128.5
May 4	128.1	127.8	128.3
May 5	128.2	128.0	128.3
May 6	128.2	128.0	128.5
May 7	128.1	127.8	128.4
May 8	127.8	127.5	128.4
May 9	127.6	127.4	127.9
May 10	127.5	127.2	128.0
May 11	127.6	127.4	128.0
May 12	127.5	127.2	127.7
May 13	127.6	127.3	128.0
May 14	127.6	127.3	127.9
May 15	127.6	127.3	127.9
May 16	127.6	127.3	127.8
May 17	127.4	126.9	127.7
May 18	127.4	127.2	127.7
May 19	127.5	127.2	127.8
May 20	127.5	127.2	127.9
May 21	127.3	127.1	127.5
May 22	127.1	126.9	127.3
May 23	127.1	126.7	127.4
May 24	127.1	126.8	127.5
May 25	127.3	126.8	127.8
May 26	127.0	126.9	127.5
May 27	127.1	126.8	127.7
May 28	127.1	126.9	127.5
May 29	127.1	126.8	127.4
May 30	127.1	126.8	127.3
Summary	127.6	127.0	128.4

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	154.9	143.1	165.9
May 2	147.2	130.4	152.3
May 3	149.8	133.9	153.0
May 4	144.2	126.6	151.4
May 5	147.4	137.8	154.6
May 6	154.7	141.4	168.1
May 7	162.5	156.4	166.7
May 8	154.2	143.7	159.8
May 9	143.9	137.9	150.7
May 10	146.7	138.5	150.6
May 11	138.2	121.4	149.4
May 12	136.1	127.9	142.2
May 13	139.8	131.9	151.4
May 14	134.2	125.7	140.1
May 15	131.1	120.4	139.2
May 16	128.8	122.7	134.0
May 17	115.8	79.7	138.1
May 18	131.7	121.7	142.3
May 19	130.3	123.6	144.5
May 20	151.8	124.5	182.1
May 21	189.0	177.1	196.4
May 22	196.2	194.5	197.2
May 23	200.2	198.3	203.7
May 24	205.2	201.2	207.6
May 25	208.6	204.8	211.8
May 26	210.4	207.2	213.4
May 27	210.8	208.3	213.6
May 28	212.9	207.3	216.8
May 29	135.9	67.2	216.8
May 30	72.8	57.4	81.6
Summary	156.2	72.8	212.9

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	110.2	107.2	114.2
May 2	108.9	104.4	113.0
May 3	107.7	101.9	110.5
May 4	104.6	102.6	107.6
May 5	106.1	101.9	110.7
May 6	107.1	104.5	110.4
May 7	108.4	103.8	113.0
May 8	109.3	105.9	114.9
May 9	109.6	106.1	113.2
May 10	108.1	104.6	114.3
May 11	109.9	106.5	114.4
May 12	109.0	107.2	111.9
May 13	110.1	107.5	114.8
May 14	110.3	106.7	114.2
May 15	111.4	107.8	115.3
May 16	110.7	108.9	113.4
May 17	108.2	104.2	110.9
May 18	108.0	105.7	111.5
May 19	109.5	105.7	113.1
May 20	111.5	108.7	115.3
May 21	109.5	106.3	113.1
May 22	107.6	104.7	112.6
May 23	106.1	102.9	110.2
May 24	106.9	102.4	112.0
May 25	108.7	105.4	113.6
May 26	106.9	104.9	109.8
May 27	108.3	103.9	113.6
May 28	108.9	106.4	112.1
May 29	109.4	107.2	112.8
May 30	108.2	104.3	111.9
Summary	108.6	104.6	111.5

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	150.3	148.8	151.5
May 2	149.7	147.4	151.6
May 3	149.9	142.3	151.4
May 4	148.1	143.1	149.5
May 5	148.8	146.2	150.2
May 6	148.9	146.2	150.3
May 7	150.0	148.2	151.1
May 8	150.3	148.9	152.7
May 9	149.0	146.9	150.7
May 10	149.4	147.0	150.8
May 11	149.0	145.8	150.9
May 12	149.4	146.8	151.2
May 13	150.0	145.8	152.3
May 14	150.5	148.7	151.7
May 15	150.8	149.6	152.4
May 16	150.5	148.8	151.6
May 17	148.5	141.9	151.0
May 18	150.1	148.7	151.3
May 19	150.6	149.5	152.4
May 20	151.5	149.3	153.4
May 21	150.2	145.9	151.6
May 22	149.9	147.9	151.8
May 23	150.1	148.7	151.5
May 24	151.1	149.6	152.3
May 25	151.6	149.4	153.0
May 26	150.4	149.1	151.6
May 27	150.8	149.3	152.1
May 28	151.6	150.0	153.4
May 29	107.2	64.7	152.5
May 30	67.4	56.3	80.0
Summary	145.9	67.4	151.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	73.0	59.8	91.3
May 2	72.7	61.7	87.7
May 3	65.0	54.0	77.6
May 4	62.1	51.7	81.5
May 5	58.5	47.8	75.8
May 6	59.0	44.8	79.8
May 7	64.3	44.5	89.5
May 8	66.1	55.8	88.9
May 9	64.6	52.0	85.7
May 10	64.0	42.3	92.1
May 11	70.8	56.2	92.3
May 12	64.5	61.0	74.0
May 13	68.4	57.7	88.7
May 14	69.2	58.3	89.3
May 15	75.8	61.4	95.3
May 16	73.9	65.4	86.0
May 17	72.0	59.2	89.6
May 18	72.6	54.9	91.3
May 19	71.3	53.0	94.2
May 20	74.9	61.3	95.5
May 21	71.9	62.1	86.6
May 22	66.2	50.8	81.8
May 23	61.5	48.8	78.3
May 24	62.5	40.6	88.6
May 25	70.1	48.4	95.5
May 26	61.3	54.9	71.9
May 27	64.2	55.2	82.2
May 28	64.1	54.7	84.1
May 29	68.0	61.3	82.4
May 30	64.8	54.8	80.9
Summary	67.2	58.5	75.8

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	169.7	167.9	170.9
May 2	168.8	164.0	170.3
May 3	168.9	162.8	170.8
May 4	167.8	164.8	168.9
May 5	168.1	166.6	169.1
May 6	168.2	165.9	169.9
May 7	170.1	168.5	171.4
May 8	170.6	168.9	171.7
May 9	169.6	167.8	171.1
May 10	169.7	167.7	171.3
May 11	168.9	165.5	171.3
May 12	170.0	168.6	171.2
May 13	170.9	169.4	172.4
May 14	170.7	169.0	171.7
May 15	170.9	169.1	172.0
May 16	170.7	170.0	171.6
May 17	168.5	162.3	171.3
May 18	169.4	168.2	170.5
May 19	169.7	168.9	170.6
May 20	169.9	167.1	171.5
May 21	165.4	162.9	167.2
May 22	164.0	162.2	165.9
May 23	163.7	162.7	164.6
May 24	164.2	163.1	165.2
May 25	164.8	163.7	165.9
May 26	163.6	162.4	164.8
May 27	163.8	162.5	165.2
May 28	164.1	163.1	165.4
May 29	164.2	163.5	164.9
May 30	163.4	161.6	164.5
Summary	167.7	163.4	170.9

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	173.2	169.6	174.5
May 2	172.2	169.4	174.0
May 3	173.6	170.4	174.7
May 4	172.1	170.9	173.6
May 5	172.0	168.7	173.7
May 6	171.6	167.5	173.2
May 7	173.0	171.6	174.0
May 8	173.5	172.0	174.4
May 9	173.1	171.8	174.1
May 10	173.2	172.4	174.4
May 11	172.6	169.8	173.9
May 12	173.5	171.7	174.6
May 13	174.0	172.3	174.8
May 14	174.0	172.9	174.8
May 15	173.9	171.6	174.8
May 16	174.3	172.9	175.2
May 17	171.9	169.0	175.1
May 18	172.1	169.2	174.1
May 19	173.5	171.8	174.5
May 20	174.3	172.6	175.5
May 21	168.9	165.4	172.5
May 22	168.0	164.3	171.8
May 23	169.0	164.9	171.9
May 24	171.2	169.4	172.7
May 25	172.5	171.7	173.7
May 26	172.2	170.5	173.4
May 27	172.3	171.0	173.5
May 28	172.8	171.9	173.8
May 29	172.8	171.1	173.6
May 30	172.2	168.6	174.3
Summary	172.4	168.0	174.3

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	175.4	174.1	176.4
May 2	174.5	172.8	175.7
May 3	174.9	166.9	176.4
May 4	173.8	172.5	174.8
May 5	173.9	171.4	175.2
May 6	173.6	171.7	174.6
May 7	174.3	173.4	175.2
May 8	174.5	173.8	175.5
May 9	173.5	172.0	174.9
May 10	173.6	171.9	174.7
May 11	173.1	170.7	174.6
May 12	173.3	171.2	174.6
May 13	174.1	172.5	175.1
May 14	174.3	173.4	175.1
May 15	174.3	172.9	175.2
May 16	174.2	173.5	174.7
May 17	172.8	168.1	174.9
May 18	173.5	172.5	174.6
May 19	173.8	173.2	174.6
May 20	174.2	173.4	175.1
May 21	172.7	169.1	174.0
May 22	172.1	170.5	173.9
May 23	172.0	170.6	173.1
May 24	172.4	171.5	173.1
May 25	172.7	171.7	173.6
May 26	171.4	170.2	172.1
May 27	171.6	170.6	172.6
May 28	172.1	170.9	173.2
May 29	172.5	171.5	172.7
May 30	171.7	170.2	172.8
Summary	173.4	171.4	175.4

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	172.5	172.2	172.8
May 2	172.3	171.8	172.9
May 3	172.2	171.7	172.6
May 4	171.9	171.4	172.3
May 5	171.7	171.4	172.0
May 6	171.3	170.9	171.5
May 7	171.2	170.7	171.6
May 8	171.1	170.8	171.6
May 9	170.8	170.4	171.1
May 10	170.6	170.2	171.3
May 11	170.5	170.2	170.9
May 12	170.3	170.0	170.6
May 13	170.6	170.0	171.1
May 14	170.5	170.2	170.8
May 15	170.5	170.1	170.8
May 16	170.3	170.1	170.5
May 17	169.9	169.2	170.4
May 18	169.7	169.5	170.1
May 19	169.6	169.1	170.0
May 20	169.6	169.3	169.9
May 21	169.1	168.8	169.3
May 22	168.8	167.8	169.1
May 23	168.6	168.3	169.1
May 24	168.5	168.0	169.0
May 25	168.6	168.0	169.2
May 26	168.1	167.6	168.5
May 27	168.1	167.7	168.5
May 28	168.2	167.7	168.9
May 29	168.2	167.9	168.5
May 30	168.1	167.7	168.4
Summary	170.0	168.1	172.5

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	110.4	100.1	122.3
May 2	111.4	100.5	123.0
May 3	102.7	92.5	108.3
May 4	98.4	93.8	106.1
May 5	129.0	92.7	156.2
May 6	152.5	149.2	155.2
May 7	153.9	149.7	158.5
May 8	154.4	151.8	160.2
May 9	151.9	149.8	154.4
May 10	150.4	147.0	154.0
May 11	152.4	151.2	154.6
May 12	153.5	151.6	156.9
May 13	153.6	151.5	156.7
May 14	152.8	151.4	154.7
May 15	153.7	150.3	157.8
May 16	154.2	152.3	157.7
May 17	152.3	148.4	154.0
May 18	152.1	150.3	153.6
May 19	143.8	87.4	154.1
May 20	153.6	141.8	155.7
May 21	155.9	153.8	157.0
May 22	155.4	153.3	157.2
May 23	154.7	151.8	157.2
May 24	155.6	154.2	157.8
May 25	157.1	155.2	159.5
May 26	156.8	155.1	157.9
May 27	157.2	156.1	158.5
May 28	157.5	156.3	159.3
May 29	158.0	156.9	159.0
May 30	157.3	152.8	159.0
Summary	146.8	98.4	158.0

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	147.6	147.1	148.3
May 2	147.4	146.6	148.2
May 3	147.4	146.2	148.0
May 4	146.9	146.3	147.6
May 5	146.6	146.0	147.0
May 6	146.3	145.6	147.1
May 7	146.7	145.8	147.6
May 8	146.8	146.1	148.1
May 9	146.4	145.6	147.2
May 10	146.2	145.3	147.4
May 11	146.2	145.8	147.0
May 12	146.0	145.3	146.7
May 13	146.7	146.0	147.8
May 14	146.8	146.2	147.7
May 15	147.0	146.4	148.1
May 16	146.9	146.4	147.4
May 17	146.4	145.1	147.2
May 18	146.4	145.8	147.2
May 19	146.4	145.6	147.0
May 20	146.7	146.0	147.7
May 21	146.3	145.8	147.2
May 22	146.0	145.2	146.6
May 23	145.6	145.2	146.3
May 24	145.8	144.8	146.6
May 25	146.1	145.0	147.2
May 26	145.3	144.5	145.9
May 27	145.3	144.7	146.1
May 28	145.7	145.1	147.0
May 29	146.1	145.5	146.7
May 30	146.0	145.5	146.7
Summary	146.4	145.3	147.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	131.4	125.0	138.3
May 2	125.9	106.4	134.0
May 3	126.1	94.7	134.4
May 4	116.7	103.0	123.1
May 5	119.3	107.7	127.8
May 6	118.2	108.7	125.3
May 7	124.2	115.5	133.4
May 8	124.3	120.1	134.0
May 9	117.4	107.6	122.9
May 10	117.9	103.5	129.0
May 11	116.2	106.9	125.7
May 12	106.5	94.5	117.2
May 13	118.1	108.3	128.4
May 14	120.2	113.0	126.1
May 15	122.1	117.4	130.8
May 16	119.9	112.5	124.4
May 17	109.9	84.7	121.4
May 18	116.5	110.8	121.8
May 19	117.2	109.2	125.7
May 20	118.2	110.0	128.7
May 21	106.9	90.5	112.9
May 22	103.9	92.6	113.0
May 23	101.4	91.4	108.9
May 24	108.3	97.3	118.0
May 25	112.2	98.8	122.9
May 26	97.7	85.3	104.4
May 27	100.1	87.1	110.9
May 28	107.4	90.0	122.6
May 29	113.8	104.6	118.8
May 30	105.8	94.2	115.2
Summary	114.8	97.7	131.4

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	172.4	171.2	172.9
May 2	171.5	169.3	173.3
May 3	167.7	166.2	169.3
May 4	166.8	166.0	167.5
May 5	166.6	166.1	167.4
May 6	166.5	165.5	167.3
May 7	169.1	146.8	173.9
May 8	172.8	172.5	173.4
May 9	172.7	172.1	173.3
May 10	172.3	171.8	173.3
May 11	172.2	171.7	172.8
May 12	172.5	172.0	173.0
May 13	173.0	172.3	173.5
May 14	172.6	171.9	173.4
May 15	172.7	172.1	173.2
May 16	172.4	171.7	173.1
May 17	172.1	171.3	172.6
May 18	171.9	171.2	172.5
May 19	172.0	171.3	172.6
May 20	172.7	171.9	173.7
May 21	172.4	171.6	173.0
May 22	172.5	171.9	173.1
May 23	172.6	171.9	173.3
May 24	172.5	171.7	173.1
May 25	172.7	172.1	173.8
May 26	172.7	172.1	173.3
May 27	172.5	171.3	174.2
May 28	173.1	172.3	173.9
May 29	172.6	172.0	173.6
May 30	172.7	172.2	173.3
Summary	171.6	166.5	173.1

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	175.5	170.5	178.3
May 2	174.2	168.6	177.7
May 3	175.2	168.5	178.2
May 4	174.9	170.2	176.9
May 5	193.7	175.4	201.0
May 6	191.5	190.9	192.1
May 7	191.4	190.9	191.9
May 8	194.2	190.7	201.9
May 9	195.6	192.4	201.7
May 10	192.6	191.9	193.3
May 11	192.0	191.1	192.8
May 12	197.0	191.1	201.3
May 13	191.7	170.3	199.4
May 14	196.1	195.7	196.6
May 15	194.8	193.4	195.9
May 16	195.1	193.5	200.5
May 17	192.8	192.2	193.8
May 18	192.2	191.8	192.6
May 19	192.1	191.8	192.8
May 20	195.0	191.7	201.1
May 21	197.6	194.3	200.7
May 22	198.2	194.1	200.8
May 23	200.7	200.4	200.9
May 24	200.9	200.6	201.1
May 25	200.9	200.7	201.2
May 26	200.8	200.7	200.9
May 27	200.7	200.2	201.1
May 28	200.7	200.6	200.9
May 29	200.5	198.3	200.9
May 30	198.7	196.2	200.5
Summary	193.2	174.2	200.9

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	137.8	137.4	138.4
May 2	137.8	137.3	138.2
May 3	137.7	136.9	138.3
May 4	137.5	137.0	137.9
May 5	137.4	137.2	137.6
May 6	137.3	137.0	137.7
May 7	137.6	136.8	138.3
May 8	137.7	137.3	138.5
May 9	137.5	136.9	138.0
May 10	137.5	136.7	138.3
May 11	137.6	137.1	138.2
May 12	137.2	136.8	137.8
May 13	137.8	137.2	138.5
May 14	137.8	137.4	138.2
May 15	138.0	137.6	138.8
May 16	137.9	137.6	138.2
May 17	137.6	136.8	138.1
May 18	137.8	137.4	138.2
May 19	137.7	137.1	138.3
May 20	137.9	137.3	138.5
May 21	137.6	137.2	137.9
May 22	137.2	136.8	137.5
May 23	137.0	136.8	137.3
May 24	137.2	136.5	137.8
May 25	137.4	136.5	138.1
May 26	136.7	136.1	137.2
May 27	136.7	136.2	137.4
May 28	137.1	136.5	137.8
May 29	137.4	136.9	137.8
May 30	137.3	136.8	137.5
Summary	137.5	136.7	138.0

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	156.7	153.5	157.9
May 2	155.9	153.4	157.5
May 3	156.4	150.5	157.9
May 4	154.3	152.1	156.2
May 5	154.6	152.2	156.6
May 6	154.4	149.8	156.7
May 7	156.2	154.4	157.7
May 8	156.3	154.8	157.6
May 9	155.0	152.5	156.4
May 10	155.2	152.2	157.6
May 11	154.5	151.3	156.2
May 12	153.3	150.8	155.4
May 13	155.9	151.5	157.6
May 14	156.4	155.2	157.5
May 15	156.7	154.8	158.2
May 16	156.7	152.8	157.9
May 17	154.1	146.9	157.3
May 18	155.9	153.6	157.2
May 19	156.2	154.7	157.4
May 20	156.8	155.8	158.1
May 21	154.2	144.4	156.4
May 22	153.4	150.1	156.5
May 23	153.8	150.7	156.1
May 24	155.6	154.3	156.9
May 25	156.2	154.2	157.8
May 26	153.4	150.2	155.3
May 27	153.7	147.8	156.3
May 28	155.9	152.7	158.8
May 29	157.3	156.1	158.1
May 30	155.4	151.6	157.6
Summary	155.3	153.3	157.3

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	139.4	102.2	154.3
May 2	127.1	99.2	147.9
May 3	132.0	84.4	148.9
May 4	111.0	86.6	121.2
May 5	118.7	88.2	129.5
May 6	118.8	90.7	135.0
May 7	134.3	118.2	149.2
May 8	135.3	126.9	147.0
May 9	126.2	108.0	138.5
May 10	132.5	115.7	149.3
May 11	134.8	110.1	148.5
May 12	134.7	119.2	146.8
May 13	142.2	115.7	155.8
May 14	146.5	137.4	157.0
May 15	148.5	136.1	162.1
May 16	150.8	138.7	157.3
May 17	127.4	88.7	157.1
May 18	142.0	121.5	158.9
May 19	147.8	135.1	160.6
May 20	153.9	136.4	164.4
May 21	125.8	93.9	155.1
May 22	123.6	101.9	155.8
May 23	126.4	109.5	149.3
May 24	143.0	130.1	157.8
May 25	153.1	144.5	165.8
May 26	139.5	120.2	148.8
May 27	144.9	130.5	155.8
May 28	154.0	142.9	169.1
May 29	156.9	121.6	164.8
May 30	140.5	113.6	162.8
Summary	137.1	111.0	156.9

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	74.1	64.7	89.3
May 2	73.8	65.6	90.8
May 3	68.5	60.7	79.3
May 4	63.1	55.1	79.7
May 5	61.1	52.2	76.3
May 6	62.2	49.0	81.5
May 7	64.9	48.6	86.6
May 8	70.8	59.3	94.2
May 9	86.6	56.5	157.2
May 10	71.9	47.7	119.9
May 11	72.3	56.9	94.2
May 12	66.5	63.2	76.4
May 13	70.4	60.1	92.3
May 14	71.3	59.5	92.9
May 15	78.2	64.3	97.4
May 16	77.8	67.6	90.4
May 17	73.6	60.9	89.5
May 18	71.7	58.6	92.3
May 19	71.6	57.4	91.6
May 20	76.9	65.8	94.6
May 21	76.2	66.6	91.1
May 22	67.6	55.1	83.0
May 23	67.9	57.0	85.3
May 24	65.2	51.2	85.5
May 25	69.5	51.9	95.8
May 26	64.9	59.2	75.3
May 27	70.1	59.2	86.0
May 28	69.8	63.1	85.4
May 29	71.8	66.1	82.9
May 30	70.5	63.2	77.2
Summary	70.7	61.1	86.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	140.8	116.1	155.3
May 2	107.9	99.9	115.1
May 3	98.7	86.1	102.7
May 4	90.4	86.7	96.2
May 5	85.7	82.2	90.7
May 6	95.1	66.3	138.2
May 7	153.9	140.8	160.8
May 8	164.7	161.3	169.3
May 9	167.9	166.6	169.2
May 10	170.4	169.2	173.6
May 11	161.7	144.0	171.6
May 12	158.7	138.7	171.9
May 13	173.8	171.4	176.8
May 14	175.1	173.6	177.8
May 15	176.6	174.9	178.9
May 16	176.3	175.5	178.6
May 17	175.6	173.8	177.9
May 18	174.0	163.3	177.9
May 19	168.9	154.9	178.0
May 20	175.8	174.3	178.3
May 21	173.6	171.5	176.4
May 22	172.8	171.8	173.9
May 23	172.2	170.8	173.1
May 24	154.7	145.6	172.8
May 25	141.2	137.2	145.1
May 26	132.7	129.3	136.0
May 27	151.8	128.7	170.4
May 28	172.3	170.4	176.3
May 29	173.3	171.3	173.8
May 30	169.4	156.9	174.1
Summary	153.5	85.7	176.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	77.7	65.7	95.7
May 2	78.2	65.9	96.1
May 3	74.8	63.8	86.6
May 4	74.1	65.3	89.3
May 5	88.4	63.1	137.2
May 6	101.6	74.2	138.5
May 7	97.8	71.8	139.9
May 8	83.2	69.4	98.8
May 9	73.3	62.8	90.0
May 10	76.2	59.6	96.4
May 11	77.4	65.5	97.5
May 12	72.4	68.3	78.7
May 13	78.3	66.5	94.8
May 14	76.3	66.1	91.1
May 15	80.8	69.4	99.7
May 16	79.9	72.2	91.0
May 17	110.3	69.2	136.0
May 18	133.0	119.2	138.4
May 19	130.1	111.8	138.8
May 20	115.9	87.5	131.8
May 21	128.6	86.1	139.4
May 22	90.6	68.5	118.5
May 23	70.4	61.4	83.3
May 24	76.5	61.0	91.9
May 25	79.7	65.1	97.5
May 26	69.1	64.5	78.2
May 27	74.7	66.3	87.9
May 28	92.3	66.5	138.2
May 29	87.3	79.2	95.2
May 30	76.7	63.4	86.2
Summary	87.5	69.1	133.0
Date	Average (°F)	Minimum (°F)	Maximum (°F)
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May 1	129.0	126.7	130.6
May 2	128.4	125.7	129.8
May 3	129.1	119.7	130.9
May 4	127.1	124.2	129.1
May 5	128.0	123.4	130.6
May 6	128.4	125.9	129.9
May 7	129.8	127.1	132.3
May 8	130.5	129.2	132.7
May 9	129.2	127.6	130.1
May 10	129.7	126.2	132.8
May 11	129.6	127.7	132.2
May 12	127.9	122.8	130.4
May 13	131.7	128.5	133.9
May 14	132.1	130.6	134.4
May 15	133.2	131.9	134.8
May 16	133.6	131.4	134.7
May 17	131.6	126.9	133.9
May 18	133.1	131.7	134.3
May 19	133.5	131.6	135.3
May 20	134.5	132.6	136.3
May 21	131.8	126.6	133.4
May 22	131.3	128.7	133.5
May 23	131.4	129.2	133.3
May 24	133.1	131.2	135.4
May 25	134.2	131.5	136.3
May 26	130.6	126.9	132.5
May 27	131.6	127.9	133.9
May 28	133.6	129.4	137.8
May 29	135.6	133.2	136.6
May 30	133.3	128.7	135.5
Summary	131.2	127.1	135.6

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	154.3	153.5	155.4
May 2	154.0	151.1	155.2
May 3	153.9	151.1	155.1
May 4	152.6	150.2	153.6
May 5	152.4	149.7	153.2
May 6	152.5	149.7	153.6
May 7	153.8	152.6	155.0
May 8	154.0	152.8	155.0
May 9	152.6	150.8	154.2
May 10	153.2	150.9	154.9
May 11	153.0	152.0	154.4
May 12	151.4	149.4	152.9
May 13	153.5	151.0	155.1
May 14	154.3	153.5	155.6
May 15	154.9	153.7	156.6
May 16	155.3	153.7	155.8
May 17	152.7	144.9	155.6
May 18	152.6	151.6	153.3
May 19	152.7	151.3	153.7
May 20	153.8	152.7	155.4
May 21	152.0	149.7	153.5
May 22	152.0	150.2	153.3
May 23	152.0	149.3	154.1
May 24	153.8	152.2	155.3
May 25	154.5	152.5	156.3
May 26	152.0	148.5	153.9
May 27	152.3	150.4	154.5
May 28	154.1	151.4	156.5
May 29	155.0	153.3	155.9
May 30	153.4	150.1	154.9
Summary	153.3	151.4	155.3

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	75.4	60.4	91.6
May 2	76.3	62.6	92.3
May 3	65.8	55.9	77.0
May 4	62.1	51.8	79.3
May 5	59.1	48.7	74.7
May 6	64.2	46.0	82.4
May 7	73.2	55.3	87.1
May 8	77.5	61.5	94.4
May 9	76.7	61.9	90.0
May 10	64.3	45.5	90.9
May 11	71.0	56.1	94.4
May 12	67.9	62.0	80.7
May 13	68.9	58.1	84.8
May 14	69.1	58.3	87.4
May 15	75.5	61.5	92.4
May 16	73.8	65.5	86.2
May 17	72.6	59.6	88.3
May 18	70.2	55.7	90.4
May 19	70.5	53.7	94.1
May 20	77.2	62.0	95.7
May 21	73.5	63.5	85.0
May 22	69.2	52.0	86.0
May 23	66.4	50.1	85.8
May 24	64.5	46.5	84.9
May 25	67.8	49.7	93.6
May 26	62.3	56.0	72.9
May 27	67.6	55.5	85.2
May 28	71.7	65.7	83.0
May 29	68.9	62.4	79.6
May 30	65.2	56.3	78.6
Summary	69.6	59.1	77.5

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	145.9	145.4	146.6
May 2	146.0	145.1	146.8
May 3	145.8	144.9	146.3
May 4	145.5	145.0	146.5
May 5	145.3	144.9	146.1
May 6	145.6	144.9	146.3
May 7	145.8	145.2	146.4
May 8	145.7	145.1	146.6
May 9	145.4	144.9	146.0
May 10	145.3	144.6	146.2
May 11	145.3	144.7	146.0
May 12	145.0	144.6	145.4
May 13	145.4	144.9	146.3
May 14	145.4	144.9	146.0
May 15	145.5	145.0	146.4
May 16	145.5	145.2	145.9
May 17	145.1	144.3	145.7
May 18	145.2	144.8	145.7
May 19	145.2	144.7	145.8
May 20	145.5	144.9	146.3
May 21	145.5	144.9	145.8
May 22	145.1	144.7	145.6
May 23	145.1	144.7	145.4
May 24	145.4	144.8	146.0
May 25	145.7	144.8	146.4
May 26	145.1	144.5	145.7
May 27	145.2	144.6	145.9
May 28	145.5	144.9	146.2
May 29	146.0	145.7	146.4
May 30	145.9	145.2	146.4
Summary	145.5	145.0	146.0

Date	Average (°F)	Minimum (°F)	Maximum (°F)
May 1	153.4	152.9	154.0
May 2	138.3	136.3	140.3
May 3	153.1	151.2	153.5
May 4	137.2	135.6	139.0
May 5	152.7	152.4	153.1
May 6	137.2	135.7	140.3
May 7	153.0	152.1	153.9
May 8	138.7	136.1	141.7
May 9	153.2	152.8	154.1
May 10	137.5	133.8	140.7
May 11	153.5	153.0	154.3
May 12	138.1	135.9	142.9
May 13	153.8	153.1	154.6
May 14	138.4	136.8	139.9
May 15	154.4	153.9	155.2
May 16	141.0	138.1	148.6
May 17	154.4	153.2	155.0
May 18	138.3	137.2	139.4
May 19	154.5	153.7	155.1
May 20	138.6	135.3	139.7
May 21	154.4	153.1	154.8
May 22	135.7	132.5	139.8
May 23	153.4	152.9	154.1
May 24	136.4	133.9	140.2
May 25	154.0	153.2	154.8
May 26	135.2	132.7	136.8
May 27	153.4	152.6	154.3
May 28	137.2	135.1	140.1
May 29	154.6	154.3	155.1
May 30	137.6	134.7	139.2
Summary	153.7	152.7	154.6

Appendix D

Solid Waste Permit 588 Daily Borehole Temperature Averages

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	Depth from Surface									
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft				
1-May	165.9	220.0	220.5	231.3	245.6	264.3				
2-May	166.0	219.9	220.5	231.6	245.8	264.3				
3-May	165.9	219.8	220.3	231.4	245.9	264.2				
4-May	165.6	219.7	220.2	231.1	245.7	264.0				
5-May	165.3	219.6	220.1	230.9	245.7	263.9				
6-May	165.3	219.7	220.2	230.9	245.7	263.9				
7-May	165.6	219.8	220.3	231.2	246.0	264.2				
8-May	165.7	219.9	220.5	231.5	246.1	264.2				
9-May	165.6	219.9	220.4	231.4	246.0	264.1				
10-May	165.4	219.9	220.4	231.4	246.2	264.1				
11-May	165.7	220.2	220.7	231.6	246.5	264.4				
12-May	165.6	220.0	220.5	231.5	246.4	264.2				
13-May	166.0	220.2	220.7	231.8	246.6	264.4				
14-May	165.8	220.2	220.7	231.6	246.7	264.3				
15-May	166.0	220.6	221.1	231.6	246.8	264.5				
16-May	165.9	220.6	221.1	231.6	246.7	264.5				
17-May	165.8	220.6	221.0	231.6	246.7	264.4				
18-May	165.7	220.6	221.1	231.5	246.5	264.3				
19-May	165.5	220.6	221.1	231.6	246.6	264.4				
20-May	165.8	220.7	221.3	231.8	246.7	264.5				
21-May	165.7	220.7	221.3	231.7	246.4	264.3				
22-May	165.5	220.5	221.0	231.6	246.2	264.1				
23-May	165.1	220.5	221.0	231.2	246.0	263.9				
24-May	165.2	220.5	221.0	231.1	245.9	264.0				
25-May	165.6	220.9	221.4	231.4	246.2	264.3				
26-May	165.4	220.7	221.3	231.2	246.1	264.1				
27-May	165.6	220.9	221.4	231.3	246.0	264.2				
28-May	165.7	221.0	221.5	231.2	245.9	264.2				
29-May	165.7	221.2	221.7	231.4	245.8	264.3				
30-May	165.3	221.1	221.6	231.2	245.5	264.1				
31-May	165.1	221.1	221.6	231.1	245.4	264.0				
Average	165.6	220.4	220.9	231.4	246.1	264.2				

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-May	*	233.8	233.6	*	*	*	*	*
2-May	*	233.9	233.6	*	*	*	*	*
3-May	*	233.7	233.5	*	*	*	*	*
4-May	*	233.6	233.4	*	*	*	*	*
5-May	*	233.5	233.3	*	*	*	*	*
6-May	*	233.6	233.3	*	*	*	*	*
7-May	*	233.6	233.4	*	*	*	*	*
8-May	*	233.8	233.6	*	*	*	*	*
9-May	*	233.7	233.5	*	*	*	*	*
10-May	*	233.6	233.4	*	*	*	*	*
11-May	*	233.8	233.6	*	*	*	*	*
12-May	*	233.7	233.4	*	*	*	*	*
13-May	*	233.8	233.6	*	*	*	*	*
14-May	*	233.8	233.6	*	*	*	*	*
15-May	*	233.9	233.7	*	*	*	*	*
16-May	*	233.8	233.6	*	*	*	*	*
17-May	*	233.9	233.6	*	*	*	*	*
18-May	*	233.8	233.6	*	*	*	*	*
19-May	*	233.9	233.6	*	*	*	*	*
20-May	*	234.0	233.7	*	*	*	*	*
21-May	*	234.0	233.7	*	*	*	*	*
22-May	*	233.9	233.6	*	*	*	*	*
23-May	*	233.8	233.6	*	*	*	*	*
24-May	*	233.9	233.6	*	*	*	*	*
25-May	*	234.0	233.7	*	*	*	*	*
26-May	*	233.9	233.6	*	*	*	*	*
27-May	*	234.0	233.7	*	*	*	*	*
28-May	*	234.0	233.7	*	*	*	*	*
29-May	*	234.1	233.8	*	*	*	*	*
30-May	*	234.1	233.7	*	*	*	*	*
31-May	*	234.1	233.8	*	*	*	*	*
Average	N/A	233.8	233.6	N/A	N/A	N/A	N/A	N/A

* Indicates sensor reading issues

	Depth from Surface								
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft	
1-May	142.0	215.3	215.5	228.2	236.9	240.0	214.6	204.4	
2-May	142.2	215.3	215.6	228.2	237.1	240.0	214.6	204.5	
3-May	141.9	215.1	215.4	228.0	237.0	239.8	214.4	204.3	
4-May	141.9	215.0	215.2	227.7	237.0	239.8	214.3	204.2	
5-May	141.7	214.8	215.0	227.6	236.8	239.5	214.1	204.0	
6-May	141.4	214.8	215.1	227.5	237.0	239.6	214.0	204.1	
7-May	141.5	214.9	215.2	227.6	237.1	239.6	214.1	204.2	
8-May	141.9	215.0	215.4	227.8	237.4	239.9	214.4	204.5	
9-May	141.9	214.8	215.1	227.8	237.2	239.8	214.1	204.3	
10-May	142.0	214.2	214.4	227.5	237.0	239.7	214.0	204.2	
11-May	142.4	214.3	214.6	227.9	237.5	240.0	214.2	204.5	
12-May	142.6	214.1	214.3	227.7	237.4	239.8	214.0	204.3	
13-May	143.6	214.2	214.4	227.6	237.5	239.9	214.1	204.5	
14-May	143.7	214.1	214.4	227.7	237.5	240.0	214.2	204.6	
15-May	143.4	214.2	214.4	227.7	237.6	240.1	214.3	204.7	
16-May	143.7	214.1	214.3	227.7	237.5	240.0	214.2	204.6	
17-May	144.1	214.0	214.3	227.7	237.6	240.0	214.3	204.7	
18-May	144.2	213.9	214.1	227.7	237.4	239.8	214.0	204.5	
19-May	144.4	213.9	214.1	227.8	237.4	239.9	214.0	204.4	
20-May	144.5	214.0	214.2	227.8	237.5	240.0	214.2	204.6	
21-May	144.9	213.9	214.1	227.9	237.5	239.9	214.2	204.6	
22-May	145.1	213.8	214.1	227.7	237.3	239.8	214.0	204.4	
23-May	145.4	213.7	214.0	227.7	237.2	239.7	213.9	204.4	
24-May	146.3	213.6	213.9	227.5	237.1	239.6	213.8	204.3	
25-May	147.4	213.8	214.0	227.5	237.3	239.9	214.1	204.5	
26-May	147.5	213.6	213.8	227.3	237.1	239.6	213.8	204.3	
27-May	147.6	213.6	213.9	227.3	237.1	239.6	213.9	204.4	
28-May	147.0	213.6	213.9	227.4	237.1	239.7	214.0	204.5	
29-May	146.8	213.6	213.9	227.5	237.1	239.6	214.0	204.5	
30-May	146.4	213.7	213.8	227.5	237.1	239.7	213.9	204.5	
31-May	146.4	213.5	213.7	227.4	237.0	239.6	213.8	204.4	
Average	144.1	214.2	214.5	227.7	237.2	239.8	214.1	204.4	

	Depth from Surface								
Date	25 ft	50 ft	75 ft	100 ft	125 ft				
1-May	207.2	209.9	209.8	210.0	209.9				
2-May	207.3	210.3	210.2	210.4	210.2				
3-May	206.8	210.1	210.1	210.2	210.1				
4-May	206.7	209.8	209.8	210.0	209.9				
5-May	206.7	209.8	209.7	209.9	209.8				
6-May	207.1	208.8	208.8	208.9	208.9				
7-May	207.0	209.0	205.3	209.1	209.0				
8-May	207.1	208.7	197.9	208.7	208.7				
9-May	207.0	209.4	205.9	209.4	209.4				
10-May	207.1	208.5	202.5	208.5	208.5				
11-May	207.5	208.3	207.3	208.3	208.4				
12-May	207.1	207.3	207.1	207.0	206.9				
13-May	206.8	206.3	202.3	206.2	206.0				
14-May	206.9	205.3	194.9	205.0	204.8				
15-May	207.0	202.6	178.7	202.3	202.3				
16-May	207.0	206.2	206.5	205.9	205.8				
17-May	207.0	202.1	170.8	201.7	201.6				
18-May	207.2	203.4	179.5	202.8	202.9				
19-May	207.1	206.1	192.3	206.2	206.2				
20-May	206.9	203.6	175.8	203.7	203.7				
21-May	206.9	202.6	169.8	202.5	202.5				
22-May	206.9	206.0	199.0	206.0	205.9				
23-May	207.0	204.5	180.3	204.7	204.6				
24-May	207.2	200.2	142.1	200.5	200.5				
25-May	207.3	197.6	116.6	197.8	197.8				
26-May	207.1	200.2	140.4	200.4	200.4				
27-May	207.2	197.3	114.9	197.6	197.5				
28-May	207.1	199.6	134.0	199.8	199.7				
29-May	207.1	193.8	81.8	194.0	193.9				
30-May	206.7	197.6	119.0	197.7	197.6				
31-May	206.6	197.4	121.5	197.4	197.4				
Average	207.0	204.6	177.6	204.6	204.5				

	Depth from Surface								
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft	
1-May	145.3	183.9	212.4	195.2	191.4	199.7	205.1	211.9	
2-May	145.5	186.8	212.8	195.2	191.4	199.7	204.6	211.7	
3-May	145.3	187.8	212.3	194.8	191.0	199.3	204.0	211.5	
4-May	145.3	188.5	212.0	194.6	191.0	198.9	205.1	210.9	
5-May	145.2	188.1	212.2	194.7	190.6	199.0	205.1	212.4	
6-May	145.3	187.8	212.5	194.8	190.5	199.0	205.2	210.6	
7-May	145.4	187.9	212.4	194.9	190.6	199.0	204.7	209.9	
8-May	145.7	188.1	212.3	195.2	190.7	199.1	204.9	210.6	
9-May	145.6	188.7	211.4	195.0	191.0	199.1	204.2	209.8	
10-May	145.4	188.0	211.1	195.0	190.6	199.2	205.1	210.2	
11-May	145.7	187.9	212.7	195.3	190.7	199.4	205.0	211.1	
12-May	145.6	188.6	212.6	195.0	191.0	199.2	203.9	209.0	
13-May	145.7	189.5	212.4	195.0	191.4	198.9	204.0	208.9	
14-May	145.8	188.5	212.4	194.9	190.4	198.7	206.0	211.3	
15-May	146.0	188.9	212.6	195.0	190.6	198.8	206.3	210.5	
16-May	145.8	189.2	212.5	194.8	190.5	198.5	205.9	210.5	
17-May	145.9	189.4	212.4	195.0	191.1	198.7	205.4	210.2	
18-May	145.8	188.5	212.5	194.9	190.5	198.7	205.8	211.9	
19-May	145.8	188.7	212.4	195.0	190.6	198.9	205.2	213.4	
20-May	145.9	187.8	212.5	194.8	189.9	198.6	206.3	211.3	
21-May	146.0	188.1	212.6	195.0	190.3	198.7	205.6	213.0	
22-May	145.7	188.7	212.5	194.8	190.6	198.5	205.3	211.6	
23-May	145.7	188.6	212.4	194.9	190.4	198.7	205.4	212.5	
24-May	145.7	188.5	212.4	195.0	190.5	198.9	205.7	211.9	
25-May	145.8	188.6	212.5	195.2	190.7	199.0	205.5	213.0	
26-May	145.7	188.5	212.1	194.9	190.5	198.6	205.1	209.9	
27-May	145.8	188.5	212.3	195.0	190.7	198.6	205.3	211.0	
28-May	145.8	188.5	212.1	195.0	190.6	198.6	205.2	212.1	
29-May	145.9	189.2	212.0	195.0	191.0	198.6	205.1	210.5	
30-May	145.9	189.5	211.9	194.8	191.1	198.4	204.8	209.1	
31-May	145.8	188.8	211.5	194.4	190.5	198.0	204.5	210.0	
Average	145.7	188.3	212.3	194.9	190.7	198.9	205.1	211.0	

	Depth from Surface							
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
1-May	188.9	193.7	193.9	196.3	198.8	199.7	190.1	174.8
2-May	188.9	193.6	194.0	196.4	198.9	199.7	190.1	174.5
3-May	188.8	193.5	193.8	196.1	198.6	199.5	189.8	174.3
4-May	188.7	193.3	193.7	196.0	198.5	199.5	189.8	174.3
5-May	188.6	193.2	193.6	195.9	198.4	199.3	189.6	174.1
6-May	188.4	193.3	193.6	196.0	198.5	199.3	189.7	174.1
7-May	188.6	193.3	193.6	196.0	198.5	199.3	189.6	173.9
8-May	187.0	193.6	193.9	196.3	198.8	199.6	189.9	174.3
9-May	187.7	193.4	193.7	196.0	198.6	199.4	189.7	174.0
10-May	187.4	193.4	193.6	196.1	198.6	199.3	189.5	173.8
11-May	187.7	193.6	193.9	196.3	198.9	199.5	189.8	174.1
12-May	187.7	193.4	193.7	196.1	198.7	199.3	189.7	173.9
13-May	187.8	193.4	193.7	196.1	198.6	199.4	189.7	174.0
14-May	187.8	193.5	193.8	196.1	198.7	199.6	189.9	174.1
15-May	187.8	193.6	193.9	196.2	198.8	199.7	189.9	174.2
16-May	187.8	193.5	193.9	196.2	198.7	199.6	189.8	174.1
17-May	187.7	193.6	193.8	196.1	198.7	199.7	189.9	174.1
18-May	187.5	193.5	193.8	196.1	198.6	199.5	189.7	173.9
19-May	187.5	193.4	193.8	196.1	198.7	199.5	189.7	173.9
20-May	187.7	193.5	193.8	196.2	198.7	199.5	189.7	173.9
21-May	187.0	193.5	193.8	196.1	198.7	199.5	189.7	173.8
22-May	187.0	193.3	193.6	196.0	198.5	199.3	189.6	173.6
23-May	186.7	193.3	193.6	196.0	198.6	199.3	189.4	173.5
24-May	186.2	193.2	193.5	196.0	198.6	199.2	189.3	173.3
25-May	187.0	193.4	193.8	196.2	198.8	199.4	189.5	173.4
26-May	187.0	193.3	193.6	196.0	198.7	199.2	189.3	173.2
27-May	187.2	193.4	193.7	196.1	198.7	199.3	189.4	173.2
28-May	187.1	193.5	193.7	196.1	198.8	199.4	189.5	173.4
29-May	187.6	193.5	193.7	196.1	198.8	199.3	189.5	173.4
30-May	187.8	193.3	193.6	195.9	198.6	199.4	189.4	173.3
31-May	187.9	193.1	193.5	195.8	198.5	199.3	189.4	173.2
Average	187.7	193.4	193.7	196.1	198.7	199.4	189.7	173.9

	Depth from Surface											
Date	25 ft	50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft				
1-May	106.2	146.6	145.3	149.0	145.4	132.4	116.0	105.1				
2-May	106.2	146.5	145.4	148.9	145.2	132.3	116.0	105.1				
3-May	105.7	146.3	145.0	148.7	145.0	132.0	115.8	104.8				
4-May	106.0	146.2	145.1	148.6	145.0	132.0	115.7	104.7				
5-May	106.0	146.2	145.1	148.4	144.7	131.8	115.5	104.4				
6-May	106.0	146.3	145.2	148.5	144.8	131.8	115.6	104.4				
7-May	106.5	146.7	145.7	148.7	144.9	131.9	115.8	104.7				
8-May	107.0	147.1	146.2	148.8	144.9	132.0	115.9	104.7				
9-May	106.5	147.0	146.0	148.7	144.9	131.9	115.8	104.7				
10-May	106.9	147.0	146.1	148.7	144.7	131.9	115.7	104.7				
11-May	107.5	147.4	146.6	149.0	145.1	132.1	116.0	105.0				
12-May	107.0	147.3	146.5	148.8	144.8	131.8	115.8	104.8				
13-May	107.3	147.6	146.6	149.1	145.1	132.0	116.1	105.1				
14-May	107.3	147.6	146.7	149.0	145.1	131.9	116.0	105.0				
15-May	107.8	147.9	147.1	149.2	145.1	132.2	116.2	105.3				
16-May	107.5	147.9	147.1	149.2	145.0	132.1	116.1	105.2				
17-May	107.7	148.0	147.4	149.1	145.0	132.1	116.1	105.1				
18-May	107.3	147.9	147.2	149.1	144.9	132.0	116.0	105.1				
19-May	107.6	147.9	147.2	149.1	144.9	132.0	116.0	105.1				
20-May	108.0	148.2	147.5	149.2	145.0	132.1	116.1	105.3				
21-May	107.2	148.1	147.4	149.1	145.0	132.1	116.1	105.1				
22-May	107.7	147.9	147.3	148.9	144.7	131.9	115.9	104.9				
23-May	108.1	148.0	147.3	148.7	144.5	131.6	115.7	104.6				
24-May	108.1	148.1	147.6	148.7	144.5	131.7	115.8	104.6				
25-May	108.5	148.5	147.9	149.1	144.8	132.0	116.0	104.8				
26-May	107.7	148.2	147.5	148.8	144.5	131.6	115.8	104.5				
27-May	108.7	148.5	147.8	149.0	144.6	131.8	115.9	104.6				
28-May	108.2	148.4	147.8	148.8	144.5	131.7	115.8	104.5				
29-May	108.1	148.6	147.8	149.0	144.7	131.8	115.9	104.6				
30-May	108.1	148.4	147.7	148.9	144.5	131.7	115.8	104.4				
31-May	108.0	148.2	147.5	148.9	144.6	131.8	115.9	104.4				
Average	107.3	147.6	146.7	148.9	144.9	131.9	115.9	104.8				

Appendix E

Monthly Topography Analysis





- 1. GRADES SHOWN AS CONTOUR REPRESENT THE TOPOGRAPH
- 2. ANY DETERMINATION OF TOPO IMPROVEMENTS, PROPERTY LI AND SHALL NOT BE USED FO IMPROVEMENTS TO REAL PRO
- 3. THE HORIZONTAL DATUM IS
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JR LINES ONLY WITHIN THE PERMIT 588 BOUNDARY HY CAPTURED ON MAY 21, 2024 BY SCS ENGINEERS. POGRAPHY OR CONTOURS, OR ANY DEPICTION OF PHYSICAL LINES, OR BOUNDARIES IS FOR GENERAL INFORMATION ONLY FOR DESIGN, MODIFICATION, OR CONSTRUCTION OF ROPERTY OR FLOOD PLAIN DETERMINATION. STATE PLANE VIRGINIA SOUTH ZONE NAD-83 (2011).	SHEET TITLE MAY 2024 LANDFILL TOPOGRAPHY	PROJECT TITLE MONTHI Y TOPOGRAPHY ANALYSIS	SOLID WASTE PERMIT #588
ASED OFON NAVD-60.	CITY OF BRISTOL INTEGRATED SOLID	WASTE MANAGEMENT FACILITY 2655 VALLEY DRIVE	BRISTOL, VIRGINIA 24201
	SCALE:	CONSULTING ENGINEERS, INC. 15521 MIDLOTHIAN TNPK - MIDLOTHIAN, VA 23113 PH. (804) 378-7440 FAX. (804) 378-7433	CJ PROJ. NO. DWN. BY: Q/A RW BY: 02218208.05 VMM Q/A RW BY: DSN. BY: CHK. BY: CJW DSN. BY: CHK. BY: CJW
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- 2. ANY DETERMINATION OF TOPO PHYSICAL IMPROVEMENTS, PR INFORMATION ONLY AND SHA CONSTRUCTION OF IMPROVEM DETERMINATION.
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- 3. THE HORIZONTAL DATUM IS
- 4. THE VERTICAL DATUM(S) IS

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Appendix F

Field Logs

Lab Report

Historical LFG-EW Leachate Monitoring Results Summary

Appendix F Field Logs

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

Date	5/21-22/25													
Personnel				L. Nelson 8	L. Tucker						Check	ed By:		L. Howard
Location ID	Date	Casing Stickup (ft)	Depth to Liquid (ft)	Prior Depth to Liquid (ft)	Cycle Count	Prior Cycle Count	Well Casing Depth (ft)	Pump Depth (ft)	Liquid Column Thickness	Pump (Y/N)	Pump PSI	Sample Collected	Check/ Photo	Comments
PUMP INSTALL	ED													1
EW-49	5/21/2025	6.29		71.57	79565	79565	96.15	87		Y	0	N	~	Too tall, air off
EW-50	5/21/2025	4.70	46.67	49.72	1577699	1552761	77.70	83	31.03	Y	95	N	~	
EW-53	5/21/2025	5.16	49.82	52.01	3294540	3294528	100.70	77	50.88	Y	0	N	~	Air off
EW-55	5/21/2025	4.35	40.07	38.94	73387	73374	90.40	90	50.33	Y	0	N	~	Air disconnected
EW-59	5/21/2025	4.82	53.79	36.22	3639040	3537043	73.40	61	19.61	Y	100	N	~	
EW-60	5/21/2025	4.85	41.34	41.17	191283	147455	81.80	72.5	40.46	Y	95	N	~	
EW-61	5/21/2025	3.28	65.24	63.32			87.80	75	22.56	Y	90	N	~	
EW-62	5/22/2025	4.60	77.88	75.91	214599	214599	110.60	91.5	32.72	Y		N	~	Air off
EW-64	5/22/2025	4.61	81.68	81.75	196791	196791	109.00	90	27.32	Y		N	~	Air off
EW-65	5/22/2025	3.15	47.19	50.02	106332	79679	88.40	70	41.21	Y	95	N	~	
EW-66	5/21/2025	3.65	32.76	33.97	35486					Y	100	N	~	No well label
EW-67	5/21/2025	3.70	38.74	40.46	288744		107.75	76	69.01	Y	0	N	~	Air off
EW-68	5/21/2025	2.00	43.37	46.50	2661124	2647461	73.57	60	30.20	Y	110	N	~	
EW-78	5/22/2025	3.85	46.35	46.62	54639	31066	57.00	47	10.65	Y	95	N	~	
EW-81	5/22/2025	5.90	82.23	103.73		Too tall to read	151.56	125	69.33	Y		N	~	Air disconnected, lost PVC
EW-82	5/22/2025	4.45	121.33	123.11	631288	631288	163.26	145	41.93	Y		N	~	Air off
EW-83	5/22/2025	5.10	85.25	85.84	Too tall	2263	167.04	145	81.79	Y		N	~	Air off, lost PVC
EW-85	5/21/2025	5.00	61.79	62.84	312919	294797	91.00	78	29.21	Y	115	N	~	
EW-93	5/21/2025	3.35	35.31	33.84	1408232	1292375	111.00		75.69	Y	110	N	~	
EW-96	5/21/2025	8.00	47.21	48.19	Too tall	Too tall to read	164.35	145	117.14	Y		N	~	Air disconnected, lost PVC
EW-98	5/21/2025	4.40	45.18	31.78	1886306	1716630	51.00	46	5.82	Y	50	N	~	

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

Date	5/21-22/25													
Personnel				L. Nelson 8	L. Tucker				Checked By:					L. Howard
Location ID	Date	Casing Stickup (ft)	Depth to Liquid (ft)	Prior Depth to Liquid (ft)	Cycle Count	Prior Cycle Count	Well Casing Depth (ft)	Pump Depth (ft)	Liquid Column Thickness	Pump (Y/N)	Pump PSI	Sample Collected	Check/ Photo	Comments
NO PUMP														
EW-54	5/21/2025	4.55	35.08	33.87			82.70	65	47.62	N		N	~	
EW-56	5/21/2025	3.75	Dry	Dry			42.71			N		N	~	Measured dry around 38.86'
EW-63	5/22/2025	5.60	59.12	58.72			117.00		57.88	N		N	~	
EW-69	5/22/2025	4.73	93.76	93			98.00		4.24	N		N	~	
EW-70	5/22/2025	1.89	65.53	65.32			71.00	58	5.47	N		N	~	
EW-73	5/22/2025	3.99	107.34	107.19			116.00		8.66	N		N	~	
EW-77	5/22/2025	6.47	125.26	118.14			185.22		59.96	N		N	~	
EW-79	5/22/2025	5.35	155.21	154.82			185.64		30.43	N		N	~	
EW-80	5/22/2025	3.06	137.38	142.71			149.00		11.62	N		N	~	
EW-84	5/22/2025	4.14	80.37	79.76			130.56		50.19	N		N	~	
EW-86	5/21/2025	3.50	77.50	77.05			153.00		75.50	N		N	~	
EW-91	5/21/2025	6.05	47.13	46.14			137.70		90.57	N		N	~	
EW-92	5/21/2025	8.54					112.99			N		N	~	Too tall
EW-95	5/21/2025	4.49					68.00			Ν		N	~	Caution tape around well
EW-97	5/21/2025	8.23					144.50			N		N	~	Too tall
EW-99	5/21/2025	3.83	59.37	60.53			65.00		5.63	N		N	~	

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

Date	5/21-22/25													
Personnel		L. Tucker		Checked By:					L. Howard					
Location ID	Date	Casing Stickup (ft)	Depth to Liquid (ft)	Prior Depth to Liquid (ft)	Cycle Count	Prior Cycle Count	Well Casing Depth (ft)	Pump Depth (ft)	Liquid Column Thickness	Pump (Y/N)	Pump PSI	Sample Collected	Check/ Photo	Comments
MEASURE CASING STICKUP AND CYCLE COUNTER ONLY														
EW-33B ²	5/22/2025	4.85		DNM			185.00	140		N		N	~	
EW-36A ²	5/21/2025	5.73		64.90	459999	Too tall to read	180.00	135		Y		N	~	Air off
EW-52 ²	5/21/2025	3.30		43.74	1239186	1239036	98.70	80		Y		N	~	Air disconnected
EW-76 ²	5/22/2025	3.70		DNM			127.00	108		Ν		N	~	
EW-87 ²	5/21/2025	5.97		DNM	340749	360749	149.57	110		Y		N	~	Air disconnected
EW-88 ²	5/21/2025	3.21	61.88	DNM	332881		100.00	61	38.12	Y	100	Y	~	Lost PVC
EW-89 ²	5/21/2025	4.90	52.68	DNM	41203	0	84.57	70	31.89	Y	60	Y	~	Lost PVC
EW-94 ¹	5/21/2025	3.60		DNM	1484006	1128396	50.00	38		Y	60	N	~	

DNM = Do not measure

1 = Not Measured as gauging equipment has historically become stuck in well.
2 = Not Measured as pump is shut off and intended to be pulled for maintenance/replacement.

Dual Phase LFG-EW Sample Collection Log

Location ID	Sample Date	Sample Time	Temperature (oC)	рН (s.u.)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Observations
EW-33B									
EW-36A									
EW-49									
EW-50									
EW-51									
EW-52									
EW-53									
EW-54									
EW-55									
EW-57									
EW-58									
EW-59									
EW-60									
EW-61									
EW-62									
EW-64									
EW-67									
EW-68									
EW-70									
EW-72									

Specific Dissolved Temperature pН ORP Turbidity Location ID Sample Date Sample Time Oxygen Observations Conductance (NTU) (oC) (s.u.) (mV) (mS/cm) (mg/L) EW-73 -----------------------------EW-74 ------------------------------EW-75 --------------------------------EW-76 --------------------------------EW-78 ____ ----------------____ -------EW-81 --------------------------------EW-82 -----------------------------------EW-83 ---------------------------------EW-85 ----------------------____ -------EW-87 --------------____ --------------Amber color, floating EW-88 5/20/2025 16:36 71.5 5.19 20720 0.57 100.2 0.00 sheen Amber color, floating EW-89 5/20/2025 16:16 77.1 5.42 42794 0.22 -85.3 60.93 sheen EW-90 ----____ ------------------------EW-91 ---------------------------EW-92 -------------------------------EW-94 -------------------------------EW-96 -----------------------------------EW-98

Laboratory: Enthalpy Analytical

Samples Shipped By: FedEx

EW-100

Sampler: Log Checked By: ----

L. Howard

L. Nelson, L. Tucker

Dual Phase LFG-EW Sample Collection Log

Appendix G

LFG Dewatering Pump Stroke Counter Data Analysis

Stroke Counter Data Analysis

During the monthly liquid depth measurement event and during LFG monitoring, SCS collected stroke counter data from the pumps installed in the GCCS extraction wells. These stroke counts were collected from 40 wells from April 21, 2025 to May 21, 2025. The recorded stroke count data from each well during April are included in Table G-1.

Based on the number of strokes in each well, SCS can estimate the number of gallons of liquid pumped from each well to assess pump performance. SCS assumed that each stroke from a floatstyle pneumatic pump correlates to approximately 0.3 gallons of liquid removed from the well. Blackhawk piston-style pumps remove approximately 0.11 gallons per stroke.

Well	4/21/2025	5/6/2025	5/21/2025	# of strokes between measurements	Estimated liquid removed (gallons)
EW33B				-	-
EW36A			459999	-	-
EW49		79565	79565	-	-
EW50	1562073	1570681	1577699	15626	4688
EW52	1239186	1239186	1239186	0	0
EW53	3294531	3294540	3294540	9	3
EW54				-	-
EW55	73384	73387	73387	3	1
EW59		3593208	3639040	45832	13750
EW60	161145	177538	191283	30138	9041
EW61	30319	51007		20688	6206
EW62	214599	214599	214599	0	0
EW64	196791	196791	196791	0	0
EW65	91595	100784	106332	14737	4421
EW66		501753	35486	35486	10646
EW67	288743	288744	288744	1	0
EW68	2658730	2659893	2661124	2394	718
EW76				-	-
EW78	40047	47146	54639	14592	1634
EW81				-	-
EW82			631288	-	-
EW83				-	-
EW85	305085	308620	312919	7834	877
EW87	340749		340749	0	0
EW88	291710	311548	332881	41171	4611
EW89		1330	41203	41203	12361
EW91				-	-
EW93	1314252	1402718	1408232	93980	10526

 Table G - 1
 Summary of Dual Extraction Well Pump Stroke Counter Data

Well	4/21/2025	5/6/2025	5/21/2025	# of strokes between measurements	Estimated liquid removed (gallons)
EW94	1263742	1372391	1484006	220264	24670
EW96				-	-
EW98	1771872	1840102	1886306	114434	34330
	Т	138,483			