

May 2023 Monthly Compliance Report

Solid Waste Permit No. 498
Bristol Integrated Solid Waste Management Facility
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Table of Contents

Section	Page
Introduction	1
1.0 Leachate Pump Station	1
1.1 Floating Material.....	1
1.2 Pump Replacement.....	1
1.3 Alarm/Notification System.....	1
2.0 Cover Integrity and Exposed Wastes.....	1
2.1 Alternate Daily Cover	2
2.2 Intermediate Cover.....	2
2.3 Surface Emissions Monitoring.....	2
3.0 Gas Collection.....	3
3.1 System Optimization	3
3.2 Optimization Plan and Reporting.....	3
3.2.1 Optimization Plan	3
3.2.2 Optimization Actions.....	4
3.2.3 Monthly Wellhead Monitoring.....	4
4.0 Grading, Geometric Configuration and Gas Expansion	4
4.1 Closure and LFGCCS Plan	4
4.2 Final Cover and LFGCCS Installation.....	4
5.0 Leachate Seeps and Ponding.....	4
5.1 Periodic Inspections	5
5.2 Completion of Work Activities	5
6.0 Stormwater Drainage and Management.....	5
6.1 Stormwater Management Plan.....	5
6.2 Cleanout of Stormwater Diversion Channel/Trench Berm	5
7.0 Self-Inspection and Recordkeeping	5
7.1 Updated Self-Inspection Logs.....	6
7.2 Facility Training.....	6
7.3 Self-Inspection and Recordkeeping Assignments.....	6

Tables

Table 1. Summary of March Surface Emissions Monitoring.....	2
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Table of Contents

Section	Page
Appendices	
Appendix A May Monthly Wellhead Monitoring Data	

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 in Appendix B of the Consent Decree between the City and VDEQ. This report provides updates regarding the progress towards completion of the items outlined in Appendix B of the Consent Decree between the City and VDEQ. The following sections outline progress during the month of May 2023 related to Solid Waste Permit (SWP) No. 498.

1.0 LEACHATE PUMP STATION

The City is in the process of repairing the pumps and addressing other concerns related to the leachate pump station. The steps taken by the City are outlined in the following sections.

1.1 FLOATING MATERIAL

On July 6, 2022 SCS received the results of samples taken from the Solid Waste Permit 498 Wet Well on May 25, 2022. Based on SCS' review of the data, the data indicated the liquid is non-hazardous. SCS submitted a letter to the City on July 7, 2022 with SCS' review of the data and the underlying lab analysis. A copy of this letter was included in the October 2022 Monthly Compliance Report for the SWP No. 498 Landfill.

As described in the October 2022 Monthly Compliance Report for the SWP No. 498 Landfill, the floating material in the wet well was resolved.

1.2 PUMP REPLACEMENT

The City contracted with Buchanan Pump Service (Buchanan) to complete repairs to the pumps and infrastructure at the 498 pump station. Buchanan completed repairs to one pump (in addition to the pump currently operating at the pump station). Buchanan has ordered a replacement for the third pump and confirmed that the current electrical infrastructure will support the proposed pump. The replacement pump is anticipated to arrive on June 10, 2023 and installation is currently scheduled for the week of June 12, 2023.

1.3 ALARM/NOTIFICATION SYSTEM

The alarm system at the SWP No. 498 Landfill pump station is currently functional and sending alerts to landfill staff via text message. On March 30, 2023, the City directed SCS Remote Monitoring and Control (SCS-RMC) to implement a cloud based recordkeeping system for leachate flows from the SWP No. 498 Landfill pump station. Based on current lead times on equipment, installation of the equipment necessary to implement the system will occur in June of 2023.

2.0 COVER INTEGRITY AND EXPOSED WASTES

The sections below describe steps taken by the City to address cover integrity and exposed wastes.

2.1 ALTERNATE DAILY COVER

During the month of May, surface disturbance that would require alternate daily cover was not anticipated on the SWP No. 498 landfill in 30 to 60 days. Alternate daily cover (ADC) tarps were not required because the landfill is currently covered by soil intermediate cover as discussed in section 2.2.

2.2 INTERMEDIATE COVER

Placement of intermediate soil cover on the SWP No. 498 landfill is complete. Soil placement and thickness verification was documented in the April 2023 Compliance Report for the SWP No. 498 Landfill. The City will continue to monitor the intermediate cover integrity on a regular basis until final cover has been installed.

2.3 SURFACE EMISSIONS MONITORING

On May 30, 2023, SCS performed the Second Quarter 2023 Surface Emissions Monitoring Event on the landfill. The monitoring was performed in accordance with the site-specific GCCS Design Plan, the facility's Title V Permit, the requirements of 40 CFR 63.1960(c) and (d), 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 included all applicable areas of the Permit No. 498 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.

VDEQ will be copied on a letter outlining the results at a later date. Table 1 summarizes the results of the monitoring event.

Table 1. Summary of March Surface Emissions Monitoring

Description	May 30, 2023
Number of Points Sampled	68
Number of Points in Serpentine Route	64
Number of Points at Surface Cover Penetrations	4
Number of Exceedances	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

These results are consistent with the SEM performed in October 2022, December 2022, and March 2023, in which no exceedances were detected. No further SEM is required at the landfill during this quarter.

3.0 GAS COLLECTION

The City has taken steps to optimize gas collection and minimize air intrusion as outlined in the sections below.

3.1 SYSTEM OPTIMIZATION

The SWP No. 498 Landfill is approximately 12.0 acres and is located south of the SWP No. 221 Landfill and east of the SWP No. 588 Landfill. As of September 2022, mining in Permit No. 498 has concluded. The majority of the SWP No. 498 Landfill does not have an active LFG collection system, due to mining operations which have occurred since waste placement was completed. The current system includes three vertical wells (EW-19, EW-20, and EW-21) and a condensate trap (CT-1) at the low point. Field reconnaissance efforts in September/October 2022 identified that the header pipe serving the three wells had been severed, blocked, or otherwise compromised. Vacuum was restored to EW-19 in November 2022. As of January 18, 2023, the blocked header piping was replaced, restoring vacuum to wells EW-20 and -21. Vacuum has remained consistent since those repairs were completed.

The buried waste in SWP No. 498 Landfill Area is greater than 25 years old, thus, the rate and quantity of decomposition gas production has declined significantly compared to the rate and quantity of LFG generated in more recently buried wastes. Due to the age of the waste in place, the methane concentration is substantially lower in several collection devices within this area. However, in the northwestern portion of SWP No. 498, devices EW-16, EW-17, and EW-18 have consistently shown normal methane values and are tuned accordingly each week. These collectors were not installed within the waste mass and are believed to be capturing migrating gases between SWP No. 498 and SWP No. 588 landfills. Devices EW-19, EW-20, and EW-21 exhibit gas concentrations that are consistent with older landfill gas. These collectors show low methane concentrations, as well as low flow, and are kept under minimal vacuum.

There is no historical evidence of elevated temperatures in SWP No. 498; however, the methane-to-carbon dioxide ratio measured in the wellheads can sometimes be less than 1 because organic fraction is more fully decomposed and the rate of methanogenesis has declined. Also, the No. 498 Landfill Area is not believed to be a significant source of odors. For the month of May, EW-19, EW-20, and EW-21 continue to show low methane values and remain under minimal vacuum. EW-16, EW-17 and EW-18 still show varying levels of methane. Adjustments to flow and vacuum are made where necessary to those devices while being monitored.

3.2 OPTIMIZATION PLAN AND REPORTING

3.2.1 Optimization Plan

On December 1, 2022, on behalf of the City, SCS submitted a plan that provides for means and methods for optimizing the performance of the existing gas extraction system in the Solid Waste Permit No. 498 landfill. Additional details about that plan were included along with a copy of the plan in the November Monthly Compliance Report for the SWP No. 498 Landfill.

3.2.2 Optimization Actions

During the month of January 2022 actions were taken to implement the submitted Optimization Plan. The actions taken at the SWP No. 498 Landfill in accordance with the plan were summarized in the January Monthly Compliance Report for the SWP No. 498 Landfill.

3.2.3 Monthly Wellhead Monitoring

On May 1, 2023 and May 2, 2023, SCS-FS visited the landfill and performed monitoring of the landfill gas wells. The results of the monthly monitoring were submitted to VDEQ on June 7, 2023 and are included in Appendix A.

4.0 GRADING, GEOMETRIC CONFIGURATION AND GAS EXPANSION

The City has taken the steps outlined in the sections below to grade the surface of the SWP No. 498 landfill to an appropriate geometric configuration to allow for final closure.

4.1 CLOSURE AND LFGCCS PLAN

SCS prepared plans on the City's behalf for closing and installing final cover on the Solid Waste Permit No. 498 landfill. The plans also include a comprehensive gas collection and control system and comprehensive stormwater management plan. These drawings along with supporting information to facilitate a modification to the facility's Solid Waste Permit were submitted on January 31, 2023 and February 24, 2023. SCS is preparing updates to the permit modification based on the letter received from VDEQ on March 10, 2023.

Recent updates to the permit modification package include the addition of supplemental LFG monitoring network probes along the eastern perimeter of the SWP No. 498 landfill. The permit modification drawings propose expanding the existing stormwater basin adjacent to the northeast corner of the landfill, and a new outlet structure is proposed to control the discharge from the basin.

4.2 FINAL COVER AND LFGCCS INSTALLATION

The drawings described in Section 4.1 will be used as the basis of bid drawings used for procurement of a contractor to complete final cover and LFGCCS installation. The drawings used for the purposes of bidding, procurement and construction of the final closure, gas collection system, and stormwater controls will generally conform to the layout and details in the permit modification drawings. In addition to the drawings SCS will prepare a detailed project manual including technical specifications. SCS will also continue to work with VDEQ to complete the permit modification incorporating the revised closure design into the facility's solid waste permit.

5.0 LEACHATE SEEPS AND PONDING

The sections below outline the steps taken by the City to address leachate seeps and ponding.

5.1 PERIODIC INSPECTIONS

The City initiated a process of tracking precipitation events that have the potential to create ponding and leachate seeps. Inspections are made following events that exceed 0.25 inches as recorded by the on-site weather station. For the purposes of these inspections, if precipitation is continuous for at least 8 hours during a storm that lasts multiple days, that storm will be considered a single event requiring a single inspection. After each such event, City personnel will inspect the landfill for ponding and leachate seeps. Locations of ponding and seeps will be marked in the field.

The City performed inspections as appropriate during the month of May. Section 6 describes the self-inspection logs that were used to record observations during the inspections. Inspection forms will be scanned and stored on the landfill computer server in a folder designated for the purpose of storing environmental records. Completed inspection forms are available for VDEQ to review upon request.

5.2 COMPLETION OF WORK ACTIVITIES

During the month of April 2023, the City completed work activities which eliminated areas of ponding and accomplished leachate seep repairs. These details about these activities were included in the April 2023 Compliance Report for the SWP No. 498 Landfill. The City will address any conditions that require remedial actions identified in future inspections as part of regular maintenance of the facility.

6.0 STORMWATER DRAINAGE AND MANAGEMENT

The sections below outline the steps by the City to improve stormwater management and drainage.

6.1 STORMWATER MANAGEMENT PLAN

As noted in Section 4.1 the plans that SCS prepared for Closure of SWP No. 498 included measures to address stormwater management on the landfill. The stormwater management plans were discussed and included in the January Monthly Compliance Report for the SWP No. 498 landfill.

6.2 CLEANOUT OF STORMWATER DIVERSION CHANNEL/TRENCH BERM

Clean-out of the stormwater diversion channel/trench berm was completed in February. The clean-out of the stormwater diversion channel/trench berm was discussed in the February 2023 Monthly Compliance Report for the SWP No. 498 Landfill. On March 15, 2023 SCS submitted a letter to VDEQ verifying completion of the stormwater diversion channel/trench berm clean-out. A copy of that letter and supporting documentation were included in the March 2023 Monthly Compliance Report for the SWP No. 498 Landfill.

7.0 SELF-INSPECTION AND RECORDKEEPING

SCS prepared two self-inspection log templates, the Stormwater Management Inspection Log and the Daily Landfill Inspection Log. SCS provided updated self-inspection logs for SWP 498 to the City and VDEQ and completed self-inspection training with facility staff on November 30, 2022.

7.1 UPDATED SELF-INSPECTION LOGS


Copies of updated self-inspection log templates were submitted to VDEQ on November 30, 2022. Details about this log and the intended inspection process were detailed in the November Monthly Compliance Report for the SWP No. 498 Landfill. Copies of the log templates are also included in that report.

7.2 FACILITY TRAINING

On November 30, 2022, SCS personnel, Ryan Mahon, met members of the Facility staff to complete self-inspection training. A summary of this training and a record of attendees was included in the November Monthly Compliance Report for the SWP No. 498 Landfill.

7.3 SELF-INSPECTION AND RECORDKEEPING ASSIGNMENTS

Completed inspections will be held on-site at the facility office available for review by VDEQ upon request. Currently, self-inspections are being completed by Jonathan Hayes. Dave Cochran will serve as the primary alternate for inspections with the other members of the staff trained on inspection procedures filling in as needed. Inspection forms will be scanned and stored on the landfill computer server in a folder designated for the purpose of storing environmental records.



Appendix A
May Monthly Wellhead Monitoring Data

Bristol Virginia Landfill - Permit 498 Well Data - 03/01/2023 to 05/31/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Static Pressure ("H2O)	Adj Static Pressure ("H2O)	Temp (F)	System Pressure ("H2O)	Comments
16	3/1/2023 10:16	49.3	32.4	1.9	16.4	-1.7	-1.7	65.8	-21.1	No Change
16	3/13/2023 11:30	52.0	34.5	1.9	11.6	-8.6	-9.3	51.6	-22.8	Increased Flow/Vacuum
16	4/3/2023 10:17	33.4	33.4	0.1	33.2	-11.9	-11.8	61.7	-22.5	Valve Adjustment: Opened Valve 1/2 to 1 turn
16	5/1/2023 10:42	31.9	28.7	0.1	39.3	-16.4	-16.5	52.3	-22.4	Valve Adjustment: Closed Valve 1/2 to 1 turn
17	3/1/2023 10:20	57.7	42.3	0.0	0.0	-1.1	-2.2	66.2	-20.9	Increased Flow/Vacuum
17	3/13/2023 11:33	43.7	32.1	3.3	20.9	-22.9	-22.9	47.0	-22.8	No Change
17	4/3/2023 10:20	50.8	36.1	0.0	13.0	-22.4	-22.4	58.7	-22.6	Valve Adjustment: Opened Valve 1/2 to 1 turn
17	5/1/2023 10:44	51.6	36.9	1.2	10.3	-22.3	-22.3	50.0	-22.2	Valve Adjustment: Open Valve 1/2 to 1 turn
18	3/1/2023 10:25	56.9	36.7	0.0	6.4	-0.1	-0.8	73.4	-20.9	Increased Flow/Vacuum
18	3/13/2023 11:37	54.6	37.8	1.3	6.3	-8.6	-10.4	53.9	-22.9	Increased Flow/Vacuum
18	4/3/2023 10:24	47.2	37.0	0.0	15.7	-13.3	-13.2	61.6	-22.4	No Change
18	5/1/2023 10:30	47.6	38.9	0.0	13.5	-11.8	-11.8	52.9	-22.1	No Change
19	3/1/2023 10:31	76.4	23.6	0.0	0.0	-11.3	-17.1	70.2	-20.7	Increased Flow/Vacuum
19	3/7/2023 13:29	8.7	2.0	20.1	69.2	-21.4	-21.4	70.7	-21.0	Decreased Flow/Vacuum
19	3/13/2023 11:42	79.2	20.5	0.3	0.0	-0.4	-15.6	54.4	-22.8	Increased Flow/Vacuum
19	4/3/2023 10:26	11.5	23.5	17.2	47.8	-20.2	-20.0	62.3	-22.4	No Change
19	5/1/2023 10:32	8.2	22.0	5.4	64.3	-18.2	-18.2	51.9	-22.3	Valve Adjustment: Closed Valve 1/2 to 1 turn
20	3/1/2023 10:35	2.6	6.7	13.1	77.6	-20.5	-17.7	65.4		
20	4/3/2023 10:31	3.0	8.9	13.5	74.6	-15.5	-9.9	58.9	-22.3	Valve Adjustment: Closed valve 1/2 to 1 turn
20	5/1/2023 10:35	9.3	13.0	9.6	68.1	-5.4	-5.4	51.8	-22.3	Valve Adjustment: Closed Valve 1/2 to 1 turn
21	3/1/2023 10:41	4.0	4.0	17.6	74.4	-11.5	-11.6	64.6		
21	4/3/2023 10:33	3.4	6.4	17.3	72.9	-0.9	-0.9	64.4	-22.7	No Change
21	5/1/2023 10:38	5.6	9.1	14.0	71.4	-0.8	-0.8	64.2	-22.5	Valve Adjustment: Closed Valve 1/2 to 1 turn
23	3/1/2023 10:11	0.3	1.2	20.4	78.1	-0.1	-0.1	63.7	-21.3	No Change
23	4/3/2023 10:40	1.7	5.3	20.4	72.6	-0.1	-0.1	54.8	-22.6	No Change
23	5/1/2023 10:46	3.1	10.8	19.7	66.4	0.0	0.0	56.9	-21.0	Valve Adjustment: Open Valve 1/2 to 1 turn
23	5/2/2023 09:31	0.1	0.5	20.6	78.9	-0.1	-0.1	60.0	-22.9	No Change