



July 2023 Monthly Compliance Report

Solid Waste Permit No. 498
Bristol Integrated Solid Waste Management Facility
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INTRODUCTION

On behalf of the City of Bristol, Virginia (City), SCS Engineers has prepared this report to the Virginia Department of Environmental Quality (VDEQ) in accordance with item 8 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 July 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 installed a replacement for the third pump during the month of July of 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.

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 July, 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. During the monitoring event no exceedances were detected on the serpentine route or at pipe penetrations. Details of the SEM were included in the May 2023 Monthly Compliance Report for SWP No. 498 Landfill.

SCS understands that the Solid Waste Permit No. 498 Landfill is subject to quarterly SEM and therefore SEM was not required to be performed this month. The third quarter SEM event for SWP No. 498 landfill will occur prior to September 30.

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 the SWP No. 498 Landfill 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. As construction efforts continue in Area 588, multiple tie-ins and infrastructure relocations have occurred in July. Additionally, large rain events have affected the landfill gas collection system as these events can occasionally limit the overall system pressure for all three areas. This has resulted in a lower vacuum value during the monitoring event for the month.

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 month. 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 SWP No. 498 Landfill Area is not believed to be a significant source of odors. For the month of July, EW-19, EW-20, and EW-21 exhibit higher than normal methane values and were adjusted accordingly. 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 2023 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 2023 Monthly Compliance Report for the SWP No. 498 Landfill.

3.2.3 Monthly Wellhead Monitoring

On July 5, 2023; July 24, 2023 and July 28, 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 August 2, 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 revised the permit modification based on the letter received from VDEQ on March 10, 2023. The revised permit modification drawings and documents were submitted to VDEQ on July 11, 2023, and draft Solid Waste Permit modules were received from VDEQ on July 31, 2023.

The permit modification package include the addition of supplemental LFG monitoring network probes along the eastern perimeter of the SWP No. 498 landfill. Additionally, 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 are being used as the basis of bid drawings 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 is preparing a detailed project manual including technical specifications. SCS and the City are tentatively targeting early August for issuing an invitation-to-bid for the SWP No. 498 landfill closure project.

SCS will continue to work with VDEQ to complete the permit modification incorporating the revised closure design into the facility's solid waste permit. As discussed previously with VDEQ, SCS intends to incorporate into the solid waste permit the use of AGRU MicroDrain Liner and the associated AGRUTex geotextile as an approved equivalent option for the conventional final cover geomembrane and drainage geocomposite. SCS is preparing new and revised specifications and hydraulic analyses (EPA HELP model) to support this effort.

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 July. 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 2023 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 2023. 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 2022 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

July Monthly Wellhead Monitoring Data

Bristol Virginia Landfill - Permit 498 Well Data - 05/01/2023 to 07/31/2023

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	5/1/2023 10:42	31.9	28.7	0.1	39.3	-16.4	-16.5	52.3	-22.4	Closed Valve 1/2 to 1 turn
16	6/1/2023 10:56	27.0	31.2	0.0	41.8	-17.5	-17.8	83.9	-22.9	No Change
16	6/14/2023 15:15	31.1	32.7	0.0	36.2	-21.1		89.4	-27.3	Closed valve 1/2 to 1 turn
16	6/27/2023 14:11	52.7	35.1	0.0	12.2	-10.5	-10.4	86.0	-11.3	Valve completely open
16	7/5/2023 10:06	57.4	35.0	0.0	7.6	-5.4	-5.4	88.2	-5.6	Valve completely open
17	5/1/2023 10:44	51.6	36.9	1.2	10.3	-22.3	-22.3	50.0	-22.2	Open Valve 1/2 to 1 turn
17	6/1/2023 10:57	46.2	36.0	0.0	17.8	-23.1	-23.1	79.6	-22.9	No Change
17	6/14/2023 15:18	54.2	41.4	0.0	4.4	-27.4		90.1	-27.3	Opened Valve 1/2 to 1 turn
17	6/27/2023 14:13	56.4	41.6	0.0	2.0	-11.2	-11.2	85.8	-11.2	Valve completely open
17	7/5/2023 10:07	53.2	35.1	0.0	11.8	-5.4	-5.4	85.6	-5.4	Valve completely open
18	5/1/2023 10:30	47.6	38.9	0.0	13.5	-11.8	-11.8	52.9	-22.1	No Change
18	6/1/2023 10:48	45.7	35.3	0.1	18.9	-12.6	-12.5	78.7	-22.9	No Change
18	6/27/2023 14:16	49.8	39.0	0.0	11.3	-8.5	-8.5	87.6	-11.1	Opened Valve > 1 turn
18	7/5/2023 10:09	56.7	40.0	0.3	3.0	-4.6	-4.6	89.5	-5.7	Valve completely open
19	5/1/2023 10:32	8.2	22.0	5.4	64.3	-18.2	-18.2	51.9	-22.3	Closed Valve 1/2 to 1 turn
19	6/1/2023 10:34	2.8	15.3	0.2	81.6	-22.4	-22.5	85.3	-22.8	No Change
19	6/27/2023 14:19	7.3	18.6	0.0	74.1	-8.8	-8.5	86.7	-11.1	Closed valve 1/2 to 1 turn
19	7/5/2023 10:11	51.7	38.5	0.6	9.2	-5.2	-5.2	86.0	-5.5	Valve completely open
20	5/1/2023 10:35	9.3	13.0	9.6	68.1	-5.4	-5.4	51.8	-22.3	Closed Valve 1/2 to 1 turn
20	6/1/2023 10:38	10.7	13.4	7.7	68.1	-5.8	-5.8	89.4	-23.0	No Change
20	6/27/2023 14:25	17.7	16.5	4.3	61.6	-3.6	-3.6	85.1	-11.1	No Change
20	7/5/2023 10:13	63.6	31.1	0.3	4.9	-5.2	-5.1	85.6	-5.4	Valve completely open
21	5/1/2023 10:38	5.6	9.1	14.0	71.4	-0.8	-0.8	64.2	-22.5	Closed Valve 1/2 to 1 turn
21	6/1/2023 10:41	5.4	8.0	13.4	73.2	-0.8	-0.8	79.0	-22.9	No Change
21	6/27/2023 14:28	10.4	12.7	9.3	67.6	-5.4	-5.4	82.6	-11.1	Valve completely closed
21	7/5/2023 10:16	27.1	19.6	4.1	49.2	-0.5	-0.5	83.2	-5.4	No Change
23	5/1/2023 10:46	3.1	10.8	19.7	66.4	0.0	0.0	56.9	-21.0	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 Chnage
23	6/1/2023 11:39	0.9	3.2	19.6	76.3	0.0	-0.1	75.1	-16.6	No Change
23	6/14/2023 14:12	0.4	1.3	19.5	78.9	-0.1	0.0	71.9	-16.9	Closed valve 1/2 to 1 turn
23	7/24/2023 15:29	0.5	1.1	19.4	79.0	-0.1	-0.1	92.6	0.3	No Change
23	7/28/2023 08:27	1.2	2.2	19.8	76.8	-0.2	-0.1	77.3	-3.1	No Change

