

# April Monthly Compliance Report

Solid Waste Permit No. 498  
Bristol Integrated Solid Waste Management Facility  
2655 Valley Drive  
Bristol, VA 24201  
(276) 645-7233

**SCS ENGINEERS**

02218208.05-18 | May 10, 2023

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

## 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 Intermediate Cover.....	2
2.2 Surface Emissions Monitoring.....	3
3.0 Gas Collection.....	3
3.1 System Optimization .....	4
3.2 Optimization Plan and Reporting.....	4
3.2.1 Optimization Plan .....	4
3.2.2 Optimization Actions.....	4
3.2.3 Monthly Wellhead Monitoring.....	4
4.0 Grading, Geometric Configuration and Gas Expansion .....	5
4.1 Closure and LFGCCS Plan.....	5
4.2 Final Cover and LFGCCS Installation.....	5
5.0 Leachate Seeps and Ponding.....	5
5.1 Periodic Inspections .....	5
5.2 Completion of Work Activities.....	5
6.0 StormWater Drainage and Management.....	6
6.1 Stormwater Management Plan.....	6
6.2 Cleanout of Stormwater Diversion Channel/Trench Berm .....	6
7.0 Self-Inspection and Recordkeeping .....	6
7.1 Updated Self-Inspection Logs.....	6
7.2 Facility Training.....	6
7.3 Self-Inspection and Recordkeeping Assignments.....	6

## Figures

Figure 1. Soil Depth Measurement.....	3
---------------------------------------	---

## Table of Contents

Section	Page
Appendices	
Appendix A	April Monthly Wellhead Monitoring Data
Appendix B	Elimination of Ponding Areas and Leachate Seep Repair Letter
Appendix C	Intermediate Cover Soil Depth Verification

## **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 April 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 Monthly Compliance Report for the SWP No. 498 Landfill.

As described in the October 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. Buchanan is now in the process of procuring another pump that will operate utilizing the existing electrical infrastructure.

#### **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 INTERMEDIATE COVER

During the month of March 2023 the City was able to clear slopes to begin the process of placing additional intermediate cover soil. City staff have now completed the placement of intermediate cover soil on the landfill area. SCS prepared a figure included in Appendix C comparing March 2023 topography during the placement of the additional intermediate cover soil with topography from October 2022. The comparison shows sufficient placement of additional cover soil within the central portions of the landfill, but soil placement was still ongoing around the perimeter of the landfill during the March 2023 flyover.

During the month of April 2023 the City started a soil thickness verification investigation to determine if any areas of the landfill need additional soil cover. Nine soil borings were completed in April to check for sufficient cover soil depth. The 9 boring locations are noted on Sheet 1 in Appendix C. The borings showed adequate cover soil depth. Figure 1 shows a measurement being taken in one of the borings.

Seven additional soil borings were completed on May 4, 2023 at the points noted Sheet 1 in Appendix C. The additional soil borings also showed adequate cover soil depth.

Figure 1. Soil Depth Measurement



## 2.2 SURFACE EMISSIONS MONITORING

On March 15, 2023, SCS performed surface emissions monitoring 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 March 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 second quarter SEM for SWP No. 498 landfill will occur in June.

## 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.

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 values, 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 due to the fact that the wastes are becoming biochemically stabilized (meaning organic wastes have been 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.

## **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 April 3, 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 May 4, 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. 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 document based on the letter received from VDEQ on March 10, 2023.

### **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 attached 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 April. 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, the City completed work activities which eliminated areas of ponding and accomplished leachate seep repairs. SCS submitted a letter detailing the work activities completed to



VDEQ on April 30, 2023. The letter included photographs taken on top of the SWP No. 498 Landfill and is included in Appendix B. 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 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 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

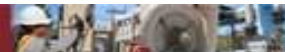
as the primary alternate for inspections with the other members of the staff trained on inspection procedures filling in as needed. Inspection forms will be scanned and stored on the landfill computer server in a folder designated for the purpose of storing environmental records.



Appendix A  
April Monthly Wellhead Monitoring Data

## Bristol Virginia Landfill - Permit 498 Well Data - 02/01/2023 to 04/30/2023

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	2/1/2023 13:49	61.2	37.3	0.1	1.4	-8.9	-8.9	55.6	-23.9	Increased Flow/Vacuum
16	2/1/2023 13:50	60.7	37.9	0.0	1.4	-21.1	-21.1	46.0	-21.1	
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
17	2/1/2023 13:52	55.6	37.0	0.0	7.4	-23.9	-23.8	44.3	-23.6	Increased Flow/Vacuum
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
18	2/1/2023 13:31	62.0	38.0	0.0	0.0	-0.3	-0.3	54.5	-23.9	Increased Flow/Vacuum
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
19	2/1/2023 13:42	5.5	3.0	18.5	73.0	-12.7	-11.0	47.1	-23.9	
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	Close_Task
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
20	2/1/2023 13:35	5.1	11.7	9.2	74.0	-20.1	-20.1	64.7		Closed Valve > 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
21	2/1/2023 13:38	4.3	5.0	18.2	72.5	-1.2	-1.2	58.4		Closed Valve > 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
23	2/1/2023 13:55	0.8	2.2	21.0	76.0	0.0	0.0	45.2	-18.3	
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



## Appendix B

### Elimination of Ponding Areas and Leachate Seep Repair Letter

April 30, 2023  
File No. 02218208.17

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

Subject: Elimination of Ponding Areas and Leachate Seep Repair  
Integrated Solid Waste Management Facility – Solid Waste Permit #498  
Bristol, Virginia

Dear Mr.Chapman:

SCS Engineers (SCS) is submitting this letter on behalf of the City of Bristol, Virginia (City) to provide documentation to the Virginia Department of Environmental (VDEQ or Department) that work activities have eliminated areas of ponding and accomplished leachate seep repairs at the Permit #498 Landfill. This letter is intended to notify VDEQ of the Facility's conformance with the requirements of Item 5.ii in Appendix B of the Consent Decree, dated 3/28/23.

As you are aware, the City has been performing site work activities and implementing improvements to the Permit #498 Landfill in preparation for the upcoming final cap construction and closure activities. The site work activities have generally consisted of placement of additional soil material to eliminate exposed wastes and enhance cover integrity, regrading and reshaping of the landfill surface to promote positive drainage and proper stormwater run-off, and stabilization of the stormwater diversion channel and trench berm using erosion control matting and aggregate. Furthermore, the site work activities have focused on remediation and abatement of leachate seeps and areas susceptible to ponding, which has been accomplished primarily by the placement, spreading, and compaction of additional cover soil material.

On 4/25/23, City personnel conducted a site reconnaissance of the Permit #498 Landfill to investigate whether evidence of existing leachate seeps or ponding areas could be observed. Based on the field observations, no evidence of existing leachate seeps or ponding areas were noted. Photographs documenting the landfill surface conditions, as noted during the site reconnaissance, are attached in the Site Reconnaissance Report.

The City intends to continue placing and compacting additional soil on select portions of the landfill surface as part of the ongoing site work efforts in preparation for the upcoming final cap construction and closure activities. Furthermore, the City will continue to perform periodic inspections of the SWP #498 Landfill after major precipitation events in accordance with the protocols outlined in the Facility's self-inspection program. Corrective actions will be implemented to address any areas of ponding or leachate seeps that are observed during future inspections.



Mr. Jonathan Chapman

April 30, 2023

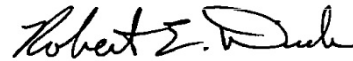
Page 2

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

Sincerely,



Charles J. Warren, PE  
Project Manager  
SCS Engineers



Robert E. Dick, PE, BCEE  
Project Director  
SCS Engineers

CJW/TRW

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

Encl. Site Reconnaissance Report & Photo Log – April 25, 2023

# SITE RECONNAISSANCE REPORT

**Project Name:** SWP #498 Seep & Ponding Areas Repairs

**Project No.:** 02218208.17

**Task:** 1

**Contractor:** City of Bristol, Virginia Public Works

**Client:** City of Bristol, Virginia

**Site Personnel:** Mike Martin

**Prepared By:** Bob Dick

**Date:** April 25, 2023

**Weather:** Mild, sunny

## Observations:

- Observed conditions of landfill surface at Permit #498 Landfill to verify elimination of ponding areas and leachate seep repairs. No evidence of existing stormwater ponding or leachate seeps was noted.

## PHOTO LOG 04/25/2023



View of landfill surface, sideslope area, stormwater diversion channel and trench berm.



## PHOTO LOG 04/25/2023



View of top of landfill surface.




View of landfill surface showing slope and grade for positive drainage.



View of top of landfill surface looking northeast.



View of top of landfill showing positive drainage looking west.



Appendix C  
Intermediate Cover Soil Depth Verification



- GENERAL NOTES**
- EXISTING GRADES SHOWN AS DASHED HALF-TONE CONTOUR LINES REPRESENT THE TOPOGRAPHY DEVELOPED FROM AN SCS DRONE FLYOVER DATED MARCH 9, 2023. AERIAL IMAGERY IS FROM THE SAME FLYOVER.
  - THE SPOT DEPTHS ARE BASED ON A VOLUMETRIC COMPARISON OF THE MARCH 9, 2023 TOPOGRAPHY AND THE OCTOBER 7, 2022 TOPOGRAPHY. THE LABELS SHOW THE ELEVATION DIFFERENCE (FEET) BETWEEN THE TWO SURFACES. THE OCTOBER 7, 2022 TOPOGRAPHY WAS DEVELOPED FROM AERIAL PHOTOGRAPHY PROVIDED BY NV5 GEOSPATIAL.
  - SOIL BORING TESTS WERE CONDUCTED AT LOCATIONS SHOWING LESS THAN ONE FOOT OF ELEVATION GAIN ACCORDING TO THE TOPOGRAPHY COMPARISON. THE SPOT DEPTHS MAY UNDERESTIMATE ACTUAL INTERMEDIATE COVER SOIL DEPTH DUE TO SETTLEMENT AND THE PRESENCE OF PREVIOUSLY PLACED COVER SOIL. ADDITIONALLY, NEW SOIL PLACEMENT WAS NOT COMPLETE AT THE TIME OF THE MARCH FLYOVER.
  - NINE INITIAL SOIL BORING TESTS WERE COMPLETED IN APRIL 2023 AT THE POINTS SHOWN USING "X" MARKERS. THE POINTS ARE LABELED WITH THE SOIL BORING DEPTH. ALL BORINGS SHOWED A MINIMUM OF 1.0' OF SOIL COVER.
  - AN ADDITIONAL 7 SOIL BORING TESTS WERE COMPLETED ON MAY 4, 2023 AT THE POINTS SHOWN USING TRIANGLE MARKERS. THE POINTS ARE LABELED WITH THE SOIL BORING DEPTH. THE BORINGS SHOWED SUFFICIENT COVER SOIL DEPTH.

DATE	
REVISION	
NO.	NO.
ESTIMATION OF NEWLY ADDED SOIL COVER	
SHEET TITLE	PROJECT TITLE
	<b>SWP #498 LANDFILL INTERMEDIATE COVER</b>
CLIENT	
<b>CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY</b>	
2655 VALLEY DRIVE BRISTOL, VA 24201	
<b>SCS ENGINEERS</b> STEARNS CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC. 15281 MIDLOTHIAN TPK - MIDLOTHIAN, VA 23113 PH. (804) 278-7400 FAX. (804) 278-7433	
CADD FILE:	02218208.05
DATE:	5/8/2023
SCALE:	AS SHOWN
DRAWING NO.	<b>1</b> of 1