

# February Monthly Compliance Report

Solid Waste Permit #221  
Bristol Integrated Solid Waste Management Facility  
2655 Valley Drive  
Bristol, VA 24201  
(276) 645-7233

**SCS ENGINEERS**

02218208.05-18 | March 10, 2023

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

## Table of Contents

Section	Page
Introduction .....	1
2.0 Cover Integrity and Exposed Wastes.....	1
2.3 Surface Emissions Monitoring.....	1
3.0 Gas Collection.....	1
3.1 System Optimization .....	1
3.2 Optimization Plan and Reporting.....	1
3.2.1 Optimization Plan .....	2
3.2.2 Optimization Actions.....	2
3.2.3 Monthly Wellhead Monitoring.....	2

## Tables

Table 1.	Monthly Average Wellhead LFG Composition – SWP #221 Wells .....	2
----------	---	---

## Appendices

Appendix A	February Monthly Wellhead Monitoring Data
------------	---

## INTRODUCTION

On behalf of the City of Bristol, Virginia (City), SCS Engineers (SCS) has prepared this report to the Virginia Department of Environmental Quality (VDEQ). This report covers the Solid Waste Permit (SWP) #221 Landfill during the month of February.

The following sections outline actions completed towards the applicable items in Appendix B of the Consent Decree. The sections have been numbered to align with the numbering in Appendix B.

## 2.0 COVER INTEGRITY AND EXPOSED WASTES

As outlined in Appendix B of the Consent Decree, cover integrity of the SWP #221 Landfill will be managed primarily through ongoing surface emissions monitoring in accordance with Federal and State regulations.

## 2.3 SURFACE EMISSIONS MONITORING

On October 12, 2022, SCS performed surface emissions monitoring (SEM) on the landfill. During the monitoring event no exceedances were detected on the serpentine route or at pipe penetrations. Details of the surface emissions monitoring were included in the October Monthly Compliance Report for the SWP #221 Landfill and in a letter outlining the results submitted to VDEQ on October 28, 2022.

On January 26, 2023, SCS performed a “Target Zone” SEM event, where points were collected at locations that showed visual characteristics of a potential exceedance location (erosion rills, bare spots where vegetation was lacking, etc.). The results of this SEM event were summarized in the January Monthly Compliance Report for the SWP #221 Landfill.

SCS will notify the City of Bristol prior to performing the 2023 Annual SEM Event.

## 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

There are currently 15 vertical extraction wells in the SWP #221 Landfill Area (Well Nos. 1 – 15). In waste disposal units where the age of the buried wastes is greater than 40 years, as is the case at SWP #221 Landfill, the rate and quantity of decomposition gas production declines significantly compared to the rate and quantity of LFG generated in more recently buried wastes. There is no historical evidence of elevated temperatures in SWP #221 Landfill. Also, the #221 Landfill Area is not believed to be a significant source of fugitive LFG emissions or odors.

Adjustments are made during wellhead monitoring to optimize gas quality and applied vacuum on the SWP #221 Landfill wells. All SWP #221 Landfill Wells are under vacuum. During the February monitoring event, slight valve adjustments were made at EW-04, -05, -07, -09, -10, -12, -13, and -15 wellheads. The average gas composition in the SWP #221 Landfill wells is shown in Table 1. Methane, carbon dioxide, and oxygen concentrations increased slightly compared to the previous month. The installation of new 1-inch wellheads and the replacement of flex hoses on the wells in

SWP #221 Landfill is in progress in an effort to reduce the oxygen content. Monitoring Data for the SWP #221 Landfill wells is included in Appendix A.

Table 1. Monthly Average Wellhead LFG Composition – SWP #221 Wells

Month	Average CH <sub>4</sub> (% Vol)	Average CO <sub>2</sub> (% Vol)	Average O <sub>2</sub> (% Vol)	Average Pressure (inches w.c.)
November 2022	47.4	33.7	3.3	-11.9
December 2022	58.7	39.6	0.3	-2.7
January 2023	39.8	27.0	6.0	-20.6
February 2023	42.5	28.1	7.2	-15.6

## 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 #221 landfill. Additional details about that plan were included along with a copy of the plan in the November Monthly Compliance Report for the SWP #221 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 #221 Landfill in accordance with the plan were summarized in the January Monthly Compliance Report for the SWP# 221 Landfill. SCS prepared a report that detailed the results of each of these activities and the report was submitted to VDEQ on February 1, 2023.

### 3.2.3 Monthly Wellhead Monitoring

On February 1, 2023, SCS Field Services (SCS-FS) visited the landfill and performed monitoring of the landfill gas wells. The results of the monthly monitoring were submitted to VDEQ on March 1, 2023 and are included in Appendix A.

Appendix A  
February Monthly Wellhead Monitoring Data

## Bristol Virginia Landfill - Permit 221 Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Static Pressure ("H2O)	Adj Static Pressure ("H2O)	Init Temp (F)	System Pressure ("H2O)	Comments
01	12/8/2022 11:39	59.7	39.4	0.0	0.9	-3.8	-3.7	58.3	-3.0	Increased Flow/Vacuum
01	12/8/2022 11:41	60.0	40.0	0.0	0.0	-3.6	-3.6	57.5	-3.6	Opened Valve 1/2 to 1 Turn
01	1/5/2023 12:28	60.3	39.7	0.0	0.0	-24.3	-24.2	67.6	-24.2	
01	2/1/2023 12:37	55.2	35.1	9.7	0.0	-19.0	-21.1	43.4	-22.2	
02	12/8/2022 11:33	56.0	37.0	1.1	5.9	-1.7	-4.0	64.2	-3.2	Increased Flow/Vacuum
02	1/5/2023 12:24	27.4	17.8	11.5	43.3	-24.2	-24.4	66.3	-24.2	
02	2/1/2023 12:26	15.5	10.2	16.8	57.5	-20.5	-19.9	46.7	-24.2	
03	12/8/2022 11:16	56.6	40.6	0.6	2.2	-0.6	-2.7	58.4	-3.6	Opened Valve 1/2 to 1 Turn
03	1/5/2023 12:16	13.0	9.0	15.7	62.3	-17.5	-16.9	55.9	-24.1	
03	2/1/2023 12:15	3.3	3.2	20.2	73.3	-5.4	-4.8	45.9	-24.1	
04	12/8/2022 11:03	58.9	41.1	0.0	0.0	-2.3	-2.3	58.2	-3.8	Increased Flow/Vacuum
04	1/5/2023 12:11	48.2	35.3	3.1	13.4	-15.1	-15.0	64.8	-24.3	
04	2/1/2023 12:09	45.2	31.5	4.7	18.6	-20.7	-20.7	49.7	-24.2	Increased Flow/Vacuum
04	2/1/2023 12:11	43.2	30.8	5.2	20.8	-21.9	-21.9	45.9	-24.1	
05	12/8/2022 10:54	58.3	41.7	0.0	0.0	-3.5	-3.6	56.6	-3.8	Increased Flow/Vacuum
05	12/8/2022 10:57	58.3	41.7	0.0	0.0	-3.9	-3.9	56.4	-3.8	Increased Flow/Vacuum
05	1/5/2023 13:09	58.7	41.3	0.0	0.0	-24.3	-24.3	65.5	-24.2	
05	2/1/2023 13:18	59.0	41.0	0.0	0.0	-23.9	-23.9	42.0	-23.9	Increased Flow/Vacuum
06	12/8/2022 12:19	57.4	35.0	1.5	6.1	-3.1	-3.0	61.4	-3.4	Opened Valve 1/2 Turn or Less
06	1/5/2023 13:05	14.4	8.6	16.0	61.0	-23.4	-23.2	69.0	-24.2	
06	2/1/2023 13:14	13.1	8.2	17.5	61.2	-23.1	-23.1	53.7	-23.9	
07	12/8/2022 12:15	58.4	41.1	0.0	0.5	-2.1	-2.1	61.6	-3.4	No Change
07	1/5/2023 13:02	59.0	39.9	0.0	1.1	-14.0	-14.1	65.9	-24.5	
07	2/1/2023 13:12	63.2	36.8	0.0	0.0	-1.8	-1.8	59.2	-19.4	Increased Flow/Vacuum
08	12/8/2022 12:12	60.5	39.5	0.0	0.0	-1.4	-1.4	61.8	-3.5	Increased Flow/Vacuum



## Bristol Virginia Landfill - Permit 221 Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Static Pressure ("H2O)	Adj Static Pressure ("H2O)	Init Temp (F)	System Pressure ("H2O)	Comments
08	1/5/2023 12:58	1.9	1.6	20.3	76.2	-0.9	-0.5	67.1	-24.2	
08	2/1/2023 13:08	3.9	3.2	20.4	72.5	-1.2	-1.2	51.6	-22.5	
09	12/8/2022 12:03	59.7	40.3	0.0	0.0	-3.1	-3.0	68.8	-3.4	Increased Flow/Vacuum
09	12/8/2022 12:04	59.6	40.4	0.0	0.0	-3.4	-3.4	62.6	-3.4	Increased Flow/Vacuum
09	1/5/2023 12:50	56.6	38.3	1.1	4.0	-24.2	-24.1	65.4	-24.2	
09	2/1/2023 13:00	55.0	36.8	1.7	6.5	-23.9	-23.9	45.8	-17.2	Increased Flow/Vacuum
10	12/8/2022 11:59	57.6	42.4	0.0	0.0	-1.6	-2.1	63.7	-3.6	Opened Valve 1/2 to 1 Turn
10	1/5/2023 12:46	58.1	41.9	0.0	0.0	-23.1	-24.8	62.1	-24.2	
10	2/1/2023 12:54	58.5	41.5	0.0	0.0	-0.4	-1.1	46.7	-23.8	Increased Flow/Vacuum
11	12/8/2022 11:51	59.5	40.2	0.3	0.0	-4.4	-4.5	63.9	-3.2	Increased Flow/Vacuum
11	1/5/2023 12:36	29.5	20.2	10.7	39.6	-24.3	-24.4	60.9	-24.1	
11	2/1/2023 12:50	60.6	39.4	0.0	0.0	-3.4	-3.8	45.9	-21.2	
12	12/8/2022 11:45	55.5	37.1	1.4	6.0	-4.2	-4.2	57.8	-4.2	Opened Valve 1/2 to 1 Turn
12	1/5/2023 12:32	19.2	13.0	14.6	53.2	-24.1	-24.1	58.0	-24.1	
12	2/1/2023 12:46	46.7	31.0	5.0	17.3	-24.0	-24.0	48.6	-24.3	Increased Flow/Vacuum
13	12/8/2022 11:09	57.5	40.6	0.0	1.9	-3.6	-3.6	56.6	-3.7	Increased Flow/Vacuum
13	12/8/2022 11:11	57.2	40.2	0.1	2.5	-3.5	-3.6	56.8	-3.7	Increased Flow/Vacuum
13	1/5/2023 12:19	59.9	40.1	0.1	0.0	-24.2	-24.2	56.9	-24.2	
13	2/1/2023 12:19	58.9	38.0	0.9	2.2	-23.8	-23.8	46.8	-24.1	Increased Flow/Vacuum
13	2/1/2023 12:22	58.4	38.4	0.8	2.4	-24.2	-24.1	43.8	-24.1	
14	12/8/2022 12:09	63.3	36.7	0.0	0.0	-0.2	-0.2	71.5	-3.5	Increased Flow/Vacuum
14	1/5/2023 12:55	31.7	19.1	11.1	38.1	-20.6	-20.6	65.8	-24.2	
14	2/1/2023 13:05	26.1	16.7	12.1	45.1	-23.2	-23.2	60.8	-23.9	
15	12/8/2022 11:53	60.3	39.7	0.0	0.0	-4.5	-4.3	60.6	-4.3	Increased Flow/Vacuum
15	12/8/2022 11:55	60.0	40.0	0.0	0.0	-4.3	-4.8	58.0	-4.8	Increased Flow/Vacuum



Bristol Virginia Landfill - Permit 221 Well Data - 12/01/2022 to 02/28/2023

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Static Pressure ("H2O)	Adj Static Pressure ("H2O)	Init Temp (F)	System Pressure ("H2O)	Comments
15	1/5/2023 12:41	59.5	39.0	0.0	1.5	-24.2	-24.2	56.9	-24.1	
15	2/1/2023 12:34	56.6	36.3	7.0	0.1	-3.4	-3.5	51.1	-24.5	Increased Flow/Vacuum



Midlothian, VA

PROJECT: City Bristol, LF Engineering, ISWMF, VA 02218208.05      DATE: 3/10/2023

SUBJECT: February Monthly Compliance Reports SWP #588, SWP #498, & SWP #221      TRANSMITTAL ID: 00010

PURPOSE: For Record      VIA: Info Exchange

FROM

NAME	COMPANY	EMAIL	PHONE
Charles Warren Midlothian, VA	SCS Engineers	CWarren@scsengineers.com	+1-804-486-1903

TO

NAME	COMPANY	EMAIL	PHONE
Jonathan Chapman 355-A Deadmore Street Abingdon VA 24210 United States	Virginia Department of Environmental Quality	Jonathan.chapman@deq.virginia.gov	

REMARKS: Jonathan,  
In accordance with Item 8.iii of Appendix A and Item 8 of Appendix B of the Consent Decree between the City and VDEQ, SCS is submitting the Monthly Compliance Reports for the Solid Waste Permit #588, #498, and #221 Landfills on behalf of the City of Bristol, Virginia. The reports can be downloaded using the links below. Please note that the data from monthly gas monitoring of leachate collection components (Item 1.i of Appendix A), sampling and analysis of dual extraction wells (Item 4.ii of Appendix A), and topographic survey (Item 5.ii of Appendix A) are contained within the Solid Waste Permit #588 report. Let us know if you have questions about the contents of these reports.  
Regards,  
Charles

DESCRIPTION OF CONTENTS

QTY	DATED	TITLE	NOTES
1	3/10/2023	February Compliance Report - SWP 221.pdf	
1	3/10/2023	February Compliance Report - SWP 498.pdf	
1	3/10/2023	February 2023 Compliance Report - SWP 588.pdf	

# Transmittal

DATE: 3/10/2023  
TRANSMITTAL ID: 00010

## COPIES:

Bob Dick	(SCS Engineers)
Charles Warren	(SCS Engineers)
Daniel Scott	(Virginia Department of Environmental Quality)
Erin Malone	(Environmental Protection Agency)
Erin Willard	(Environmental Protection Agency)
Jacob Chandler	(Bristol, VA, City of)
Jeffery Hurst	(Virginia Department of Environmental Quality)
Joey Lamie	(City of Bristol)
Jonathan Hayes	(Bristol, VA, City of)
Michael Martin	(Bristol, VA, City of)
Randall Eads	(City of Bristol)
Robert Gardner	(SCS Engineers)
Stacy Bowers	(Virginia Department of Environmental Quality)
Susan Blalock	(Virginia Department of Environmental Quality)
Tom Lock	(SCS Engineers)
Brandon King	(SCS Engineers)
Jimmy Jewett	(McGuireWoods LLP)
Samuel Burgess	(SCS Engineers)
Lucas Nachman	(SCS Engineers)
Jennifer Robb	(SCS Engineers)