

# 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 | November 10, 2022

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

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## EXECUTIVE SUMMARY

On behalf of the City of Bristol, Virginia (City), SCS Engineers has prepared this report to the Virginia Department of Environmental Quality (VDEQ) outlining steps taken towards the action items outlined in the Plan of Action submitted to VDEQ on July 6, 2022. This report covers the Solid Waste Permit #221 landfill during the month of October.

### 1.0 SURFACE EMISSIONS MONITORING

On October 12, 2022, SCS performed surface emissions monitoring 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 frequency for performing surface emissions monitoring at the Closed Landfill is on an annual basis in accordance with the Facility's approved GCCS Design Plan.

The monitoring route included all applicable areas of the Permit No. 221 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.

VDEQ was copied on a letter outlining the results on October 28, 2022. A copy of that submittal is included in Appendix A. Table 1 summarizes the results of the monitoring event.

Table 1. Summary of October Surface Emissions Monitoring

Description	October 12, 2022
Number of Points Sampled	85
Number of Points in Serpentine Route	73
Number of Points at Surface Cover Penetrations	12
Number of Exceedances	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

### 2.0 GAS COLLECTION

On October 12, 2022 SCS Field Services (SCS-FS) visited the landfill and performed monitoring of the landfill gas wells. The results of that monitoring were submitted to VDEQ on November 2, 2022 and are included in Appendix B. This data will be used to optimize the wellfield and address oxygen intrusion.

## Appendix A

### Annual Surface Emissions Monitoring Event – Permit 221 Landfill

October 28, 2022  
File No. 02218208.04

Mr. Mike Martin  
Solid Waste Administrator  
City of Bristol Virginia  
2125 Shakesville, Rd  
Bristol, VA 2125

Subject: Annual Surface Emissions Monitoring Event – Permit 221 Landfill - October 12, 2022  
Bristol Integrated Solid Waste Facility – Bristol, Virginia

Dear Mr. Martin:

SCS Engineers (SCS) is pleased to submit the results of the Annual 2022 Surface Emissions Monitoring (SEM) event performed at the Solid Waste Permit No. 221 Landfill at the Bristol Integrated Solid Waste Facility located in Bristol, Virginia on October 12, 2022. 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 frequency for performing surface emissions monitoring at the Closed Landfill is on an annual basis in accordance with the Facility's approved GCCS Design Plan.

The monitoring route included all applicable areas of the Permit No. 221 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. The approximate monitoring route and sampling locations are presented in the attached Drawing.

At the time of monitoring, all areas of the Permit No. 221 landfill footprint are subject to regulatory monitoring based on the regulatory time schedule stipulated in 40 CFR 63.1960(b) and 40 CFR 60.36f(b). This yields a total monitored landfill footprint of approximately 13.4 acres for this quarterly event. Therefore, the target number of sampling points to cover the appropriate portion of the landfill footprint, utilizing a 30-meter grid interval, is approximately 64 (4.75 points per acre).

During the Annual 2022 SEM event, SCS sampled 85 points, including 12 surface cover penetrations. The recorded methane concentrations are presented in Exhibit 1. None of the 85 sampling locations demonstrated a methane concentration that exceeded the regulatory limit of 500 ppm above background.

Since no locations exhibited methane concentrations greater than the regulatory limit, the monitoring frequency for the Permit No. 221 Landfill remains on an annual basis.

SCS will notify the City of Bristol of the proposed schedule for the 2023 Annual Event (to be performed prior to December 31, 2023).



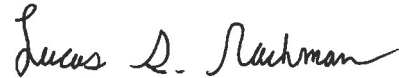
Mr. Mike Martin  
October 28, 2022  
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If you have questions or require additional information, please contact either of the undersigned.

Sincerely,



Lauren E. James  
Associate Staff Professional  
SCS Engineers



Lucas S. Nachman  
Project Professional  
SCS Engineers

LEJ/LSN

Cc. Joey Lamie, City of Bristol  
Jacob Chandler, PE, City of Bristol  
Crystal Bazyk, Virginia Department of Environmental Quality  
Encl.

**EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS  
 PERMIT NO. 221 - 2022 ANNUAL EVENT - OCTOBER 12, 2022  
 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA**

Date	Time	ID #	Methane Concentration	Compliance	Comments
10/12/22	11:36	1	3.7 PPM	OK	GW-6
10/12/22	11:38	2	28.3 PPM	OK	GW-7
10/12/22	11:39	3	3.3 PPM	OK	
10/12/22	11:39	4	2.1 PPM	OK	
10/12/22	11:39	5	1.7 PPM	OK	
10/12/22	11:40	6	1.7 PPM	OK	
10/12/22	11:40	7	2.1 PPM	OK	
10/12/22	11:41	8	1.6 PPM	OK	
10/12/22	11:41	9	1.7 PPM	OK	
10/12/22	11:41	10	3.0 PPM	OK	
10/12/22	11:42	11	96.1 PPM	OK	GW-5
10/12/22	11:42	12	1.7 PPM	OK	
10/12/22	11:43	13	1.7 PPM	OK	
10/12/22	11:43	14	2.1 PPM	OK	
10/12/22	11:44	15	1.9 PPM	OK	
10/12/22	11:44	16	1.9 PPM	OK	
10/12/22	11:44	17	7.0 PPM	OK	
10/12/22	11:45	18	2.4 PPM	OK	
10/12/22	11:45	19	1.9 PPM	OK	
10/12/22	11:46	20	1.8 PPM	OK	
10/12/22	11:46	21	1.8 PPM	OK	
10/12/22	11:47	22	3.0 PPM	OK	
10/12/22	11:47	23	1.8 PPM	OK	
10/12/22	11:47	24	1.5 PPM	OK	
10/12/22	11:48	25	1.9 PPM	OK	GW-1
10/12/22	11:49	26	1.9 PPM	OK	
10/12/22	11:49	27	2.2 PPM	OK	
10/12/22	11:50	28	5.5 PPM	OK	GW-12
10/12/22	11:50	29	2.0 PPM	OK	
10/12/22	11:51	30	12.8 PPM	OK	GW-11
10/12/22	11:51	31	1.5 PPM	OK	
10/12/22	11:52	32	1.5 PPM	OK	
10/12/22	11:53	33	1.6 PPM	OK	GW-10
10/12/22	11:55	34	1.4 PPM	OK	
10/12/22	11:55	35	1.4 PPM	OK	
10/12/22	11:56	36	7.8 PPM	OK	GW-9
10/12/22	11:56	37	1.1 PPM	OK	
10/12/22	11:57	38	1.1 PPM	OK	
10/12/22	11:57	39	1.2 PPM	OK	GW-8
10/12/22	11:57	40	1.2 PPM	OK	
10/12/22	11:58	41	1.5 PPM	OK	
10/12/22	11:58	42	1.7 PPM	OK	
10/12/22	11:59	43	2.0 PPM	OK	
10/12/22	12:16	44	1.7 PPM	OK	
10/12/22	12:16	45	0.8 PPM	OK	
10/12/22	12:17	46	1.0 PPM	OK	
10/12/22	12:17	47	2.2 PPM	OK	
10/12/22	12:17	48	2.8 PPM	OK	
10/12/22	12:18	49	1.0 PPM	OK	
10/12/22	12:18	50	5.4 PPM	OK	
10/12/22	12:18	51	0.9 PPM	OK	
10/12/22	12:19	52	2.3 PPM	OK	
10/12/22	12:19	53	1.2 PPM	OK	
10/12/22	12:20	54	0.8 PPM	OK	
10/12/22	12:20	55	0.7 PPM	OK	
10/12/22	12:20	56	1.4 PPM	OK	
10/12/22	12:21	57	0.4 PPM	OK	
10/12/22	12:21	58	1.2 PPM	OK	
10/12/22	12:22	59	0.5 PPM	OK	
10/12/22	12:22	60	0.5 PPM	OK	
10/12/22	12:23	61	1.4 PPM	OK	GW-14
10/12/22	12:24	62	1.0 PPM	OK	
10/12/22	12:24	63	1.0 PPM	OK	
10/12/22	12:24	64	1.1 PPM	OK	
10/12/22	12:24	65	1.2 PPM	OK	
10/12/22	12:25	66	0.8 PPM	OK	
10/12/22	12:25	67	0.9 PPM	OK	GW-13
10/12/22	12:25	68	1.9 PPM	OK	
10/12/22	12:26	69	1.9 PPM	OK	
10/12/22	12:26	70	1.2 PPM	OK	

**EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS  
 PERMIT NO. 221 - 2022 ANNUAL EVENT - OCTOBER 12, 2022  
 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA**

Date	Time	ID #	Methane Concentration	Compliance	Comments
10/12/22	12:26	71	2.5 PPM	OK	
10/12/22	12:27	72	3.3 PPM	OK	
10/12/22	12:27	73	2.0 PPM	OK	
10/12/22	12:27	74	1.2 PPM	OK	
10/12/22	12:27	75	0.6 PPM	OK	
10/12/22	12:28	76	0.6 PPM	OK	GW-15
10/12/22	12:28	77	0.9 PPM	OK	
10/12/22	12:28	78	0.9 PPM	OK	
10/12/22	12:29	79	1.1 PPM	OK	
10/12/22	12:29	80	1.2 PPM	OK	
10/12/22	12:29	81	1.5 PPM	OK	
10/12/22	12:29	82	1.0 PPM	OK	
10/12/22	12:30	83	1.1 PPM	OK	
10/12/22	12:30	84	0.7 PPM	OK	
10/12/22	12:30	85	1.4 PPM	OK	

Number of points sampled:	85
Number of exceedance locations:	0

**NOTES:**  
 Weather Conditions (10/12/22): Partly Cloudy, 64°F, Winds: 6 MPH SSE

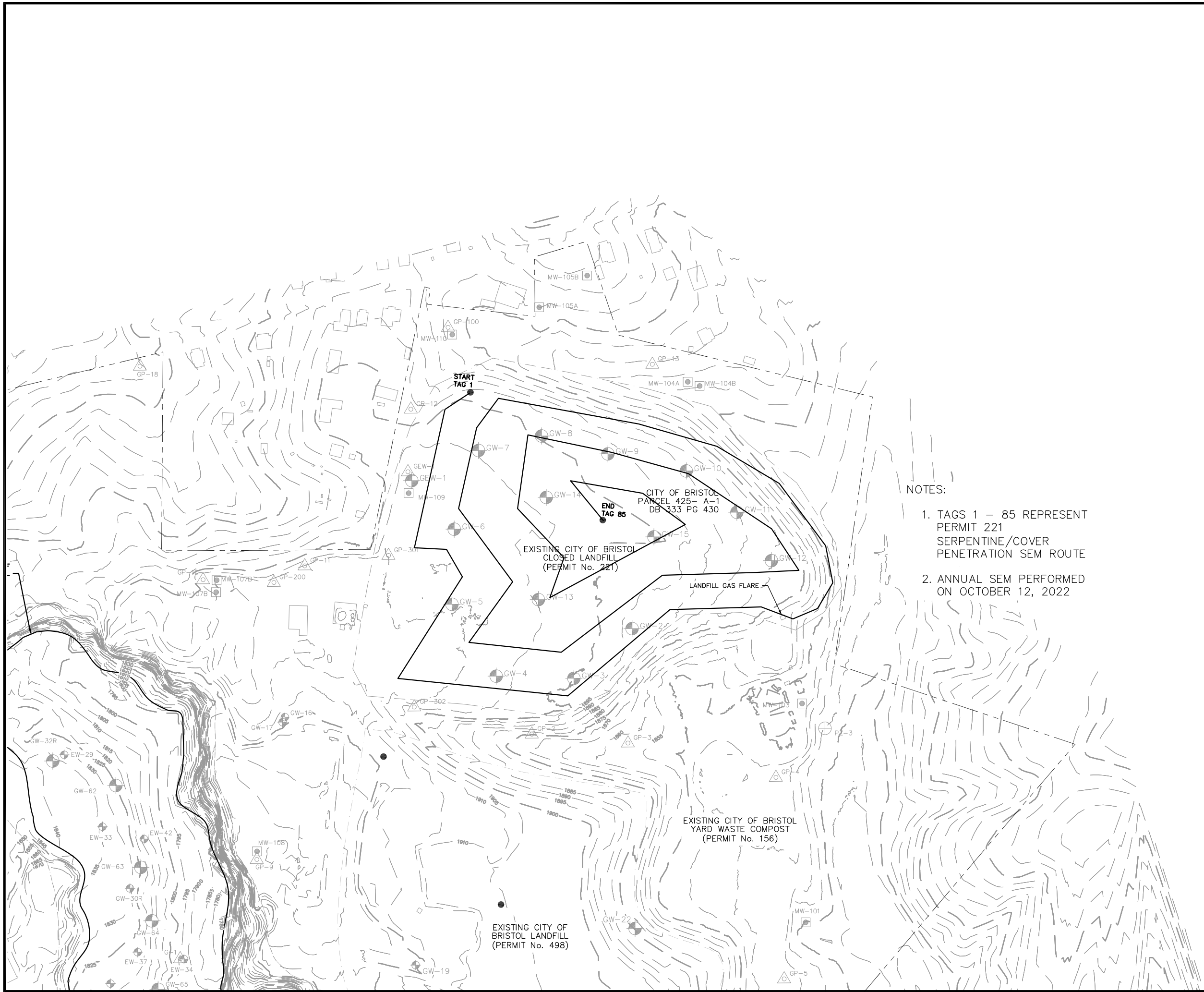
Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm

10/12/22	11:25	Zero	0.1 PPM
10/12/22	11:26	SPAN	498.0 PPM

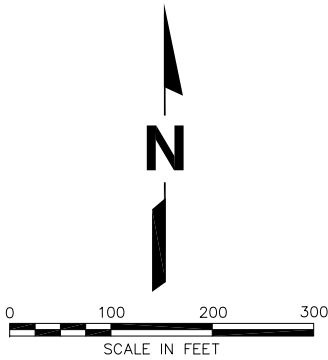
Background Reading:

10/12/22	11:30	Upwind	1.9 PPM
10/12/22	11:36	Downwind	3.8 PPM






- NOTES:
1. TAGS 1 – 85 REPRESENT PERMIT 221 SERPENTINE/COVER PENETRATION SEM ROUTE
  2. ANNUAL SEM PERFORMED ON OCTOBER 12, 2022



<b>SCS ENGINEERS</b> STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC. 2825 SHAKESVILLE RD., SUITE 200 BRISTOL, VA 24113 PH: (804) 378-7440 FAX: (804) 378-7433		CLIENT <b>BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY</b> 2125 SHAKESVILLE RD BRISTOL, VA	SHEET TITLE <b>BRISTOL SEM ROUTE</b>	NO.	REVISION	DATE
PROJ. NO. 02218205.04	D/W. BY. LSN	D/A. RW. BY. LSN	PROJECT TITLE <b>ANNUAL SURFACE EMISSIONS MONITORING SOLID WASTE PERMIT #221</b>	NO.	REVISION	DATE
CADD FILE:	DATE: 10/28/22	SCALE: AS SHOWN	DRAWING NO. <b>1</b> of <b>1</b>	NO.	REVISION	DATE



Appendix B  
October Monthly Wellhead Monitoring Data

November 1, 2022  
File No. 07220028.00 Task 6

## MEMORANDUM

TO: Jonathan Chapman, VDEQ – SWRO

FROM: Mike Gibbons, SCS Field Services

SUBJECT: Monthly Wellhead Monitoring Data – October, 2022  
Landfill Permit Areas 221 and 498  
Bristol Integrated Waste Management Facility, Bristol, Virginia

In accordance with the Draft VDEQ Consent Order for the Bristol Virginia Integrated Solid Waste Management Facility, SCS is submitting this data on behalf of the City of Bristol to satisfy the condition of Appendix B, compliance provision #3(ii). This compliance provision report includes monthly wellhead monitoring data for Solid Waste Permit Areas #221 and #498 for the month of October, 2022. Note that there are currently no landfill gas collectors connected to the extraction system in Area #498.

Please contact SCS if you have any questions or require additional information.

cc: Randall Eads, City of Bristol  
David Cochran, City of Bristol  
Michael Maine, City of Bristol  
Robert E. Dick, P.E., SCS Engineers



# Bristol Virginia Landfill - Permit 221 and 498 Extraction Well Data - 10/01/2022 to 10/31/2022

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)	Flow (scfm)	System Pressure ("H2O)	Comments
01	10/12/2022 09:16	21.4	15.6	11.4	51.6	-22.8	-22.7	59.6		-22.6	
02	10/12/2022 09:06	34.4	23.2	8.7	33.7	-18.5	-18.5	56.7	62.3	-22.5	Slightly Open
03	10/12/2022 08:56	18.6	13.6	14.5	53.3	-9.4	-9.4	57.4	5.2	-22.6	
04	10/12/2022 08:52	51.5	38.4	2.0	8.1	-5.7	-5.6	57.5	10.8	-22.5	
04	10/12/2022 08:52	51.5	38.4	2.0	8.1	-5.7	-5.6	57.5	10.8	-22.5	
05	10/12/2022 08:48	53.9	39.8	0.9	5.4	-24.9	-22.5	60.3		-22.3	
05	10/12/2022 08:48	53.9	39.8	0.9	5.4	-24.9	-22.5	60.3		-22.3	
06	10/12/2022 09:49	18.7	12.3	14.2	54.8	-20.4	-20.4	64.3	3.0	-22.5	
07	10/12/2022 09:45	57.9	40.1	0.0	2.0	-9.4	-9.4	67.7		-22.5	
08	10/12/2022 09:38	4.4	3.1	19.4	73.1	-1.9	-1.9	64.5		-22.4	
09	10/12/2022 09:34	50.0	35.7	3.1	11.2	-21.9	-21.9	61.1		-22.3	
10	10/12/2022 09:30	56.5	41.5	0.0	2.0	-1.3	-1.2	64.6	2.9	-22.4	Fully Closed
11	10/12/2022 09:23	25.0	18.6	12.4	44.0	-22.6	-22.6	59.3		-22.4	
12	10/12/2022 09:19	27.5	20.0	12.3	40.2	-22.8	-22.8	66.0	5.6	-22.7	
13	10/12/2022 08:59	55.0	38.7	5.3	1.0	-22.5	-22.5	60.3	9.0	-22.5	
14	10/12/2022 09:41	39.5	24.5	7.5	28.5	-1.6	-1.6	67.8		-22.4	
15	10/12/2022 09:10	59.4	40.6	0.0	0.0	-22.6	-22.6	60.7	5.5	-22.7	Slightly Open
16	10/12/2022 10:02	38.7	35.1	0.2	26.0	-10.9	-10.9	70.2		-18.8	
17	10/12/2022 10:06	33.1	26.6	13.1	27.2	-15.2	-15.1	58.7		-22.5	
18	10/12/2022 10:34	48.9	39.0	0.1	12.0	-12.1	-12.1	65.6	3.6	-22.5	
23	10/12/2022 10:14	0.2	0.5	21.4	77.9	-20.1	-20.1	56.5		-22.0	