UNDERDRAIN MONITORING PLAN

UNDERDRAIN MONITORING PLAN

Bremo Bluff FFCP Management Facility
Solid Waste Permit 627
Fluvanna County, Virginia

Prepared for:

Dominion Energy Virginia
120 Tredegar Street
Richmond, Virginia 23219

Prepared by:
Schnabel Engineering
9800 Jeb Stuart Parkway, Suite 100
Glen Allen, Virginia 23059

Schnabel Reference No. 22130437.031

November 2024

TABLE OF CONTENTS

ATTACHMENTS

1.0 GENERAL

This Underdrain Monitoring Plan (Plan) has been prepared for the Bremo Bluff Fossil Fuel Combustion Products (FFCP) Management Facility (Facility) located in Bremo Bluff, Virginia. The Facility will accept coal combustion residuals (CCR) previously generated at the Bremo Station (Station) and operate as a new, captive industrial landfill (CCR Unit) under the Virginia Department of Environmental Quality (DEQ) Solid Waste Permit (SWP) 627. Schnabel Engineering (Schnabel) has prepared this Plan on behalf of the Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy).

The Facility is subject to the design requirements in the United States Environmental Protection Agency's (USEPA) "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments" (CCR Rule, 40 CFR §257 Subpart D) as well as the DEQ's Virginia Solid Waste Management Regulations (VSWMR, 9VAC20-81). This Plan has been prepared in accordance with the DEQ Division of Land Protection and Revitalization Guidance Memo No. 2016-02 (Underdrain Guidance).

The underdrain system has been designed to provide for the effective and efficient conveyance of emergent groundwater flows below the proposed Facility footprint. The underdrain system will be constructed in accordance with the requirements of the Virginia Water Protection (VWP) Individual Permit Number 21-2305 and variance to 9VAC20-81-120.C.1.b to protect instream beneficial uses, comply with applicable water quality standards, and prevent cause or contribution to a significant impairment of state waters or fish and wildlife resources.

1.1 Site Description

The Facility will be located along State Route 656 at 2134 Bremo Bluff Road in Bremo Bluff, Virginia on an approximately 214-acre parcel that is owned by Dominion Energy and adjacent to the Station property (Tax Parcel 62-A-7). The geology and hydrogeology of the property was investigated as part of the July 2022 Part A Permit Application (by others). It is understood that existing groundwater discharge and surface water run-off on the property primarily drain to a former jurisdictional perennial stream feature that flows southward, generally along the centerline of the property with smaller localized tributaries/drainage features flowing to it, and represents the surface exposure of the uppermost aquifer. The drainage features, as well as wetlands, identified on the property during the Part A permitting process are shown on the Site Features Figure, which is included as Attachment 1.

Approximately 125 acres of the 214-acre property will be dedicated for Facility activities, i.e., the Facility Boundary (FB), with approximately 73 of those acres designated for waste management activities, i.e., the Waste Management Boundary (WMB), and 47 of those acres lined for disposal activities, i.e., the Disposal Unit Boundary (DUB). Emergent groundwater flows from below the Facility area will drain by gravity through the proposed underdrain to the southern edge of the FB.

As part of the Facility design, surface water run-on originating north and east of the Facility will be diverted around the Facility footprint; therefore, the underdrain is not expected to manage any significant quantities of surface water run-on. During Facility construction, the underdrain will manage localized run-on and groundwater that would otherwise discharge to the ground surface. Once the Facility construction is completed, the underdrain will collect and convey groundwater that emerges beneath the CCR Unit and ancillary structures, which previously would have discharged along the central stream feature.

2.0 UNDERDRAIN DESIGN

The underdrain design consists of a 12-inch diameter SDR-11 header pipe along the low-volume flowline, with geotextile-wrapped stone laterals extending into the smaller localized tributaries/drainage features to the east and west.

In the footprint of the proposed CCR Unit, as well as approximately 300 feet (ft) upstream and 75 ft downstream of the perimeter road, the 12-inch diameter header pipe will be perforated and enveloped in compacted Virginia Department of Transportation (VDOT) No. 57 stone with a 10-ounce per square yard (oz) non-woven geotextile wrap around the stone to allow for collection of the emerging groundwater and the retainage of soils to prevent them from migrating into the underdrain. Emergent groundwater seeps from the tributary drainage features east and west of the low-volume flowline will be collected and conveyed to the underdrain header pipe via lateral extensions consisting of compacted VDOT No. 57 stone wrapped in a 10-oz non-woven geotextile. The upstream and downstream ends of the underdrain header will be solid-wall pipe. Where the underdrain header transitions to solid pipe, the stone and geotextile wrap will terminate and the pipe will be enveloped in compacted fill soils.

The underdrain discharges at an outfall (UD-01), located near the toe of the downstream Facility embankment slope, which will be protected with gabion armoring and constructed in accordance with VWP Individual Permit Number 21-2305. Underdrain cleanout access points in the form of manholes are located upstream and downstream of the perforated portions of the header pipe. As necessary, underdrain flows can be collected in the manhole immediately upstream of UD-01.

An in-depth discussion of the underdrain design, including pipe strength and capacity analyses, is included in Attachment VI of the Part B Permit Application (Design Report) and details of the underdrain system are shown on Drawings 6 and 7 in Attachment III of the Part B Permit Application (Design Plans).

3.0 SAMPLING AND ANALYSIS

3.1 Monitoring Network

This underdrain system is designed as an emergent groundwater collection system, and the monitoring network includes two upgradient sampling points, groundwater monitoring wells FMW-01 and FMW-02, and one downgradient sampling point, the underdrain outlet (UD-01). Given the nature of the of underdrain system and Facility conditions, the upstream sampling points are located upgradient of the DUB and the initial point of emergent groundwater collection. The outfall sampling point, UD-01, is located downstream of the DUB and Contact Stormwater Pond (CSWP), where no further potential contamination related to the Facility is likely to occur. Upgradient and downgradient monitoring points are shown on the Site Monitoring Plan, included as Attachment 2.

3.2 Monitoring Frequency

Underdrain monitoring will be performed on a semi-annual basis in conjunction with groundwater monitoring activities. Monitoring shall be performed throughout the life of the Facility and during the post-closure care period until underdrain monitoring is no longer deemed necessary or post-closure care is terminated. Determination to end underdrain monitoring shall be approved by the DEQ and based upon site-specific factors.

3.3 Monitoring Constituents and Analytical Requirements

In accordance with the DEQ Underdrain Guidance, CCR landfills are subject to the same list of sampling parameters for both underdrains and groundwater monitoring wells. The underdrain monitoring locations will therefore be sampled and analyzed for the leachate indicator parameters established for the Facility and included in Attachment X of the Part B Permit Application (Groundwater Monitoring Plan). Constituents will include CCR Rule Appendix III and/or IV parameters, and the applicable columns of VSWMR Table 3.1. Monitored constituents are listed in Tables 1 and 2, which are included as Attachment 3.

Laboratory analysis will be conducted by an accredited laboratory in accordance with the Virginia Environmental Laboratory Accreditation Program (VELAP). USEPA Test Methods for Evaluating Solid Waste (SW-846) will be used, as available, for permit-required constituent laboratory analysis.

3.4 Results Evaluation

Background water quality will be established using data obtained from upgradient groundwater samples collected and analyzed for each of the constituents required in the monitoring program. The sampling and analysis methods will incorporate standard statistical techniques in accordance with the requirements of the CCR Rule, which include the collection of 8 independent background samples to determine background concentrations.

Results from the underdrain outlet sampling will be compared to upgradient background water quality values. The results from each sampling event will be evaluated within 30 days of laboratory data receipt to determine if a statistically significant increase (SSI) over background values exists.

Dominion Energy may, at any time within the 30-day SSI determination period, undertake third-party data validation of the analytical data received from the laboratory. Undertaking data validation is voluntary and shall not alter the timeframes associated with determining or reporting an SSI.

3.4.1 Verification Sampling

If a potential SSI or suspect result is identified during a monitoring event, Dominion Energy may elect to conduct verification sampling. Elected verification samples will be collected within the 30-day SSI determination period.

Statistical significance will be considered verified if the result of the verification sample remains statistically significant. No statistical significance will be noted for that monitoring event if the verification sample is not statistically significant. Verification sampling results will be included with SSI notifications and annual reports.

4.0 REPORTING PROCEDURES

4.1 Written Notifications

If an SSI over background is identified, the SSI will be reported to the DEQ in writing in accordance with 9VAC20-81-530.C.2 within 14 days of making the SSI determination. The notification shall include one of the following response actions:

- A plan to submit an alternate source demonstration (ASD); or

- A statement that the underdrain discharge containing landfill constituents will be handled in a manner consistent with the requirements of 9VAC20-81-210.D within 60 days, as specified in the DEQ Guidance Memo, and will include interim steps to minimize risks to human health or the environment.

An ASD certified by a qualified professional engineer may be submitted if SSI(s) are identified while monitoring the underdrain water quality in accordance with this monitoring program. The written ASD will be submitted within 90 days of noting the SSI. Dominion Energy will contact the DEQ to discuss handling options for the underdrain flows in the interim period while the ASD is being performed. If the ASD is successful, Dominion Energy will continue to implement underdrain monitoring. In the case of an unsuccessful ASD, Dominion Energy will initiate corrective actions as described in Section 5.0.

4.2 Annual Reports

An Annual Landfill Underdrain Monitoring Summary (ALUMS) Report will be submitted to the DEQ by December 31st of each year. The ALUMS Report form, included as Attachment 4, will document the underdrain sampling activities completed during the calendar year and include lab analyses, data interpretation, and other attachments as necessary.

5.0 CORRECTIVE ACTIONS

If an SSI over background is detected and verified, Dominion Energy will notify the DEQ of the increase and the intent to capture and treat underdrain flows in accordance with 9VAC20-81-210.D. If Dominion Energy elects not to submit an ASD, or the ASD is unsuccessful, a corrective action plan and compliance schedule to capture the underdrain flows will be developed in collaboration with the DEQ.

6.0 OPERATIONS AND MAINTENANCE

The underdrain system is designed to intercept emerging groundwater and convey the flow by gravity to a discharge outfall (UD-01) downstream of the CCR Unit and ancillary Facility structures. There are two manholes associated with the underdrain; one at the upgradient end of the underdrain and the other at the downgradient end prior to the UD-01. Outfall UD-01 and the manholes shall be visually inspected during each semi-annual event for damage and accessibility. Should damage to UD-01 or either of the underdrain manholes be observed, the damage shall be noted as part of the inspection plan and repairs shall be completed as soon as practicable.

Routine maintenance around the underdrain manholes and UD-01 shall be undertaken as necessary to prevent overgrowth or blockages by ground or woody vegetation. Access shall be maintained to these locations and preventive maintenance to cut and/or remove vegetation shall be conducted as necessary. The use of weed killer or other herbicides is prohibited from use around these locations.

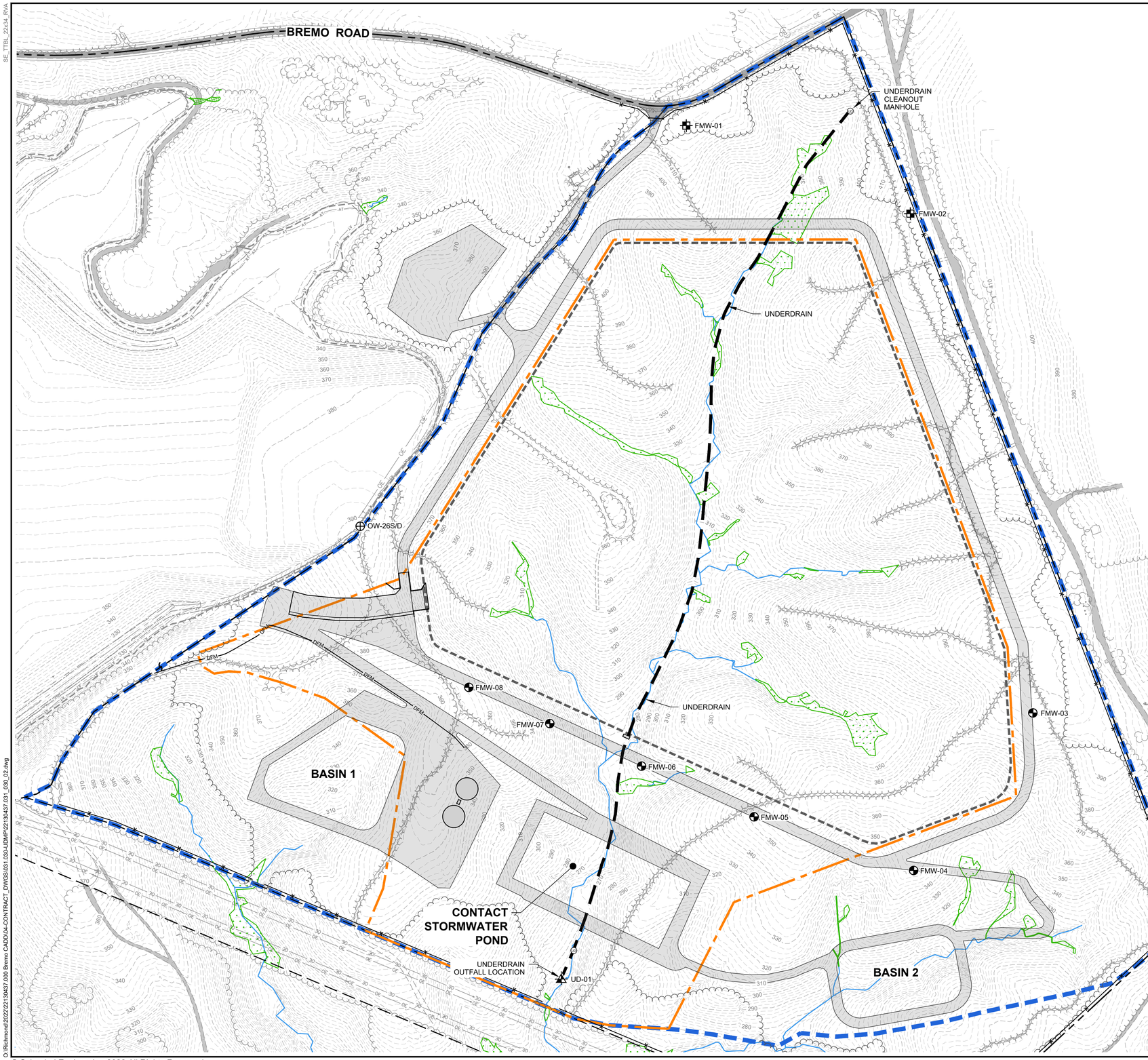
As the underdrain is a free-flowing gravity pipe, there are no mechanical or automated controls or parts which require operation or additional maintenance.To mitigate the potential for clogging, underdrain cleanout access points in the form of manholes are located upstream and downstream of the perforated pipe portions of the pipe.

7.0 INSPECTION PLAN

The underdrain manholes and UD-01 outfall structure will be visually inspected by the sampler during each semi-annual sampling event. Observed damages shall be recorded on an inspection log and any damages having the potential to impact the operation, maintenance, or integrity of the underdrain system shall be repaired as soon as practicable. Inspection logs shall be included as part of the semi-annual inspections and will be maintained by Dominion Energy and made available to the DEQ upon request.

ATTACHMENT 1

SITE FEATURES FIGURE



LEGEND

- PARCEL BOUNDARY
- EX. TOPOGRAPHIC CONTOURS (2' INTERVALS)
- EX. OVERHEAD ELECTRIC LINE
- EX. STREAM
- EX. WETLANDS
- FACILITY BOUNDARY
- WASTE MANAGEMENT BOUNDARY
- DISPOSAL UNIT BOUNDARY / BOTTOM LINER ANCHOR TRENCH
- PROP. UNDERDRAIN
- PROP. UNDERDRAIN MANHOLE
- PROP. ROAD
- FMW-03 — PROP. DOWNGRADIENT GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
- FMW-01 — PROP. UPGRADIENT GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
- OW-26S/D — PROP. SIDEGRADIENT GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
- UD-01 — PROP. UNDERDRAIN OUTFALL LOCATION AND IDENTIFICATION

NOTES

1. EXISTING CONDITIONS COMPILED FROM AERIAL SURVEY PREPARED BY McKENZIE SNYDER, INC., DATED MARCH 24, 2019. CONTROL PREPARED BY H&B SURVEYING & MAPPING, LLC.
2. PARCEL BOUNDARIES TAKEN FROM ALTA / NSPS LAND TITLE SURVEY DATED JUNE 18, 2019 AND UPDATED JANUARY 17, 2020, BY H&B SURVEYING & MAPPING, LLC.
3. SITE DATUM: NAD83 / NAVD88, VIRGINIA STATE PLANE SOUTH.
4. JURISDICTIONAL AREAS SHOWN BASED ON APPROVED JURISDICTIONAL DETERMINATION BY USACE ON JUNE 14, 2021 AND VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) ON MARCH 10, 2021.

REV	DESCRIPTION	DES. BY	CAD BY	CHK. BY	DATE
1	RESPONSE TO COMMENTS	MEO	BPG	JRD	02/16/24
0	ORIGINAL ISSUE	MEO	BPG	JRD	07/10/23

Schnabel ENGINEERING
9800 JEB Stuart Parkway, Suite 100
Glen Allen, VA 23059
Phone: 804-290-4600
Fax: 804-264-3244
schnabel-eng.com

BREMO BLUFF FFCP MANAGEMENT FACILITY
SOLID WASTE PERMIT No. 627
FLUVANNA COUNTY, VIRGINIA

FFCP MANAGEMENT FACILITY
SITE FEATURES

PREPARED FOR: Dominion Energy

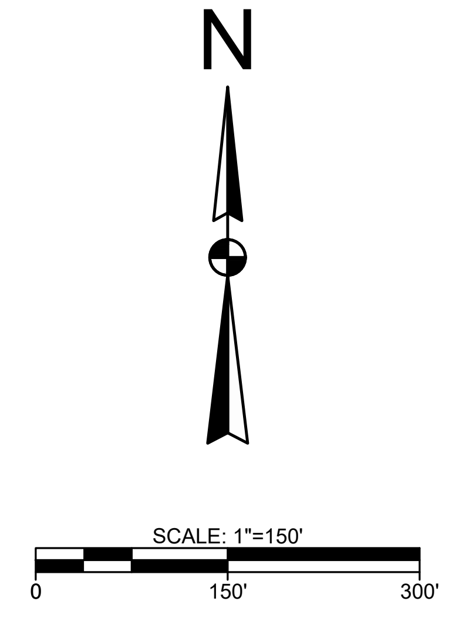
PROJECT: 22130437.031
DATE: 02/16/24
ATTACHMENT 1
SHEET - OF -

SE_TTBL_22x34_RVA

O:\Richmond\2022\22130437.000 Bremo CADD\04-CONTRACT_DWGS\031.03\0-UDMP\22130437.031_030_02.dwg

ATTACHMENT 2

SITE MONITORING PLAN



LEGEND

— — —	PARCEL BOUNDARY
- - 350 - -	EX. TOPOGRAPHIC CONTOURS (2' INTERVALS)
—350—	PROP. FINAL GRADE CONTOURS (2' INTERVALS)
— OE — OE —	EX. OVERHEAD ELECTRIC LINE
▬ ▬ ▬	FACILITY BOUNDARY
▬ - ▬	WASTE MANAGEMENT BOUNDARY
- - - -	DISPOSAL UNIT BOUNDARY / BOTTOM LINER ANCHOR TRENCH
▬ ▬ ▬	PROP. UNDERDRAIN
UD	PROP. UNDERDRAIN MANHOLE
▭	PROP. ROAD
▨	PROP. CONCRETE CHANNEL
—-—-—	PROP. CONTACT STORMWATER PIPE
C	PROP. CONTACT STORMWATER PIPE MANHOLE
◉	PROP. CONTACT STORMWATER PIPE INLET
NC	PROP. NON-CONTACT STORMWATER MANHOLE
DI	PROP. NON-CONTACT STORMWATER DROP INLET
———	PROP. NON-CONTACT STORMWATER PIPE / CULVERT
▨	PROP. RIP RAP CHANNEL ARMORING
◕ FMW-03	PROP. DOWNGRADIENT GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
✚ FMW-01	PROP. UPGRADIENT GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
⊕ OW-26S/D	PROP. SIDEGRADIENT GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
▲ UD-01	PROP. UNDERDRAIN OUTFALL LOCATION AND IDENTIFICATION
◇ BASIN 1 OUTFALL	PROP. STORMWATER OUTFALL LOCATION AND IDENTIFICATION

NOTES

1. EXISTING CONDITIONS COMPILED FROM AERIAL SURVEY PREPARED BY McKENZIE SNYDER, INC., DATED MARCH 24, 2019. CONTROL PREPARED BY H&B SURVEYING & MAPPING, LLC.
2. PARCEL BOUNDARIES TAKEN FROM ALTA / NSPS LAND TITLE SURVEY DATED JUNE 18, 2019 AND UPDATED JANUARY 17, 2020, BY H&B SURVEYING & MAPPING, LLC.
3. SITE DATUM: NAD83 / NAVD88, VIRGINIA STATE PLANE SOUTH.
4. PROPOSED GRADES SHOWN ON THIS DRAWING DEPICT THE CONDITION OF THE SITE AFTER FINAL COMPLETION.

REV.	DESCRIPTION	DES. BY	CAD BY	CHK. BY	DATE
1	RESPONSE TO COMMENTS	MEO	BPG	JRD	02/16/24
0	ORIGINAL ISSUE	MEO	BPG	JRD	07/10/23

Schnabel
ENGINEERING
9800 JEB Stuart Parkway, Suite 100
Glen Allen, VA 23059
Phone: 804-649-7035
Fax: 804-264-3244
schnabel-eng.com

BREMO BLUFF FFCP MANAGEMENT FACILITY
SOLID WASTE PERMIT No. 627
FLUVANNA COUNTY, VIRGINIA

SITE MONITORING PLAN

PREPARED FOR:
Dominion Energy

PROJECT: 22130437.031
DATE: 02/16/24
ATTACHMENT
2
SHEET
- OF -

O:\Richmond\2022\22130437.000 Bremo CADD\04-CONTRACT_DWGS\031.030-UDMP\22130437.031_030_02A (ATT 2).dwg

ATTACHMENT 3

MONITORING PROGRAM CONSTITUENTS

Table 1: Summary of Detection Monitoring Program Parameters

	Parameter	Class	CAS RN[1]	Typical Method[2]	Units	Typical LOQ[3]/QL[4]
CCR Appendix III	Boron	metal	7440-42-8	6010D/6020B	µg/L[5]	50
	Calcium	metal	7440-70-2	6010D/6020B	mg/L[6]	5
	Chloride	anion	16887-00-6	9056A	mg/L	1
	Fluoride	anion	16984-48-8	9056A	mg/L	0.1
	pH	field parameter	N/A[7]	9040C	S.U.	N/A
	Sulfate	anion	18785-72-3	9056A	mg/L	1
	Total Dissolved Solids (TDS)	dissolved cations/anions	Total[8]	SM2540C	mg/L	50
VSWMR Table 3.1 Column A Metals	Antimony	metal	Total	6010D/6020B	µg/L	5
	Arsenic	metal	Total	6010D/6020B	µg/L	1
	Barium	metal	Total	6010D/6020B	µg/L	5
	Beryllium	metal	Total	6010D/6020B	µg/L	1
	Cadmium	metal	Total	6010D/6020B	µg/L	1
	Chromium	metal	Total	6010D/6020B	µg/L	5
	Cobalt	metal	Total	6010D/6020B	µg/L	1
	Copper	metal	Total	6010D/6020B	µg/L	5
	Lead	metal	Total	6010D/6020B	µg/L	1
	Nickel	metal	Total	6010D/6020B	µg/L	5
	Selenium	metal	Total	6010D/6020B	µg/L	5
	Silver	metal	Total	6010D/6020B	µg/L	5
	Thallium	metal	Total	6010D/6020B	µg/L	1
	Vanadium	metal	Total	6010D/6020B	µg/L	5
	Zinc	metal	Total	6010D/6020B	µg/L	20

Notes:

[1] Chemical Abstracts Service Registry Number (CAS RN)

[2] U.S. EPA SW-846 analytical methods, if available, will be used for monitoring constituents. Typical methods shall be as equivalent or most current version, depending on laboratory's VELAP certification for the method.

[3] Limit of Quantitation (LOQ)

[4] Quantitation Limit (QL)

[5] Micrograms per liter (µg/L)

[6] Milligrams per liter (mg/L)

[7] Not applicable (N/A)

[8] All species that contain the element are included.

Table 2: Summary of Assessment Monitoring Program Parameters

	Parameter	Class	CAS RN[1]	Typical Method[2]	Units	Typical LOQ[3]/QL[4]
CCR Appendix III	Boron	metal	7440-42-8	6010D/6020B	µg/L[5]	50
	Calcium	metal	7440-70-2	6010D/6020B	mg/L[6]	5
	Chloride	anion	16887-00-6	9056A	mg/L	1
	Fluoride	anion	16984-48-8	9056A	mg/L	0.1
	pH	field parameter	N/A[7]	9040C	S.U.	N/A
	Sulfate	anion	18785-72-3	9056A	mg/L	1
	Total Dissolved Solids (TDS)	dissolved cations/anions	Total[8]	SM2540C	mg/L	50
CCR Appendix IV	Antimony	metal	Total	6010D/6020B	µg/L	5
	Arsenic	metal	Total	6010D/6020B	µg/L	1
	Barium	metal	Total	6010D/6020B	µg/L	5
	Beryllium	metal	Total	6010D/6020B	µg/L	1
	Cadmium	metal	Total	6010D/6020B	µg/L	1
	Chromium	metal	Total	6010D/6020B	µg/L	5
	Cobalt	metal	Total	6010D/6020B	µg/L	1
	Fluoride	anion	Total	9056A	µg/L	300
	Lead	metal	Total	6010D/6020B	µg/L	1
	Lithium	metal	Total	6010D/6020B	µg/L	40
	Mercury	metal	Total	7470A	µg/L	2
	Molybdenum	metal	Total	6010D	µg/L	10
	Selenium	metal	Total	6010D/6020B	µg/L	5
	Thallium	metal	Total	6010D/6020B	µg/L	1
	Radium 226 & 228 combined	radionuclide	13982-63-3 &15262-20-1	9315/9320	pCi/L[9]	1
VSWMR Table 3.1 Column A, B	Copper	metal	Total	6010D/6020B	µg/L	5
	Nickel	metal	Total	6010D/6020B	µg/L	5
	Silver	metal	Total	6010D/6020B	µg/L	5
	Tin	metal	Total	6010D, 6020B	µg/L	10
	Vanadium	metal	Total	6010D/6020B	µg/L	5
	Zinc	metal	Total	6010D/6020B	µg/L	20

Notes:

[1] Chemical Abstracts Service Registry Number (CAS RN)

[2] U.S. EPA SW-846 analytical methods, if available, will be used for monitoring constituents. Typical methods shall be as equivalent or most current version, depending on laboratory's VELAP certification for the method.

[3] Limit of Quantitation (LOQ)

[4] Quantitation Limit (QL)

[5] Micrograms per liter (µg/L)

[6] Milligrams per liter (mg/L)

[7] Not applicable (N/A)

[8] All species that contain the element are included.

[9] Picocuries per liter (pCi/L)

ATTACHMENT 4

ALUMS REPORT FORM

Annual Landfill Underdrain Monitoring Summary (ALUMS) Report

General Facility Information

1] Submittal Date: Click here to enter a date.
2] DEQ Region: Choose an item.
3] DEQ Regional Contact: _____
4] Permit Number: _____
5] Landfill Name: _____
6] GW Program Status: Choose an item.
7] Landfill Operational Status: Choose an item.
8] Underdrain Details:
8-a] Type of Underdrain: Choose an item.
8-b] Sampled Media: Choose an item.
8-c] Description of Discharge: _____
9] Monitoring Frequency: Choose an item.
10] Is Sampled Discharge Covered by VPDES: ☐ Yes ☐ No
11] # of Monitoring Points Sampled: _____
12] # of Upgradient Monitoring Points Sampled: _____

Sampling Specifics

13]

Sampling Event	*Event 1*	*Event 2*	*Event 3*	*Event 4*
Dates samples were collected	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.

14] Were any monitoring points unable to be sampled? ☐ Yes ☐ No
For monitoring points not sampled during the sampling event; provide the reason below and note whether this was a first time occurrence, or whether it has been observed on site before at that particular location.
14-a] Damage ☐ Yes (Initial occurrence? ☐) ☐ No
14-b] Failure to yield sufficient sampling volume ☐ Yes (Initial occurrence? ☐) ☐ No
14-c] Totally Dry, could not be sampled ☐ Yes (Initial occurrence? ☐) ☐ No
14-d] Other, please explain:

15] Were sampling parameters measured in field? ☐ Yes ☐ No
If yes, include data in Attachment VI

Analytical Lab Information

16]

Sampling Event	*Event 1*	*Event 2*	*Event 3*	*Event 4*
Dates samples were sent to analytical lab	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.
Dates samples were received at analytical lab	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.
Date signed/certified analytical report issued by lab	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.
Date signed/certified analytical reports received by consultant/facility	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.

17] Were samples submitted under Chain of Custody? ☐ Yes ☐ No
18] Were samples submitted to a VELAP accredited facility? ☐ Yes ☐ No
19] Were samples analyzed using SW-846 (as updated) methods? ☐ Yes ☐ No

Interpretation and Response to Analytical Results

21] For groundwater sampled, do any constituents exceed background levels determined at the upgradient monitoring well(s) on site? ☐ Yes ☐ No

22] For surface water sampled, do any constituents exceed background? ☐ Yes ☐ No

23] For sampling lists that contain VOC, were any VOCs identified above their LOQ? ☐ Yes ☐ No

(if yes) **23-a]** Were any of the detections for new VOC constituents or sample points? ☐ Yes ☐ No

24] Was verification sampling undertaken? ☐ Yes ☐ No

Sampling Event	*Event 1*	*Event 2*	*Event 3*	*Event 4*
24-a] (if yes) Dates of the verification event	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.
24-b] (if yes) Dates verification results were released by the analytical lab	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.

25] (If yes to 24) Did verification events confirm VOC detection? ☐ Yes ☐ No

26] Dates DEQ was notified (if applicable) of the exceedance(s) associated with items 21, 22 or 23?

Sampling Event	*Event 1*	*Event 2*	*Event 3*	*Event 4*
Notification Date	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.

27] Will the facility pursue an ASD for any of the exceedances? ☐ Yes ☐ No

28] Do the sampling results, as presented in this certified submission, indicate landfill leachate has entered into the collection system being sampled? ☐ Yes ☐ No

(if yes) **28-a]** Has the discharge of collected media changed due to sampling results? ☐ Yes ☐ No

(if yes) **28-b]** What facility actions are planned to address the exceedances? _____

Attachments

The following attachments must be submitted in the order prescribed

Attachment I	Site Identified on a USGS 7 ½ minute Topographic Map
Attachment II	Site Plan, 11" x 17"
Attachment III	Table of constituents exceeding background levels
Attachment IV	Complete Laboratory Analytical Reports (including Verification Events)
Attachment V	Chain of Custody documentation (including Verification Events)
Attachment VI	Field book documentation (including Verification Events)
Attachment VII	Statistical Data Sheets

Responsible Official Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision by qualified personnel who properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the submitted information, to the best of my knowledge and belief, the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE: _____ DATE: _____

NAME: _____

TITLE: _____

Instructions for Completing the ALUMS Report

The Annual Landfill Underdrain Monitoring Summary (ALUMS) Report form was developed to provide a consistent annual report format that should enable an expeditious review of the submitted technical content by DEQ staff. To provide an annual report summarizing all sampling events during the calendar year, up to four date boxes are provided for questions 13, 16, 24, and 26 to allow for reporting dates for up to four sampling events during the year, consistent with quarterly monitoring. If the underdrain system was only sampled once or twice during the calendar year, enter the appropriate dates in the Event 1 and Event 2 columns and leave the remaining columns (Event 3 and Event 4) blank.

The report should be filled out by the Owner/Operator, or their representative, and certified by a Responsible Official. Completed ALUMS Reports shall be addressed to the facility's Regional Office contact and received before December 31st of each calendar year. The descriptions below are listed in the order as they appear on the ALUMS Report.

General Facility Information

1] Select date of the submittal.

2] DEQ Regional Office to which you submit monitoring reports. Select from drop-down: BRRO (Blue Ridge), NRO (Northern), PRO (Piedmont), SWRO (Southwest), TRO (Tidewater), and VRO (Valley).

3] List the name of your DEQ Regional Office contact.

4] Permit number, SWP###.

5] Identify the landfill name.

6] Select the groundwater sampling program status, (i.e., Detection, Assessment, Modified Assessment, First Determination, or Phase II). This is a general indicator of whether there has been a landfill impact on the aquifer identified to date.

7] Select the landfill operational status: active, closing, or post-closure.

8a] Identify the system being sampled (e.g., drain system, dewatering or gradient control system, witness zone, piped stream, seep/spring collection system, or other).

8b] Identify the type of media being sampled (i.e., perched water, groundwater, stormwater, surface water, mix of groundwater and surface water, or witness zone).

8c] Describe the underdrain discharge, indicating how and where (e.g., storm water basin, stormwater ditch, receiving stream, etc) the collected discharge is managed.

9] Identify the underdrain sampling frequency.

10] Yes or No.

11] List total number of system monitoring points sampled.

12] For piped stream collection systems, list total number of any upgradient monitoring points sampled. For groundwater collection systems, if applicable, list the number of upgradient monitoring wells sampled. Use 'NA' if not applicable.

Sampling Specifics

13] List the date(s) the system was sampled. Boxes are provided for up to four sampling events for the calendar year. If the underdrain was only sampled semi-annually or annually, enter sampling dates within the calendar quarter the sample was taken.

14] Yes or no. If the answer is yes, please fill out lines 'a' through 'c' with a yes or no as appropriate and check the initial occurrence box if applicable.

15] Were any parameters measured directly in the field? Yes or No.

Analytical Lab Information

16] Provide the dates the samples were sent to the analytical lab, dates the samples were received at the lab, dates the analytical reports were issued by the lab under the signature of the lab manager/director, and dates the analytical report was received by the consultant/facility.

17] Yes or no.

19] Yes or no.

20] Yes or no. Please note, SW-846 methods are only required for constituents that are listed on Table 3.1 of 9 VAC 20-81-250.E.

Interpretation and Response to Analytical Results

21] Yes or no. Please note that for some system designs, it may be more appropriate for a facility to compare the point of sampling data against its own background level (similar in concept to intrawell analysis) if data from the upgradient groundwater monitoring well(s) is not considered truly representative of the media being collected in the underdrain system.

22] Yes or no. Please note that for surface water, an entity which can be highly variable, background level, shall consist of upgradient samples (at least four independent samples) obtained the same day as the downgradient samples are obtained. Background level shall not consist of historical upstream sampling data.

23] Yes or no.