Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Stefanie K. Taillon
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

June 30, 2025

VIA ELECTRONIC MAIL

Mr. Dennis Slade
Corporate Manager, Waste and Remediation
Dominion Energy Environmental Services
120 Tredegar Street
Richmond, VA 2319
dennis.a.slade@dominionenergy.com

Subject: Issuance of Solid Waste Permit No. (SWP) 627
Bremo Bluff FFCP Management Facility
Bremo Bluff, Virginia

Dear Mr. Slade:

Enclosed is SWP627 for Bremo Bluff FFCP Management Facility. The public participation period ended on May 16, 2025. Comments were received which did not require changes to the draft permit; therefore, only incidental editing of the draft permit occurred. The applicant and all persons who commented during the public participation period have been sent a response to their comments.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision to initiate an appeal of this decision, by filing notice with:

Michael S. Rolband, PE, PWD, PWS Emeritus, Director
Virginia Department of Environmental Quality
ATTN: Division of Land Protection & Revitalization
P.O. Box 1105
Richmond, Virginia 23218

In the event that this decision is served to you by mail, three days are added to that period. Please refer to Part Two of the rules of the Supreme Court of Virginia, which describes the required content of the Notice of Appeal, including specification of the Circuit Court to which an appeal is taken, and additional requirements governing appeals from decisions of administrative agencies.

Please note that it is the responsibility of applicant to obtain any other permits or authorizations that may be necessary. If there are any questions, please contact Laura Stuart, Land Protection Program Manager, at 540-209-5605 or at laura.stuart@deq.virginia.gov, or JengHwa Lyang, Solid Waste Permit Writer, at 540-830-8837 or at jenghwa.lyang@deq.virginia.gov.

Sincerely,

Brandon D. Kiracofe

Brandon D. Kiracofe, Regional Director
Virginia Department of Environmental Quality
540-217-7479
Valley Regional Office
4411 Early Road
540-574-7800

Attachment

CC: *(via email)*
Laura Stuart, P.G., DEQ VRO Land Protection Program Manager, laura.stuart@deq.virginia.gov
Jenny Poland, DEQ CO, Solid Waste Permit Coordinator, jenny.poland@deq.virginia.gov
Geoff Christe, DEQ CO, Groundwater Coordinator, geoff.christe@deq.virginia.gov
Paul Hansohn, DEQ VRO, Compliance Inspector Senior, Paul.hansohn@deq.virginia.gov
Gregory Baker, DEQ VRO, Compliance Inspector, gregory.k.baker@deq.virginia.gov
JengHwa Lyang, Ph.D., P.E., DEQ VRO, Solid Waste Permit Writer, jenghwa.lyang@deq.virginia.gov
Shannon Lukens, P.G., DEQ VRO Groundwater Specialist, Shannon.G.Lukens@deq.virginia.gov
Erin Heath, Dominion Energy, Erin.L.Heath@dominionenergy.com
DEQ ECM SWP627 File

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stefanie K. Taillon
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

SOLID WASTE FACILITY PERMIT
PERMIT NUMBER 627

Facility Name: Bremo Bluff Fossil Fuel Combustion Products (FFCP) Management Facility

Facility Type: Captive Industrial Landfill **Latitude:** N 37° 42' 32"

Site Location: Fluvanna County **Longitude:** W 78° 16' 09"

Location Description: The facility is located on an adjacent parcel at the east side of the retired Dominion Energy Bremo Power Station located at 1038 Bremo Bluff Road, east of Route 15 (James Madison Highway) and north of the James River, in Bremo Bluff, Virginia.

Background: The facility is a privately owned/operated captive industrial landfill for the disposal of fossil fuel combustion products (FFCP), consisting primarily of coal combustion by products, as defined under 9 Virginia Administrative Code (VAC) 20-81-10, which encompass coal combustion residuals (CCR), as defined under 40 CFR 257.53, from the closure of the CCR North Surface Impoundment (North Pond) located at the retired Bremo Power Station. The CCR in the North Pond was previously generated during operation of the Bremo Power Station. The North Pond is required by the Virginia Code §10.1-1402.03 to be closed by removal or beneficiation of impounded CCR. The wastes accepted include those wastes identified in Module II, which is based on the information provided on DEQ Form SW PTB dated December 13, 2024.

The landfill property and facility boundaries encompass approximately 214 acres and 125 acres, respectively, of which 47 acres are designed as a disposal unit. The total capacity of the disposal unit, as provided in the Design Report, Part B Attachment VI, is approximately 6.2 million cubic yards. The estimated site life for the disposal unit is 6 years. This landfill life is based on the daily disposal limit of 15,000 tons/day, operating 312 days/year.

Permit Variance: This Permit incorporates a variance, approved on November 12, 2024, to the siting criteria of 9VAC20-81-120.C.1.b of the Virginia Solid Waste Management Regulations (VSWMR) for the proposed facility. Two sections of perennial streams will be impacted during development of the proposed facility. Dominion Energy asserts that the stream impacts would not result in an unreasonable risk to public health or the environment based on a thorough alternatives analysis and impact evaluation included in the Joint Permit Application submitted to DEQ and the U.S. Army Corps of Engineers (Corps), and has secured the Virginia Water Protection (VWP)

Individual Permit No. 21-2305 from DEQ and Section 404 Permit No. NAO-2020-01000 (VRMC #21-V2305) from the Corps for impact of the streams.

THIS IS TO CERTIFY THAT:

Virginia Electric and Power Company d/b/a Dominion Energy Virginia
120 Tredegar Street
Richmond, VA 23219

is hereby granted a permit to construct, operate, and maintain the facility as described in the attached Permit Modules I, II, V, X, XI, XII, and XIII and Permit Documents incorporated by reference. These Permit Modules and Permit Documents are as referenced hereinafter and are incorporated into and become a part of this Permit.

The herein described activity is to be established, modified, constructed, installed, operated, used, maintained, and closed in accordance with the terms and conditions of this Permit and the plans, specifications, and reports submitted and cited in the Permit. The facility shall comply with all regulations of the Virginia Waste Management Board. In accordance with Chapter 14, § 10.1 - 1408.1(D) of the Code of Virginia, prior to issuing this permit or major modification, any comments by the local government and general public have been investigated and evaluated and it has been determined that the *proposed* facility poses no substantial present or potential danger to human health or the environment. The permit contains such conditions and requirements as are deemed necessary to comply with the requirements of the Virginia Code, the regulations of the Board, and to prevent substantial or present danger to human health or the environment.

Failure to comply with the terms and conditions of this Permit shall constitute grounds for the revocation or suspension of this permit and for the initiation of necessary enforcement actions.

The permit is issued in accordance with the provisions of 10.1-1408.1.A, Chapter 14, Title 10.1, Code of Virginia (1950) as amended. Variances that have been approved for this facility are included in Permit Attachment I-1.

APPROVED: Brandon D. Kiracofe

Brandon D. Kiracofe
Regional Director

DATE: June 30, 2025

PERMIT MODULES
REFERENCE LIST

PERMIT DOCUMENTS

The documents listed below are hereby incorporated into this permit and the permittee is subject to all conditions contained therein. It is the responsibility of the permittee to properly maintain and update these documents. Any version with a revision date other than as listed below is not considered to be the official approved version and is subject to Department review and approval prior to being recognized as the "permitted" version.

1. Design Plans, Dominion Energy Bremo Bluff FFCP Management Facility, prepared by Schnabel Engineering, LLC., dated November 2024.
2. Closure Plan, prepared by Schnabel Engineering, LLC., dated November 2024.
3. Post-Closure Plan, prepared by Schnabel Engineering, LLC., dated November 2024.
4. Design Report, prepared by Schnabel Engineering, LLC., dated November 2024.
5. Construction Quality Assurance Plan, prepared by Schnabel Engineering, LLC., dated November 2024.
6. Technical Specifications, prepared by Schnabel Engineering, LLC., dated November 2024.
7. Leachate Management Plan, prepared by Schnabel Engineering, LLC., dated November 2024.
8. Landfill Gas Demonstration, prepared by Schnabel Engineering, LLC., dated November 2024.
9. Groundwater Monitoring Plan, prepared by Schnabel Engineering, LLC., dated November 2024.
10. Alternate Liner Demonstration, prepared by Schnabel Engineering, LLC., dated November 2024.
11. Alternate Final Cover Demonstration, prepared by Schnabel Engineering, LLC., dated November 2024.
12. Underdrain Monitoring Plan, prepared by Schnabel Engineering, LLC., dated November 2024.

The following documents have been submitted to satisfy permit or regulatory requirements; however, are considered reference documents and are not incorporated into Permit No. 627. This list may not be all-inclusive.

1. Part A Permit Application: Bremo Bluff Fossil Fuel Combustion Products (FFCP) Management Facility, prepared by AECOM, received by DEQ on July 6, 2021, with revisions received on October 1, 2021, April 7, 2022, July 8, 2022, August 24, 2022, March 6, 2024, and June 28, 2024.
2. Bremo Bluff Fossil Fuel Combustion Products Management Facility, Solid Waste Permit #627; Variance Request to Part A Solid Waste Permit Siting Requirements, prepared by Dominion Energy Services, dated June 28, 2024.

PERMIT MODULE I
GENERAL PERMIT CONDITIONS

I.A. EFFECT OF PERMIT

The permittee is allowed to dispose solid waste on-site in accordance with the conditions of this permit. Any disposal of solid waste not authorized by this permit is prohibited. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Sections 10.1-1402(18), 10.1-1402(19), or 10.1-1402(21) of the Virginia Waste Management Act (Chapter 14, Title 10.1, Code of Virginia (1950), as amended); or any other law or regulation for protection of public health or the environment. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. For purposes of this permit, terms used herein shall have the same meaning as those in the Virginia Waste Management Act, and Part I and other pertinent parts of the Virginia Solid Waste Management Regulations (VSWMR, 9VAC20-81), unless this permit specifically provides otherwise; where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by the generally accepted scientific or industrial meaning of the term or a standard dictionary reference. "Director" means the Director of the Department of Environmental Quality, or his designated or authorized representative.

I.B. DUTIES AND REQUIREMENTS

The permittee shall comply with all conditions of this permit and 9VAC20-81. The effect of this permit is detailed in 9VAC20-81-490, and it shall be the duty of the permittee to ensure the applicable requirements are met. Additionally, the permittee is subject to the recording and reporting requirements detailed in 9VAC20-81-530. In addition to these requirements, the following additional conditions are invoked per 9VAC20-81-430, and shall be complied with:

I.B.1. Noncompliance may be authorized by a schedule of compliance [9VAC20-81-490.D. and 9VAC20-81-490.H.]. Any other permit noncompliance constitutes a violation of the Virginia Waste Management Act and is grounds for enforcement action, or for permit revocation, revocation and reissuance, or modification [9VAC20-81-570 and 9VAC20-81-600].

I.B.2 The permittee shall comply with the requirements of this permit and any provisions of RCRA Subtitle D (Title 40, Code of Federal Regulations, Section 258) requirements as they become applicable upon their effective date. This permit may not act as a shield against compliance with any part of RCRA or any other applicable federal regulation, state regulation or state law.

I.B.3. In an enforcement action, it shall not be a defense for the permittee that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

I.B.4. In the event of noncompliance with this permit, the permittee shall take all reasonable steps to minimize releases of solid wastes or waste constituents to the environment and shall carry out measures to prevent substantial adverse impacts on human health or the environment.

I.B.5. The permittee shall at all times properly operate and maintain all units (and related appurtenances) which are installed or used by the permittee to achieve compliance with the operations manual and the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing, and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary equipment only when necessary to achieve compliance with the conditions of this permit.

I.B.6. The permittee shall furnish to the Director, within a reasonable time, any relevant information that the Director may request to determine compliance with this permit, regulations or the Act. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit by the date specified in the request.

I.B.7. The permittee shall allow the Director, or an authorized representative, at a reasonable time, upon the presentation of appropriate credentials, to:

I.B.7.a. Enter the permitted facility where a regulated unit or activity is located or conducted, or where records must be kept under the conditions of this permit;

I.B.7.b. Have access to and copy any records that must be kept under the conditions of this permit;

I.B.7.c. Inspect any unit, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

I.B.7.d. Sample or monitor, for the purposes of assuring permit compliance or as otherwise authorized by the Virginia Waste Management Act, any substances or parameters at any location within his control.

I.B.8. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample to be analyzed must be the appropriate method from the latest edition of Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA Publication SW-846, if available.

Laboratory samples shall be analyzed in accordance with 1 VAC 30-45, Certification for Noncommercial Environmental Laboratories, or 1 VAC 30-46, Accreditation for Commercial Environmental Laboratories.

I.B.9. This permit is not transferable to any person, unless approved by the Director. The Director may require modification or revocation and reissuance of the permit pursuant to 9VAC20-81-490.G. Before transferring ownership or operation of the facility during its operational life, the permittee shall notify the new owner or operator in writing of the requirements of Parts III and V, of the Virginia Solid Waste Management Regulations, the Financial Assurance Regulations, 9VAC20-70, and this permit.

I.B.10. In accordance with § 10.1-1408.2, all facilities must have a Certified Operator as required by the Board of Waste Management Facility Operators-Licensing Regulations, 18 VAC 155-20.

I.B.11. Specifications for all drainage media should specify that the material shall contain no greater than 15% calcium carbonate equivalent. Department literature regarding research on leachate collection media indicates that weight loss greater than 15% results in an unacceptable loss of performance. If a greater percentage is specified or allowed, a demonstration that performance is not adversely affected must be provided to the Department for review and approval.

I.B.12. Recirculation of collected leachate shall not be allowed.

I.B.13. The closure cost estimate must reflect the maximum cost of closure at all times. The owner has the responsibility to maintain the closure and post closure cost estimate and associated financial assurance funding as conditions change.

I.B.14. Land-clearing, excavation, and construction activities that involve the disturbance of wetlands or streams shall not commence without authorization from the Virginia Water Protection (VWP) Program and/or Army Corps of Engineers.

I.B.15. Blasting operations shall be conducted to avoid changes in the hydrogeologic character of the remaining underlying formations.

I.B.16. The facility shall maintain and follow an approved Erosion & Sediment Control Plan for all land-disturbing activities in accordance with the Erosion and Stormwater Management Regulations, 9 VAC 25-875.

I.C. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The permittee shall maintain a complete copy of the Solid Waste Permit and incorporated Permit Documents at the facility, or another location approved by the Director, until post-closure is complete and certified by a professional engineer, and shall maintain

amendments, revisions, and modification to these documents. In addition, the facility shall maintain the following additional documents:

I.C.1. Operations Manual with annual certification by Responsible Official

I.C.2. Detailed, written estimate, in current dollars, of the cost of closing the facility, post-closure care and corrective action measures

I.C.3. All other documents/records required and applicable from the following:

I.C.3.a. Monitoring records from leachate, gas, groundwater, and underdrain monitoring.

I.C.3.b. Inspection records as required from construction/installation, operational, closure, post-closure inspection requirements, including records of weekly and annual inspections required of 40 CFR 257.84(a) and (b).

I.C.3.c. Personnel training records

I.C.3.d. Daily operational records (i.e., solid waste received and processed, fill area records, records of special wastes accepted, a logbook which is a daily narrative account of the activities at the landfill).

I.C.3.e. Construction quality assurance reports, record drawings and engineer's certifications for all new liner and/or final cover construction

I.C.4. An approved copy of the complete Part A permit application

I.C.5. Documentation of the authorization to discharge leachate into the publicly/privately owned treatment works, leachate volumes sent to the POTW, and periodic leachate sampling analytical results

I.C.6. All records shall be maintained in the operating record for at least five years, or the time specified in 40 CFR 257.105, following the date of each occurrence, measurement, maintenance, corrective action, report, record or study.

I.D. DOCUMENTS TO BE SUBMITTED

In addition to the documents/records/reports to be submitted per the requirements of this permit or 9VAC20-81, the permittee shall also submit the following documents to the Director according to indicated schedules:

I.D.1. Prior to beginning construction, as defined under 9 VAC 20-81-10, of the disposal unit, the permittee shall submit the following documents to the Director according to indicated schedules:

I.D.1.a. The required location demonstrations and professional engineer certifications required of 40 CFR 257.60 (a) and (b), 257.61 (a) and (b), 257.62 (a) and (b), 257.63 (a) and (b), and 257.64 (a) and (b) indicating that the landfill is in compliance with the location restrictions for new CCR landfills.

I.D.1.b. In accordance with 40 CFR 257.70 (e), the required certification from a professional engineer that the design of the composite liner or alternative composite liner and leachate collection and removal system meet the requirements of 40 CFR 257.70.

I.D.2. Once construction of the disposal unit is complete but prior to placing waste, the permittee shall submit the following documents:

I.D.2.a. Report and supporting documents resulting from quality control/quality assurance activities performed during construction and installation of the liner/drainage systems, including the installation contractor's written acceptance of the surfaces to be lined, synthetic liner manufacturer and installer warranties, laboratory test results of the permeability of the clay liner and the drainage media overlying the liner, and representative copies (sufficient to demonstrate responsible control) of the accumulated inspection schedules resulting from the professional engineer's oversight of the construction.

I.D.2.b. In accordance with 9VAC20-81-490.A. and 40 CFR 257.70 (f), certification from a design engineer, who must be a professional engineer licensed to practice in the Commonwealth, that the construction of the facility has been completed in accordance with the permit, approved plans and specifications, and requirements of 40 CFR 257.70 and is ready to begin operation.

I.D.2.c. Certification (separate from I.D.2.b., above) from the Construction Quality Assurance (CQA) officer that the approved CQA plan has been successfully carried out and that the constructed unit meets all requirements of the permitted CQA plan, in accordance with 9VAC20-81-130.Q. A certification will be required for each lined phase of development. The CQA officer must be a professional engineer licensed to practice in Virginia.

I.D.2.d. Documentation of at least one of the following to demonstrate proper management of leachate from the landfill:

i. Bremo Power Station’s modified Virginia Pollutant Discharge Elimination System (VPDES) permit that includes a new wastewater

treatment facility, located on the station property, to treat leachate from the landfill, or

ii. Authorization from the Moores Creek Wastewater Treatment Plant, owned and operated by the Rivanna Water and Sewer Authority, to discharge the leachate and wastewater to the treatment works.

I.D.2.e. Updated Disclosure Statement identifying the Facility's licensed waste facility operator.

I.D.3. The as-built plans of all groundwater and gas monitoring wells shall be submitted as these wells are installed or modified. Information to be included on the as-built plans shall include, but is not limited to, the total depth of the well, the surveyed elevations of the top of casing and ground surface (or apron), and the length and location of the screened interval and annular space seal. All dimensions are to be shown on well construction schematics.

I.D.4. The permittee shall submit all other notifications required of 40 CFR 257.106 (e) through (i) to the Director or delegated authority before the close of business on the day the notification is required to be completed.

I.E. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DIRECTOR

All reports, notifications, or other submissions which are required by this permit to be sent or given to the Director should be sent to:

Virginia Department of Environmental Quality
Division of Land Protection & Revitalization
Valley Regional Office
4411 Early Road
P.O. Box 3000
Harrisonburg, VA 22801

These reports, notifications, or other submissions may alternatively be submitted by e-mail or other electronic method in addition to direct mail, subject to prior notice and approval by DEQ.

I.F. SITE SPECIFIC CONDITIONS

The provisions of this section are in addition to the permit conditions and regulatory requirements and are specifically developed for this facility. The permittee shall comply with all conditions of this section, as follows:

I.F.1. The final permit is based on permit application submittals (drawings and reports) that may contain the word "proposed' and similarly tentative language. The documents that are incorporated into SWP627 have been evaluated for

administrative and technical adequacy and have been approved as proposed. Therefore, any references to a design, construction, operation, monitoring or closure criteria are considered to be approved as proposed.

I.F.2. The facility is subject to the conditions listed in the Part A approval letter dated December 19, 2024.

I.F.3. The permittee shall perform a topographic survey of all active portions of the landfill units on an annual basis anytime during March unless otherwise requested by the Director. The survey shall be certified by a professional engineer or certified land surveyor licensed in the Commonwealth of Virginia, unless exempt pursuant to Va. Code § 54.1-402. The survey results shall be compared to the landfill permit's final site topography plan. Within 90 days of the survey, the permittee shall submit to the DEQ Valley Regional Office Land Protection Program a drawing comparing surveyed elevations, permitted final elevations, and the disposal unit boundary. The drawing shall note areas that have reached final elevation or lateral extent, and any areas of overfill (waste outside the constructed disposal unit boundary or above the vertical design capacity) including an estimate of total area and volume of overfill. The remaining capacity and estimated life within the permitted disposal unit boundary shall also be included as part of the submittal. Areas that have attained final elevations and slopes must be stabilized in accordance with the permit until final cover is applied within the timeframe specified in the Closure Plan. Except as may be separately permitted or approved in writing by DEQ for exigent or emergency situations, no waste shall be placed outside of the disposal unit boundary and in areas where the elevation exceeds the vertical design capacity that can be derived from Drawing 12 Final Grading Plan dated November 15, 2024.

I.F.4. The Bremo Bluff FFCP Management Facility design, construction, and operation must conform to the approved Special Use Permit (SUP) 21:03, as amended hereafter, by the Board of Supervisors, Fluvanna County, VA.

I.F.5. The requirements of 9 VAC 20-81-80 do not apply to the facility so long as the landfill remains captive (i.e., the landfill only receives wastes identified on the Solid Waste Disposal Facility Part B Application, DEQ Form SW PTB, dated December 13, 2024, generated by the retired Bremo Power Station).

I.F.6. A Financial Assurance (FA) mechanism for the approved closure and post-closure cost estimate amounts shall be established and approved prior to issuance of a Certificate to Operate (CTO).

I.F.7. The facility shall maintain a publicly accessible Internet site (CCR Web site), titled "CCR Rule Compliance Data and Information." The information as specified in 40 CFR 257.107 (e) through (i) must be posted to the CCR Web site within 30 days of placing the pertinent information required by 40 CFR 257.105

(Permit Condition I.C.6.) in the operating record. The information must remain on the CCR Web site for the period of time provided in 257.107.

I.F.8. The facility is subject to the U.S. Environmental Protection Agency's Final Rule on the "Disposal of Coal Combustion Residuals from Electric Utilities" (40 CFR 257, Subpart D - Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments). The applicable provisions of this rule are incorporated herein and to the extent a conflict may exist or arise between the requirements of EPA's rule and/or the VSWMR or this permit; the facility shall comply with the more stringent requirement.

Permit Attachment I-1

Permit Approval Letters

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Travis A. Voyles
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

December 19, 2024

VIA ELECTRONIC MAIL

Mr. Dennis Slade
Corporate Manager, Waste and Remediation
Dominion Energy Environmental Services
120 Tredegar Street
Richmond, VA 23219
dennis.a.slade@dominionenergy.com

Subject: Bremo Bluff FFCP Management Facility, Solid Waste Permit No. (SWP) 627
Part A Application Approval
Bremo Bluff, Virginia

Dear Mr. Slade:

The Virginia Department of Environmental Quality (DEQ) Valley Regional Office is in receipt of the following documentation:

"Part A Permit Application: Bremo Bluff Fossil Fuel Combustion Products (FFCP) Management Facility," prepared by AECOM. The application was received by DEQ on July 6, 2021, with revisions received on October 1, 2021, April 7, 2022, July 8, 2022, August 24, 2022, March 6, 2024, and June 28, 2024.

VWP Individual Permit No. 21-2305 issued by DEQ and dated March 30, 2023.

Section 404 Permit NAO-2020-01000 (VRMC #21-V2305) issued by U.S. Army Corps of Engineers and dated January 12, 2024.

"Dominion Energy Bremo Bluff Fossil Fuel Combustion Products Management Facility, Solid Waste Permit #627; Variance Request to Part A Solid Waste Permit Siting Requirements," prepared by Dominion Energy Services, Inc., and dated June 28, 2024, which was approved by DEQ on November 12, 2024.

The application addressed the suitability of a new captive industrial CCR landfill with a waste management area of 73 acres located inside a 125-acre facility boundary.

In accordance with § 9 VAC 20-81-450.A, B, and C, § 9 VAC 20-81-460, § 9 VAC 20-81-120, § 9 VAC 20-81-810.A.1 of the Virginia Solid Waste Management Regulations (VSWMR, 9 VAC 20-81-10, *et seq*.), the Part A Application has been reviewed for technical adequacy and regulatory compliance.

DEQ deems the application to be complete and technically adequate. Pursuant to § 9 VAC 20-81-450.C.3 of the VSWMR, the approval of the Part A Application is subject to the following conditions, which must be met in order to maintain the validity of this approval.

1. The facility boundary (125 acres) and the waste management boundary (73 acres) are limited to those areas identified as the "Facility Boundary" and "Waste Management Boundary" respectively, on the Facility Near Vicinity Map: Index Map and Maps A1-A3 & B1-B3, last revised May 30, 2024, as well as on Figure 1 Landfill Boundaries, dated February 18, 2024.

2. This Part A approval letter, the Near Vicinity Map(s), last revised May 30, 2024, and Figure 1 Landfill Boundaries dated February 18, 2024, shall be included with the Part B permit application as Attachment 1 to the Design Report. The Part B permit application must discuss how the conditions described in this Part A approval letter have been met.

3. Prior to construction, any piezometers or monitoring wells located within the proposed waste management area shall be completely removed by removing the casing or overdrilling of the wellbore, followed by pressure grouting methods to the ground surface.

4. All vehicle traffic to the landfill should be on roads internal to the facility. Should traffic access change to utilize public roads, a copy of the adequacy report required under 9VAC 20-81-460.G that is submitted to the Virginia Department of Transportation (VDOT) and a VDOT approval letter shall be included in the Part B application.

5. The highest elevation of any point on the landfill is limited to 525 feet or less above mean sea level (AMSL). The Part B permit application cannot be submitted for a highest elevation of the top of the landfill beyond the elevation 525 feet AMSL.

6. The daily disposal limit for the Bremo Bluff FFCP Management Facility is 15,000 tons per day. This limit is subject to decreasing during the Part B permit application process depending on the planning and permitting for the equipment and other operational needs of the facility.

7. During Part B design the disposal cells and the leachate storage system layout and location must be within the waste management boundary that is delineated in the Part A application. Also, the disposal capacity, considering the maximum build-out, must be equal to or less than 7,600,000 cubic yards. This is the capacity requested in the Part A application. The depth of the base grades for the disposal area are limited to a lowest elevation of 312 feet AMSL.

8. All containment structures, including liners, leachate collection systems, and surface water control systems shall be designed to resist the maximum horizontal ground acceleration, with a 10% or greater probability of occurring in 250 years, for this site. The value was estimated to be 0.197g in the seismic analysis submitted with the Part A application. The Part B design analysis must be performed using the maximum horizontal acceleration of 0.197g or more.

9. The Part B design should address any requirements of the Wetland and Stream Impact permits issued and any approved variances.

If you should have questions regarding this matter, please contact JengHwa Lyang, Solid Waste Permit Writer, at 540-830-8837 or at jenghwa.lyang@deq.virginia.gov.

Sincerely,

Laura Stuart, P.G.
Land Protection Program Manager
Virginia Department of Environmental Quality
540-209-5605
laura.stuart@deq.virginia.gov
Valley Regional Office
4411 Early Road, P.O. Box 3000
540-574-7800

cc: *(via email)*
Jenny Poland, DEQ CO, Solid Waste Permit Coordinator, jenny.poland@deq.virginia.gov
Geoff Christe, DEQ CO, Groundwater Coordinator, geoff.christe@deq.virginia.gov
Prina Chudasama, DEQ CO, prina.chudasama@deq.virginia.gov
David Shaw, DEQ VRO, Solid Waste Compliance Inspector, david.shaw@deq.virginia.gov
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DEQ ECM File

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Travis A. Voyles
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

November 12, 2024

VIA ELECTRONIC MAIL

Mr. Dennis Slade
Corporate Manager, Waste and Remediation
Dominion Energy Environmental Services
120 Tredegar Street
Richmond, VA 22319
dennis.a.slade@dominionenergy.com

Subject: Bremo Bluff FFCP Management Facility, Solid Waste Permit (SWP) 627
Variance to the Virginia Solid Waste Management Regulations (VSWMR)
Final Approval

Dear Mr. Slade,

Please accept this as a response to your variance petition submitted to the Department of Environment Quality (DEQ) on June 28, 2024, for the proposed Bremo Bluff Fossil Fuel Combustion Product (FFCP) Management Facility. The public participation period for tentative approval of the variance ended on October 28, 2024. No comments were received during the public participation period.

This variance approval is a State-only requirement for stream setback under the VSWMR 9VAC20-81-120.C.1.b. that requires no disposal unit or leachate storage unit to be closer than 100 feet from any perennial stream or river. During the development of the proposed facility, two sections of perennial streams will be impacted. Dominion Energy applied for the variance because the petitioner has secured the Virginia Water Protection (VWP) Individual Permit from DEQ and Section 404 Permit from U.S. Army Corps of Engineers for the impact of the streams. The stream setback is a State-only requirement and does not conflict with the CCR Rule location restrictions. The approval is subject to the following conditions:

1. All stream impacts and mitigation requirements shall be in accordance with VWP Individual Permit No. 21-2305 and Section 404 Permit NAO-2020-01000 (VRMC #21-V2305).

2. The facility shall meet all other location and design requirements of the U.S. Environmental Protection Agency's Final Rule on the "Disposal of Coal Combustion Residuals from

Electric Utilities" (40 CFR Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments), as amended.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision to initiate an appeal of this decision, by filing notice with:

Michael S. Rolband, PE, PWD, PWS Emeritus, Director
Virginia Department of Environmental Quality
ATTN: Division of Land Protection & Revitalization
P.O. Box 1105
Richmond, Virginia 23218

In the event that this decision is served to you by mail, three days are added to that period. Please refer to Part Two of the rules of the Supreme Court of Virginia, which describes the required content of the Notice of Appeal, including specification of the Circuit Court to which an appeal is taken, and additional requirements governing appeals from decisions of administrative agencies.

Please note that it is the responsibility of the permittee to obtain any other permits or authorizations that may be necessary. If there are any questions, please contact JengHwa Lyang, Solid Waste Permit Writer, at 540-830-8837 or at jenghwa.lyang@deq.virginia.gov.

Sincerely,

Laura Stuart

Laura Stuart, P.G.
Land Protection Program Manager
Virginia Department of Environmental Quality
540-209-5605
laura.stuart@deq.virginia.gov
Valley Regional Office
4411 Early Road, P.O. Box 3000
540-574-7800

Attachment: Final Variance Approval Signature Page

cc: *(via email)*
Jenny Poland, DEQ CO, Solid Waste Permit Coordinator, jenny.poland@deq.virginia.gov
JengHwa Lyang, Ph.D., P.E., DEQ VRO, Solid Waste Permit Writer, jenghwa.lyang@deq.virginia.gov
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Travis A. Voyles
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

VARIANCE TO THE VIRGINIA SOLID WASTE MANAGEMENT REGULATIONS
Bremo Bluff FFCP Management Facility, Solid Waste Permit No. 627
Bremo Bluff, Virginia

In response to a variance petition submitted on June 28, 2024, by the Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for the proposed Bremo Bluff Fossil Fuel Combustion Product (FFCP) Management Facility, the requested variance to the Virginia Solid Waste Management Regulations (VSWMR) 9 VAC 20-81-120.C.1.b. that requires no disposal unit or leachate storage unit to be closer than 100 feet from any perennial stream or river, is hereby granted. During the development of the proposed facility, two sections of perennial streams will be impacted. Dominion Energy asserts that the stream impacts would not result in an unreasonable risk to public health or the environment based on a thorough alternatives analysis and impact evaluation included in the Joint Permit Application submitted to DEQ and the U.S. Army Corps of Engineers (the Corps), and has secured the Virginia Water Protection (VWP) Individual Permit No. 21-2305 from DEQ and Section 404 Permit No. NAO-2020-01000 (VRMC #21-V2305) from the Corps for the impact of the streams.

This variance will be limited by the following conditions:

1. All stream impacts and mitigation requirements shall be in accordance with VWP Individual Permit No. 21-2305 and Section 404 Permit NAO-2020-01000 (VRMC #21-V2305).

2. The facility shall meet all other location and design requirements of the U.S. Environmental Protection Agency's Final Rule on the "Disposal of Coal Combustion Residuals from Electric Utilities" (40 CFR Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments), as amended.

This variance may be terminated upon a finding by the Director that the applicant has failed to comply with any variance requirements.

APPROVED:_____
Kathryn Perszyk
Director
Land Protection & Revitalization Division

DATE: 11/6/2024

PERMIT MODULE II
CONDITIONS OF OPERATION

II.A. HOURS OF OPERATION

II.A.1. The hours of operation are from 6 am to 7 pm Monday through Saturday. Operational hours may be altered by the facility upon notification to the DEQ Valley Regional Office.

II.B. WASTES ACCEPTED

The Bremo Bluff FFCP Management Facility may receive the following wastes generated from the facility itself and from the retired Bremo Power Station and, as defined by 9VAC20-81-10, or described below:

II.B.1 Fossil Fuel Combustion Products.

II.B.2. Contaminated Soil.

II.B.3. Non-putrescible construction and demolition waste (excluding hydrocarbon contaminated or liquid materials) such as broken concrete, broken fabric form concrete, broken asphalt, limestone/hydrated lime, geosynthetics, sand bags, and coke derived solid fuel and associated combustion ash. Additional non-specified materials meeting the above intentions may be applicable and should be discussed with the DEQ Solid Waste Inspector prior to disposal. These waste materials shall not be placed within 10 feet of the bottom liner or the final cover and shall be placed to protect the liner and cap.

II.B.4. Industrial Waste.

II.B.5. Sludge, industrial. Industrial wastewater treatment plant sludges that have been dewatered.

Sludges shall be disposed of by mixing with other solid wastes, placed, and compacted at the working face in a manner to prevent localized pockets of sludge or conditions which might result in future instability of the waste mass.

II.B.6. Stormwater sediment pond solids.

II.B.7 UNAUTHORIZED WASTE – The Bremo Bluff FFCP Management Facility may not receive any unauthorized wastes identified in 9 VAC 20-81-140.C.4. or any of the following: waste oil that has not been adequately absorbed through site cleanup; radioactive wastes; lead acid batteries; pressurized tanks or pressurized containers; automobile gas tanks; friable and some non-friable asbestos-containing waste materials as defined by 9VAC20-81-620; regulated

medical waste; explosives or other dangerous materials; and junked automobiles.

II.C. PERMIT LIMITS

The facility has a disposal limit of 15,000 tons per day as specified in the Part A approval letter.

II.D. COMPACTION & COVER

II.D.1. Upon the effective date of Amendment 9 to the Virginia Solid Waste Management Regulations, the facility may use alternate cover methods in place of the required weekly cover. The alternate cover methods are specific to the type, nature and quantity of waste disposed and shall be effective to control fires, odors, blowing litter, minimize stormwater infiltration, and prevent erosion and displacement of waste. The use of the alternate methods shall cease if they are not effective in controlling fires, odors, blowing litter, minimizing stormwater infiltration, preventing erosion and displacement of waste, or if it is found to present a threat to human health and the environment. The maximum working face area open at any given time shall be 28 acres.

II.D.2 Fugitive dust shall be controlled in accordance with the site-specific fugitive dust control plan and must meet the requirements of 40 CFR 257.80.

II.D.3. Intermediate cover consisting of one foot of compacted soil or geosynthetic cover system shall be applied when an additional lift of refuse is not to be applied within 30 days (or alternate schedule approved by the Director) or waste has reached final grades.

II.D.4. Interim cover systems shall be applied when waste will not be placed in the unit for more than a year and final cover will not be installed. Prior to installation of an interim cover system not covered under the permit, the facility shall submit a minor permit modification request for DEQ review and approval. Interim cover systems shall be applied and maintained as outlined below:

II.D.4.a. Soil interim cover systems shall be designed, installed, and maintained to provide positive drainage and control stormwater run-on and run-off.

II.D.4.b. Geosynthetic interim cover systems shall be designed, installed, and maintained per manufacturer’s instructions, and to provide positive drainage and control stormwater run-on and run-off.

II.D.4.c. Geosynthetic interim covers systems shall be installed on a minimum 12-inch compacted soil or CCR subgrade which is graded to provide positive drainage for the life of the interim cover system, accounting for future settlement.

II.D.4.d. Geosynthetic interim cover systems shall be properly secured and/or anchored to prevent lift and wind damage.

II.D.4.e. All interim cover systems shall be inspected at least monthly, and repairs made in a timely manner, as necessary, to maintain the integrity and effectiveness, correct the effects of damage, settlement, and landfill gas, and remove ponded water.

II.D.4.f. At least 30 days prior to installing any new interim cover system, notify the Department in writing, providing the expected installation date, description of cover, location(s), acreage, and expected duration of use.

II.D.4.g. Information regarding installation, maintenance, and removal of all interim cover systems shall be documented in the facility's Operations Manual prior to installation.

II.D.5 Before placement of new waste in areas with low permeability soil, alternate covers, intermediate cover, or interim cover systems, cover materials shall be removed such that leachate can flow downward unimpeded to the leachate collection system. At least 30 days prior to removing an interim cover system, notify the Department in writing, providing the location(s) and acreage to be reopened and a plan for removal and management of the interim cover.

II.D.6. Final cover construction as outlined in Permit Module XII shall be initiated when the requirements of 40 CFR 257.102 (e) are met.

II.E. HOUSEKEEPING

II.E.1. The facility shall control odors in accordance with 9VAC20-81-200.D. and/or as necessary to protect human health and the environment.

II.E.2 The facility shall use fencing or other suitable control means to control litter migration. All litter blown from the operations shall be collected on a weekly basis.

II.E.3 Fugitive dust and mud deposits on main offsite roads and access roads shall be limited at all time to limit nuisances. Dust shall be controlled to meet the requirements of 9VAC20-81-140.B.12 and 40 CFR 257.80.

II.E.4. Open burning at active landfills shall comply with the requirements of 9VAC20-81-140.B.4. Open burning is prohibited at areas where waste has been disposed or is being used for active disposal.

II.F. SAFETY PROGRAM

Safety hazards to operating personnel shall be controlled through an active safety program consistent with the requirements of 29 CFR Part 1910. Safety training shall be performed annually, at a minimum.

II.G. SELF-INSPECTION PROGRAM

The landfill shall implement an inspection routine including a schedule for inspecting all applicable major aspects of facility operations necessary to ensure compliance with the requirements of this permit, and Parts III and VIII of the VSWMR (9 VAC 20-81-100 through 9 VAC 20-81-260 and 9 VAC 20-81-800 through 9 VAC 20-81-810). Records of these inspections must be maintained in the operating record and available for review. At a minimum, the following aspects of the facility shall be inspected at the frequencies identified:

II.G.1. On a weekly basis (at intervals not exceeding seven (7) calendar days), inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit in accordance with 40 CFR 257.84 (a)(i).

II.G.2. On a monthly basis, inspect erosion and sediment control features, storm water conveyance system, leachate collection system, safety and emergency equipment, internal roads, and operation equipment.

II.G.3. Within 14 months of initial CCR acceptance in the landfill, and on an annual basis thereafter while the landfill is in operation, a qualified professional engineer shall inspect the landfill in accordance with 40 CFR 257.84 (b).

II.H. OPERATIONS MANUAL REQUIREMENTS

II.H.1. The facility shall be operated in accordance with 9 VAC 20-81-140, Module II, and an operations manual which has been certified by a responsible official and placed in the facility's operating record.

II.H.2. The operations manual shall include the following items as required by 9 VAC 20-81-485:

- A certification page;
- Operations Plan;
- Inspection Plan;
- Health and Safety Plan;
- Unauthorized Waste Control Plan;
- Emergency Contingency Plan; and
- Landscaping Plan.

The Operations Manual shall also reference the following items as required by 40 CFR 257, Subpart D:

- CCR Fugitive Dust Control Plan (40 CFR 257.80) and

- Run-on and Run-off Control System Plan (40 CFR 257.81).

II.H.3. The operations manual shall be reviewed and recertified annually to ensure consistency with the current operations and regulatory requirements.

II.I. LEACHATE MANAGEMENT

Leachate shall be managed in accordance with 9 VAC 20-81-210, Module V, and the facility's Leachate Management Plan. If a leachate seep(s) occurs, the owner or operator shall repair the seep(s) and follow the procedures outlined in 9 VAC20-81-210.F.

II.J. UNDERDRAIN MONITORING AND MAINTENANCE

The facility's underdrain system shall be monitored and maintained in accordance with Module V, and the facility's Underdrain Monitoring Plan incorporated into this permit. The underdrain system shall be inspected at a rate consistent with the system's monitoring frequency. Repairs should be made to any damage that prevents the underdrain system from functioning as designed.

II.K. LANDFILL GAS MANAGEMENT

Landfill gas shall be monitored in accordance with 9VAC20-81-200, Module V, and the facility's Landfill Gas Management Plan, if required. The gas management system, if installed, shall be inspected at a rate consistent with the system's monitoring frequency.

II.L. GROUNDWATER MONITORING

Groundwater shall be monitored in accordance with 40 CFR 257.90 through 257.98; Module X and Module XI; and the respective groundwater permit documents, as applicable. The groundwater monitoring system shall be inspected at a rate consistent with the system's monitoring frequency.

PERMIT MODULE V
INDUSTRIAL LANDFILL DESIGN

V.A. LINER DESIGN

The landfill shall be underlain by the composite liner system described below, from top down:

Option 1 -

- a six-inch fine aggregate protective layer with a hydraulic conductivity (K) ≥ $1x10^{-3}$ cm/s
- a 10 oz./yd^2 non-woven geotextile
- a 12-inch coarse aggregate drainage layer with a hydraulic conductivity (K) ≥ $1x10^{-3}$ cm/s
- a 250-mil geocomposite double-sided with 8 oz./yd^2 non-woven geotextile
- a 60-mil double-sided textured High Density Polyethylene (HDPE) geomembrane
- a Geosynthetic clay liner (GCL) with a K ≤ $3.4x10^{-9}$ cm/s
- a 12-inch controlled subgrade

Option 2A -

- a 10 oz./yd^2 non-woven geotextile
- an 18-inch coarse aggregate drainage layer with a K ≥ $1x10^{-3}$ cm/s
- a 250-mil geocomposite double-sided with 8 oz./yd^2 non-woven geotextile
- a 60-mil double-sided textured HDPE geomembrane
- a GCL with a K ≤ $3.4x10^{-9}$ cm/s
- a 12-inch controlled subgrade

Option 2B -

- an 18-inch fine aggregate drainage layer with a K ≥ $1x10^{-3}$ cm/s
- a 250-mil geocomposite double-sided with 8 oz./yd^2 non-woven geotextile
- a 60-mil double-sided textured HDPE geomembrane
- a GCL with a K ≤ $3.4x10^{-9}$ cm/s
- a 12-inch controlled subgrade

Each of above liner options are considered an alternative composite liner in accordance with 40 CFR 257.70 (c) and must be certified by a qualified professional engineer in accordance with 40 CFR 257.70 (c)(2) and meet the requirements of 40 CFR 257.70(b)(1) through (b)(4).

V.B. LINER CONSTRUCTION & CERTIFICATION

The landfill base liner shall be constructed in accordance with the approved Design Plans, Technical Specifications, and Construction Quality Assurance Plan, and the design criteria specified under 40 CFR 257.70.

Prior to waste placement into the newly constructed disposal area, the permittee shall submit all required certification documents as indicated in Permit Module I Section I.D.1

and D.2 as required by 9 VAC 20-81-490.A and 40 CFR 257.70. Once this documentation has been submitted and approved by the Department, and a site inspection of the new disposal area has been conducted, a Certificate to Operate (CTO) must be issued by the Regional Office prior to the facility accepting waste in the newly constructed disposal area.

V.C. LANDFILL GAS MANAGEMENT SYSTEM

V.C.1. In accordance with 9 VAC 20-81-130.K., the facility has provided documentation (Landfill Gas Demonstration) that gas formation is not a concern at the facility; however, to confirm the information provided, the facility shall implement screening level activities for the presence of landfill gas odors during the active life of the Facility as part of the weekly self-inspection requirements contained in the Facility Inspection and Maintenance Plan in the Operations Manual.

V.C.1.a. If the presence of potential landfill gas odors is noted during the weekly self-inspections, the permittee shall notify the Department and investigate the source within 30 days. The permittee shall submit a Landfill Gas Management Plan to the DEQ within 60 days of a confirmed detection, and implement and maintain a gas management plan in accordance with 9 VAC 20-81-200 and this section to provide for the protection of public health, safety, and the environment during the periods of operation, closure, and post-closure care, in accordance with the following requirements:

i. The concentration of methane gas generated by the facility shall not exceed 25 percent of the lower explosive limit for methane (1.25% methane) in facility structures (excluding gas control or recovery system components); and

ii. The concentration of methane gas shall not exceed the lower explosive limit for methane (5.0% methane) at the facility boundary.

V.C.2. If required to be installed, the facility shall perform quarterly landfill gas monitoring of the perimeter gas monitoring network and facility structures in accordance with 9 VAC 20-81-200.B.4.

V.C.3. If required to be installed, the facility shall make any necessary repairs to the gas monitoring network, (including, but not limited to, dewatering if necessary because probes cannot be routinely monitored or making repairs to the concrete pad, cap, lock, or cover) and gas management and remediation systems prior to the next gas quarterly monitoring event unless an alternate repair timeframe is requested and approved.

V.C.4. Gas Monitoring Network

V.C.4.a. If required to be installed, the facility shall design a landfill gas monitoring network in accordance with 9VAC20-81-200.B that shall be installed in accordance with the approved Landfill Gas Management Plan submitted in accordance with V.C.1.a.

V.C.5. Landfill Gas Control Components
[Reserved]

V.C.6. Landfill Gas Monitoring Response and Remediation
[Reserved]

V.D. LEACHATE MANAGEMENT

The leachate collection and removal system must be designed, constructed, operated, and maintained in accordance with the requirements of 40 CFR 257.70 (d).

V.D.1. Leachate Storage
All leachate collected in the leachate collection system shall be stored in the two 500,000-gallon tanks onsite.

V.D.2. Leachate Treatment
Leachate from the storage tanks is pumped to a new Dominion Energy-owned, permitted wastewater treatment facility located at the adjacent retired Bremo Power Station.

V.D.3. Leachate Disposal
Leachate will either by treated in the Dominion Energy-owned wastewater treatment facility or pumped and hauled to the Moores Creek Wastewater Treatment Plant located at 695 Moores Creek Ln, Charlottesville, VA 22902, which is owned and operated by the Rivanna Water and Sewer Authority.

V.E UNDERDRAIN SYSTEM

V.E.1. Underdrain System Description

This landfill is constructed with an underdrain system along the existing streambed which carries flow from emerging groundwater and discharges at an outfall (UD-01) located near the toe of the embankment slope at the south side of the landfill. The underdrain system in the north to south direction consists of a 12-inch perforated header pipe enveloped with VDOT No. 57 aggregates and a 10-oz./sq. yd non-woven geotextile. The underdrain system also consists of laterals in the east west direction along the beds of tributaries. Both ends of the header pipe outside the lined area of the landfill will be constructed of solid pipe.

V.E.2. The landfill, including any discharge of water collected in an underdrain system, may not cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirements of the Clean Water Act (33 USC § 1251 et seq.), including, but not limited to, VPDES requirements and Virginia Water Quality Standards (9VAC25-260).

V.E.3. Underdrain Performance Sampling

To ensure the underdrain system is operating as designed, and to detect whether or not landfill constituents have gained entry into the system, the collected water shall be sampled as follows:

Upgradient Sampling Location	Downgradient Sampling Location	Sampling Frequency
FMW-01	UD-01	semi-annual
FMW-02		semi-annual

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 Department and based upon site-specific factors.

V.E.3.a. The samples shall be collected, handled, and transported in a manner consistent with applicable USEPA RCRA guidance including use of a Chain-of-Custody. The collected water shall be analyzed for the constituent list provided below using SW-846 methods, unless an alternate method has been approved by the Director.

V.E.3.b. Both the method used and the laboratory completing the work must be VELAP certified/accredited (1 VAC 30-45 & 36). Laboratory LOQ's must be equivalent to those achieved during the groundwater monitoring well compliance sampling undertaken for 9 VAC 20-81-250.B or C and Permit Modules X and XI.

V.E.3.c. While the facility is in the Modified Detection Monitoring program described in Permit Module X., the collected water shall be analyzed for the inorganic constituents in VSWMR Table 3.1 Column A and 40 CFR 257 Appendix III. If the facility initiates Modified Assessment Monitoring program, under Permit Module XI, the collected water shall be analyzed for VSWMR Table 3.1 Column A and B metals (copper, nickel, silver, tin, vanadium, and zinc) not included in 40 CFR 257 Appendix III or IV and 40 CFR 257 Appendix III and IV, and speciation of Total Chromium and Hexavalent Chromium).

Background for these parameters must be determined from sampling the facility upgradient monitoring well(s) eight times with each event sequenced to allow for seasonal variation that best ensures the events represent independent samples of groundwater. Background for these parameters shall be periodically updated such that the background values are based on the most recent 16 sampling event results.

V.E.3.d. The results of underdrain sampling and analysis completed during the calendar year shall be reported to the DEQ Regional Office by December 31st of each year on the Annual Landfill Underdrain Monitoring Summary (ALUMS) Report form. Underdrain sampling and analysis results must also be maintained on site in the facility Operating Record during the active life and post-closure care period.

V.E.4. Underdrain Sample Evaluation

V.E.4.a. If the analytical results from the underdrain sampling event show a verified statistically significant increase (SSI) for any of the waste-specific metals compared to results from the site's upgradient groundwater sampling point(s), the owner/operator must notify the Director in writing within 14 days of receipt of laboratory analyses.

V.E.4.b. The written notification must include either:

- a plan to obtain a single verification sample within the 30-day SSI determination period;
- a plan to submit an Alternate Source Demonstration within 90-days of the notification if the identified constituent(s) is (are) proven to be either laboratory or cross contaminants sourced from something other than the solid waste; or
- a statement that the underdrain discharge containing landfill constituents will be handled in a manner consistent with the requirements of 9 VAC 20-81-210.D within a minimum of 60 days. The notification shall also outline any interim steps the facility is taking to minimize risk to human health or the environment.

V.E.4.c. If the Permittee undertakes verification sampling to refute a suspect SSI, it shall be performed within the 30-day SSI determination period. Verification sampling results shall be submitted to the Director within 14 days of receipt of laboratory analyses.

V.E.5. The Director may require the owner/operator undertake an assessment of potential options to remediate the condition(s) causing the release of solid waste constituents into the underdrain system.

V.E.6. If the proposed remediation or actions related to the collection/disposal of the discharge from the underdrain require modification of the Permit or associated Permit Document, the proposed modification(s) shall be submitted to the Department within 30 days of the notification.

PERMIT MODULE X
MODIFIED DETECTION MONITORING

The monitoring program described herein is designed to recognize when impacts to the uppermost aquifer have exceeded natural site background. The Module combines actions otherwise required in the VSWMR, as well as Federal requirements of Detection Monitoring defined under 40 CFR 257.94, of the Coal Combustion Residuals rule. Any exceedance of natural site background would trigger potential modified Assessment monitoring groundwater actions.

Monitoring at this facility will take place under the program described herein and the actions undertaken shall be consistent with 9 VAC 20-81-250 of the VSWMR as well as applicable requirements of 40 CFR 257.90-98 and 257.105-107. Where a groundwater requirement is defined in both 40 CFR 257.90-98 and/or 257.105-107 as well as within the VSWMR or this Module, the stricter of the referenced requirements shall apply.

X.A. GROUNDWATER COMPLIANCE POINT

X.A.1. Uppermost Aquifer

X.A.1.a. Prior to monitoring well installation, the uppermost aquifer must be characterized by completion of a site-specific hydrologic investigation. This hydrologic investigation must be completed in a manner consistent with available EPA Resource Conservation and Recovery Act (RCRA) Subtitle C, D and/or CCR technical guidance documents.

X.A.1.b. Point of compliance monitoring wells must be installed within the identified uppermost aquifer on site and shall be screened at depths appropriate to monitor all preferential contaminant migration pathways identified during X.A.1.a above.

X.A.1.c. All monitoring wells on site shall be screened solely within the saturated portion of the aquifer such that at no time during the life of the sampling program, will portions of the well screen be exposed to the unsaturated zone or capillary fringe zone, above the zone of saturation.

X.A.1.d. The owner/operator may choose, or the Director may determine, that additional monitoring wells are needed to act as sentinel wells to further characterize potential risk to human health or the environment. These wells may be exempt from the location requirements of X.B.1.b below with Director approval, but must otherwise be installed in a manner consistent with X.A.1.b and c above.

X.A.1.e. Any monitoring wells installed by the owner/operator pursuant to 40 CFR 257.102(c) to demonstrate closure by removal of CCR, will be

exempt from the location requirements of X.B.1.a and b below.

X.A.1.f. Any monitoring wells installed on site, which lie within the limits of the FEMA 100-year flood zone, must be installed in a manner which prevents them from being submerged beneath flood waters (which could allow surface water to enter the well) or be damaged by flood wave or current actions.

X.B. MONITORING NETWORK REQUIREMENTS

X.B.1. The point of compliance groundwater monitoring well network shall:

X.B.1.a. contain no fewer than one (1) upgradient, and three (3) downgradient wells;

X.B.1.b. consist of monitoring wells located at, the CCR unit boundary (40 CFR 257.91(a)(2));

X.B.1.c. include as needed, nested well pairs screened at different depths below ground surface to monitor all the potential contaminant migration pathways identified under X.A.1.a above;

X.B.1d. not exhibit lateral spacing between downgradient point of compliance wells that exceeds 500 feet unless the owner/operator has successfully demonstrated to the Director that physical or topographic limitations exist on site preventing a closer linear well spacing;

X.B.1.e. not include monitoring wells located outside of the permitted facility boundary/property boundary; and

X.B.1.f. not include any new monitoring wells screened within or penetrating through CCR.

X.B.2. Installation, Operations and Maintenance

X.B.2.a. All wells shall be installed, operated and maintained in a manner which is consistent with existing RCRA guidance and allows them to operate as designed (40 CFR 257.91(e)(2)) during the life of the groundwater monitoring program.

X.B.2.b. Wells requiring replacement due to non-performance shall be reported to the Department within 30 days of recognizing the non-performance. The notification shall include a site plan depicting the proposed location for the replacement well(s) for Department review.

X.B.2.c. Wells that require replacement due to non-performance must be replaced prior to the next regularly scheduled groundwater sampling event unless the Director has granted an extension.

X.B.2.d. Any wells that require abandonment due to non-performance shall be sealed and abandoned in accordance with existing EPA RCRA guidance as well as any applicable state or local requirements.

X.B.2.e. No well onsite shall be abandoned without prior approval from the Director.

X.B.3. Well Designations

The following CCR point of compliance wells shall be included in the solid waste groundwater monitoring network covered by this permit:

Upgradient Wells	Downgradient Wells	
FMW-01	FMW-04	FMW-05
FMW-02	FMW-06	FMW-07
	FMW-08	

All point of compliance wells shall:

X.B.3.a. be identified within the ***Groundwater Monitoring Plan*** in a manner which clearly identifies the wells and the CCR landfill that they are associated with, and

X.B.3.b. be shown on a site map included in the Plan. The Plan text and any related figures must be updated within 90 days of any changes to the point of compliance wells.

X.C. AQUIFER DATA

X.C.1. Data Acquisition - Requirements

X.C.1.a. Static groundwater elevations shall be:

X.C.1.a.(1) measured in all monitoring wells prior to purging;

X.C.1.a.(2) measured to an accuracy of 0.01 foot;

X.C.1.a.(3) measured each time groundwater is sampled on site; and

X.C.1.a.(4) obtained from all wells in the network within a single 24-hour period to avoid temporal variations/ fluctuations in the groundwater table.

X.C.1.b. Groundwater flow rate and direction shall be determined each time groundwater is sampled for modified Detection monitoring constituents on site (40 CFR 257.93(c)) via a method accepted for use in EPA RCRA groundwater programs.

X.C.2. Data Acquisition - Response

Except for those wells utilized as demonstration or sentinel wells, the Permittee shall evaluate the upgradient or downgradient function of each monitoring network well each time groundwater is sampled. If the evaluation shows that one or more of the well(s) no longer functions in a manner that meets performance requirements of the VSWMR, the Permittee shall follow the requirements of X.B.2 above.

X.D. SAMPLING and ANALYTICAL ACTIONS

The Permittee shall:

X.D.1. utilize a groundwater monitoring program and sampling actions that meet the requirements of the VSWMR, 40 CFR 257.90-95 and this Module;

X.D.2. collect and analyze unfiltered samples of groundwater from each monitoring well sampled consistent with 40 CFR 257.93(h)(2)(i);

X.D.3. utilize, where applicable, EPA SW-846 analytical methods (as amended) conducted at a VELAP accredited laboratory;

X.D.4, provide the Department final laboratory results as total metals (parts per billion) for all metals constituents; and

X.E. SAMPLING FREQUENCY

The Permittee shall sample and analyze groundwater from all point of compliance monitoring wells on at least a semi-annual basis (40 CFR 257.94(b)), which shall be an interval corresponding to approximately 180 days. For the purposes of scheduling monitoring activities, sampling within 30 days of the 180-day interval will be considered ‘semiannual’.

X.F. SAMPLING LIST

X.F.1. All 40 CFR 257 Appendix III constituents.

X.F.2. All VSWMR Table 3.1 Column A metals.

X.F.3. The sampling list shall be included in the site ***Groundwater Monitoring Plan*** and shall be updated by the owner or operator as directed by the Director.

X.G. DETERMINATION OF BACKGROUND & GPS

The Permittee shall establish site-specific background values for the constituents of XI.F.1-2 in a manner consistent with EPA requirements within 40 CFR 257.93(d) and 94(b). These values must be submitted to the Department for review and approval prior to the initiation of the modified Detection monitoring program.

X.H. STATISTICAL PROCEDURES

When evaluating the groundwater sampling event results at CCR point of compliance wells, the Permittee shall:

X.H.1 Have a qualified professional engineer certify the selected statistical method used by the Permittee is appropriate for evaluating the groundwater monitoring data consistent with 40 CFR 257.93(f)(6). The certification must include a narrative description of the statistical method selected to evaluate the groundwater monitoring data.

X.H.2 Within 30 days of completion of the laboratory analysis for each semiannual sampling event, determine whether or not there is a statistically significant increase over site background for each modified Detection monitoring constituent using a statistical method consistent with 40 CFR 257.93(f) and (g).

X.H.3 For the purpose of this Permit, laboratory analysis is considered complete upon issuance of the final analytical report under laboratory signature.

X.H.4 If there is a statistically significant increase (SSI) over background for any constituent listed in X.F, the Permittee will:

X.H.4.a. notify the DEQ of the SSI over background within 44 days of issuance of the laboratory report identifying the metal(s) which exceed background and noting whether the facility intends to identify an Alternate Source for the SSI as described under X.M below, or

X.H.4.b. begin the initial steps toward initiating modified Assessment monitoring.

When evaluating the groundwater sampling event results at other groundwater monitoring wells, the Permittee shall:

X.H.5. within 30 days of completion of the laboratory analysis for each semiannual sampling event,

X.H.5.a. determine whether or not there is a statistically significant increase over site background using a statistical method consistent with 40 CFR 257.93(f) and (g), and

X.H.5.b. notify the DEQ of the SSI over background within 44 days of issuance of the laboratory report identifying the metal(s) which exceed background and identifying whether the facility intends to identify an Alternate Source for the SSI as described under X.M below.

X.H.6. Based on the information contained in the notification under X.H.5. above, the Director may require further Interim Measures under the VSWMR or other action be undertaken.

X.I. RECORD-KEEPING REQUIREMENTS

X.I.1. The Permittee shall comply with the applicable record-keeping and public accessible internet site requirements of the VSWMR, 40 CFR 257, Subpart D and this Permit.

X.I.2. The Permittee shall retain all records identified under 9 VAC 20-81-250.E.1 as well as 530.B.1 and B.2 throughout the closure and post-closure care periods. The records shall be retained within the operating record at the facility or at an alternate location approved by the Director.

X.J. REPORTING REQUIREMENTS

The Permittee shall meet all the reporting and notification requirements of 40 CFR 257 and 9 VAC 20-81-250.E.1 as well as 530.B.1 and B.2 throughout the closure and post-closure care periods. The Regional Office shall be copied on any groundwater report, notification, request, demonstration, certification or documentation submitted pursuant to 40 CFR 257.

X.J.1. Groundwater Monitoring Reports

X.J.1.a. The Annual Groundwater Monitoring Report shall be due no later than 120 days from the completion of sampling and analysis conducted for the second semi-annual event and no later than January 31 of the following calendar year. The Annual Report shall include at a minimum the content found under 9 VAC 20-81-250.E.2.a and 40 CFR 257.90(e)(1-5) and shall be submitted in a format consistent with existing DEQ Submission Instructions.

X.J.1.b. A Semi-annual Report shall be due no later than 120 days from the completion of sampling and analysis conducted for the 1st semi-annual groundwater sampling event. The Semi-annual Report shall include at a minimum the content found under 9 VAC 20-81-250.E.2.b and shall be submitted in a format consistent with existing DEQ Submission Instructions.

X.J.2. Facility Background Determination Report

X.J.2.a. Within 30 days of initially establishing background, re-establishing background due to the installation of new monitoring wells or a change in sampling technique, the Permittee shall report the background values and statistical computations forming the basis for those values in a report entitled ***Facility Background Determination Report***.

X.J.2.b. The background determination results shall be submitted in the timeframe defined under 9 VAC 20-81-250.C.3.b.(2).

X.J.3. Well Installation Report

Within 44 days of well completion, the Permittee shall supply the Director a ***Well Installation Report*** containing the well number, surveyed elevation, boring log, casing length, total depth, and a completion diagram for each monitoring well, along with a certification from a qualified professional engineer that the monitoring wells have been installed in accordance with the submitted plans.

X.J.4. Well Abandonment Report

XI.J.4.a. Consistent with X.B.2.e above, the Director shall be notified and grant approval prior to any monitoring well abandonment.

X.J.4.b. Within 44 days of well abandonment, the Permittee shall supply the Director a ***Well Abandonment Report*** containing information including field methods utilized, and a certification from a qualified professional engineer verifying the well abandonment activities met all applicable requirements.

X.K. NOTIFICATION REQUIREMENTS

X.K.1 ***SSI Notifications*** shall be submitted to the Director within 44 days of issuance of the laboratory report and shall indicate which groundwater constituent has shown an SSI over site background.

X.K.2 ***Well Non-Performance Notifications*** shall be submitted to the Director within 30 days of recognizing the non-performance issue.

X.L. MISCELLANEOUS ALLOWANCES

X.L.1. Use of Alternate Site Background. The Permittee may request the Director allow site background to be developed using wells that are not hydrologically upgradient of the disposal unit as long as the request addresses the technical criteria contained in VSWMR and 40 CFR 257 and is certified by a qualified

professional engineer. Until such time as Director approval is obtained, background shall be determined by sampling wells which are upgradient of the disposal unit.

X.L.2. Use of Alternate Statistical Method. The Permittee may request the Director allow the use of an Alternate Statistical Method as long as the Permittee can demonstrate the alternate method can meet the technical criteria defined under 9 VAC 20-81-250.D.2 and 40 CFR 257.93(g). Until such time as Director approval is obtained, the statistical test(s) applied to site groundwater data shall be compliant with 9 VAC 20-81-250.D.1 and 40 CFR 257.93(f)(1-5). Whichever method is approved for use at the site, the method should be listed in the *Groundwater Monitoring Plan*.

X.L.3. Verification Sampling. The Permittee, at any time within 30 days of receipt of the laboratory report for a semi-annual sampling event, may obtain verification samples. Undertaking verification sampling shall not alter the timeframes associated with determining or reporting a statistically significant increase.

X.L.4. Data Validation. The owner or operator may at any time within the 30-day statistical determination period undertake third-party data validation of the analytical data received from the laboratory. Undertaking such validation efforts shall not alter the timeframes associated with determining or reporting a statistically significant increase.

X.M. MISCELLANEOUS DEMONSTRATIONS

To address an exceedance which is the result of something other than a release of CCR constituents, the Permittee may submit a report entitled *Alternate Source Demonstration*, certified by a qualified professional engineer for review and approval by the Director, within 90 days of providing the initial Detection or Modified Assessment monitoring SSI notification.

X.M.1. If a successful demonstration of an alternate source for the noted increase is made by the Permittee and approved by the Director within the 90-day timeframe, the Permittee may continue in the applicable monitoring program as defined in this Permit Module.

X.M.2. If a successful demonstration of an alternate source for the noted increase is not made by the Permittee within the 90-day timeframe, the Permittee shall take actions required under 9 VAC 20-81-250.A.5.c and 40 CFR 257.94 within the required timeframes.

X.N. PERMIT RELATED GROUNDWATER MONITORING PLAN

The Permittee must have a plan that includes detailed instructions concerning groundwater monitoring. These instructions must at a minimum cover the items listed under 40 CFR

257.90-95; 9 VAC 20-81-250.A.4.a and other applicable information under 9 VAC 20-81-250. The document containing these instructions, called the ***Groundwater Monitoring Plan***, shall be placed in the operating record.

It shall be the responsibility of the Permittee to update this monitoring plan as needed, which may include actions otherwise defined under 9 VAC 20-81-600.A – F, if changes to the monitoring program have taken place since original plan development.

X.O. LIMITATIONS/AUTHORITIES

X.O.1 The groundwater monitoring and reporting requirements set forth here are minimum requirements. The Director may require, by amending the Permit, any owner or operator to install, operate, and maintain a groundwater monitoring system and program that contains requirements more stringent than those of the Regulations whenever it is determined that such requirements are necessary to prevent significant adverse effects on public health or the environment.

X.O.2 Should information contained in a ***Groundwater Monitoring Plan*** conflict with any requirement or condition of this Module, the VSWMR, or the EPA CCR Rule, this Module and/or regulatory condition shall prevail over the language in the ***Groundwater Monitoring Plan***.

X.O.3 When the Permittee recognizes a failure to submit any relevant facts or has submitted incorrect information in any groundwater monitoring report to the Director, he shall, within 7 days, submit such omitted facts or the correct information with a full explanation.

PERMIT MODULE XI
MODIFIED ASSESSMENT MONITORING

The monitoring program described herein is designed to recognize when impacts to the uppermost aquifer have exceeded natural site background and site-specific groundwater protection standards. This Module combines actions otherwise required in the VSWMR, Detection Monitoring (40 CFR 257.94), Assessment Monitoring (40 CFR 257.95) and includes the requirement that groundwater protection standards be established. Any exceedance of a groundwater protection standard would trigger potential groundwater corrective actions.

Monitoring at this facility will take place under the program described herein and the actions undertaken shall be consistent with 9 VAC 20-81-250 of the VSWMR as well as applicable requirements of 40 CFR 257.90-98 and 257.105-107. Where a groundwater requirement is defined in both 40 CFR 257.90-98 and/or 257.105-107 as well as within the VSWMR or this Module, the stricter of the referenced requirements shall apply.

XI.A. GROUNDWATER COMPLIANCE POINT

XI.A.1. Uppermost Aquifer

XI.A.1.a. Prior to monitoring well installation, the uppermost aquifer must be characterized by completion of a site-specific hydrologic investigation. This hydrologic investigation must be completed in a manner consistent with available EPA Resource Conservation and Recovery Act (RCRA) Subtitle C, D and/or CCR technical guidance documents.

XI.A.1.b. Point of compliance monitoring wells must be installed within the identified uppermost aquifer on site and shall be screened at depths appropriate to monitor all preferential contaminant migration pathways identified during XI.A.1.a above.

XI.A.1.c. All monitoring wells on site shall be screened solely within the saturated portion of the aquifer such that at no time during the life of the sampling program, will portions of the well screen be exposed to the unsaturated zone or capillary fringe zone, above the zone of saturation.

XI.A.1.d. The owner/operator may choose, or the Director may determine, that additional monitoring wells are needed to act as sentinel wells to further characterize potential risk to human health or the environment. These wells may be exempt from the location requirements of XI.B.1.b below with Director approval, but must otherwise be installed in a manner consistent with XIA.1.b and c above.

XI.A.1.e. Any monitoring wells installed on site, which lie within the limits of the FEMA 100-year flood zone, must be installed in a manner which prevents them from being submerged beneath flood waters (which could allow surface water to enter the well) or be damaged by flood wave or current actions.

XI.B. MONITORING NETWORK REQUIREMENTS

XI.B.1. The point of compliance groundwater monitoring well network shall:

XI.B.1.a. contain no fewer than one (1) upgradient, and three (3) downgradient wells;

XI.B.1.b. consist of monitoring wells located at, the CCR unit boundary (40 CFR 257.91.(a).(2));

XI.B.1.c. include as needed, nested well pairs screened at different depths below ground surface to monitor all the potential contaminant migration pathways identified under XI.A.1.a above;

XI.B.1d. not exhibit lateral spacing between downgradient point of compliance wells that exceeds 500 feet unless the owner/operator has successfully demonstrated to the Director that physical or topographic limitations exist on site preventing a closer linear well spacing;

XI.B.1.e. not include monitoring wells located outside of the permitted facility boundary/property boundary; and

XI.B.1.f. not include any new monitoring wells screened within or penetrating through CCR.

XI.B.2. Installation, Operations and Maintenance

XI.B.2.a. All wells shall be installed, operated and maintained in a manner which is consistent with existing RCRA guidance and allows them to operate as designed (40 CFR 257.91(e)(2)) during the life of the groundwater monitoring program.

XI.B.2.b. Wells requiring replacement due to non-performance shall be reported to the Department within 30 days of recognizing the non-performance. The notification shall include a site plan depicting the proposed location for the replacement well(s) for Department review.

XI.B.2.c. Wells that require replacement due to non-performance must be replaced prior to the next regularly scheduled groundwater sampling event unless the Director has granted an extension.

XI.B.2.d. Any wells that require abandonment due to non-performance shall be sealed and abandoned in accordance with existing EPA RCRA guidance as well as any applicable state or local requirements.

XI.B.2.e. No well onsite shall be abandoned without prior approval from the Director.

XI.B.3. Well Designations

The following CCR point of compliance wells shall be included in the solid waste groundwater monitoring network covered by this permit:

Upgradient Wells	**Downgradient Wells**	
FMW-01	FMW-04	FMW-05
FMW-02	FMW-06	FMW-07
	FMW-08	

All point of compliance wells shall:

XI.B.3.a. be identified within the ***Groundwater Monitoring Plan*** in a manner which clearly identifies the wells and the CCR landfill that they are associated with, and

XI.B.3.b. be shown on a site map included in the Plan. The Plan text and any related figures must be updated within 90 days of any changes to the point of compliance wells.

XI.C. AQUIFER DATA

XI.C.1. Data Acquisition - Requirements

XI.C.1.a. Static groundwater elevations shall be:

XI.C.1.a.(1) measured in all monitoring wells prior to purging;

XI.C.1.a.(2) measured to an accuracy of 0.01 foot;

XI.C.1.a.(3) measured each time groundwater is sampled on site; and

XI.C.1.a.(4) obtained from all wells in the network within a single 24-hour period to avoid temporal variations/ fluctuations in the groundwater table.

XI.C.1.b. Groundwater flow rate and direction shall be determined each time groundwater is sampled for modified Assessment monitoring

constituents on site (40 CFR 257.93(c)) via a method accepted for use in EPA RCRA groundwater programs.

XI.C.2. Data Acquisition - Response

Except for those wells utilized as demonstration or sentinel wells, the Permittee shall evaluate the upgradient or downgradient function of each monitoring network well each time groundwater is sampled. If the evaluation shows that one or more of the well(s) no longer functions in a manner that meets performance requirements of the VSWMR, the Permittee shall follow the requirements of XI.B.2 above.

XI.D. SAMPLING and ANALYTICAL ACTIONS

The Permittee shall:

XI.D.1. utilize a groundwater monitoring program and sampling actions that meet the requirements of the VSWMR, 40 CFR 257.90-95 and this Module;

XI.D.2. collect and analyze unfiltered samples of groundwater from each monitoring well sampled consistent with 40 CFR 257.93(h)(2)(i);

XI.D.3. utilize, where applicable, EPA SW-846 analytical methods (as amended) conducted at a VELAP accredited laboratory;

XI.D.4, provide the Department final laboratory results as total metals (parts per billion) for all metals constituents; and

XI.D.5. provide final results showing total Chromium and (speciation of) total hexavalent Chromium.

XI.E. SAMPLING FREQUENCY

The Permittee shall sample and analyze groundwater from all point of compliance monitoring wells on at least a semi-annual basis, (40 CFR 257.94(b)), which shall be an interval corresponding to approximately 180 days. For the purposes of scheduling monitoring activities, sampling within 30 days of the 180-day interval will be considered ‘semiannual’.

XI.F. SAMPLING LIST

XI.F.1. All 40 CFR 257 Appendix III constituents.

XI.F.2. To satisfy requirements of Modified Assessment Monitoring, all 40 CFR 257 Appendix IV constituents, any VSWMR Table 3.1 Column B metal not included in 40 CFR 257 Appendix III or IV, and Boron.

XI.F.3. Speciation of Chromium (Total Chromium and Hexavalent Chromium).

XI.F.4. The sampling list shall be included in the site ***Groundwater Monitoring Plan*** and shall be updated by the owner or operator as directed by the Director.

XI.G. DETERMINATION OF BACKGROUND & GPS

XI.G.1 The Permittee shall establish site-specific background values for the constituents of XI.F.1-2 in a manner consistent with EPA requirements within 40 CFR 257.93(d) and 94(b).

XI.G.2 Consistent with requirements of Modified Assessment monitoring, the Permittee shall establish site-specific Groundwater Protection Standards (GPS) using:

XI.G.2.a. the process EPA defined within 40 CFR 257.95(h) for constituents contained under XI.F.2,

XI.G.2.b. EPA's alternate GPS published in the CCR rule for Cobalt, Lithium, Lead, and Molybdenum, and

XI.G.2.c. the Virginia Unified Risk Assessment Model (VURAM) for Boron.

XI.G.3. Background shall also be developed for constituents in XI.F.4 above.

XI.G.4. Groundwater Protection Standards shall be updated:

XI.G.4.a. immediately upon promulgation of a new or revised Federal maximum contaminant level (MCL);

XI.G.4.b. every two years for background-based GPS such that the eight most recent background well sampling results shall replace the oldest eight background well sampling results.

XI.G.5. For the purposes of this permit for determining an exceedance, upon permit issuance, the MCL or EPA determined alternate GPS published in the CCR rule shall be immediately effective as the GPS. The MCL/alternate GPS shall remain the GPS until such time as the Department approves a site-specific background value for the constituent which is higher than the MCL consistent with XI.G.2.

XI.G.6. A table of GPS shall be included in the facility's operating record and shall be updated as directed by the Director.

XI.H. STATISTICAL PROCEDURE

When evaluating the groundwater sampling event results at CCR point of compliance wells, the Permittee shall:

XI.H.1 Have a qualified professional engineer certify the selected statistical method used by the Permittee is appropriate for evaluating the groundwater monitoring data consistent with 40 CFR 257.93(f)(6). The certification must include a narrative description of the statistical method selected to evaluate the groundwater monitoring data.

XI.H.2 Within 30 days of completion of the laboratory analysis for each semiannual sampling event, determine whether there is a statistically significant increase over site background for each modified Detection monitoring constituents and GPS for Assessment monitoring constituents using a statistical method consistent with 40 CFR 257.93(f) and (g).

XI.H.3 For the purpose of this Permit, laboratory analysis is considered complete upon issuance of the final analytical report under laboratory signature.

XI.H.4 If there is a statistically significant increase (SSI) over background, or GPS for any modified Assessment monitoring constituent listed in XI.F, the Permittee will:

XI.H.4.a. notify the DEQ of the SSI over background and/or GPS within 44 days of issuance of the laboratory report identifying the metal(s) which exceed background and/or GPS and noting whether the facility intends to identify an Alternate Source for the SSI as described under XI.M below, or

XI.H.4.b. begin the initial steps toward groundwater Corrective Action if the SSI is associated with a GPS exceedance.

When evaluating the groundwater sampling event results at other groundwater monitoring wells, the Permittee shall:

XI.H.5. within 30 days of completion of the laboratory analysis for each semiannual sampling event,

XI.H.5.a. determine whether or not there is a statistically significant increase over site background for modified Assessment monitoring constituents using a statistical method consistent with 40 CFR 257.93(f) and (g), and

XI.H.5.b. notify the DEQ of the SSI over background and/or GPS within 44 days of issuance of the laboratory report identifying the metal(s) which exceed background and/or GPS and identifying whether the facility intends to identify an Alternate Source for the SSI as described under XI.M below.

XI.H.6. Based on the information contained in the notification under XI.H.5. above, the Director may require further Interim Measures under the VSWMR or other action be undertaken.

XI.I. RECORD-KEEPING REQUIREMENTS

XI.I.1. The Permittee shall comply with the applicable record-keeping and public accessible internet site requirements of the VSWMR, 40 CFR 257, Subpart D, and this Permit.

XI.I.2. The Permittee shall retain all records identified under 9 VAC 20-81-250.E.1 as well as 530.B.1 and B.2 throughout the closure and post-closure care periods. The records shall be retained within the operating record at the facility or at an alternate location approved by the Director.

XI.J. REPORTING REQUIREMENTS

The Permittee shall meet all the reporting and notification requirements of 40 CFR 257 and 9 VAC 20-81-250.E.1 as well as 530.B.1 and B.2 throughout the closure and post-closure care periods. The Regional Office shall be copied on any groundwater report, notification, request, demonstration, certification or documentation submitted pursuant to 40 CFR 257.

XI.J.1. Groundwater Monitoring Reports

XI.J.1.a. The Annual Groundwater Monitoring Report shall be due no later than 120 days from the completion of sampling and analysis conducted for the second semi-annual event and no later than January 31 of the following calendar year. The Annual Report shall include at a minimum the content found under 9 VAC 20-81-250.E.2.a and 40 CFR 257.90(e)(1-5) and shall be submitted in a format consistent with existing DEQ Submission Instructions.

XI.J.1.b. A Semi-annual Report shall be due no later than 120 days from the completion of sampling and analysis conducted for the 1st semi-annual groundwater sampling event. The Semi-annual Report shall include at a minimum the content found under 9 VAC 20-81-250.E.2.b and shall be submitted in a format consistent with existing DEQ Submission Instructions.

XI.J.2. Facility Background Determination Report

XI.J.2.a Within 30 days of initially establishing background, re-establishing background due to the installation of new monitoring wells or a change in sampling technique, the Permittee shall report the background values and statistical computations forming the basis for

those values in a report entitled ***Facility Background Determination Report***.

XI.J.2.b The background determination results shall be submitted in the timeframe defined under 9 VAC 20-81-250.C.3.b.(2).

XI.J.3. Well Installation Report

Within 44 days of well completion, the Permittee shall supply the Director a ***Well Installation Report*** containing the well number, surveyed elevation, boring log, casing length, total depth, and a completion diagram for each monitoring well, along with a certification from a qualified professional engineer that the monitoring wells have been installed in accordance with the submitted plans.

XI.J.4. Well Abandonment Report

XI.J.4.a. Consistent with XI.B.2, the Director shall be notified and grant approval prior any monitoring well abandonment.

XI.J.4.b. Within 44 days of well abandonment, the Permittee shall supply the Director a ***Well Abandonment Report*** containing information including field methods utilized, and a certification from a qualified professional engineer verifying the well abandonment activities met all applicable requirements.

XI.K. NOTIFICATION REQUIREMENTS

XI.K.1 ***GPS SSI Notifications*** shall be submitted to the Director within 44 days of issuance of the laboratory report and shall indicate which groundwater constituent has shown an SSI over Facility-specific GPS.

XI.K.2 ***Well Non-Performance Notifications*** shall be submitted to the Director within 30 days of recognizing the non-performance issue.

XI.K.3 ***Off-site Plume Notifications*** shall be submitted to the affected landowner and copied to the Director within 15 days of identifying constituents which exceed their GPS.

XI.L. MISCELLANEOUS ALLOWANCES

XI.L.1. Use of Alternate Site Background

The Permittee may request the Director allow site background to be developed using wells that are not hydrologically upgradient of the disposal unit as long as the request addresses the technical criteria contained in VSWMR and 40 CFR 257 and is certified by a qualified professional engineer. Until such time as

Director approval is obtained, background shall be determined by sampling wells which are upgradient of the disposal unit.

XI.L.2. Use of Alternate Statistical Method

The Permittee may request the Director allow the use of an Alternate Statistical Method as long as the Permittee can demonstrate the alternate method can meet the technical criteria defined under 9 VAC 20-81-250.D.2 and 40 CFR 257.93(g). Until such time as Director approval is obtained, the statistical test(s) applied to site groundwater data shall be compliant with 9 VAC 20-81-250.D.1 and 40 CFR 257.93(f)(1-5). Whichever method is approved for use at the site, the method should be listed in the *Groundwater Monitoring Plan*.

XI.L.3. Verification Sampling

The Permittee, at any time within 30 days of receipt of the laboratory report for a semi-annual sampling event, may obtain verification samples. Undertaking verification sampling shall not alter the timeframes associated with determining or reporting a statistically significant increase.

XI.L.4. Data Validation

The owner or operator may at any time within the 30-day statistical determination period undertake third-party data validation of the analytical data received from the laboratory. Undertaking such validation efforts shall not alter the timeframes associated with determining or reporting a statistically significant increase.

XI.M. MISCELLANEOUS DEMONSTRATIONS

To address an exceedance which is the result of something other than a release of CCR constituents, the Permittee may submit a report entitled *Alternate Source Demonstration*, certified by a qualified professional engineer for review and approval by the Director, within 90 days of providing the initial Detection or Modified Assessment monitoring SSI notification.

XI.M.1. If a successful demonstration of an alternate source for the noted increase is made by the Permittee and approved by the Director within the 90-day timeframe, the Permittee may continue in the applicable monitoring program as defined in this Permit Module.

XI.M.2. If a successful demonstration of an alternate source for the noted increase is not made by the Permittee within the 90-day timeframe, the Permittee shall take actions required under 9 VAC 20-81-250.A.5.c and 40 CFR 257.94 within the required timeframes.

XI.N. PERMIT RELATED GROUNDWATER MONITORING PLAN

The Permittee must have a plan that includes detailed instructions concerning groundwater monitoring. These instructions must at a minimum cover the items listed under 40 CFR 257.90-95; 9 VAC 20-81-250.A.4.a and other applicable information under 9 VAC 20-81-250. The document containing these instructions, called the ***Groundwater Monitoring Plan***, shall be placed in the operating record.

It shall be the responsibility of the Permittee to update this monitoring plan as needed, which may include actions otherwise defined under 9 VAC 20-81-600.A – F, if changes to the monitoring program have taken place since original plan development.

XI.O. LIMITATIONS/AUTHORITIES

XI.O.1 The groundwater monitoring and reporting requirements set forth here are minimum requirements. The Director may require, by amending the Permit, any owner or operator to install, operate, and maintain a groundwater monitoring system and program that contains requirements more stringent than those of the Regulations whenever it is determined that such requirements are necessary to prevent significant adverse effects on public health or the environment.

XI.O.2 Should information contained in a ***Groundwater Monitoring Plan*** conflict with any requirement or condition of this Module, the VSWMR, or the EPA CCR Rule, this Module and/or regulatory condition shall prevail over the language in the ***Groundwater Monitoring Plan***.

XI.O.3 When the Permittee recognizes a failure to submit any relevant facts or has submitted incorrect information in any groundwater monitoring report to the Director, he shall, within 7 days, submit such omitted facts or the correct information with a full explanation.

PERMIT MODULE XII
CLOSURE

XII.A. CLOSURE PLAN MODIFICATION

XII.A.1 The owner or operator of the CCR landfill shall have a written closure plan that meets the criteria of 9VAC20-81-160.B.1 and 40 CFR 257.102(b).

XII.A.2. The closure plan shall be amended whenever there is a change in the operation of the CCR landfill that would substantially affect the written closure plan in effect; or before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan. All amended closure plans shall contain a written certification by a professional engineer that the plan amendment meets the requirements of 40 CFR 257.102 (b)(4).

XII.A.3. Amended closure plans shall be submitted to the department at least 180 days before the date the facility expects to begin construction activities related to closure. If a closure plan is revised following an unanticipated event or after closure activities have commenced, the plan shall be submitted to the Department in accordance with the schedule under 40 CFR 257.102 (b)(3)(iii).

XII.B. TIMEFRAMES ASSOCIATED WITH CLOSURE

XII.B.1. The facility shall submit a notification of intent to close to the Department at least 180 days prior to beginning closure of each landfill phase. Additionally, the notification must include a certification by a professional engineer and be placed in the facility's operating record in accordance with 40 CFR 257.102 (g).

XII.B.2. The facility shall close each unit and install a final cover system in accordance with the timeframes specified in 40 CFR 257.102 (e) and (f).

XII.C. FINAL COVER SYSTEM

The landfill final cover design profiles from top to bottom are as follows:

On the side slope –

Option 1:

- a 6-inch vegetative supporting soil layer
- an 18-inch protective soil cover layer
- a 275-mil geocomposite
- a 40-mil textured LLDPE or HDPE geomembrane
- Prepared and compacted subgrade (CCR or 12-inch soil)

Option 2:

- a 6-inch vegetative supporting soil layer
- an 18-inch protective soil cover layer

- an 8 oz. non-woven heat-burnished geotextile (heat-burnished side down)
- a 50-mil LLDPE geomembrane (Agru MicroDrain or Agru Super Gripnet liner)
- Prepared and compacted subgrade (CCR or 12-inch soil)

On the top deck –

Option 1:

- a 6-inch vegetative supporting soil layer
- an 18-inch protective soil cover layer
- a 275-mil geocomposite
- a 40-mil textured LLDPE or HDPE geomembrane
- a geosynthetic clay liner (GCL) with a maximum hydraulic conductivity of 5.0 x 10^{-9} cm/sec
- Prepared and compacted subgrade (CCR or 12-inch soil)

Option 2:

- a 6-inch vegetative supporting soil layer
- an 18-inch protective soil cover layer
- an 8 oz. non-woven heat-burnished geotextile (heat-burnished side down)
- a 50-mil LLDPE geomembrane (Agru MicroDrain liner)
- a GCL with a maximum hydraulic conductivity of 5.0 x 10^{-9} cm/sec
- Prepared and compacted subgrade (CCR or 12-inch soil)

Each of the above final cover system options are considered an alternate final cover system in accordance with 40 CFR 257.102(d)(3)(ii) and must be certified by a qualified professional engineer in accordance with 40 CFR 257.102(d)(3)(iii) and meet the requirements of 40 CFR 257.102(d)(3)(ii)(A) thru (C).

XII.D. CLOSURE CERTIFICATION

XII.D.1. Following construction of the final cover system for each unit, certification, signed by a registered professional engineer, shall be submitted verifying that closure has been completed in accordance with the permit, approved plans, specifications, and 40 CFR 257.102 (f)(3). A certification will be required for each capped landfill phase and shall include the results of the CQA/QC requirements under 9VAC20-81-130.Q.1.b.(6).

XII.D.2. Following the closure of all units, certification, signed by a registered professional engineer, shall be submitted verifying that closure has been completed in accordance with the requirements of 9VAC20-81-160.D.5.a. through 5.c. and 40 CFR 257.102 (h), which require posting a sign at the facility entrance and erecting suitable barriers to prevent access; submitting a survey plat to the local land reporting authority; and recording a notation on the deed to the facility property. The deed notation shall be in accordance with 40 CFR 257.102 (i).

PERMIT MODULE XIII
POST-CLOSURE CARE

XIII.A. POST-CLOSURE CARE REQUIREMENTS

XIII.A.1. The facility shall conduct post-closure care of the landfill in accordance with its approved Post-closure Care Plan and 40 CFR 257.104.

XIII.A.1.a. The final cover system shall be maintained in accordance with 40 CFR 257.104 (b)(1).

XIII.A.1.b. The leachate collection and removal system shall be maintained in accordance with 40 CFR 257.104 (b)(2). Leachate shall be managed in accordance with 9 VAC 20-81-210 and the facility's Leachate Management Plan. If a leachate seep(s) occurs, the owner or operator shall repair the seep(s) and follow the procedures outlined in 9 VAC20-81-210.F.

XIII.A.1.c. If required, landfill gas shall be monitored in accordance with 9VAC20-81-200 and the facility's Landfill Gas Management Plan if required. The gas management system shall be inspected at a rate consistent with the system's monitoring frequency.

XIII.A.1.d. Groundwater shall be monitored in accordance with 40 CFR 257.90 through 257.98, 9VAC20-81-250, Module X, Module XI and the respective groundwater permit documents as applicable. The groundwater monitoring system shall be inspected at a rate consistent with the system's monitoring frequency.

XIII.A.1.e. Underdrains shall be monitored and maintained in accordance with Module V and the facility's Underdrain Monitoring Plan.

XIII.A.2. Amended Post-closure Care Plans shall meet the requirements of 40 CFR 257.104 (d) and 9 VAC 20-81-170.A.2. and A.3 and shall be submitted to the Department for review and approval by the Director. All plans, once approved, shall be maintained in the facility's operating record as required by 40 CFR 257.105 (i)(4).

XIII.B. POST-CLOSURE PERIOD

XIII.B.1. Post-closure care shall be conducted for 30 years.

XIII.B.2. The facility shall continue post-closure care and monitoring until such time that the department approves termination or the post-closure care and/or monitoring activity.

XIII.C. CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE

Not less than 180 days prior to the completion of the post-closure monitoring and maintenance period as prescribed by the Board's regulations or by the Director, the owner or operator shall submit to the Director:

XIII.C.1. Certification, signed by the owner or operator and a professional engineer licensed in the Commonwealth, verifying that post-closure monitoring and maintenance have been completed in accordance with the facility's Post-closure Care Plan; and

XIII.C.2. An evaluation prepared by a professional engineer or professional geologist licensed in the Commonwealth, which assesses and evaluates the landfill's potential for harm to human health and the environment in the event that post-closure monitoring and maintenance are discontinued.

If the Director determines that continued post-closure monitoring or maintenance is necessary to prevent harm to human health or the environment, he shall extend the post-closure period for such additional time as the Director deems necessary to protect human health and the environment and shall direct the owner or operator to submit a revised post-closure plan and to continue post-closure monitoring and maintenance in accordance therewith. Requirements for financial assurance shall apply throughout such extended post-closure period.