



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

February 9, 2016

Cathy C. Taylor
Director, Environmental Services
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Chesterfield Power Station Upper (East) Ash Pond (SWP 619) Submittal Review

Dear Ms Taylor:

The Virginia Department of Environmental Quality (DEQ) has reviewed the application provided by Dominion in accordance with the applicable provisions of the Virginia Solid Waste Management Regulations (VSWMR) which incorporate the EPA 2015 Final Rule on the Disposal of Coal Combustion Regulations (EPA Rule). The application addressed closure and post-closure care of the Upper (East) Ash Pond; however, a future submittal will need to address closure and post-closure care of the Lower (West) Ash Pond in accordance with 9 VAC 20-81-810.B.

Please note that that this facility has been assigned Solid Waste Permit Number 619. Please use this number in future submittals for this facility.

Permit Application Fee

1. Based upon the modules applicable to the facility, Dominion needs to remit a permit application fee in the amount of \$5,470. This amount shall be paid by check, draft or postal money order made payable to "Treasurer of Virginia."

Closure Plan

2. Please provide a discussion to address the proposed closure sequence as depicted on Drawing 3.
3. Section 6.1 - The engineered cover system includes a reference to a "soil infiltration layer" which should be to a "soil protective cover layer". The same reference to an "infiltration layer" is made in Detail 2 on Drawing 8. In the context of the CCR rule and

VSWMR, an infiltration layer is a layer of soil with low permeability used to minimize the amount of infiltration into a closed disposal unit and is typically found below the geomembrane or barrier layer.

4. Section 6.3 – Please add a narrative to explain the relationship between the drainage benches/channels and cap drains as mechanisms for dealing with surface water run-off and cap infiltration. Address whether there is any interconnection between these drainage features and confirm whether the function of the cap drain would be impacted if the above bench or channel is inundated by run-off from the 25-yr/24-hr storm.

Also in reference to the cap drains, the drawings reference use of either 4” or 6” pipes depending on location. Please clarify when, where, and how these pipes interconnect.

5. Section 6.4.3 - The second paragraph of the dike slope stability references 257.73(e)(1)(i) and (iv) but is applying the factors of safety from 257.73(e)(1)(i) and (iii). It is unclear from the calculations if 257.73(e)(1)(iv) should be met (i.e. are the dikes constructed of soils that have susceptibility to liquefaction; if so seismic FS ≥ 1.2).
6. Section 7.3 - This section addresses the closure certification requirement of 40 CFR 257.102(h). Please add the requirement for certification in accordance with 9 VAC 20-81-160.D.5.d., which requires P.E. certification verifying closure completion per 160.D.5.a., b., and c. and the Closure Plan.

Closure Cost Estimate (Appendix H of the Closure Plan) & Post-Closure Cost Estimate (Appendix B of the Post-Closure Plan)

7. Closure Cost Estimate Worksheet (CEW-01): The closure cost was calculated for capping 112 acres, while the stated Disposal Unit Boundary/Waste Management Boundary is 117 acres. It is understood that 112 acres is the area bounded by the top of the dikes (Section 3.2 of the Closure Plan text); however, closure includes the sideslope areas outside the top of the dikes. The post-closure care cost also uses 112 acres (Section IV of CEW-02) when determining costs associated with final cover maintenance and repair. Please confirm and revised as necessary.
8. Post-Closure Cost Estimate Worksheet (CEW-02): Section III. Groundwater Management - Please provide background on the estimated 21 million gallon per year discharge from toe drain referenced in item a. Also, the cost for management of the toe drain discharge assumes on-site treatment; however, treatment/disposal costs need to account for the cost of hiring a third party. The worksheet provides items b and c to account for any pre-treatment systems a facility may operate in order to meet discharge standards set forth by the receiving waste water treatment plant. This section of the cost estimate needs to address items d to l, as applicable, to manage the disposal costs of the toe drain discharge.

9. Post-Closure Cost Estimate Worksheet (CEW-02): Section VII. Post-Closure Care General Inspections accounts for an annual P.E. inspection, but not the quarterly site inspections by site personnel as outlined in Section 3.0 of the Post-Closure Care Plan.

Closure Design Plan/Drawings

10. Please identify the location of the 100-yr floodplain on all applicable drawings.
11. Drawing 4 - Please address the following items:
 - a. Drawing 4 only includes four cross sections. 9 VAC 20-81-470.A.1.h. requires that design plans have cross-sections at a maximum distance of 500 feet between cross-sections. Please add additional cross-sections between cross-sections B-B' and C-C' to meet this requirement. Also, please identify station locations for cross-sections. A separate cross-section layout may be necessary to allow for all drawing notes and detail references to be visible.
 - b. There are several drawing notes located on top of the topographic contours making it difficult to read (see Existing Force Main and 4" Toe Drain System Forcemain (see Detail 3/9)). Please move these notes to more visible areas on the drawing.
 - c. There is a reference to the Road with direction to see detail 3/10 that points to an area within the topographic contours without any other designation of a road being present. Please verify proposed location of the road on the closed UEP.
12. Drawings 6 & 7 - Within each cross-section please identify the limits of filling/limits of final cover; drainage control structures; and access roads and ramps on the site perimeter and within the active fill area as required by 9 VAC 20-81-470.A.1.h. Cross-reference to applicable detail drawings as appropriate. If available, also show the approximate limits of the bottom of CCR fill and/or liner system and groundwater potentiometric surface (if known) as referenced in Appendix A of the Closure Plan.
13. Drawing 8 - Detail 1 shows the Cap System and includes a layer above the Geocomposite Drainage Net that is not identified. It appears this layer is the Final Cover as shown in Detail 2. Please verify and correct accordingly.
14. Drawing 10 – Detail 2 shows the Fabric-Formed Concrete Channel as referenced from Drawing 4 as the spillway approach channel; however it is unclear how the channels and cap drains enter the spillway. Please clarify. Also, Drawing 4 points out an Emergency Spillway. Please clarify whether the design of the emergency spillway is different from the design depicted in Detail 2 on Drawing 10.

Construction Quality Assurance Plan & Technical Specifications (Appendix B & C of the Closure Plan)

15. Section 1.1 Project Description and Section 4.0 CQA Testing and Inspection criteria vary regarding the components that make up this CQA Plan.

16. Section 1.3 - Please define the role of land surveyor.
17. 4.3.2.2 Destructive Testing - states Destructive testing shall be conducted according to TS 02597, Paragraph 3.03.H., possible incorrect citation, should be 3.04.D.
18. 4.3.2.3. Repairs - states Repairs shall be conducted according to 3.04.D., incorrect citation, should be 3.03.H.
19. Section 4.6.2 ends abruptly with "As a minimum, the following requirements shall be met:" No requirements follow.
20. Technical Specification 02120: Stripping of Ash Laden Soils - Please clarify anticipated areas where ash laden soils will be stripped. There is no mention on the drawings and it is unclear from the specification if these soils are within limits of the Upper or Lower Ash Ponds or in other areas of the property.
21. Technical Specification 02141: Surface Decanting/Dewatering - Section 1.06 C. references effluent criteria in Tables 02140-1 and 02140-2. No effluent criteria tables were provided in Technical Specification 02140 and instead the effluent criteria were found at the end of TS 02141 even though the footer identified the pages as being with TS 02140. Please check the reference and correct accordingly. Also, ensure the effluent criteria are in line with current VPDES criteria.
22. Technical Specification 02200: Earthwork - Section 2.04 - Landfill Final Protective Cover, paragraph B references interface friction angle of 26.5 deg between the cap liner geosynthetic layer and underlying material when this section should probably include what is written under 2.02 E stating the interface friction angle between the structural fill and cap geocomposite layer. Please verify and correct accordingly.

Also, Section 3.06 C.2. states "All protrusions extending more than one-half inch from the surface shall be removed, crushed, or pushed into the surface with a smooth-drum compactor." Pushing stones into the surface should not be allowed because the stones may come out during the geomembrane deployment.
23. Technical Specification 02233: Coarse Aggregate - Section 2.02 A references coarse aggregate materials to comply with specification for proposed application. No material minimum properties are specified in this Technical Specification.
24. Technical Specification 02597: Polyethylene Geomembrane (HDPE & LLDPE)
 - a. Section 2.01 A. The minimum average asperity height specified for 40 and 60 mil HDPE is listed as 10 mils, while GRI Test Method GM-13 specifies a minimum average asperity height of 16 mils. Also, the stress crack resistance is listed as 300 hrs while GRI GM-13 specifies 500 hours. Note that GRI GM-13 was revised on November 14, 2014, to increase the asperity height of textured sheet from 10 to 16

mils (0.25 to 0.40 mm) and the minimum acceptable stress crack resistance time from 300 to 500 hours. All other HDPE properties appear to meet the GRI specification.

- b. Section 2.01 B. – The minimum average asperity height specified for 40mil LLDPE is listed as 10 mils, while GRI Test Method GM-17 specifies a minimum average asperity height of 16 mils. Note that GRI GM-17 was revised on November 14, 2014, to increase the asperity height of textured sheet from 10 to 16 mils (0.25 to 0.40 mm). All other LLDPE properties appear to meet the GRI specification.

25. Please provide a Technical Specification for Groundwater Monitoring Wells.

Calculations (Appendix D-I of the Closure Plan)

26. Appendix D - Universal Soil Loss Demonstration using the RUSLE was only performed for final cover condition. Please perform the calculation for conditions prior to vegetation being established and update Section 6.5 (or other appropriate section) to discuss the erosion control measures to be used to minimize soil loss while vegetation is being established. (Requirement from Submission Instruction No. 06).
27. Appendix E - Veneer and Deep Seated Stability Analysis calculations use a peak acceleration due to gravity of 0.075g for seismic conditions, and reference that the value is derived from the 2014 USGS Seismic-Hazard Maps; however, this value seems low for the 2% probability of exceedance in 50 years. [Per 40 CFR 257.53, seismic factor of safety means the factor of safety (safety factor) determined using analysis under earthquake conditions using the peak ground acceleration for a seismic event with a 2% probability of exceedance in 50 years, equivalent to a return period of approximately 2,500 years, based on the U.S. Geological Survey (USGS) seismic hazard maps for seismic events with this return period for the region where the CCR surface impoundment is located.] It appears the PGA value should be in the range of 0.12-0.16 depending on the precise location of the facility. Please confirm. If the PGA is adjusted, additional calculations and references within the Closure Plan will need to be corrected.
28. Appendix G - Bearing capacity calculations assume depth of water is only 1.5 feet, which is the assumed height of the water table. The application discusses decanting/dewatering of the UEP (TS 02141), but this calculation does not assume there is a water level closer to the surface of CCR. Appendix I references that ash fill to UEP shifted from sluiced ash to trucked ash from Lower Ash Pond in 2002, and assumes GW table at 35 ft. Please revise for consistency.

Post-Closure Plan

29. The Post-Closure Care Plan and CCR Surface Impoundment Inspection Checklist (Appendix A) should also incorporate any requirements and inspection items for dike/dam stability as required by DCR Impounding Structure Regulations. The post-closure cost estimate should be adjusted to cover costs associated with these inspections during the post-closure care period.

Groundwater Monitoring Plan (GMP)

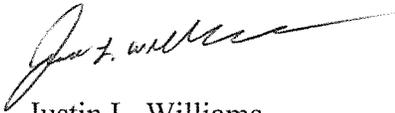
30. Please submit for review a Groundwater Monitoring Plan to transition the groundwater monitoring to the solid waste program and prepare a groundwater monitoring program in accordance with 9 VAC 20-81-250 and the EPA Rule for existing surface impoundments.

Surface Water Monitoring

31. Please note that the facility will be required to conduct surface water monitoring. The Department will be providing additional requirements regarding this monitoring.

Please provide the additional information and necessary revisions. Please note that this letter should not be considered a legal opinion or a case decision as defined by the Administrative Process Act, Code of Virginia § 2.2-4000 *et seq.* If there are any questions about this letter, please contact me at (804)-698-4185 or Justin.Williams@deq.virginia.gov.

Respectfully,



Justin L. Williams
Land Protection & Revitalization Division Director

cc: Jason Miller, PRO Regional Land Protection Program Manager
Nancy Perry, DEQ, Office of Financial Management
DEQ - PMT File, Permit No. 619