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CONSTRUCTION CERTIFICATION REPORT
CHESTERFIELD POWER STATION - LOWER ASH POND
SOUTHWEST CORNER STABILITY IMPROVEMENTS
CHESTER, VIRGINIA

by
Haley & Aldrich, Inc.
Midlothian, Virginia

for
Saiia Construction Company, LLC
Birmingham, Alabama

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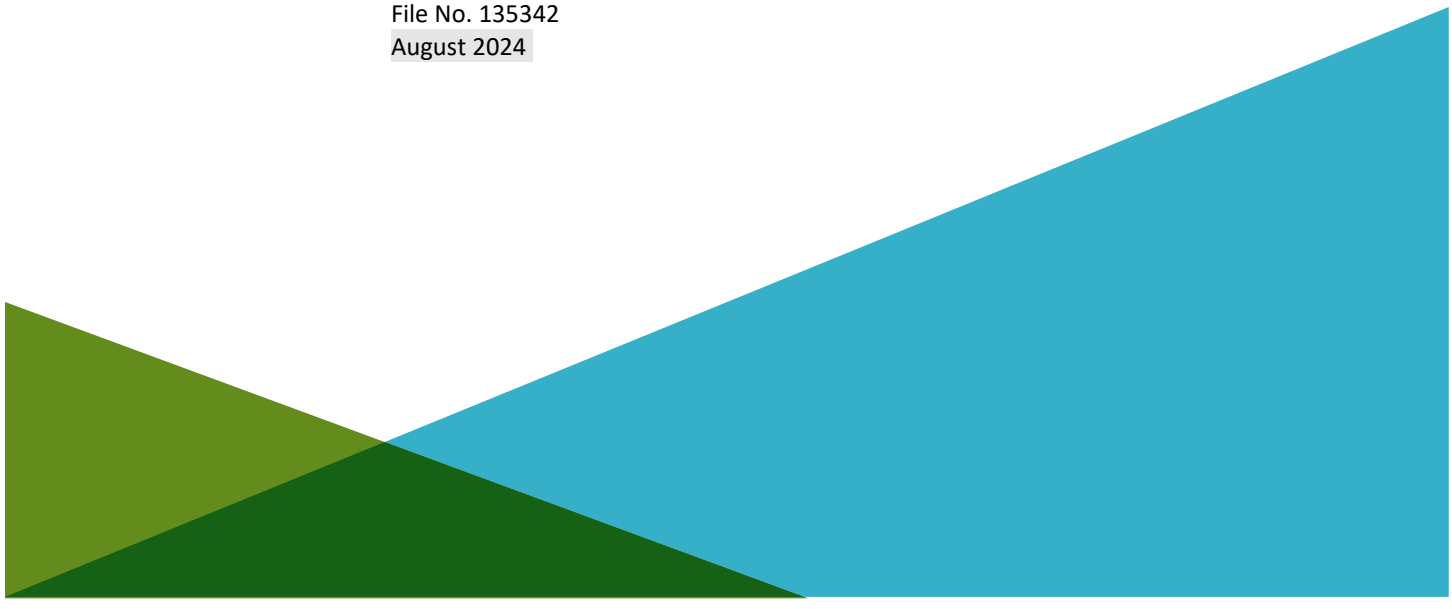


Professional Engineer Certification

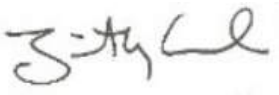
I certify that the corrective measures (structural remedies consisting of the structural TRD wall, site excavation, and sheet pile wall) implemented at the previously identified critical cross section known as "Section B" (a.k.a. Southwest Corner) which is located along the western 600 ft of the southern embankment of the Lower Ash Pond (LAP) is complete, and that the construction of the corrective measures has been completed in general accordance with the intent of approved plans, specifications, and supporting design documents and construction evaluations. Relevant documents are listed in the References.

Section 257.73(d)(2) of the Final CCR Rule (EPA 2015) states:

"…If a deficiency or a release is identified during the periodic assessment, the owner or operator unit must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken."

In accordance with §257.73(d)(2), this certification documents and details the corrective measures taken to improve the stability deficiencies identified during the periodic Structural Stability and Safety Factor Assessments as prepared by Golder Associates (2021). The stability improvements as indicated by adequate factors of safety in Section 4 of this document for conditions in accordance with 257.73(d)(vii) and 257.73 (e)(i) through 257.73 (e)(iv) were only conducted for the as-built condition of Section B.

As used herein, the word "certification" shall mean an expression of the Engineer's professional opinion to the best of his or her information, knowledge, and belief, and does not constitute a warranty or guarantee by the Engineer.



Timothy Crowl, P.E.
Program Lead - Geotechnical
Haley & Aldrich, Inc.

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1. Introduction

Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) owns and operates the Chesterfield Power Station Lower Ash Pond (LAP) in Chester, Virginia. The LAP is regulated under the Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (40 CFR 257 Subpart D) ("CCR Rule"). Pursuant to Section §257.73(e)(1) of the CCR Rule, Dominion Energy engaged Golder Associates Inc. (Golder) to conduct the periodic safety factor assessments for the LAP. In Golder's November 2021 report (Reference 1), the computed factors of safety (FSs) for a cross-section of the southwest corner of the LAP (identified as "Section B") did not meet the minimum FS under the four identified conditions in the CCR Rule.

Under the evaluated conditions for the 2021 assessment, the calculated FSs for the southwest corner embankment were as follows:

Case	Required Minimum FS per §257.73(e)(1)(i) to (iv)	Computed FS (November 2021)
Maximum storage pool	1.50	1.03
Maximum surcharge pool	1.40	1.03
Seismic	1.00	0.68
Liquefied ash	1.20	0.62

Pursuant to 40 CFR §257.73 (d)(2), if a deficiency or a release is identified during the periodic assessment, the owner/operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.

2. Remedy Development

Dominion Energy engaged Haley & Aldrich, Inc., along with Saiia Construction Company, LLC, and Keller North America to develop a solution to improve the embankment FS to meet the CCR Rule requirements. A reinforced Cement Soil Mix (CSM) wall was selected to be installed using Keller's Trench Remixing Deep (TRD) machine that was already on site to install the hydraulic cutoff wall around portions of the LAP embankment. The reinforced section of the CSM wall is referred to as the "Structural TRD Wall."

The overall structural remedy for the southwest corner of the LAP consists of three components, each described in more detail in the following sections. These three components are:

1. Structural TRD Wall
2. Site Excavation
3. Sheet Pile Wall

Please note that this report references both "depths" and "elevations," with both values reported in feet. **Depth** is in reference to a specific surface, as in "40 feet deep below existing ground." **Elevation** is a specific vertical location in reference to the current site survey datum, the North American Vertical Datum of 1988 (NAVD 88).

2.1 STRUCTURAL TRD WALL

Haley & Aldrich's geotechnical assessment of the slope identified the east and west limits of the embankment where reinforcement would be needed, as outlined in the "Geotechnical Basis of Design" (Reference 3). The resulting remedy was to install an approximately 570-foot-long structural TRD wall that was reinforced with W14x99 steel beams (piles) installed on approximately 6-foot horizontal centers. The wall would be installed along the southern edge of the existing embankment of the LAP. The structural TRD wall was to be installed from the existing ground surface to a below-ground elevation of -50 feet. The TRD machine utilized a continuous cutter head to simultaneously excavate the wall and mix bentonite and cement into the soil cuttings, resulting in an in-place hydraulic cutoff barrier.

The required minimum soil cement strength for the structural TRD wall section was specified to be 200 pounds per square inch (PSI). The 60-foot-long W14x99 piles were installed within the wall at approximately 6 feet on-center using a frame to hold them in position until the cement soil cured. The resulting bottom elevation of the piles is approximately -43 to -46 feet, depending on the surface elevation at which they were installed.

2.2 SITE EXCAVATION

In addition to the structural TRD wall, a portion of the existing LAP embankment soil south of the structural TRD wall (downslope) was removed to lessen the forces contributing to potential instability and further improve the FS. Soil was removed on the downslope face to a maximum depth of 7.5 feet from the top of the wall to establish a relatively flat area immediately south of the structural TRD wall.

2.3 SHEET PILE WALL

To provide protection against potential riverside erosion, an approximately 590-foot-long steel sheet pile wall was installed further downslope, at distances ranging from 25 to 50 feet from the structural TRD wall. This sheet pile wall is intended to protect the existing embankment soils downslope of the structural TRD wall from potential erosion.

The steel sheet piles consisted of PZC-18 sections that were installed using a Giken Silent Piler® to avoid generating excess vibration and noise in the work area. The piles were pushed to an approximate tip elevation of -27.5 feet. After the sheets were driven and the site excavated, the tops of the sheets were cut off to a uniform elevation of +7.5 feet to match the final grading plan.

3. Construction

The entire project was finished in June 2024. The structural aspects of the work (i.e., construction of the walls and site excavation) were performed as described above in Section 2 and were completed as of October 11, 2023. Additional ancillary non-structural portions of the work were completed thereafter; these items include:

- An approximately 525-foot-long concrete barricade and wall facing to provide a vehicle and fall protection barrier between the upper road surface and the walking trail below;
- Installation of perimeter fencing and a new gate to the Chesterfield County kayak launch area;
- Re-establishment of stormwater outfall 059, including a new drop inlet and outlet protection; and

- Asphalt paving of the adjacent LAP perimeter road.

4. Stability Improvement

The multi-component design was conceptualized to address specific site conditions and improve the overall FS throughout the closure of the LAP. The FSs were analyzed for the as-built conditions using Slide2 Version 9.034 (Rocscience, 2024). Completing the structural TRD wall, site excavation, and sheet pile wall did in fact greatly improve the FSs for the southwest embankment. The updated minimum computed FSs for the four evaluated conditions are outlined below and are presented in the memorandum "Section B – As-Built Global Slope Stability Evaluation" dated 5 September 2024.

Case	Required Minimum FS per §257.73(e)(1)(i) to (iv)	Computed FS
Maximum storage pool	1.50	2.06
Maximum surcharge pool	1.40	1.99
Seismic	1.00	1.02
Liquefied ash	1.20	1.70

5. Conclusion

Based on the as-built condition of the LAP, the computed factors of safety as required by §257.73(e)(1) exceed the minimum required for each of the four conditions analyzed.

References

1. Golder Associates Inc., 2021. Periodic Safety Factor Assessment, Chesterfield Power Station CCR Surface Impoundment: Lower Ash Pond. November.

2. Greenman-Pedersen, Inc., 2023a. TRD Wall Cap and Barrier Calculations for Chesterfield Power Station. September.

3. Greenman-Pedersen, Inc., 2023b. TRD Wall Coping Plan and Sections, Rev 2. November.

4. Haley & Aldrich, Inc., 2022a. Dam Alteration Permit Application Narrative, Chesterfield Power Station Lower Ash Pond Dam. March.

5. Haley & Aldrich, Inc., 2022b. Geotechnical Basis of Design, Southwest Embankment Mitigation Focused Feasibility Study. March.

6. Haley & Aldrich, Inc., 2023a. Chesterfield Power Station Evaluation of Thickness of Concrete Facing. September.

7. Haley & Aldrich, Inc., 2023b. Chesterfield Power Station LAP SW Corner Improvements drawing package, Rev 10. September.

8. Haley & Aldrich, Inc., 2023c. Chesterfield Power Station TRD Wall and Barricade Profile Field Layout package, Rev 0. November.

9. Haley & Aldrich, Inc. 2024. Section B – As-Built Global Slope Stability Evaluation, Southwest Embankment Mitigation Focused Feasibility Study. September.

10. Haley & Aldrich, Inc. Evaluations of As-Construction Conditions for Chesterfield Power Station Southwest Corner Stability Improvements, various dates.