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October 8, 2018

Project C141182.04

Mr. Dennis Slade, CHMM
Supervisor – Corporate Waste and Remediation
Dominion Energy Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia, 23060

Unstable Areas Location Restriction Certification
Phase B Life of Station Ash Disposal Facility
Mt. Storm Power Station
Grant County, West Virginia

Dear Mr. Slade:

At the request of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion), GAI Consultants, Inc. (GAI) reviewed the Phase B Life of Station Ash Disposal Facility (Facility) located at the Mt. Storm Power Station for compliance with 40 Code of Federal Regulations (CFR) §257.64. According to § 257.64, existing CCR landfills must not be located in unstable areas unless it can be demonstrated that "recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted" (EPA, 2015). At a minimum, this demonstration must consider: "(1) On-site or local soil conditions that may result in significant differential settling; (2) On-site or local geologic or geomorphologic features; and (3) On-site or local human-made features or events (both surface and subsurface)" (EPA, 2015).

This demonstration was completed by evaluating information included in the Facility's Solid Waste Permit Application (GAI, 1990). The solid waste permit application includes the results of site investigations and analyses that were completed to permit the construction of the facility with the West Virginia Department of Environmental Protection. The investigations and analyses considered the soil conditions, geology, and human-made features at the Facility. A summary is provided below.

On-site or Local Soil Conditions

The Facility is located at a former open pit strip mine. The former mining operation involved the placement of mine overburden material adjacent to the pit rather than back into the pit to provide a location for the Facility. Surficial soils were removed from the site during the strip mining process. Therefore, surficial soils are not present beneath the site. The landfill subgrade consists of the Bolivar Claystone, which is the underclay beneath the Upper Freeport Coal that was mined. The Bolivar Claystone consists of a variety of lithologies including claystone, silty claystone, clayey siltstone and more sandy sediments (GAI, 1990). Based on GAI's review of the Facility's solid waste permit application, on-site or local soil conditions that would result in significant differential settlement or unstable conditions were not found.

The Technical Specifications for the Facility include engineering requirements for subgrade preparation and compaction of structural fill associated with the Facility. In addition, stability analyses were completed as part of the engineering design presented in the Permit Application. These analyses resulted in satisfactory factors of safety for stability. Based on this information, the integrity of the structural components of the CCR landfill will not be disrupted by the on-site or local soils.

On-site or Local Geologic or Geomorphologic Features

Strata of the Pennsylvanian Age Conemaugh and Allegheny Series are found at the site. The foremost stratigraphic unit is the Upper Freeport Coal, which was strip mined from the site prior to the Facility's construction. Stratigraphic units beneath the Freeport Coal include, in descending order, the Bolivar Claystone, the Upper Freeport Sandstone, the Lower Freeport Coal, and the Lower Freeport Claystone. Stratigraphic units overlying the Upper Freeport Coal along the highwall of the Facility are, in ascending order, the Uffington Claystone, the Lower and Upper Mahoning Sandstone, Brush Creek Shales and Sandstones, and the Buffalo Sandstone (GAI, 1990).

GAI reviewed geologic information obtained from test pits and borings completed around the Facility (GAI, 1990). No indications of karst or other unstable geomorphologic features were encountered. The geologic or geomorphologic information reviewed did not suggest the presence of unstable areas that would disrupt components of the Facility.

On-site or Local Human-made Features or Events

The Facility is located at a former open pit strip mine. Mine entries to underground mine workings in the Upper Freeport Coal seam are located along the highwall at the base of the landfill. Engineering details and analyses were completed in the Facility's solid waste permit application to address the covering of the mine openings (GAI, 1990). There are no other man-made features in or about the Phase B area. Therefore, the structural components of the CCR Unit will not be disrupted by on-site or local human-made features or events.

References

GAI Consultants, Inc. (GAI), 1990. *Application for Class F Industrial Waste Landfill Facility*, Life of Station Ash Disposal Facility – Phase A & B. West Virginia Energy Center, Mount Storm Power Station, Mount Storm, West Virginia. Submitted to the State of West Virginia, Department of Natural Resources, Division of Water Resources. December 1990.

United States Environmental Protection Agency (EPA), 2015. *40 CFR Parts 257 and 261 Hazardous and Solid Waste Management Disposal System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, April 17.

Conclusion

GAI has reviewed the above-mentioned documents in relation to the requirements of 40 CFR §257.64, Unstable Areas. The documents show the Phase B Life of Station Ash Disposal Facility, as designed and constructed, meets the requirements of the regulation.

Sincerely,
GAI Consultants, Inc.

James F. Shields, P.E.
Assistant Engineering Manager

John Klamut, P.E.
Engineering Manager

JFS:JK/djz

Attachments: Attachment 1 (Unstable Areas Certification)

ATTACHMENT 1

UNSTABLE AREAS CERTIFICATION

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Unstable Areas Certification (40 CFR §257.64(c))
Phase B Life of Station Ash Disposal Facility
West Virginia Solid Waste/NPDES Permit #WV0110256
Mt. Storm Power Station
Grant County, West Virginia

EPA's "Disposal of Coal Combustion Residuals from Electric Utilities" Final Rule, 40 Code of Federal Regulations CFR Section 257.64, requires the owner and operator of an existing Coal Combustion Residuals (CCR) unit to obtain a certification from a qualified professional engineer stating that the CCR unit demonstration meets the requirements of 40 CFR Section 257.64.

CERTIFICATION

Based on review of the requirements described in 40 CFR Section 257.64 and documentation associated with the Facility's Solid Waste/National Pollutant Discharge Elimination System Permit #WV0110256, it is my professional opinion, as a Professional Engineer registered for practice in the State of West Virginia, that the Phase B Life of Station Ash Disposal Facility meets the requirements of 40 CFR Section 257.64 (unstable areas).

40 CFR Section 257.64 is from the United States Environmental Protection Agency's "CCR Rule" published in the Federal Register on April 17, 2015 with an effective date of October 19, 2015.

This Professional Engineer's Certification is limited to the information available to GAI at the time this report was prepared. The use of the words "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

GAI Consultants, Inc.

John Klamut, P.E.
Engineering Manager

Date: 10/08/2018

WV PE License Number: 20866