

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

June 27, 2011

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

VIA E-MAIL AND FEDERAL EXPRESS

Mr. Ed M. Sullivan, Consulting Engineer
Duke Energy Corporation
526 South Church Street
Charlotte, North Carolina 28202

Dear Mr. Sullivan,

On August 10, 2010 the United States Environmental Protection Agency ("EPA") and its engineering contractors conducted a coal combustion residual (CCR) site assessment at the Cayuga facility. The purpose of this visit was to assess the structural stability of the impoundments or other similar management units that contain "wet" handled CCRs. We thank you and your staff for your cooperation during the site visit. Subsequent to the site visit, EPA sent you a copy of the draft report evaluating the structural stability of the units at the Cayuga facility and requested that you submit comments on the factual accuracy of the draft report to EPA. Your comments were considered in the preparation of the final report.

The final report for the Cayuga facility is enclosed. This report includes a specific condition rating for each CCR management unit and recommendations and actions that our engineering contractors believe should be undertaken to ensure the stability of the CCR impoundment(s) located at the Cayuga facility. These recommendations are listed in Enclosure 2.

Since these recommendations relate to actions which could affect the structural stability of the CCR management units and, therefore, protection of human health and the environment, EPA believes their implementation should receive the highest priority. Therefore, we request that you inform us on how you intend to address each of the recommendations found in the final report. Your response should include specific plans and schedules for implementing each of the recommendations. If you will not implement a recommendation, please explain why. Please provide a response to this request by July 27, 2011. Please send your response to:

Mr. Stephen Hoffman
U.S. Environmental Protection Agency (5304P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

If you are using overnight or hand delivery mail, please use the following address:

Mr. Stephen Hoffman
U.S. Environmental Protection Agency
Two Potomac Yard
2733 S. Crystal Drive
5th Floor, N-5838
Arlington, VA 22202-2733

You may also provide a response by e-mail to hoffman.stephen@epa.gov

You may assert a business confidentiality claim covering all or part of the information requested, in the manner described by 40 C. F. R. Part 2, Subpart B. Information covered by such a claim will be disclosed by EPA only to the extent and only by means of the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when EPA receives it, the information may be made available to the public by EPA without further notice to you. If you wish EPA to treat any of your response as "confidential" you must so advise EPA when you submit your response.

EPA will be closely monitoring your progress in implementing the recommendations from these reports and could decide to take additional action if the circumstances warrant.

You should be aware that EPA will be posting the report for this facility on the Agency website shortly.

Given that the site visit related solely to structural stability of the management units, this report and its conclusions in no way relate to compliance with RCRA, CWA, or any other environmental law and are not intended to convey any position related to statutory or regulatory compliance.

Please be advised that providing false, fictitious, or fraudulent statements of representation may subject you to criminal penalties under 18 U.S.C. § 1001.

If you have any questions concerning this matter, please contact Mr. Hoffman in the Office of Resource Conservation and Recovery at (703) 308-8413. Thank you for your continued efforts to ensure protection of human health and the environment.

Sincerely,
/Suzanne Rudzinski/, Director
Office of Resource Conservation and Recovery

Enclosures

11.1 Corrective Measures and Analyses for the Structures

1. A thick growth of trees, many up to 2 feet in diameter, was observed on the Original Ash Pond north perimeter dike downstream slope. The trees should be removed to prevent root systems from creating seepage paths through the embankment slopes. A minimum of about 25 feet of clear space should be provided between the downstream toe and the tree line. Removal of root balls of large trees can cause additional damage to a dike and is not recommended without proper engineering planning and consideration.
2. Trees were observed near the downstream slope of the Secondary Ash Settling Basin east dike and the Original Ash Pond/Ash Disposal Area #1 northeast dike. A minimum of about 25 feet of clear space should be provided between the downstream toe and the tree line. The trees within these areas should be removed within the next year. Removal of root balls of large trees can cause additional damage to a dike and is not recommended without proper engineering planning and consideration.
3. Former animal holes at the toe of the Primary Ash Settling Basin east dike downstream slope have been filled with riprap. The riprap should be further filled with low strength cement fill to prevent erosion and seepage through these areas.
4. Seepage observed along the downstream toe of the Secondary Ash Settling Pond should be measured and monitored for changes. Piezometers should be installed in the east dike to monitor the phreatic surface through the embankment.
5. Seepage should continue to be monitored at the Original Ash Pond / Ash Disposal Area #1 northeast dike. Piezometers should be installed in the dike to monitor the phreatic surface through the embankment.
6. Video inspect the Primary Ash Settling Basin and Secondary Ash Settling Basin CMP outlets for corrosion and damage. Based on the results of the video inspection, additional corrective measures may be required. Seepage through the dike at the outlet locations should be closely monitored. Piezometers should be installed in the dike to monitor the phreatic surface through the embankment.
7. Slope stability analyses for the Original Ash Pond, Ash Disposal Area #1 and Primary Ash Settling Basin and Secondary Ash Settling Basin should analyze the appropriate maximum, or critical, sections. Evaluation of maximum, or critical, sections should include the divider dike between the Primary and Secondary Ash Settling Ponds with a phreatic surface representative of steady seepage at normal water surface conditions. For the Lined Ash Disposal Pond – Cell #1 section, the stability analyses should include a phreatic surface representative of steady seepage at normal water surface conditions without a geomembrane liner, weaker layers of foundation fly ash in the foundation, and evaluate the influence of the perimeter dam.
8. A liquefaction potential analysis should be conducted for the Lined Ash Disposal Pond – Cell #1 impoundment. Based on the results of this analysis, additional corrective measures may be required.
9. A slope stability and liquefaction analysis should be performed for the divider dike between the Ash Disposal Area #1 and Primary Ash Settling Basin if it is possible that CCW is a foundation material.
10. Based on the simplified evaluation performed for this inspection, and lacking any prior hydrologic studies of the facilities, it appears the Ash Disposal Area #1 would not meet the requirement to safely store or pass the regulatory design flood for a Significant Hazard Structure. The storage capacity and water level of

the ash pond units can vary depending on operations. Due to this variability, we recommend Duke Energy maintain the four CCW impoundments at a level that ensures sufficient storage capacity within the units to accept the inflow design storm volume without overtopping the dam. A hydrology and hydraulics study should be completed to ensure adequate freeboard in the ponds, and in particular for Ash Disposal Area #1.

11.2 Corrective Measures Required for Instrumentation and Monitoring Procedures

Daily water levels are not measured and there are no staff gages for reference in any of the ponds or basins. No piezometers or settlement monuments are installed at the ash pond or settling basin dams. We recommend an instrumentation and monitoring program be developed and implemented that would include, at a minimum, piezometers and settlement monuments installed along the dikes of any impoundments that will continue to receive wet coal combustion waste or any dikes currently experiencing seepage. Seepage should be measured and monitored at the observed seepage locations.

11.3 Corrective Measures Required for Maintenance and Surveillance Procedures

Currently, the four CCW impoundments are visually inspected quarterly by Duke Energy staff. We recommend Duke Energy develop and document formal inspections of the ash ponds and settling basins, and include an inspection at a minimum of every 5 years by a third-party professional engineer with experience in dam safety evaluations. We also recommend a brief daily check inspection of the facilities and seepage areas be conducted by DEI personnel.