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

SEP 15 2009

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 June 9-10, 2009 the United States Environmental Protection Agency ("EPA") and its engineering contractors conducted a site assessment of the Basins 1, 2, and 3 at the Buck facility. The purpose of this visit was to assess the structural stability of the impoundments or other similar management units that contain "wet" handled coal combustion residuals (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 Buck 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 Buck facility is enclosed. This report includes a specific 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 Buck facility. These recommendations are found on pages 122-127 in the final assessment report and 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 within 14 calendar days of receipt of this letter. Please send your response to:

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

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

Mr. Stephen Hoffman
US Environmental Protection Agency
Two Potomac Yard
2733 S. Crystal Drive
5th Floor, N-237
Arlington, VA 22202-2733

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

This request has been approved by the Office of Management and Budget under EPA ICR Number 2350.01.

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 non-CBI portions of 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.

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 ongoing efforts to ensure protection of human health and the environment.

Sincerely,

Matt Hale, Director
Office of Resource Conservation and Recovery

Enclosures

4.2 Vegetation Control

While CHA observed appropriate grass cover that had been recently mowed, taller weeds were growing adjacent to the upstream ash and dike contact. We recommend these weeds be cut during the routine mowing and vegetation control maintenance to prevent undesirable wood brush and trees from establishing where their roots could penetrate the embankment.

Sparse vegetation was noted in localized areas on each of the dikes. In these areas of sparse vegetation, reseeding maintenance should be performed.

4.3 Drainage Swales

Sediment was evident in rip rap drainage swales. The sediment observed appeared to be related to surface runoff and tended to be accumulated at the toe of the swales. Duke Energy should monitor the condition of these drainage swales and if the sediment appears to be clogging the rip rap and impeding surface runoff from being adequately conveyed away from the earthen embankments, the rip rap should be cleaned of sediment.

4.4 Main Dike Crest

A low area was observed on the downstream side of the main dike across from the outlet tower access path as noted in Section 2.3.1. We recommend this low spot be re-graded to prevent surface runoff from the crest concentrating in this area, and marked in the field, so Duke Energy personnel can observe for further changes during routine inspections. Should any unusually large amount of sediment appear in the rip rap swales at any one time, particularly after rain events, plant personnel should inspect the dike slope and crest areas because this could be a sign of decreased grass cover and increase erosion activity.

4.5 Animal Control

CHA observed several areas where disturbed soil was observed on the dam embankments because of animal activity. Disturbed areas that result in loose soil and vegetation removal should be monitored during routine inspections and re-graded and seeded as needed to keep these

areas stable. Paths, such as the beaver or muskrat slide seen on the Basin 2 to 3 dam, should be observed for deepening and runoff erosion as these areas will concentrate storm water runoff.

CHA did not observe signs of burrowing animals, but Duke Energy personnel indicated they have had to trap woodchucks at their fuel tank containment berm, so Duke Energy should remain vigilant during inspections looking for signs of burrowing animals on the dikes as well.

4.6 Seepage

CHA understands from conversations with Duke Energy personnel that they are currently discussing seepage control and measuring options with their consultant to help quantify the seepage conditions at the toe of the new dike. CHA recommends that a plan be developed and implemented that includes monitoring a weir. A monitoring weir allows for this quantitative measurement of seepage flow so that changes can be more easily identified, and it allows a sampling point to collect seepage flow for observation of soil particles being carried by the flow.

Seepage was also observed around the headwall of the outlet pipe at the Basin 1 to Basin 2 dam. CHA recommends this seepage be monitored during Duke Energy's monthly inspections of their ash pond facilities. Because of the discharge channel water level, this is not a location conducive to installation of a monitoring system.

4.7 Wooded Area of Main Dike

CHA recommends that Duke Energy have an independent consultant evaluate the neglected portion of the main dike. This area of the dike does not impound water under the current normal operating pool. However, this area will impound water under flood conditions. Therefore, this portion of the dike should be evaluated for determination of its ability to hold back flood water volumes.

4.8 Ash and Vegetation at Basin 2 to Basin 3 Outlet Control Structure

Ash is piled around the Basin 2 to Basin 3 outlet control structure and significant vegetation has been established in this ash. The vegetation and ash should be removed so as not to impede flow into the outlet structure.

4.9 Depressions on Diverter Dike

CHA recommends that depressions and erosion swales on the diverter dike be re-graded and re-seeded and then monitored for changes.

4.10 Monitoring Instrumentation

There are conclusions and recommendations in the 2008 inspection report suggesting that some of the piezometers at the new and main dike are damaged and should be replaced with new piezometers with screens at the same elevations. CHA strongly recommends that these piezometers are reinstalled particularly at the new dike where there have been concerns about elevated phreatic surface in the past. Well operating monitoring points can show signs of change in the dike that need to be addressed before signs become visible at the ground surface.

4.11 Hydrologic and Hydraulic Evaluation Update

Preliminary analyses suggest that the ash basins at Buck Steam Station will safely pass the ¾ PMF. However, these analyses suggest the water levels in Basin 2 will rise to within 0.6 feet of the dam crest. Because of the preliminary nature of these analyses, CHA recommends Duke Energy evaluate the basin system for safe passage of the ¾ PMF and make adjustment to operating procedures as needed to meet freeboard requirements satisfactory to the North Carolina Utilities Commission.

4.12 Hazard Assessment

We recommend that a breach analysis be performed to determine whether development downstream from the main dike (e.g. residential development approximately 3 miles downstream) would suggest a high hazard classification is warranted for the impoundment.

We also recommend that a breach analysis be performed for the new dike to determine if the Buck Steam Station access road and parking areas would be impacted by a failure of the dike and if a high hazard classification is warranted.

4.13 Additional Stability Analyses – New Dike

We recommend that an investigation be performed in which the properties of the embankment and foundation soils be investigated. Based on the documentation we have reviewed it appears that it has been some time, over 15 years, since a detailed investigation has been performed for the new dike. Independent consultant reports have summarized changes over time in the new dike, including some piezometers readings above the design pheratic surface (Piezometers P15 and 16). Current piezometer data (May 2009) indicates that other piezometers readings are below the design pheratic surface (Piezometers P13 and P14). The 2008 Annual Inspection Report notes that piezometers P15 and P16 are damaged. The recommended investigation should include the installation of additional piezometers to determine the current pheratic surface and to replace any damaged piezometers. The investigation should include a detailed stability analysis based on the updated soil and pheratic parameters determined.

It should be noted that if operations at the Buck Steam Station are modified and Basin 1 is dredged resulting in the new dike impounding liquid it is recommended that a rapid drawdown analyses be performed.

4.14 Additional Stability Analyses – Main Dike

The steady state analysis in 1996 for the main dike (adjacent to Basin 2) indicated a factor of safety of 1.4 for the downstream slope, which is below the recommended criteria of 1.5. Additional piezometers were installed after the fourth independent inspection report to verify uplift conditions at depth in the main dike. An independent review of recent piezometers readings should be conducted to confirm that uplift conditions at depth are below hydrostatic.

4.15 Additional Stability Analyses – Diverter Dike

If operations at the Buck Steam Station are modified and Basin 2 is dredged resulting in the diverter dike impounding liquid it is recommended that a steady state and rapid drawdown and analyses be performed.

4.16 Settlement Monitoring Points

The Buck Steam Station staff should continue to take settlement monitoring point readings on a regular annual basis. The readings should be plotted with previous readings to determine if the rate of settlement has changed.

4.17 Basin 3 Outlet Spillway Channel

CHA observed undermining and joint separation in the concrete-lined spillway channel conveying water below the downstream Main Dike toe to the Yadkin River. This does not appear to be an imminent threat to dike stability at this time, and given the fact that this area has been noted in previous inspections as a point of concern, is likely to have been a fairly slow developing condition over a period of years. If left unchecked however, the rate of undermining can increase and can reach the point where the spillway no longer protects the downstream toe from continual erosion as more sections drop away from the channel. The presence of the Yadkin River backwater in this area of the dike exacerbates the problem by softening the soils, especially during periods of higher water levels. As a consequence, CHA recommends careful routine inspection, particularly after the area experiences periods of heavy rainfall and plant sump pumping, high river levels, or increased power generation that leads to higher CCW sluicing volumes. Should a marked increase in undermining and resulting spillway joint separation or lining displacement become evident, the outlet spillway channel should be repaired or replaced.