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

June 13, 2013

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

VIA E-MAIL

Ms. Cynthia Anderson, Senior Manager, Water and Waste Compliance
Fossil Generation Development & Construction
Tennessee Valley Authority
1101 Market Street, BR 4A
Chattanooga, TN 37402-2801

Re: Request for Action Plan regarding Tennessee Valley Authority - Paradise Fossil Plant

Dear Ms. Anderson,

On September 19, 2011 the United States Environmental Protection Agency ("EPA") and its engineering contractors conducted a coal combustion residual (CCR) site assessment at the Tennessee Valley Authority - Paradise Fossil Plant 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 Tennessee Valley Authority - Paradise Fossil Plant 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 Tennessee Valley Authority - Paradise Fossil Plant facility can be accessed at the secured link below. The secured link will expire on July 31, 2013.

Here is the link: http://www.yousendit.com/download/UVJnT0NkOW5veE43czhUQw

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 Tennessee Valley Authority - Paradise Fossil Plant facility. These recommendations are listed in Enclosure 1.

Since these recommendations relate to actions which could affect the structural stability of the CCR management unit(s) 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 provide a rationale. Please provide a response to this request by **July 15, 2013**. 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, dufficy.craig@epa.gov, kelly.patrickm@epa.gov and englander.jana@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

Enclosure

Enclosure 1

**Tennessee Valley Authority - Paradise Fossil Plant Recommendations (from the final assessment report)**

## CONCLUSIONS

### Scrubber Sludge Complex

Based on the ratings defined in the USEPA Task Order Performance Work Statement (Satisfactory, Fair, Poor and Unsatisfactory), the information reviewed and the visual inspection, the overall condition of the Scrubber Sludge Complex is considered to be FAIR. This rating is given primarily due to the potential for the Lower Stilling Pond to overtop during the 10-year, 24 hr. storm event, as documented in Stantec's 2010 Hydrology and Hydraulics Analysis Report. Based on the conditions observed at the time of inspection, acceptable performance is expected under normal and seismic loading conditions; however, the potential for overtopping of the Lower Stilling Pond during the 10-yr storm indicates inadequate storage and/or spillway capacity for the Lower Stilling Pond, which needs to be addressed. Potential embankment overtopping could result in a breach of the Lower Stilling Pond embankment; however, O'Brien & Gere does not believe this potential occurrence to represent an imminent endangerment to human health and environment given its remote location, and low CCW solids content, and mostly incised configuration of this impoundment.

Stantec has concluded that this facility can be operated safely for a few more years, provided that the new operations and maintenance plans are followed closely. O'Brien & Gere understands that TVA intends to formally close the facility in the near future and transition disposal of the scrubber sludge to a dry storage landfill. Maintenance and improvement measures that should be addressed in the near future include the following:

• Design and construct emergency overflow spillway to safely pass the 100% PMF spillway design flood.

• Raise low-lying portion of the Lower Stilling Pond dike, as appropriate, in conjunction with spillway construction to reduce the potential for overtopping during major storm events.

In general accordance with Stantec's recommendations, TVA has implemented significant remedial measures in the past two to three years to address serious deficiencies identified at the Scrubber Sludge Complex and to bring stability factors of safety up to accepted standards.

### Peabody Ash Pond

Based on the ratings defined in the USEPA Task Order Performance Work Statement (Satisfactory, Fair, Poor and Unsatisfactory), the information reviewed and the visual inspection, the overall condition of the Peabody Ash Pond is considered to be FAIR. This rating is given due to the potential for the Peabody Ash Pond to overtop during the PMP storm event, as documented in Stantec's 2010 Hydrology and Hydraulics Analysis Report. Based on the conditions observed at the time of inspection, acceptable performance is expected under normal and seismic loading conditions. Storm events of magnitude exceeding the 100-year, 24-hour storm, which the Peabody Ash Pond can handle in its current configuration, are rare and the risk of an embankment breach due to overtopping is very low. O'Brien & Gere does not believe this potential occurrence represents an imminent endangerment to human health and represents a low risk to the environment, given the low probability of occurrence.

Maintenance and improvement measures that should be addressed in the near future include the following:

• Clear trees and vegetation on lower outboard slope of east dike.

• Armor lower outboard slope of east dike with riprap where steeper than 2.5H:1V.

• Design and construct an emergency overflow spillway to safely pass the spillway design flood.

Upon Stantec's recommendations, TVA has implemented significant remedial measures in the past two to three years to address deficiencies identified at the Peabody Ash Pond to maintain the structural integrity of the embankment.

**Slag Ponds 2A/2B**

Based on the ratings defined in the USEPA Task Order Performance Work Statement (Satisfactory, Fair, Poor and Unsatisfactory), the information reviewed and the visual inspection, the overall condition of Slag Ponds 2A/2B and the Stilling Pond is considered to be FAIR. This rating is given due to the potential for the Slag Stilling Pond to overtop during the PMP storm event, as documented in Stantec's 2010 Hydrology and Hydraulics Analysis Report. Based on the conditions observed at the time of inspection, acceptable performance is expected under normal and seismic loading conditions. Storm events of magnitude exceeding the 100-year, 24-hour storm, which the Slag Stilling Pond can handle in its current configuration, are rare and the risk of an embankment breach due to overtopping is very low. O'Brien & Gere does not believe this potential occurrence represents an imminent endangerment to human health and represents a low risk to the environment, given the low probability of occurrence.

Maintenance and improvement measures that should be addressed in the near future include the following:

• Clear trees and vegetation on lower outboard slope of east dike of Slag Pond 2B and Stilling Pond. Based on photographs taken after our site visit, this recommended clearing was completed by TVA.

• Monitor apparent seep at northeast corner toe of Slag Pond 2B.

• Repair erosion along edge of crest at north end of divider dike.

• Design and construct an emergency overflow spillway to safely pass the spillway design flood. Spillway design floods have not been established for the subject management units based on the Hazard Classification of the impoundments. Based on information provided in the H&H reports prepared by Stantec, the Peabody Ash Pond and the Slag Ponds 2A/2B Stilling Pond overtop during the PMP storm event. The Scrubber Sludge Complex Lower Stilling Pond overtops in the 10-yr., 24-hr. event. An appropriate spillway design flood should be established for each and modifications to the embankments and/or outlet works should be made as necessary to pass the spillway design flood. The design and construction of emergency overflow spillways, as recommended in Stantec's 2010 Hydrology and Hydraulics Analysis Report, would address this need.

TVA has made significant programmatic changes to their operations and maintenance procedures in order to implement a more proactive and preventative approach to ensuring the structural integrity of their CCW impoundments. TVA performs frequent inspections and monitoring to identify, document, and repair new deficiencies early so that they do not develop into more serious problems.

Since implementation of the new programmatic O&M procedures, the plant's Coal Combustion Products staff maintains design and construction documents and inspection reports in a well organized manner for future reference. The plant operations personnel have received training in dam safety inspections and are performing daily, monthly, quarterly, and annual internal inspections, supported by periodic inspections by a private consultant (Stantec). TVA has implemented a formal emergency action plan for all of its CCW impoundments that provides detailed procedures for TVA personnel to follow upon indication of possible, impending, or actual failure of a CCW impoundment. Based on these findings, we are of the opinion that the operations and maintenance procedures being practiced at the subject impoundments are satisfactory.

**RECOMMENDATIONS**

Based on the findings of our visual inspection and review of the available records for the PAF Scrubber Sludge Complex, Peabody Ash Pond, and Slag Ponds 2A/2B, O'Brien & Gere recommends that additional maintenance of the embankments be performed to correct the erosion, drainage, and other miscellaneous deficiencies cited above. In addition, installation of emergency overflow spillways at each of the management units is recommended to safeguard against overtopping during a PMP storm event.

**URGENT ACTION ITEMS**

None of the recommendations are considered to be urgent, since the issues noted above do not appear to threaten the structural integrity of the dikes in the near term. However, O'Brien & Gere recommends that the low section of the Lower Stilling Pond embankment be raised within one year to provide minimum storage capacity for the of the 100-yr storm.

**LONG TERM IMPROVEMENT**

The deficient conditions observed during the inspection do not require immediate attention, but should be implemented in the near future as part of a regular maintenance plan. The recommended maintenance/improvement actions are provided below:

**Scrubber Sludge Complex**

• Design and construct an emergency overflow spillway for the Lower Stilling Pond to safely pass the spillway design flood (100% PMF)
• Raise low portion of Lower Stilling Pond dike as appropriate in conjunction with the design of the emergency overflow spillway

O'Brien & Gere understands that TVA intends to design and construct features to safely pass the 100% PMF.

**Peabody Ash Pond**

• Clear trees and vegetation on lower outboard slope of east dike
• Armor lower outboard slope of east dike with riprap where steeper than 2.5H:1V
• Establish appropriate spillway design flood given the Hazard Classification of each unit
• Design and construct emergency overflow spillway to safely pass the appropriate spillway design flood

O'Brien & Gere understands that TVA intends to design and construct features to safely pass the 100% PMF with adequate freeboard and conveyance, and that TVA intends to implement the above maintenance type recommendations as part of an upcoming remediation project.

**Slag Ponds 2A/2B**

• Clear trees and vegetation on lower outboard slope of east dike of Slag Pond 2B/Stilling Pond
• Repair erosion along edge of crest at north end of divider dike
• Seal cracks in open channel spillway that conveys flow from Pond 2B to the Stilling Pond
• Design and construct emergency overflow spillway to safely pass the spillway design flood

O'Brien & Gere understands that TVA intends to design and construct features to safely pass the 100% PMF with adequate freeboard and conveyance, and that TVA has completed the recommended clearing and erosion repairs, and plans to seal the cracks in the concrete spillway in the near future.

**MONITORING AND FUTURE INSPECTION**

O'Brien & Gere recommends continued internal inspections by personnel trained in dam safety and periodic inspections by independent licensed dam safety engineers on at least a biennial basis. The small seep identified at the northeastern outboard toe of Pond 2B should be evaluated and monitored in accordance with TVA's Seepage Action Plan.

**TIME FRAME FOR COMPLETION OF REPAIRS/IMPROVEMENTS**

The majority of the identified deficiencies for the subject impoundments were noted in the previous impoundment inspections and engineering evaluations by TV *A* and Stantec. Based on our conversations with representatives of TV *A* and Stantec, engineering designs for corrective action such as seepage filters, erosion repairs, slope repair, etc. are completed in a timely manner in consideration of the severity of the problem as it relates to the structural integrity of the impoundment. Based on the findings of this assessment, O'Brien & Gere believes that TVA and its consultants are addressing maintenance and deficiency repairs in a proactive manner and within a reasonable time frame. We recommend that the owner continue this good practice going forward.