



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

ROBERT J. MARTINEAU, JR.
COMMISSIONER

BILL HASLAM
GOVERNOR

January 2, 2018

Via Electronic Mail to aemasters@tva.gov

Attn: Anita E. Masters, NEPA Compliance Specialist
Tennessee Valley Authority
1101 Market St., BR 2
Chattanooga, TN 37402

Dear Ms. Masters:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Tennessee Valley Authority (TVA) Draft Environmental Impact Statement (EIS) for *Management of Coal Combustion Residuals (CCR) from the Cumberland Fossil Plant (CUF)*. CUF is in Stewart County, Tennessee, approximately 22 miles southwest of Clarksville. The plant is on a large reservation of about 2,388 acres located at the confluence of Wells Creek and the south bank of the Cumberland River near Cumberland City. This two-unit plant was built between 1968 and 1973. TVA proposes to manage CCR at CUF through several projects including the construction and operation of a Bottom Ash Dewatering Facility and the closure of the existing ash impoundments. TVA is also evaluating alternatives for the long-term storage of future CCR generated at CUF.

On August 6, 2015, TDEC issued a Commissioner's Order (TDEC Order) to the TVA directing the investigation, assessment and remediation of all coal ash disposal sites across Tennessee. The requirements of the TDEC Order are supplemental to the CCR rule. TDEC recognized that TVA may, in compliance with the federal CCR rule requirements, elect to close CCR surface impoundments and/or landfills before the full extent of contamination at a site has been determined. However, TDEC's Order makes it clear that if TVA elects to do so, it may be later required by the Order to take other and further remedial actions. TDEC's review and comment on TVA's Management of CCR from CUF Draft EIS shall not be deemed as an approval of actions required under the Order or as a waiver of any requirement of the Order.

Actions considered in detail within the Draft EIS include:¹

- **Alternative A** – No Action – Under the No Action Alternative, TVA would not construct the proposed Bottom Ash Dewatering Facility and current operations for handling sluiced bottom ash would not change. TVA would not close the ash impoundments. Accordingly, TVA would not seek additional

¹ Information on the alternatives evaluated by TVA in the EIS can be found on Summary Pages 2-5. TVA has identified two preferred alternatives, Alternative B or C or a combination thereof. Both alternatives would include the Construction and Operation of a Bottom Ash Dewatering Facility, Closure of the Impoundments (either Closure-in-Place, Closure-by-Removal or a combination of the two closure methods), and Construction of an Onsite Landfill for future CCR produced at CUF.

disposal options for dry placement of CCR generated at CUF. Rather, CCR would continue to be managed in the current impoundments and onsite stacks for as long as storage capacity is available. The No Action Alternative is not consistent with other actions that TVA could be required to take in response to regulatory programs in addition to the CCR Rule including the Order.

- **Alternative B** – Bottom Ash Dewatering Facility, Ash Impoundment Closure (In-Place or By-Removal to Offsite Landfill), Onsite Landfill for Future CCR Produced at CUF – Under Alternative B, TVA would complete a series of actions to manage CCR produced at CUF. These actions include:
 1. **Bottom Ash Dewatering Facility** – TVA would construct and operate a Bottom Ash Dewatering Facility using specialized equipment that would operate continuously while CUF is generating electricity. Dewatering would involve two basic processes. In the first process, sluice water containing bottom ash would be pumped from the powerhouse to the top of two of the three submerged flight conveyers (SFCs) inside a tank. Within the SFC, the ash would settle out and would then be transported up an incline allowing for natural dewatering by gravity. Dewatered ash would be stacked and remaining water in the material would evaporate or would drain by gravity and be collected in sumps which would drain back to the facility for treatment. The dewatered bottom ash would be transported by truck to a permitted landfill (either onsite or offsite). In the second process, water collected from the SFC would be sent to one of three clarifier tanks to allow for settling of the remaining fine bottom ash solids. Clarified water would ultimately be conveyed to a National Pollutant Discharge Elimination System (NPDES) permitted outfall. TVA may construct a recirculation system in a subsequent phase where excess water would be routed back to the plant. Instead of discharging water from the dewatering process through the existing permitted NPDES outfall, the effluent would be rerouted back into the powerhouse for future sluicing operations. The recirculation system would be contained within the existing facility footprint.
 2. **Closure of the Impoundments** – TVA is considering Closure-in-Place, Closure-by-Removal as well as a combination of Closure-in-Place and Closure-by-Removal of each of the impoundments at CUF.
 - a.) *Closure-in-Place*. Under this option, the Bottom Ash Impoundment would be dewatered, which could include decanting or drawdown which is the removal of free or ponded liquid from an impoundment, which would include the removal of pore water from the impoundment. The resulting CCR material would be stabilized in place. Following stabilization, the CCR would be regraded to promote drainage followed by installation of an approved cover system that keeps storm water from mixing with the CCR material which reduces risks of structural instability and groundwater contamination. The closure option identified for the impoundments at CUF is similar to the criteria identified in the Programmatic EIS (PEIS)² for Closure-in-Place Category A. For the Main Ash Impoundment and Stilling Impoundment, CCR material plus a foot of underlying soil would be removed from the western portion of the Main Ash Impoundment and the Stilling Impoundment. These areas would be regraded within the same footprint to promote drainage and would be lined with an approved liner system and repurposed as Process Water Basin 1 and Process Water Basin 2, respectively. The remaining portion of the Main Ash Impoundment would be Closed-in-Place as described above. CCR within the portion of the Main

² In July 2016 TVA issued a Final PEIS, TVA maintains all TVA CCR related National Environmental Policy Act (NEPA) documents at the following website, <https://www.tva.gov/Environment/Environmental-Stewardship/Environmental-Reviews/Closure-of-Coal-Combustion-Residual-Impoundments>.

Ash Impoundment and Stilling Impoundment to be repurposed would be removed to either an existing onsite landfill (Fly Ash Stack) or an existing commercial offsite landfill.

- b.) *Closure-by-Removal*. Under this option, the impoundments would be dewatered and the resulting CCR material would be stabilized. For the Main Ash Impoundment, this would be followed by excavation of CCR material plus a foot of underlying soil, perimeter dike material, and support structures. The dike material would be stockpiled onsite and segregated properly if reused. A portion of the Main Ash Impoundment and the Stilling Impoundment would be repurposed as Process Water Basins 1 and 2 as described above. Closure-by-Removal of the Bottom Ash Impoundment also entails dewatering and stabilizing residual ponded areas followed by removal of CCR material, underlying soil, and support structures within the impoundment footprint. The resulting excavation would be approximately 40 feet in depth and would result in a loss of support for the adjacent Fly Ash Stack and Gypsum Disposal Complex. This loss of support would adversely affect slope stability of the adjacent facilities. As a result, prior to excavation to remove CCR, a retaining wall would need to be constructed along the perimeter of the impoundment to support the approximate 40-foot excavation and provide support for the adjacent facilities. Closure-by-Removal may also include groundwater remediation, but the necessity and extent of such remediation will not be known until excavation is underway. Once CCR and any affected soil is removed, the cleared areas would be backfilled to promote drainage and then vegetated with native, non-invasive plant species. The CCR material from the impoundments would be hauled by trucks on existing public roadways and placed in an offsite permitted landfill. The analysis of impacts associated with transport to an existing offsite landfill are based on the closest landfill that can currently accept CCR material, the Bi-County Solid Waste Management Landfill, located in Montgomery County, Tennessee. The 37-mile haul route to the landfill would primarily use State Route (SR) 233 (also known as Cumberland City Road), SR 49 and US 79. Although CUF has both rail and barge facilities, these facilities are not configured and designed to support loading and transport of CCR generated at CUF offsite. Further, barge and rail unloading facilities are not typical near permitted landfills and are not available at the Bi-County Solid Waste Management Landfill. As such any CCR theoretically hauled by barge or rail for landfill disposal would still entail trucking. Development of barge and rail unloading facilities would also result in additional environmental impacts (land use, wetlands, water resources, etc.) and would require additional environmental permitting. These impacts, together with the need to include trucking to the landfill site, eliminate any advantage gained. Accordingly, these forms of transport are not considered reasonable modes of transportation for offsite transport of CCR at CUF by TVA.
3. Long-Term Storage of Future CCR Produced at CUF – TVA would construct and operate a landfill for disposal of CCR generated at CUF southwest of the plant site on CUF property. The selected site encompasses approximately 174 acres with a landfill footprint of about 81 acres. The landfill would be built in four stages with a total estimated capacity of 14.1 million yd³. Based on current estimates of energy production and consumption rates, the landfill would provide nearly 19 years of storage capacity. The estimated capacity provides adequate CCR storage for long range planning purposes. A two-lane paved access road would be constructed onsite to transport CCR from Old Scott Road to the landfill. This road would tie into the existing access road that extends from Old Scott Road to the CUF perimeter road. TVA would pave the existing access road to support hauling of CCR to the landfill.

- **Alternative C** – Bottom Ash Dewatering Facility, Ash Impoundment Closure (In-Place or By-Removal to Existing Onsite Landfill), Onsite Landfill for Future CCR Produced at CUF – Under Alternative C, TVA would complete a series of projects to manage CCR produced at CUF. These actions include:
 1. Bottom Ash Dewatering Facility – TVA would construct the Bottom Ash Dewatering Facility in the same manner as described for Alternative B.
 2. Closure of the Impoundments (two options)
 - a.) *Closure-in-Place*. Under this option, TVA would close the ash impoundments in-place in the same manner as described for Alternative B.
 - b.) *Closure-by-Removal*. The sequence of actions to close the ash impoundments under this option would be the same as described under Alternative B. However, CCR removed from the ash impoundments under the Closure-by-Removal option would be transported to the existing onsite landfill (Fly Ash Stack) for long-term storage.
 3. Long-Term Storage of Future CCR Produced at CUF – TVA would construct and operate a landfill for disposal of CCR generated at CUF southwest of the plant site on CUF property as described for Alternative B.

- **Alternative D** – Bottom Ash Dewatering Facility, Ash Impoundment Closure (In-Place or By-Removal to Offsite Landfill), Offsite Landfill for Future CCR Produced at CUF – Under Alternative D, TVA would complete a series of projects to manage CCR produced at CUF. These actions include:
 1. Bottom Ash Dewatering Facility – TVA would construct the Bottom Ash Dewatering Facility in the same manner as described for Alternatives B and C.
 2. Closure of the Impoundments (two options).
 - a.) *Closure-in-Place*. Under this option, TVA would close the ash impoundments in-place in the same manner as described for Alternatives B and C.
 - b.) *Closure-by-Removal*. The sequence of actions to close the impoundments under this option would be the same as described under Alternative B.
 3. Long-Term Storage of Future CCR Produced at CUF – In contrast to Alternatives B and C, this alternative considers the transport of future ash to a permitted offsite landfill for long-term storage. As noted under Alternative B, the analysis of impacts associated with this long-term storage option is based on the transport of future CCR to the Bi-County Solid Waste Management Landfill in Montgomery County, Tennessee.

TDEC has the following comments regarding the proposed action and its alternatives.

General

- Activities required under TDEC Order will direct closure methodology and further potential corrective actions. To ensure transparency of process and continuity between proposed actions and requirements under the Order, TDEC recommends that TVA provide a schedule of proposed activities, a description of how proposed actions relate to requirements of the TDEC Order, and whether any of the proposed actions, if selected, would require reevaluation per NEPA.
- TVA uses the term “future CCR” throughout the Draft EIS but does not provide a definition, describe or relate the associated timing of “future CCR” with project milestones throughout the Draft EIS. TDEC recommends that TVA consider defining “future CCR” and more clearly describe which activities will represent interim disposal practices and strategies.
- In the Draft EIS TVA describes the Closure-in-Place treatment method to include Closure-by-Removal of CCR material from the Main Ash Impoundment. TDEC recommends that TVA consider referring to this as a combination of Closure-in-Place and Closure-by-Removal.
- TVA states that the environmental impacts of developing rail facilities and utilizing rail for transport of CCR material offsite eliminates any environmental advantages, however TVA does not provide analysis of these environmental impacts in the Draft EIS. TDEC recommends TVA include analysis and feasibility of utilizing rail as an alternative to trucking in the Final EIS.

Air Resources

- If it is determined that removal of CCR material or contaminated soils to an offsite or onsite location will be employed as part of the process to address environmental and health concerns, TDEC recommends TVA implement air monitoring both onsite at the TVA CCR disposal site and also at any location selected to receive CCR materials for disposal offsite. Such air monitoring would help quantify any potential particulate or dust impacts and any environmental or health exposures during the relocation process. The air monitoring to be employed should be selected based on the composition of the CCR involved and any toxicity associated with the components. At a minimum, this should include an evaluation for metals and particulates in the PM_{2.5} or smaller size range. It is also recommended that an air monitoring action plan be used to address any air monitoring results indicating that the National Ambient Air Quality Standards (if applicable) or other accepted exposure levels are nearing exceedance, so that proactive steps can be taken to prevent any actual exceedance or unacceptable exposures both onsite and offsite.
- TDEC recommends that TVA develop a plan for addressing potential fugitive dust generated during removal or relocation activities. TDEC would recommend development of a site-specific detailed fugitive dust mitigation plan including any mechanisms designed to prevent “track out” on heavy truck bodies, truck under carriages or wheel assemblies as they leave the site. Possible application of dust suppressing agents or water and the use of temporary covering agents should be investigated. Reducing exposed areas of CCR to a minimum and working only on exposed areas leaving other areas covered or sealed will mitigate drying and wind erosion and transport. TDEC encourages TVA to include discussion regarding this in the Final EIS.

- There will likely be air quality impacts associated with a relocation project either onsite or offsite. The possible impacts are likely to be associated with the transport distances and the methods employed to minimize and mitigate fugitive dust onsite and offsite. Additional temporary emission impacts would also be expected from the on and off road vehicles and construction equipment employed. TDEC recommends the use of Best Management Practices as a method to minimize construction related emissions.

Water Resources

- TDEC is concerned that the proposed modifications to the impoundments do not align with actions required for CCR “at risk” problem areas or issues per the TDEC Order, and that pursuing the proposed modifications to the impoundments could hinder further investigation required for the completion of the Environmental Assessment Report (EAR) for the facility as a part of the TDEC Order. The Order states that the EAR “shall provide an analysis of the extent of soil, surface water, and ground water contamination by CCR at the site. The Department (TDEC) shall evaluate the EAR to determine if the extent of CCR contamination has been fully identified.” TVA runs the risk of proceeding with the proposed reconfiguration of the impoundments at CUF only to have to perform remediation reversing some of the reconfiguration work at a later date. TVA does state in the Draft EIS that it will implement supplemental groundwater mitigation measures that could include monitoring, assessment, or corrective action programs as mandated by state and federal requirements. However, TDEC recommends that TVA provide discussion as to how timing for the proposed actions in the Draft EIS will relate with the completion of the CUF EAR as described in the Order.
- As is mentioned in the Draft EIS, the project will require a General Construction Storm Water Permit and development of a Storm Water Pollution Prevention Plan (SWPPP) specific to the project, a NPDES permit plan change, a new Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP), an Aquatic Resources Alteration Permit (ARAP) based on alteration to the streams in the area and the 0.5 acres of wetlands expected to be disturbed or destroyed in the creation of the proposed onsite landfill. The Draft EIS also notes stormwater discharge permits and outfalls for the proposed onsite landfill that would go to either Wells Creek or Scott Branch. Scott Branch is a zero flow stream, which prompts questions as to whether a stormwater discharge from the proposed landfill could be permitted to that stream. The use of the wastewater treatment additives in the clarifying tanks during dewatering operations would also have to be addressed and approved by TDEC in the NPDES permitting process.³ TDEC recommends that TVA address these considerations in the Final EIS.
- The Draft EIS states, “Closure-by-Removal may also include groundwater remediation, but the necessity and extent of such remediation will not be known until excavation is underway.” TDEC recommends that TVA consider remediation methodology of areas Closed-By-Removal where excavated CCR is found to be below the groundwater table in the Final EIS. Similarly, TDEC recommends that TVA further discuss removal of pore water in the event that CCR material exists below the groundwater table in the Final EIS.

Solid Waste Management

- TVA’s existing onsite permitted solid waste industrial landfill⁴ is not discussed in the Draft EIS as a mechanism for storage of future CCR produced at CUF. It is only referenced as long-term storage for

³ For more information on TDEC Division of Water Resources permits, please visit <https://www.tn.gov/environment/permit-permits/water-permits.html>.

⁴ TDEC Division of Solid Waste Management Permit # IDL81000086 (Fly Ash Stack and Gypsum Disposal Complex).

existing CCR removed from the ash impoundments under the Closure-by-Removal option associated with Alternative C. The Fly Ash Stack and Gypsum Disposal Complex are subject to regulation under the CCR Rule. TDEC recommends the Final EIS clarify whether the Fly Ash Stack and Gypsum Disposal Complex will be used for storage of future CCR produced at CUF. Additionally, TDEC recommends that the Final EIS address how TVA plans to handle the storage of future CCR produced at CUF during the interim period prior to which an onsite landfill for future CCR is permitted and constructed.

- TDEC encourages TVA to clarify in the Final EIS whether a separate NEPA process will be required if the Fly Ash Stack and Gypsum Disposal Complex needs to close (either Closure-in-Place, Closure-by-Removal or a combination of Closure-in-Place and Closure-by-Removal) prior to exhausting all of the permitted airspace available in the existing permitted landfill. Additionally, TDEC recommends that the Final EIS address whether TVA will issue a revised or new EIS if the Fly Ash Stack and Gypsum Disposal Complex is required to close (either Closure-in-Place, Closure-by-Removal or a combination of Closure-in-Place and Closure-by-Removal) prior to completion of the Closure By-Removal as described in Alternative C.
- The Draft EIS raises concerns about the impact Closure-by-Removal only for CCR material in the Bottom Ash Impoundment would have on the support and slope stability of the Fly Ash Stack and Gypsum Disposal Complex. TDEC encourages TVA to evaluate the feasibility of removal and regrading of material in the Fly Ash Stack and Gypsum Disposal Complex in order to satisfy stability requirements under a Closure-by-Removal treatment in the Final EIS.
- TDEC encourages TVA to provide clarification in the Final EIS for Alternative B Closure-In-Place regarding whether the CCR removed to support the process water basins is expected to be directed to the Fly Ash Stack or to an offsite landfill.
- Alternatives direct additional waste from the Closure-in-Place and Closure-by-Removal options to the Fly Ash Stack, which is not lined. This site is currently in groundwater assessment monitoring. TDEC recommends that TVA include discussion regarding groundwater assessment and impacts of directing additional CCR material to the Fly Ash Stack for disposal in the Final EIS.
- TDEC encourages design and operation of the proposed onsite landfill such that it will reduce the stated maximum peak leachate flow of 1.12 million gallons per day, and recommends that TVA include a description of efforts to reduce maximum peak leachate flow in the Final EIS.
- TDEC encourages the amount of CCR exposed to be restricted to 10 acres or less for ammonia loads and maximum peak leachate flow calculations. It is recommended that this be addressed in the Final EIS.
- Leachate and stormwater discharge sampling locations are anticipated to be included in the proposed landfill permit and will require testing for all Appendix III and IV constituents identified in the CCR Rule. This should be considered as Option 1 under Alternatives B, C and D is evaluated in the future and it is recommended that this be included in the Final EIS.

Geology

- The proposed onsite landfill is close to the outcrop of the Chattanooga Shale. Although the Chattanooga Shale was not delineated on the geologic map in Tennessee Geologic Survey Bulletin 68 “Geology of the

Wells Creek Structure, Tennessee”, it was described as 15 to 58 feet thick, grayish-black, fissile, and pyritic, at the base of the Mfp geologic map unit. Construction of the landfill with excavations may expose the Chattanooga Shale which could pose the possibility of acid rock drainage. Some type of mitigation may need to be considered, either encapsulation or acid runoff treatment, in case the black shale is encountered during the construction of the onsite landfill. TDEC recommends TVA discuss these considerations in the Final EIS.

It should be noted that TVA may choose to pursue CCR impoundment closure-in-place at any of its Fossil Plants. However, should TVA begin CCR surface impoundment closures at any of its Tennessee Fossil Plants and TDEC subsequently determines based on soil, surface water, ground water and/or geologic instability that closure in place is not protective of public health and/or the environment, then TDEC shall, in accordance with the Commissioner’s Order, require TVA to commence appropriate corrective action including removal of CCR surface impoundments where TVA has begun or completed closure-in-place. Further, it should be noted that Tennessee Code Annotated Section 68-211-106(j) may require a permit or other approval from TDEC for the disposal or use of coal ash.

TDEC appreciates the opportunity to comment on this Draft EIS. Please note that these comments are not indicative of approval or disapproval of the proposed action or its alternatives, nor should they be interpreted as an indication regarding future permitting decisions by TDEC. Please contact me should you have any questions regarding these comments.

Sincerely,



Kendra Abkowitz, PhD
Director of Policy and Sustainable Practices
Tennessee Department of Environment and Conservation
Kendra.Abkowitz@tn.gov
(615) 532-8689

cc: Rob Burnette, TDEC, BOE
Lacey Hardin, TDEC, APC
Chuck Head, TDEC, BOE
Lisa Hughey, TDEC, SWM
Tom Moss, TDEC, DWR
Joseph Sanders, TDEC, OGC
Robert Wilkinson, TDEC, BOE