ASSESSMENT OF PROPOSED CHANGE TO THE FINAL CUMBERLAND FOSSIL PLANT COAL COMBUSTION RESIDUALS MANAGEMENT OPERATIONS ENVIRONMENTAL IMPACT STATEMENT

SEPTEMBER 2019

Background

In April 2018, Tennessee Valley Authority (TVA) issued an Environmental Impact Statement (EIS) to address the management of Coal Combustion Residuals (CCR) from the Cumberland Fossil Plant (CUF) in Stewart County, Tennessee (TVA 2018). The Final EIS identified Alternative C as TVA's preferred alternative, which includes the construction and operation of a Bottom Ash Dewatering Facility, closure-in-place of the Bottom Ash Impoundment, and a combination of closure-in-place and closure-by-removal of the Main Ash Impoundment and Stilling Impoundment. The portion of the Main Ash Impoundment and Stilling Impoundment that would be closed-by-removal would be repurposed as Process Water Basin 1 and Process Water Basin 2, respectively. The CCR that is removed from the impoundments would be transported to an existing onsite landfill (Fly Ash Stack). In addition, TVA would construct an onsite landfill to manage future dry CCR produced at CUF.

On June 7, 2018, TVA published a Record of Decision (ROD) regarding the construction and operation of the Bottom Ash Dewatering Facility, construction and operation of a new onsite CCR landfill, and construction of the process water basins, which includes removal of CCR from a portion of the Main Ash Impoundment and the Stilling Impoundment. TVA elected to further consider options regarding the location for the permanent disposal of CCR excavated from these impoundments to support construction of the process water basins.

TVA's CCR disposal areas at CUF, including the impoundments, are subject to the 2015 Commissioner's Order entered by the Tennessee Department of Environment and Conservation (TDEC). Investigations at CUF under that TDEC Order are ongoing. Therefore, TVA elected to further consider the proposed in-place closure of the Bottom Ash Impoundment and a portion of the Main Ash Impoundment before making a decision on closure of these facilities to allow the execution of the requirements of the TDEC Order to guide closure activities to the maximum extent possible.

Proposal

As described in the Final EIS and subsequent ROD, TVA intends to construct and operate a new CCR landfill approximately 1.2 miles southwest of the plant site on CUF property. The approximately 80-acre landfill would have a total estimated capacity of 14.3 million cubic yards (yd^3) which provides adequate CCR storage for long-range planning purposes. TVA has decided to consider the future onsite CCR landfill for permanent storage of the CCR removed from a portion of the Main Ash Impoundment and Stilling Impoundment to support construction of the process water basins.

In addition, in consultation with the US Army Corps of Engineers and TDEC, TVA has proposed a revised design of the onsite CCR landfill that avoids direct impacts to surface water features associated with stormwater and leachate basins within the landfill boundary. This revised design includes the relocation of the proposed stormwater basins and leachate impoundment as well

as the replacement of the proposed leachate impoundment with a leachate tank farm. However, the relocation of these facilities required additional area outside the boundary reviewed in the Final EIS. Additionally, some areas along the eastern portion of the project area that were included in the original landfill boundary would no longer be needed to support development of the landfill. The revised landfill boundary encompasses a total of approximately 242 acres, compared to the original 174 acres, resulting in a net change of approximately 68 acres of additional disturbance. The revised landfill boundary is shown on Figure 1.

This white paper, therefore, provides an analysis of potential impacts associated with the proposed change in the future onsite CCR landfill boundary and the use of this onsite landfill as a repository for both existing and future CCR rather than using the Fly Ash Stack (as originally proposed) as the storage facility for existing CCR.

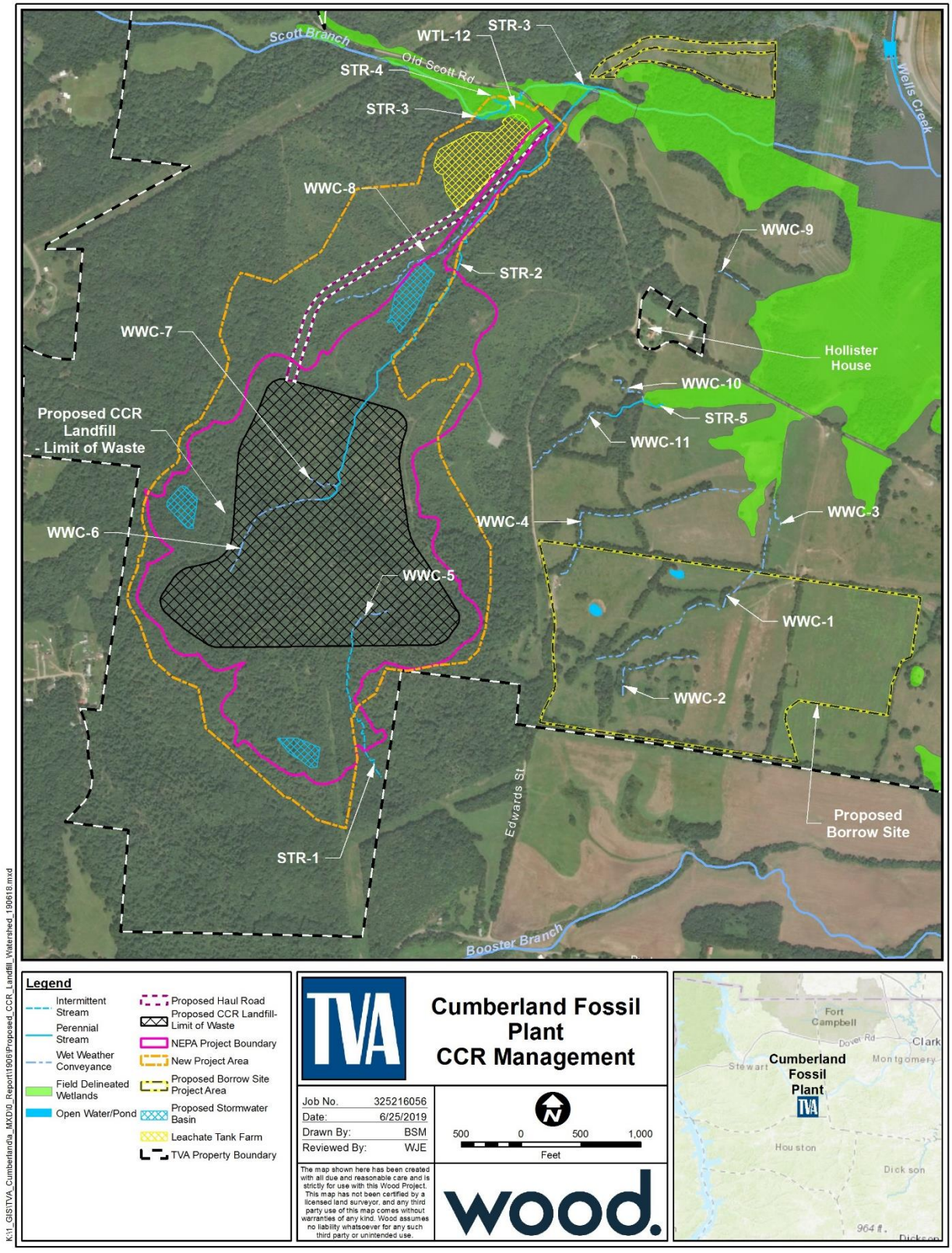

Figure 1. Modified Onsite Landfill Boundaries and Environmental Features at the Cumberland Fossil Plant

Discussion of Impacts

Impacts related to construction and operation of the onsite landfill and excavation of CCR from the Stilling Impoundment and a portion of the Main Ash Impoundment to support construction of the process water basins were previously discussed in the Final EIS (TVA 2018). This environmental review includes additional analysis associated with the transport and disposal of excavated CCR material in the proposed onsite CCR landfill and the proposed change in the landfill boundary to accommodate relocated stormwater basins and a leachate tank farm.

Based on the onsite nature of the proposed project activities, there would be no change in the determination of impacts to the following resource categories studied in the Final EIS:

- Air Quality
- Cultural and Historic Resources
- Parks and Recreation
- Socioeconomics and Environmental Justice
- Geology
- Groundwater
- Public Health and Safety
- Natural Areas
- Visual Resources

This environmental review includes additional analysis for climate change and greenhouse gases, land use, prime farmland, surface water, floodplains, vegetation, wildlife, aquatic ecology, threatened and endangered species, wetlands, solid waste, transportation, and noise. The analyses are provided below.

Climate Change and Greenhouse Gases

In the Final EIS, the EPA's quantification tool (EPA 2017) was used to estimate the carbon sequestration that may be lost from the conversion of forested land within the original landfill boundary – approximately 184 metric tons. Under the same assumptions, that all forested areas (the land cover with the greatest potential carbon sink) are completely cleared from the proposed landfill area limits of disturbance and forest composition and age is typical for the east Tennessee region, the conversion of forested lands within the revised landfill boundary (approximately 241 acres) would result in the loss of approximately 256 metric tons of carbon sequestered in one year. While implementation of the revised landfill boundary would result in a marginally greater conversion of forested lands and loss of carbon sequestration compared to the scenario evaluated in the Final EIS, it would still be de minimis relative to the regional carbon sequestration (estimated at 67,856 metric tons per year) and would not adversely affect regional climate change.

Land Use

As noted in the Final EIS, land cover within the originally proposed onsite CCR landfill was primarily comprised of deciduous forest (Table 1). Similarly, the revised landfill area is primarily comprised of deciduous forest (238.9 acres), with small amounts of woody wetlands (2.5 acres), low intensity development such as dirt roads (0.3 acre), and herbaceous cover (0.1 acre) (Table 1).

Table 1. Land Cover within the Onsite CCR Landfill and within the Vicinity of CUF

Land Cover Type	Final EIS Landfill Boundary (acres)[1]	Revised Landfill Boundary (acres)[1]	5-Mi Radius (acres)[2]
Barren Land	0	0	34.7
Cultivated Crops	0	0	3,534.9
Deciduous Forest	173.2	238.9	61,203.2
Developed, High Intensity	0	0	108.5
Developed, Low Intensity	0	0.3	335.9
Developed, Medium Intensity	0	0	284.0
Developed, Open Space	0	0	2,803.1
Emergent Herbaceous Wetlands	0	0	173.6
Evergreen Forest	0	0	776.2
Hay/Pasture	0	0	6,612.2
Herbaceous	0	0.1	5,484.1
Mixed Forest	0	0	2.7
Open Water	0	0	2,398.4
Shrub/Scrub	0	0	551.2
Woody Wetlands	0.5	2.5	2,033.3
Total	**173.7**	**241.8**	**86,336.2**

Source: [1]Derived from Homer et a; 2015, supplemented by field surveys and aerial photography
[2]Homer et al 2015

The proposed onsite CCR landfill would be constructed on a site that is currently in an undeveloped state with various types of vegetative cover. Construction of the proposed facility, with revised boundaries, would result in the permanent conversion of approximately 242 acres of predominantly undeveloped land to industrial facilities. Proposed permanent industrial facilities include the construction of the landfill, leachate tank farm, storm water ponds, and access roads. Although the revised landfill boundary would involve the conversion of approximately 68 additional acres of undeveloped lands to industrial facilities, the impact would be minor when compared to the abundance of undeveloped land within a 5-mile radius of the site (see Table 1). Therefore, impacts to land use associated with the revised landfill boundary would be minor and consistent with those analyzed in the Final EIS.

Prime Farmland

In the Final EIS, it was determined that the proposed onsite CCR landfill would impact approximately 14 acres of prime farmland soils. TVA coordinated with the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) through submittal of the AD 1006 Farmland Conversion Impact Rating Form and received a farmland conversion impact rating score of 64.6. Project sites receiving a total score of less than 160 need not be given further consideration for protection.

With the revisions to the proposed landfill boundary, construction of the landfill would impact approximately 18 acres of prime farmland soils. This minor increase in acreage compared to the original 14 acres would not result in a significant change to the farmland conversion impact rating score. As the total score would remain less than 160, the land need not be given further consideration for protection and no additional coordination with the NRCS would be required. Furthermore, approximately 18,599 acres (21.3 percent) of the area within a 5-mile radius of the

project area have soils classified as prime farmland. The minor loss of onsite prime farmland soils due to the construction of the revised landfill is not significant when compared to the amount of land designated as prime farmland within the surrounding region. Therefore, impacts to prime farmland soils would be minor and consistent with those analyzed in the Final EIS.

Surface Water

Jurisdictional streams and wetlands were delineated within the proposed project areas in November and December 2016. As indicated in the Final EIS, one perennial stream, one intermittent stream, and four wet weather conveyance/ephemeral streams were documented in the landfill project area. An additional field survey was completed in June 2019 to identify streams and wetlands within the approximately 68 additional acres included in the revised landfill boundary. Figure 1 identifies surface water and wetland resources identified during both surveys. The results of this analysis indicate that landfill construction activities could impact up to 720 feet of an intermittent stream (STR-1), 4,088 feet of perennial streams (STR-2, 3, and 4), and 3,354 linear feet of wet weather conveyance/ephemeral streams (WWC-5, 6, 7 and 8) included within the revised landfill boundary. Although additional surface water features were identified in the revised landfill boundary, storm water ponds and the leachate impoundment have also been relocated in the revised landfill design to avoid direct stream impacts. However, modified stream impacts would still be expected to produce direct adverse impacts that would require mitigation. A Stream Quantification Tool would be used to evaluate the quality of the streams impacted and determine the mitigation requirements. Impacts to streams would be mitigated by purchasing credits from a mitigation bank or in-lieu fee program and/or by permittee responsible mitigation. The specific approach and plan will be developed and approved during the Section 401 and 404 permitting process. The required permits noted in the Final EIS would not be expected to change based on these modifications. However, an update of all notable information would need to be modified in permit applications and mitigation plans.

While the locations of some of these ponds have changed, it is assumed that the size, capacity, and potential discharge flows and concentrations would not be altered significantly enough to change the overall surface water impacts as detailed in the Final EIS. Specifically, all waste streams would comply with NPDES permit**Error! Bookmark not defined.** limits and regulations and impacts would be minor. Additionally, leachate generated by the landfill would be contained in tanks instead of a pond, prior to discharge. Tanks provide more flexibility for treatment options, provide longer containment of leachate, and would not allow the mixing of precipitation with leachate. The details of these tanks are still in the initial design phase, but it is also assumed that the potential discharge flows and concentrations would not be altered to notably change the overall surface water impacts as detailed in the Final EIS. The receiving streams, mitigation measures, and impacts detailed in Options 1 and 2 of Section 3.7.2.2.2.3 of the Final EIS are not expected to significantly change with these modifications or additions.

Floodplains

As stated in the Final EIS, the 100- and 500-year flood elevations of the Cumberland River at this location would be 379.6 and 385.3 feet above mean seal level (msl). The leachate tanks would be located on fill at about elevation 396 feet above msl, well above both the 100- and 500-year flood elevations of the Cumberland River, which would be consistent with EO 11988. The fill for the proposed leachate tank farm would be placed at or above about elevation 384 feet above msl, outside the 100-year floodplain of the Cumberland River and therefore, consistent with EO 11988.

The proposed relocated stormwater basins would also be located outside the 100-year floodplain, which would be consistent with EO 11988. The original analysis in the Final EIS remains valid for the updated NEPA boundary and additional project scope.

Vegetation

Construction of the proposed onsite landfill would involve ground disturbing activities that would include grubbing, grading, and excavation. Impacts to vegetation associated with the proposed onsite landfill identified in the Final EIS consist of the permanent loss of approximately 173.2 acres of deciduous forest. In comparison, with the revisions to the proposed landfill boundary, construction of the landfill would result in permanent loss of approximately 238.9 acres of deciduous forest (see Table 1). However, there is abundant deciduous forest habitat (61,203 acres) of similar quality within a 5-mile radius of CUF, rendering the overall long-term impact to vegetation minor. Furthermore, compared to the original landfill design, the revised project would include soil excavations, removal of vegetation, grading, and construction activities with the potential to disturb soil stability and increase erosion over a larger acreage, which could result in the potential spread of invasive species. However, these indirect impacts would be minimized using standard BMPs consisting of erosion control measures and other measures to help reduce the spread of invasive species. Therefore, while effects to vegetation would increase slightly, the overall impacts to vegetation are considered to be minor and consistent with those analyzed in the Final EIS.

Wildlife

Impacts to wildlife from construction and operation of the proposed landfill would generally result from loss of deciduous forest habitats. The proposed landfill area is relatively undisturbed and is expected to support a range of wildlife species, including migratory birds. The construction of the landfill with the revised boundary would result in the loss of approximately 238.9 acres of deciduous forest, compared to the 173.2 acres of deciduous forest habitat that would be lost under the original design considered in the Final EIS. However, within a 5-mile radius, there is approximately 61,203 acres of deciduous forest that would accommodate displaced biota. In addition, the loss of approximately 66 additional acres of wildlife habitat would not substantially impact the local population of any wildlife species, including migratory birds that may use the existing forested habitats within the landfill area, due to the large amount of similar habitat in the region. Therefore, although there would be impacts to wildlife resulting from the development and operation of the proposed landfill, those impacts would be minor and consistent with those analyzed in the Final EIS.

Aquatic Ecology

Direct and permanent impacts to aquatic biota and their habitats would be limited to filling portions of the one intermittent stream, three perennial streams, and four wet weather conveyances/ephemeral streams documented within the revised landfill boundary (see Figure 1). Direct and permanent impacts to aquatic biota would occur as a result of stream loss or culverting streams supporting aquatic habitat. These activities would be done in compliance with applicable TDEC ARAP and USACE 404 permits obtained for the proposed actions, including any required mitigation. Construction activities would adhere to permit limit requirements and would utilize appropriate BMPs that would minimize potential indirect impacts associated with downstream transport and accumulation of sediments.

The proposed relocation of the sediment basins and the leachate tank farm would limit some impacts to a perennial stream (STR-2) relative to what was reported in the EIS and impacts to

aquatic ecology would remain minor and mitigated per permit requirements, consistent with those in the Final EIS.

Threatened and Endangered Species

A site survey conducted in November 2016 determined that the forested area within the originally proposed landfill project area is of low summer roosting quality for threatened and endangered bats, and it may also be used as a foraging area. The revised landfill boundary includes approximately 241 acres of forest, all of which is assumed to consist of the same low-quality summer roosting and foraging habitat. As stated in the original EIS, the landfill project area occurs within 5 miles of a documented northern long-eared bat hibernacula. In addition, the landfill project area is located within fall swarming habitat for both Indiana bat and northern long-eared bat. As stated in the original EIS, a number of activities associated with the proposed project were addressed in TVA's programmatic consultation with the U.S. Fish and Wildlife Service on routine actions and federally listed bats in accordance with ESA Section 7(a)(2) and completed in April 2018. For those activities with potential to affect bats, TVA committed to implementing specific conservation measures. These activities and associated conservation measures are identified on the TVA Bat Strategy Project Screening Form (attached).

Accordingly, TVA will track and document removal of potentially suitable summer roost trees and include in annual reporting in accordance with Section 7(a)(2) consultation. Additionally, if removal of suitable bat roost tree habitat needs to be removed when bats may be present on the landscape, TVA would set aside funding to be applied towards future bat-specific conservation projects. As stated in the original EIS, TVA currently plans to conduct the majority of tree removal between November 15 and March 31, when Indiana and northern long-eared bats are not on the landscape. No tree removal would occur between June 1 and July 31 to avoid any potential direct impact to juvenile bats at a time when they are unable to fly. Therefore, direct and indirect impacts to federally listed bat species would be the same as identified in the EIS and are expected to be minor.

Two populations of the federally threatened Price's potato-bean were observed in Stewart County as recently as 2014. In August 2017, surveys for this species were conducted at CUF within the original landfill boundaries by a competent botanist, at which time, no individuals were found. Based on the known habitat preferences of Price's potato-bean, it was determined that the areas within the landfill with the greatest potential for the species' occurrence were in the rich valley bottom where a logging road cut opened up the tree canopy and along the stream corridor that runs parallel to the road. As the areas that have been added to the revised landfill boundaries consist primarily of unfavorable habitat, including more acidic ridge slopes and ridge tops with closed forest canopies, conclusions from the original Price's potato-bean survey remains sufficient for the revised project scope. Therefore, no impacts to Price's potato-bean are anticipated in association with the changes to the landfill boundaries.

As the revised landfill boundaries do not include habitats substantially different than those of the original landfill design, the changes to the landfill boundaries are not anticipated to result in changes to the impacts to other threatened or endangered species previously determined in the Final EIS.

Wetlands

Wetlands were delineated within the project areas in August 2014 and confirmed in December 2016 (Amec Foster Wheeler 2017). Additionally, wetlands within the approximately 68 additional acres included in the revised landfill boundary were delineated in June 2019. Potential

jurisdictional wetlands were evaluated in accordance with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0). The field surveys identified a total of 2.5 acres of forested wetland and 0.01 acres of emergent wetland within the revised landfill boundary.

While the revised landfill boundary includes approximately 2.0 more acres of wetlands than what was included in the original boundary, no additional wetland impacts are anticipated. Any unavoidable direct impacts to wetlands would be mitigated as required by both state and federal agencies in accordance with the Tennessee Water Quality Control Act and Section 404 of the CWA. Therefore, development of the proposed landfill would be consistent with EO 11990 and the analysis provided in the Final EIS.

Solid Waste

No construction-related solid or hazardous waste would be generated from the hauling of CCR material from the impoundments to the future onsite CCR landfill. As noted in the Final EIS, the future onsite CCR landfill would have an estimated capacity of 14.3 million yd^3. At current generation levels with no assumed marketing of CCR material, the closure date of the landfill is approximately 2040. In the event beneficial reuse via marketing continues at its current rate, the landfill closure date is approximately 2100. The permanent storage of approximately 245,700 yd^3 of CCR material from the Main Ash Impoundment and 180,000 yd^3 of CCR material from the Stilling Impoundment in the future onsite CCR landfill would only account for 3 percent of its total capacity. Additionally, the placement of CCR material in the future onsite CCR landfill would be in compliance with state solid waste regulations and would be conducted in a manner that ensures the stability of the CCR landfill unit. Therefore, although this would result in a long term decrease of the capacity of the future onsite landfill, the impact would be minor.

As stated in the EIS, landscaping wastes would result from grubbing, land clearing, and grading necessary to construct the landfill and support areas. Construction of the proposed landfill would require additional clearing of up to 68 acres. As identified in the EIS, these materials may be disposed offsite or onsite through open burning, done in accordance with appropriate local and state regulations. Waste generated during operation, closure and post-closure care would be managed in accordance with applicable federal and state requirements. Therefore, impacts associated with solid waste generation would remain minor.

Transportation

As analyzed in the Final EIS for the preferred alternative (Alternative C), approximately 180,000 yd^3 of CCR excavated from the Stilling Impoundment and approximately 245,700 yd^3 of CCR material from the Main Ash Impoundment would be removed and transported to an onsite landfill (Fly Ash Stack). The analysis in the Final EIS indicated that the onsite transport of dry CCR produced at CUF to the existing Fly Ash Stack would use articulated dump trucks (capacity of 30 yd^3). Also, TVA determined that given a shortened haul distance, TVA could transport CCR to the existing Fly Ash Stack at a rate of 200 trucks per day (400 truckloads) over two working shifts per day. TVA reevaluated this information and determined that these same assumptions could be applied to the transport of CCR to the new proposed CCR landfill. Therefore, based on these assumptions and the total volume of CCR to be transported to the proposed onsite CCR landfill (425,700 yd^3), TVA estimated it could transport all the CCR removed from the Main Ash Pond and the Stilling Impoundment to the onsite CCR landfill in approximately 2 months. However, on July 30, 2018, the US Environmental Protection Agency published a finalized set of amendments to the 2015 CCR Rule that included an 18-month

extension to the deadline (extended to October 31, 2020) by which facilities must initiate closure of certain CCR units.

As a result, in consideration of potential worker safety issues and cost, TVA has revised the plan for accelerated transport of CCR from the Main Ash Impoundment. Specifically, TVA would transport CCR to the onsite CCR landfill at a rate of 200 trucks per day over a typical nine-hour workday throughout the estimated closure period. While this would increase the duration of closure to up to 18 months, excavated CCR material would be hauled from the Main Ash Impoundment and Stilling Impoundment to the future onsite CCR landfill using the existing onsite access road; therefore, there would be no impact to public roadways. The onsite access road includes an at-grade crossing of Old Scott Road, a two-lane gravel road. Although there are no published traffic volumes for Old Scott Road, the volumes are assumed to be very low, as there are only two residences along the road. Therefore, the impact to local traffic on this road as a result of the temporary increase in truck traffic crossing the road would be less than that evaluated in the Final EIS. As the transport of CCR under the revised plan would not utilize public roadways and the temporary increase in the volume truck traffic crossing Old Scott Road would be minor, the transportation impacts related to the change in a disposal rate for CCR excavated from the impoundments is bounded by the transportation analysis provided in the Final EIS.

Noise

The sensitive noise receptors closest to the proposed landfill are residences along East Richview Road, west of the proposed landfill. As the revised landfill boundary extends further west in this area than the original boundary, the distance to the nearest receptor has decreased from 536 feet to approximately 455 feet. Typical noise levels from both construction and operation equipment (i.e. dozers, scrapers, graders, and excavators) utilized at the landfill site are expected to be 85 dBA or less at a distance of 50 feet from the equipment. Based on straight line noise attenuation, it is estimated that noise levels from landfill construction and operation would attenuate to approximately 65.8 dBA. However, the actual noise level would likely be lower in the field, where vegetation and differences in topography would cause further noise attenuation. While noise from landfill activities could remain above the recommended HUD guideline of 65 dBA and the EPA guideline of 55 dBA, these impacts would be intermittent and would typically only occur during normal working hours. Therefore, overall noise impacts from the construction and operation of the revised landfill on the residences on East Richview Road would be similar to those reported in the EIS and would be minor.

There are no other sensitive noise receptors within 500 feet of the revised landfill boundaries or the CCR impoundments. In addition, existing onsite roads would be used to transport CCR material to the future onsite CCR landfill. Therefore, there would be no impacts to sensitive noise receptors from the transportation of CCR removed from a portion of the Main Ash Impoundment and Stilling Impoundment to the future onsite CCR landfill.

Conclusion

The proposed action would result in additional impacts to resources evaluated in this whitepaper. However, the impacts would be minor and do not alter the overall impact finding and conclusions of the Final EIS.

List of Preparers

Name:	**W. Douglas White**
Education:	B.S., Forestry
Project Role:	TVA NEPA Coordinator, NEPA Compliance
Experience:	15 year of experience in water resource management and NEPA compliance.

Name:	**Bill Elzinga**
Education:	M.S. and B.S., Biology
Project Role:	Wood Project Manager
Experience:	34 years of experience managing and performing NEPA analyses for electric utility industry, and state/federal agencies; ESA compliance; CWA evaluations.

Name:	**Karen Boulware**
Education:	M.S., Resource Planning and B.S., Geology
Project Role:	NEPA Lead
Experience:	25 years of experience in NEPA.

Name:	**Natalie Kleikamp**
Education:	B.A., Biology
Project Role:	Environmental Scientist
Experience:	5 years of experience in NEPA.

This page intentionally left blank

References

Amec Foster Wheeler. 2017. Wetland Delineation-Stream Determination Report. Tennessee Valley Authority Cumberland Fossil Plant. Cumberland City, Stewart County, Tennessee. Prepared for Tennessee Valley Authority January 2017.

Homer, C.G., J.A. Dewitz, L. Yang, S. Jin, P. Danielson, G. Xian, J. Coulston, N.D. Herold, J.D. Wickham, and K. Megown, K. 2015. Completion of the 2011 National Land Cover Database for the conterminous United States-Representing a decade of land cover change information. Photogrammetric Engineering and Remote Sensing, v. 81, no. 5, p. 345-354. Retrieved from http://www.mrlc.gov/nlcd2011.php (accessed November 2016).

Tennessee Valley Authority. 2018. Cumberland Fossil Plant Coal Combustion Residuals Management Operations Environmental Impact Statement. Stewart County, Tennessee. Tennessee Valley Authority, Knoxville, Tennessee. April 2018.

U.S. Environmental Protection Agency. 2017. Energy and the Environment. Greenhouse Gases Equivalencies Calculator –Calculations and References. Retrieved from https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculatorcalculations-and-references (accessed on March 2017).

This page intentionally left blank

Coordination

TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

March 22, 2019

Mr. Clinton E. Jones
Tennessee Valley Authority
Biological and Cultural Compliance
400 West Summit Hill Drive
Knoxville, TN 37902

RE: TVA / Tennessee Valley Authority, Management of Coal Combustion Residuals from the Cumberland Fossil Plant, 40SW219, Stewart County, TN

Dear Mr. Jones:

In response to your request and in accordance with the signed memorandum of agreement (MOA), we have reviewed the revised area of potential effects (APE) submitted by you regarding the above-referenced undertaking.

Considering the information provided, we concur that no additional archaeological resources eligible for listing in the National Register of Historic Places will be affected by the revised APE. The entirety of the recorded boundary of site 40SW219 and all portions of the site that lie within the revised APE are included in the data recovery plan appended to the undertaking's MOA. No amendment to the MOA is necessary.

Questions or comments may be directed to Jennifer Barnett (615) 687-4780.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

From:	Hamrick, Elizabeth Burton
To:	robbie_sykes@fws.gov; ross_shaw@fws.gov
Subject:	Revision of Cumberland Fossil Plant EIS- Notification in accordance with TVA Programmatic Consultation for Routine Actions and Federally listed bats
Date:	Thursday, August 01, 2019 1:03:00 PM
Attachments:	Notification_CUF-CCR-EIS_PowerPlants_TVA-Bat-Strategy_2018-10-22.pdf Completed_CUF_EIS_REVISION_PwrPlants_TVA_Bat_Strategy_08.1.19.pdf

Good afternoon,

TVA previously submitted notification of this project in October 2018. The action has not yet taken place. Redesign of the proposed landfill to avoid wetlands has resulted in the addition of roughly 69.7 additional acres of tree removal to occur in winter. See attached for updated Bat Form and previous correspondence.

TVA's programmatic ESA consultation on routine actions and bats was completed in April 2018. For projects with NLAA or LAA determinations, TVA is providing project-specific notification to relevant Ecological Service Field Offices. This notification also will be stored in the project administrative record. For projects that utilize Take issued through the Biological Opinion, that Take will be tracked and reported in TVA's annual report to the USFWS by March of the following year.

The attached form is serving at TVA's mechanism to determine if project-specific activities are within the scope of TVA's bat programmatic consultation and if there is project-specific potential for impact to covered bat species, necessitating conservation measures, which are identified for the project on pages 5-8. The form also is serving as the primary means of notification to the USFWS and others as needed.

***Project*: Cumberland Fossil Plant Coal Combustion Residual Management EIS, White Paper, Stewart County, TN. Removal of 241 acres of potentially suitable summer roosting habitat from November 15 - March 31. Project is within 5 miles of a documented NLEB hibernacula.**

Thank you.

Liz Hamrick
Terrestrial Zoologist
Biological Compliance

400 W Summit Hill Dr. WT 11C-K
Knoxville, TN 37902

865-632-4011 (w)
ecburton@tva.gov

Project Review Form - TVA Bat Strategy *(06/2019)*

*This form should **only** be completed if project includes activities in Tables 2 or 3 (STEP 2 below). This form is not required if project activities are limited to Table 1 (STEP 2) or otherwise determined to have no effect on federally listed bats. If so, include the following statement in your environmental compliance document (e.g., add as a comment in the project CEC): "Project activities limited to Bat Strategy Table 1 or otherwise determined to have no effect on federally listed bats. Bat Strategy Project Review Form NOT required." This form is to assist in determining required conservation measures per TVA's ESA Section 7 programmatic consultation for routine actions and federally listed bats.*[1]

Project Name: Cumberland Fossil Plant Coal Combustion Residual Management EIS **Date:** 7/18/2019

Contact(s): Kevin Davenport, Doug White **CEC#:** **Project ID:** 418138

Project Location (City, County, State): Stewart County, TN

Project Description:

Amendment to the form issued on 4/10/2018 for the CUF CCR EIS. The proposed landfill location has shifted due to regulatory requests from the USACE and TDEC. The revised landfill footprint has increased from 174 to 242 acres. No construction activities have occurred and the limits of waste remain the same. Impacts are discussed in supplemental analysis.

SECTION 1: PROJECT INFORMATION - ACTION AND ACTIVITIES

STEP 1) Select TVA Action. If none are applicable, contact environmental support staff, Environmental Project Lead, or Terrestrial Zoologist to discuss whether form (i.e., application of Bat Programmatic Consultation) is appropriate for project:

- ☐ 1 Manage Biological Resources for Biodiversity and Public Use on TVA Reservoir Lands
- ☐ 2 Protect Cultural Resources on TVA-Retained Land
- ☐ 3 Manage Land Use and Disposal of TVA-Retained Land
- ☐ 4 Manage Permitting under Section 26a of the TVA Act
- ☑ 5 Operate, Maintain, Retire, Expand, Construct Power Plants
- ☐ 6 Maintain Existing Electric Transmission Assets
- ☐ 7 Convey Property associated with Electric Transmission
- ☐ 8 Expand or Construct New Electric Transmission Assets
- ☐ 9 Promote Economic Development
- ☐ 10 Promote Mid-Scale Solar Generation

STEP 2) Select all activities from Tables 1, 2, and 3 below that are included in the proposed project.

TABLE 1. Activities with no effect to bats. Conservation measures & completion of bat strategy project review form NOT required.

☐ 1. Loans and/or grant awards	☐ 8. Sale of TVA property	☐ 19. Site-specific enhancements in streams and reservoirs for aquatic animals
☐ 2. Purchase of property	☐ 9. Lease of TVA property	☐ 20. Nesting platforms
☐ 3. Purchase of equipment for industrial facilities	☐ 10. Deed modification associated with TVA rights or TVA property	☐ 41. Minor water-based structures (this does not include boat docks, boat slips or piers)
☐ 4. Environmental education	☐ 11. Abandonment of TVA retained rights	☐ 42. Internal renovation or internal expansion of an existing facility
☐ 5. Transfer of ROW easement and/or ROW equipment	☐ 12. Sufferance agreement	☐ 43. Replacement or removal of TL poles
☐ 6. Property and/or equipment transfer	☑ 13. Engineering or environmental planning or studies	☐ 44. Conductor and overhead ground wire installation and replacement
☐ 7. Easement on TVA property	☐ 14. Harbor limits delineation	☐ 49. Non-navigable houseboats

TABLE 2. Activities not likely to adversely affect bats with implementation of conservation measures. Conservation measures and completion of bat strategy project review form REQUIRED; review of bat records in proximity to project NOT required.

■ 18. Erosion control, minor	☐ 57. Water intake - non-industrial	☐ 79. Swimming pools/associated equipment
☐ 24. Tree planting	■ 58. Wastewater outfalls	■ 81. Water intakes – industrial
☐ 30. Dredging and excavation; recessed harbor areas	☐ 59. Marine fueling facilities	☐ 84. On-site/off-site public utility relocation or construction or extension
■ 39. Berm development	☐ 60. Commercial water-use facilities (e.g., marinas)	☐ 85. Playground equipment - land-based
☐ 40. Closed loop heat exchangers (heat pumps)	■ 61. Septic fields	■ 87. Aboveground storage tanks
☐ 45. Stream monitoring equipment - placement and use	☐ 66. Private, residential docks, piers, boathouses	■ 88. Underground storage tanks
☐ 46. Floating boat slips within approved harbor limits	■ 67. Siting of temporary office trailers	■ 90. Pond closure
■ 48. Laydown areas	☐ 68. Financing for speculative building construction	☐ 93. Standard License
☐ 50. Minor land based structures	☐ 72. Ferry landings/service operations	☐ 94. Special Use License
■ 51. Signage installation	☐ 74. Recreational vehicle campsites	☐ 95. Recreation License
☐ 53. Mooring buoys or posts	■ 75. Utility lines/light poles	☐ 96. Land Use Permit
■ 56. Culverts	■ 76. Concrete sidewalks	

Table 3: Activities that may adversely affect federally listed bats. Conservation measures AND completion of bat strategy project review form REQUIRED; review of bat records in proximity of project REQUIRED by OSAR/Heritage eMap reviewer or Terrestrial Zoologist.

☐ 15. Windshield and ground surveys for archaeological resources	■ 34. Mechanical vegetation removal, includes trees or tree branches > 3 inches in diameter	■ 69. Renovation of existing structures
■ 16. Drilling	■ 35. Stabilization (major erosion control)	☐ 70. Lock maintenance/ construction
■ 17. Mechanical vegetation removal, does not include trees or branches > 3" in diameter (in Table 3 due to potential for woody burn piles)	■ 36. Grading	☐ 71. Concrete dam modification
■ 21. Herbicide use	■ 37. Installation of soil improvements	☐ 73. Boat launching ramps
■ 22. Grubbing	■ 38. Drain installations for ponds	■ 77. Construction or expansion of land-based buildings
☐ 23. Prescribed burns	☐ 47. Conduit installation	☐ 78. Wastewater treatment plants
■ 25. Maintenance, improvement or construction of pedestrian or vehicular access corridors	☐ 52. Floating buildings	☐ 80. Barge fleeting areas
■ 26. Maintenance/construction of access control measures	■ 54. Maintenance of water control structures (dewatering units, spillways, levees)	■ 82. Construction of dam/weirs/ levees
☐ 27. Restoration of sites following human use and abuse	☐ 55. Solar panels	■ 83. Submarine pipeline, directional boring operations
■ 28. Removal of debris (e.g., dump sites, hazardous material, unauthorized structures)	☐ 62. Blasting	■ 86. Landfill construction
■ 29. Acquisition and use of fill/borrow material	■ 63. Foundation installation for transmission support	■ 89. Structure demolition
■ 31. Stream/wetland crossings	☐ 64. Installation of steel structure, overhead bus, equipment, etc.	■ 91. Bridge replacement
☐ 32. Clean-up following storm damage	☐ 65. Pole and/or tower installation and/or extension	☐ 92. Return of archaeological remains to former burial sites
☐ 33. Removal of hazardous trees/tree branches		

STEP 3) Project includes one or more activities in Table 3? ◉ **YES (Go to Step 4)** ○ **NO (Go to Step 13)**

STEP 4) Answer questions *a* through *e* below (applies to projects with activities from Table 3 ONLY)

a) Will project involve continuous noise (i.e., ≥ 24 hrs) that is greater than 75 decibels measured on the A scale (e.g., loud machinery)?

- ○ **NO** (NV2 does not apply)
- ◉ **YES** (NV2 applies, subject to records review)

b) Will project involve entry into/survey of cave?

- ◉ **NO** (HP1/HP2 do not apply)
- ○ **YES** (HP1/HP2 applies, subject to review of bat records)

c) If conducting **prescribed burning** (**activity 23)**, estimated acreage**:** ☐ and timeframe(s) below; ☒ **N/A**

STATE	SWARMING	WINTER	NON-WINTER	PUP
GA, KY, TN	☐ Oct 15 - Nov 14	☐ Nov 15 - Mar 31	☐ Apr 1 - May 31, Aug 1- Oct 14	☐ Jun 1 - Jul 31
VA	☐ Sep 16 - Nov 15	☐ Nov 16 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 15	☐ Jun 1 - Jul 31
AL	☐ Oct 15 - Nov 14	☐ Nov 15 - Mar 15	☐ Mar 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
NC	☐ Oct 15 - Nov 14	☐ Nov 15 - Apr 15	☐ Apr 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
MS	☐ Oct 1 - Nov 14	☐ Nov 15 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 30	☐ Jun 1 - Jul 31

d) Will the project involve vegetation piling/burning?

- ○ **NO** (SSPC4/ SHF7/SHF8 do not apply)
- ○ **YES** (SSPC4/SHF7/SHF8 applies, subject to review of bat records)

e) If **tree removal (activity 33 or 34)**, estimated amount: 241 ◉**ac** ○**trees** ○**N/A**

STATE	SWARMING	WINTER	NON-WINTER	PUP
GA, KY, TN	☐ Oct 15 - Nov 14	☒ Nov 15 - Mar 31	☐ Apr 1 - May 31, Aug 1- Oct 14	☐ Jun 1 - Jul 31
VA	☐ Sep 16 - Nov 15	☐ Nov 16 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 15	☐ Jun 1 - Jul 31
AL	☐ Oct 15 - Nov 14	☐ Nov 15 - Mar 15	☐ Mar 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
NC	☐ Oct 15 - Nov 14	☐ Nov 15 - Apr 15	☐ Apr 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
MS	☐ Oct 1 - Nov 14	☐ Nov 15 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 30	☐ Jun 1 - Jul 31

If warranted, does project have flexibility for bat surveys (May 15-Aug 15): ◉ **MAYBE** ○ **YES** ○ **NO**

**** For **PROJECT LEADS** whose projects will be reviewed by a Heritage Reviewer (Natural Resources Organization only), **STOP HERE**. Click File/ Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date", and submit with project information. Otherwise continue to Step 5. ****

SECTION 2: REVIEW OF BAT RECORDS (applies to projects with activities from Table 3 ONLY)

STEP 5) **Review of bat/cave records conducted by Heritage/OSAR reviewer?**

◉ **YES** ○ **NO** (Go to Step 13)

Info below completed by:				
☐ **Heritage Reviewer**	(name)		Date	
☐ **OSAR Reviewer**	(name)		Date	
☐ **Terrestrial Zoologist**	(name)	Elizabeth Hamrick	Date	Jul 30, 2019

Gray bat records: ☐ None ☐ Within 3 miles* ☐ Within a cave* ☒ Within the County

Indiana bat records: ☐ None ☒ Within 10 miles* ☐ Within a cave* ☐ Capture/roost tree* ☐ Within the County

Northern long-eared bat records: ☐ None ☒ Within 5 miles* ☐ Within a cave* ☐ Capture/roost tree* ☐ Within the County

Virginia big-eared bat records: ☒ None ☐ Within 6 miles* ☐ Within the County

Caves: ☐ None within 3 mi ☒ Within 3 miles but > 0.5 mi ☐ Within 0.5 mi but > 0.25 mi* ☐ Within 0.25 mi but > 200 feet* ☐ Within 200 feet*

Bat Habitat Inspection Sheet completed? ◉ **NO** ○ **YES**

Amount of SUITABLE habitat to be removed/burned (may differ from STEP 4e): 241 **(**◉**ac** ○**trees)*** ○**N/A**

STEP 6) Provide any additional notes resulting from Heritage Reviewer records review in Notes box below then . . . . . Go to Step 13

Notes from Bat Records Review (e.g., historic record; bats not on landscape during action; DOT bridge survey with negative results):

STEPS 7-12 To be Completed by Terrestrial Zoologist (if warranted):

STEP 7) Project will involve:

- ☐ Removal of suitable trees within 0.5 mile of P1-P2 Indiana bat hibernacula or 0.25 mile of P3-P4 Indiana bat hibernacula or any NLEB hibernacula.
- ☒ Removal of suitable trees within 10 miles of documented Indiana bat (or within 5 miles of NLEB) hibernacula.
- ☐ Removal of suitable trees > 10 miles from documented Indiana bat (> 5 miles from NLEB) hibernacula.
- ☐ Removal of trees within 150 feet of a documented Indiana bat or northern long-eared bat maternity roost tree.
- ☐ Removal of suitable trees within 2.5 miles of Indiana bat roost trees or within 5 miles of Indiana bat capture sites.
- ☐ Removal of suitable trees > 2.5 miles from Indiana bat roost trees or > 5 miles from Indiana bat capture sites.
- ☐ Removal of documented Indiana bat or NLEB roost tree, if still suitable.
- ☐ N/A

STEP 8) Presence/absence surveys were/will be conducted: ○ **YES** ◉ **NO** ○ **TBD**

STEP 9) Presence/absence survey results, on _____ ○ **NEGATIVE** ○ **POSITIVE** ◉ **N/A**

STEP 10) Project ◉ **WILL** ○ **WILL NOT** require use of Incidental Take in the amount of 241 ◉ **acres or** ○ **trees** proposed to be used during the ■ **WINTER** ○ **VOLANT SEASON** ○ **NON-VOLANT SEASON** ○ **N/A**

STEP 11) Available Incidental Take (prior to accounting for this project) as of Jul 30, 2019

TVA Action	Total 20-year	Winter	Volant Season	Non-Volant Season
5 Operate, Maintain, Retire, Expand, Construct Power Plants	1,947.7	1,625.75	249.47	72.48

STEP 12) Amount contributed to TVA's Bat Conservation Fund upon activity completion: $ 0 OR ○ **N/A**

TERRESTRIAL ZOOLOGISTS, after completing SECTION 2, review Table 4, modify as needed, and then complete section for Terrestrial Zoologists at end of form.

SECTION 3: REQUIRED CONSERVATION MEASURES

STEP 13) Review Conservation Measures in Table 4 and ensure those selected are relevant to the project. If not, manually override and uncheck irrelevant measures, and explain why in ADDITIONAL NOTES below Table 4.

Did review of Table 4 result in ANY remaining Conservation Measures in **RED**?

- ○ **NO** (Go to Step 14)
- ◉ **YES** (STOP HERE; Submit for Terrestrial Zoology Review. Click File/Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date", and submit with project information).

Table 4. TVA's ESA Section 7 Programmatic Bat Consultation Required Conservation Measures

The Conservation Measures in Table 4 are automatically selected based on your choices in Tables 2 and 3 but can be manually overridden, if necessary. To Manually override, press the button and enter your name.

Manual Override

Name: Elizabeth Hamrick

Check if Applies to Project	Activities Subject To Conservation Measure	Conservation Measure Description
■	15, 16, 17, 18, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 45, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96	**NV1** - Noise will be short-term, transient, and not significantly different from urban interface or natural events (i.e., thunderstorms) that bats are frequently exposed to when present on the landscape.
■	33, 34	**TR1*** - Removal of potentially suitable summer roosting habitat during time of potential occupancy has been quantified and minimized programmatically. TVA will track and document alignment of activities that include tree removal (i.e., hazard trees, mechanical vegetation removal) with the programmatic quantitative cumulative estimate of seasonal removal of potential summer roost trees for Indiana bat and northern long-eared bat. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR3*** - Removal of suitable summer roosting habitat within documented bat habitat (i.e., within 10 miles of documented Indiana bat hibernacula, within 5 miles of documented northern long-eared bat hibernacula, within 2.5 miles of documented Indiana bat summer roost trees, within 5 miles of Indiana bat capture sites, within 1 mile of documented northern long-eared bat summer roost trees, within 3 miles of northern long-eared bat capture sites) will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR4*** - Removal of suitable summer roosting habitat within potential habitat for Indiana bat or northern long-eared bat will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR9** - If removal of suitable summer roosting habitat occurs when bats are present on the landscape, a funding contribution (based on amount of habitat removed) towards future conservation and recovery efforts for federally listed bats would be carried out. Project can consider seasonal bat presence/absence surveys (mist netting or emergence counts) that allow for positive detections without resulting in increased constraints in cost and project schedule. This will enable TVA to contribute to increased knowledge of bat presence on the landscape while carrying out TVA's broad mission and responsibilities.

■	69, 77, 89, 91	**AR1** - Projects that involve structural modification or demolition of buildings, bridges, and potentially suitable box culverts, will require assessment to determine if structure has characteristics that make it a potentially suitable unconventional bat roost. If so a survey to determine if bats may be present will be conducted. Structural assessment will include: ○ Visual check that includes an exhaustive internal/external inspection of building to look for evidence of bats (e.g., bat droppings, roost entrance/exit holes); this can be done at any time of year, preferably when bats are active. ○ Where accessible and health and safety considerations allow, a survey of roof space for evidence of bats (e.g., droppings, scratch marks, staining, sightings), noting relevant characteristics of internal features that provide potential access points and roosting opportunities. Suitable characteristic may include: gaps between tiles and roof lining, access points via eaves, gaps between timbers or around mortise joints, gaps around top and gable end walls, gaps within roof walling or around tops of chimney breasts, and clean ridge beams. ○ Features with high-medium likelihood of harboring bats but cannot be checked visually include soffits, cavity walls, space between roof covering and roof lining. ○ Applies to box culverts that are at least 5 feet (1.5 meters) tall and with one or more of the following characteristics. Suitable culverts for bat day roosts have the following characteristics: • Location in relatively warm areas • Between 5-10 feet (1.5-3 meters) tall and 300 ft (100 m) or more long • Openings protected from high winds • Not susceptible to flooding • Inner areas relatively dark with roughened walls or ceilings • Crevices, imperfections, or swallow nests ○ Bridge survey protocols will be adapted from the Programmatic Biological Opinion for the Federal Highway Administration (Appendix D of USFWS 2016c, which includes a Bridge Structure Assessment Guidance and a Bridge Structure Assessment Form). ○ Bat surveys usually are NOT needed in the following circumstances: • Domestic garages /sheds with no enclosed roof space (with no ceiling) • Modern flat-roofed buildings • Metal framed and roofed buildings • Buildings where roof space is regularly used (e.g., attic space converted to living space, living space open to rafters) or where all roof space is lit from skylights or windows. Large/tall roof spaces may be dark enough at apex to provide roost space
■	69, 77, 89, 91	**AR2** - Additional bat P/A surveys (e.g., emergence counts) conducted if warranted (i.e., when AR1 indicates that bats may be present).
■	16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 52, 53, 54, 55, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 70, 71, 73, 76, 77, 78, 80, 81, 82, 83, 86, 87, 88, 89, 90	**SSPC2** - Operations involving chemical/fuel storage or resupply and vehicle servicing will be handled outside of riparian zones (streamside management zones) in a manner to prevent these items from reaching a watercourse. Earthen berms or other effective means are installed to protect stream channel from direct surface runoff. Servicing will be done with care to avoid leakage, spillage, and subsequent stream, wetland, or ground water contamination. Oil waste, filters, other litter will be collected and disposed of properly. Equipment servicing and chemical/fuel storage will be limited to locations greater than 300-ft from sinkholes, fissures, or areas draining into known sinkholes, fissures, or other karst features.

■	16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 64, 65, 66, 67, 69, 70, 71, 73, 76, 77, 80, 81, 82, 83, 84, 86, 87, 88, 89, 90, 91	**SSPC3** (**Power Plants only**) - Power Plant actions and activities will continue to implement standard environmental practices. These include: o Best Management Practices (BMPs) in accordance with regulations: • Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy • Maintain every site with well-equipped spill response kits, included in some heavy equipment • Conduct Quarterly Internal Environmental Field Assessments at each sight • Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant. • When refueling, vehicle is positioned as close to pump as possible to prevent drips, and overfilling of tank. Hose and nozzle are held in a vertical position to prevent spillage o Construction Site Protection Methods • Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites • Storm drain protection device • Check dam to help slow down silt flow • Silt fencing to reduce sediment movement o Storm Water Pollution Prevention (SWPP) Pollution Control Strategies • Minimize storm water contact with disturbed soils at construction site • Protect disturbed soil areas from erosion • Minimize sediment in storm water before discharge • Prevent storm water contact with other pollutants • Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac) o Every site has a Spill Prevention and Control Countermeasures (SPCC) Plan and requires training. Several hundred pieces of equipment often managed at the same time on power generation properties. Goal is to • Minimize fuel and chemical use Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy • Maintain every site with well-equipped spill response kits, included in some heavy equipment • Conduct Quarterly Internal Environmental Field Assessments at each sight • Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant. • When refueling, vehicle is positioned as close to pump as possible to prevent drips, and overfilling of tank. Hose and nozzle are held in a vertical position to prevent spillage o Construction Site Protection Methods • Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites • Storm drain protection device • Check dam to help slow down silt flow • Silt fencing to reduce sediment movement o Storm Water Pollution Prevention (SWPP) Pollution Control Strategies • Minimize storm water contact with disturbed soils at construction site • Protect disturbed soil areas from erosion • Minimize sediment in storm water before discharge • Prevent storm water contact with other pollutants • Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac) o Every site has a Spill Prevention and Control Countermeasures (SPCC) Plan and requires training. Several hundred pieces of equipment often managed at the same time on power generation properties. Goal is to minimize fuel and chemical use
■	21, 54	**SSPC6** - Herbicide use will be avoided **within 200 ft of portals associated with caves, cave collapse areas, mines and sinkholes** are capable of supporting cave-associated species. Herbicides are not applied to surface water or wetlands unless specifically labeled for aquatic use. Filter and buffer strips will conform at least to federal and state regulations and label requirements.
■	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	**L1** - Direct temporary lighting away from suitable habitat during the active season.

▣	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	**L2** - Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution when installing new or replacing existing permanent lights by angling lights downward or via other light minimization measures (e.g., dimming, directed lighting, motion-sensitive lighting).

[1]Bats addressed in consultation (02/2018), which includes gray bat (listed in 1976), Indiana bat (listed in 1967), northern long-eared bat (listed in 2015), and Virginia big-eared bat (listed in 1979).

Hide All Unchecked Conservation Measures

- (•) HIDE
- ( ) UNHIDE

Hide Table 4 Columns 1 and 2 to Facilitate Clean Copy and Paste

- ( ) HIDE
- ( ) UNHIDE

NOTES (additional info from field review, explanation of no impact or removal of conservation measures).

STEP 14) Save completed form (Click File/Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date") in project environmental documentation (e.g. CEC, Appendix to EA) AND send a copy of form to batstrategy@tva.gov
Submission of this form indicates that Project Lead/Applicant:

[ ] (name) is (or will be made) aware of the requirements below.

- Implementation of conservation measures identified in Table 4 is required to comply with TVA's Endangered Species Act programmatic bat consultation.
- TVA may conduct post-project monitoring to determine if conservation measures were effective in minimizing or avoiding impacts to federally listed bats.

For Use by Terrestrial Zoologist Only

☒ Terrestrial Zoologist acknowledges that Project Lead/Contact (name) Greg Black has been informed of any relevant conservation measures and/or provided a copy of this form.

☒ For projects that require use of Take and/or contribution to TVA's Bat Conservation Fund, Terrestrial Zoologist acknowledges that Project Lead/Contact has been informed that project will result in use of Incidental Take 241 (•) ac ( ) trees and that use of Take will require $ 0 contribution to TVA's Conservation Fund upon completion of activity (amount entered should be $0 if cleared in winter).

For Terrestrial Zoology Use Only. Finalize and Print to Noneditable PDF.