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# CONTINUED OPERATION OF THE CUMBERLAND FOSSIL PLANT FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

## STEWART COUNTY, TENNESSEE

***SEIS-455-00-000-1760704971***

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# SUMMARY

## Introduction

The Tennessee Valley Authority (TVA) prepared this Supplemental Environmental Impact Statement (SEIS) to assess the environmental impacts associated with the proposed alternative to continue operation of Cumberland Fossil Plant's (CUF) two coal-fired units past 2028 along with construction and operation of the Cumberland Gas Plant (CUG). The proposed alternative allows for use of an existing asset to ensure reliable service to TVA customers at the lowest feasible cost to meet growing demand.

Built between 1968 and 1973, CUF is situated on a 2,388-acre reservation on the Cumberland River at its confluence with Wells Creek. The Cumberland Reservation is located in Cumberland City, Stewart County, Tennessee, approximately 22 miles southwest of Clarksville. The two-unit, coal-fired, steam-generating plant has a summer net generating capacity of 2,470 megawatts (MW). The CUG is being constructed within the 2,388-acre reservation as analyzed in the 2022 Cumberland Fossil Plant Retirement Final Environmental Impact Statement (the FEIS).

As detailed in TVA's January 2023 Record of Decision (ROD), TVA's preferred alternative, Alternative A, involves the retirement of CUF, decommissioning and demolition of CUF's coal-fired units, construction and operation of a combined cycle (CC) gas plant (CUG) on the Cumberland Reservation and construction of approximately 32 miles of a new 30-inch-diameter natural gas pipeline lateral and associated gas system infrastructure.

Since the ROD was issued, TVA has proceeded with construction of CUG, which is not complete, and the gas units are not in operation. The coal units currently continue to operate and are not retired. The FEIS considered the continued operation of the coal units (as the No Action Alternative) and the construction and operation of a gas plant (as Alternative A). The FEIS did not analyze the continued operation of CUF together with operation of CUG.

## Purpose and Need for Action

After a decade of flat electricity demand, the TVA region is experiencing rapidly increasing demand for electricity beyond the growth expected when the Cumberland retirement and replacement decision was made. Accelerated electricity demand is being driven by growth in data center use, population, and employment, and increasing electricity demand. In addition to load growth, delays in planned resource additions have increased pressure to meet demand with all available assets. TVA requires firm, dispatchable power to reliably meet system demands and planning reserve margin targets. Despite a variety of efforts and projects across the TVA Power Service Area, more generating capacity is needed to meet demand, prompting the consideration of continuing coal operations.

The purpose of the proposed alternative is to meet the increasing demand for electricity in alignment with TVA's 2019 Integrated Resource Plan (IRP). The 2019 IRP considers customer priorities around power cost and reliability across different futures. The document identified a set of near-term actions, including performing an evaluation of planned retirement dates for aging fossil units to inform long-term planning. This near-term action was met by the 2021 Aging Coal Fleet Evaluation, which recommended coal fleet planned retirement dates to reduce economic, reliability, and environmental risks. However, since this study was completed in 2021, the Tennessee Valley region has experienced high population growth and industrial growth which, in TVA's experience and expertise, has led to increased and increasing electricity demand which will in turn require TVA to increase its generating capacity. Based on these reasons, TVA is considering continued operations of CUF to maintain a low-cost, reliable, and resilient electric system and comply with the TVA Act.

This SEIS tiers from the 2019 IRP Environmental Impact Statement (EIS) and supplements the FEIS, building on its findings with site-specific analyses for the generating resources under consideration.

## Alternatives

In the FEIS, four alternatives were evaluated. The No Action Alternative was to continue operating CUF with no additional or replacement generation. All action alternatives considered the decommissioning and demolition of CUF with some form of replacement generation. Alternative A, the FEIS preferred alternative, considered construction and operation of CUG, construction of a 500-kilovolt (kV) switchyard and gas compression station and construction of approximately 32 miles of a new single, 30-inch-diameter natural gas pipeline lateral. Alternative B considered construction and operation of a 4-unit combustion turbine (CT) plant on TVA's Johnsonville reservation in New Johnsonville, Humphreys County, Tennessee, and a 3-unit CT plant on TVA's Gleason Reservation near Dresden in Weakley County, Tennessee. Alternative C considered the construction and operation of 3,000 MW of solar photovoltaic generating facilities and 1,700 MW of battery energy storage facilities across multiple locations in middle Tennessee.

The FEIS considered the continued operation of the coal units (as the No Action Alternative) and the construction and operation of CUG (as Alternative A) but did not analyze the continued operation of CUF together with operation of CUG. A new alternative, Alternative D, represents the actions being considered in this SEIS: the construction and operation of CUG (described and analyzed in Alternative A) along with the continued operation of CUF. Deconstruction and decommissioning of CUF was also considered under Alternative A, but would not occur under Alternative D.

This SEIS tiers from the FEIS and concentrates on the issues pertinent to Alternative D. It evaluates continued operation of the CUF coal-fired units in conjunction with the previously characterized and analyzed CUG. The following activities would support the continued operation of CUF under Alternative D at historic levels of reliability:

### *CUF Powerhouse Interior Updates*

Repairs and maintenance to maintain historic levels of operation for existing equipment located within the CUF Powerhouse include:

- Turbine maintenance and repair
- Feedwater heater replacement
- Repairs of scrubber absorber modules
- Air preheater basket replacement
- Distributed control system upgrades
- Continuous emission monitoring system upgrades
- Condenser circulating water pump excitation system replacement
- Other maintenance and repairs, as needed

### *Facility Effluent Limitation Guidelines and Requirements*

As explained in Chapter 2 of the FEIS, construction would be required at CUF to comply with the U.S. Environmental Protection Agency (USEPA)'s Steam Electric Effluent Limitations Guidelines (ELGs). Continued operations of CUF under Alternative D would require construction of a new high-recycle recirculation system for bottom ash transport water (BATW). BATW treatment construction would include installation of new equipment, integration with existing systems, and repairs to existing infrastructure. This equipment would be an addition to the existing bottom ash dewatering (BADW) infrastructure, which would continue to operate. The addition of a BATW recirculation system was previously analyzed in TVA's 2018 Cumberland Fossil Plant Coal Combustion Residuals Management Operations EIS. Operational changes may also be implemented for the existing flue gas desulfurization (FGD) water treatment and management system. These activities would occur within the existing Cumberland Reservation in a previously developed area adjacent to the existing BADW and FGD water treatment facilities. The USEPA has communicated that it is currently reevaluating the 2024 ELG rule. Operation beyond 2034 may require additional controls and additional National Environmental Policy Act (NEPA) review, as appropriate.

### *Transmission and Electrical System Components*

The continued operation of the CUF would require new transmission line corridors on the Cumberland Reservation and possible modifications within an existing, adjacent off-site transmission line right-of-way (ROW). New ROW acquisition would not be required under the proposed alternative. New transmission line construction would include up to approximately 0.5 miles of new 500-kV line to tie the Cumberland–Johnsonville 500-kV and Cumberland–Marshall 500-kV lines together (including approximately 0.25 miles within an existing off-site ROW) or an alternative jumper configuration outside of the Cumberland Fossil Plant Switchyard to tie the Cumberland-Johnsonville 500-kV and Cumberland-Marshall 500-kV lines together. Additionally, two alternative options are being considered to create a new loop connecting the Cumberland–Johnsonville 500-kV line to the Cumberland CC switchyard. Both options include constructing an approximately 1.5-mile new 500-kV loop from a point on the Cumberland–Johnsonville

500-kV line to the Cumberland CC switchyard. All new on-site transmission line corridors would have a permanent width of approximately 100 to 500 feet.

Additional on-site transmission upgrades could include breaker reconfigurations, relaying/protection changes, construction of new breaker bays, and relocation of the existing 500-kV loop to a new breaker bay.

Off-site transmission upgrades may be required, such as buswork, breaker replacements, associated equipment for communication and protection purposes, reconductoring of existing transmission lines, and switch replacements. These activities, if necessary, would occur within existing TVA facilities and/or ROWs and would be addressed as necessary under separate environmental reviews.

***Water Intake Upgrades***

Continued operation of CUF would require a revised approach to achieve compliance with Section 316(b) of the Clean Water Act. This would require the evaluation and selection of one of the following compliance options to reduce impacts to fish and other aquatic life from the cooling water intake structure. The options currently under consideration for CUF include those identified at 40 Code of Federal Regulations (CFR) 125.94(c)(3), (5), (6), and (7). These options would be evaluated based on their technical feasibility, alignment with operational requirements, risk tolerance, and compatibility with permitting and implementation schedules. The water intake upgrade options include implementing: 1) a through-screen velocity of 0.5 feet per second, 2) modified traveling screens, 3) a combined system of technologies, operational measures, and management practices representing best technology available, or 4) impingement mortality performance standards.

***Coal Combustion Residuals Management***

Continued operation of CUF would result in production of additional coal combustion residuals (CCR). This material would either be stored on-site in the CUF permitted landfill or processed in a beneficial reuse facility, in accordance with current CCR operations. TVA would implement specific actions related to wastewater treatment and the management and disposal of CCR at CUF. CCR management projects have been previously analyzed in NEPA documents listed in Section 1.3. Those CCR actions have been completed, are underway, or would start within the next five years. CCR management actions would occur if CUF continues to operate (Alternative D) or is retired (all action alternatives).

Alternatively, a new beneficiation processing facility would be constructed at CUF to process some of this material. Such a facility would be addressed under the Construction and Operation of Beneficiation Processing Facilities process that was evaluated in TVA's 2025 Programmatic Environmental Assessment.

## Tiered Analysis

The scope of analysis for this SEIS includes activities proposed under Alternative D that were not previously analyzed in the FEIS, including those supporting continued operation of CUF. Information presented in this SEIS comes from the FEIS and updates

the affected environment and related impact analyses associated with SEIS Alternative D.

TVA evaluated whether there was any new information relevant to the assessment of potential impacts of continued operation of CUF that differ from those activities considered in the FEIS. Through this process, TVA determined that several resource sections are fully bounded by the analyses, control measures, and commitments included in the FEIS. Either the information and the related impact analyses for the resource are unchanged or the impacts of any new information were effectively the same as that described for the FEIS.

## Summary of Environmental Impacts Associated with the Proposed Alternative

The anticipated environmental impacts of Alternative D are described in detail in the SEIS and summarized in Table 2-1. Table 2-1 also includes a summary of effects from the FEIS selected alternative, Alternative A, and the No Action Alternative.

Minor impacts on geology, soils, and prime farmland; natural areas, parks, and recreation; land use; noise; and safety under Alternative D would not be notably different than those associated with activities under the FEIS alternatives and discussion of those resources are incorporated by reference in the SEIS.

Activities to support continued operation of CUF under Alternative D would result in minor temporary effects that were determined to require additional analysis in the SEIS for the following resources: floodplains, groundwater, surface water, water quality, wetlands, air quality, wildlife (including protected bat and bird species), aquatic life (including protected fish species), utilities, and visual resources. However, impacts from these activities on these resources would be temporary and minor. In addition, Alternative D would result in moderate temporary impacts to transportation. A temporary minor benefit to socioeconomics during construction activities would result, consistent with the impact findings for Alternative A in the FEIS.

Alternative D would result in minor adverse operational impacts to groundwater, wetlands, visual resources, wildlife, protected bird species, and waste generation. Nominal increases in effluent flows would occur under Alternative D compared to the FEIS No Action Alternative. The operation of CUF and CUG would adhere to NPDES requirements and other relevant regulations; effects from continued operation of CUF, in conjunction with CUG, to groundwater, surface water, water quality and wetlands would be minor. Long-term benefits would occur for utilities from added generation capacity. Water intake improvements would result in long-term benefits to aquatic life, relative to existing conditions, by reducing the risk of impingement and entrainment.

Tree removal during transmission line corridor clearing for Alternative D would permanently convert deciduous forest cover to herbaceous cover, which could affect summer roosting and foraging habitat for bats. Effects to bats would be minimized by use of specific conservation measures established through TVA’s programmatic consultation with the U.S. Fish and Wildlife Service (USFWS) for protected bats.

Conservation measures relevant to the proposed alternative are listed in the bat strategy form (Appendix C of the SEIS). No more than 56.1 acres of forested habitat would be removed within the proposed and existing transmission line corridors. With implementation of identified conservation measures and under the terms of TVA's programmatic consultation, the proposed alternative is unlikely to adversely affect Indiana bat (*Myotis sodalis*) or northern long-eared bat (*Myotis septentrionalis*).

With the continued operation of CUF in conjunction with the operation of CUG under Alternative D, the net decrease of regulated air pollutants considered in the FEIS would not occur. Prevention of Significant Deterioration (PSD) review for CUG was not required due to this net decrease. TVA is currently in the early stages of preparing a PSD permit application, tentatively targeted for submittal as early as May 2026.

Through completion and submittal of the PSD permit application, TVA would demonstrate compliance with all required elements of the PSD process, including protection of ambient air quality and adherence to National Ambient Air Quality Standards (NAAQS) primary standards. As required by the Clean Air Act (40 CFR part 50), NAAQS are developed to protect human health, including the health of sensitive or at-risk groups, with an adequate margin of safety. Continued operation under Alternative D would not result in exceedances of primary NAAQS standards, because TVA would comply with all applicable federal and state regulations stipulated in current and future permits, thereby ensuring protection of public health. Compliance with permit requirements would be protective of ambient air quality and would ensure the proposed project does not cause or contribute to NAAQS violations. Alternative D would negate the greenhouse gas (GHG) emission reduction from CUF retirement. Continued operation of CUF, in conjunction with the operation of CUG under Alternative D, represents an increase in future estimated GHG emissions, particularly in the context of its contribution to TVA's systemwide GHG emissions and Tennessee's GHG emissions.

In a letter dated November 11, 2025, the Tennessee State Historic Preservation Office found that the proposed undertaking adversely affects the Henry Hollister House as a result of the transmission line corridor (either Loop Option 1 or 2). However, mitigation measures agreed upon in the existing Memorandum of Agreement (MOA) are sufficient (SEIS Appendix B) and no additional mitigation would be required for the new adverse effects. Should TVA select this alternative, the description in the existing MOA would be modified to include the new transmission line corridors.

## Mitigation Measures

Means to avoid and minimize environmental harm were identified in the January 2023 ROD for the FEIS and are incorporated herein by reference. TVA may apply additional project-specific best management practices (BMPs) as appropriate on a site-specific or technology-specific basis to enable efficient maintenance of construction projects and further reduce potential impacts on environmental resources. In addition, TVA would:

- Implement BMPs described in Section 2.3 of the FEIS and updated in Section 2.2 of the SEIS including those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority*.

- Construct the new transmission lines in alignment with the 1980 TVA Subclass Review Criteria for Transmission Line Location in Floodplains (TVA 1980).
- Construct new access roads or modifications to existing access roads within 100-year floodplains in such a manner that upstream flood elevations would not be increased by more than 1.0 foot.
- Conduct mandatory additional floodplain review if modified traveling screens, a system of technologies, or impingement mortality performance standard is selected as the Clean Water Act Section 316(b) compliance option.
- Conduct mandatory additional floodplain review for all facilities, activities, or structures, including CCR, proposed below elevation 380.6 on the Cumberland Reservation.
- Address unavoidable impacts to potentially suitable summer roosting habitat for the northern long-eared and Indiana bat using TVA's programmatic consultation on routine actions with potential to affect federally listed bats that was completed in April 2018 and updated May 2023 and November 2024 with the USFWS in accordance with Section 7(a)(2) of the Endangered Species Act. For those activities with the potential to affect bats, TVA committed to implementing conservation measures established through the programmatic consultation. The conservation measures required for this project are identified in the TVA Bat Strategy Project Screening Form (Appendix C), and they would be implemented as part of the proposed alternative. Conservation measures implemented through TVA's bat programmatic consultation would also minimize unavoidable impacts to summer roosting habitat for the proposed endangered tricolored bat (*Perimyotis subflavus*).

## TVA's Preferred Alternative

TVA's preferred alternative is Alternative D – Continued Operation of the CUF Plant in conjunction with the Construction and Operation of a CC Gas Plant on the Cumberland Reservation. Alternative D meets the purpose and need of the project to address the increasing demand for electricity in alignment with the 2019 IRP.

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# Symbols, Acronyms, and Abbreviations

| Acronym | Description |
|---|---|
| $\mu g/m^3$ | Micrograms per cubic meter |
| AADT | Average Annual Daily Traffic |
| ACS | American Community Survey |
| ARAP | Aquatic Resource Alteration Permit |
| BA | Biological Assessment |
| BACT | Best Available Control Technology |
| BADW | Bottom Ash Dewatering |
| BATW | Bottom Ash Transport Water |
| BMP | Best Management Practice |
| BO | Biological Opinion |
| BPF | Beneficiation Processing Facility |
| BTA | Best Technology Available |
| CAA | Clean Air Act |
| CBSA | Core Based Statistical Area |
| CC | Combined Cycle |
| CCR | Coal Combustion Residuals |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CGP | Construction General Permit |
| $CO_2$ | Carbon Dioxide |
| $CO_2e$ | Carbon Dioxide Equivalent |
| CT | Combustion Turbine |
| CUF | Cumberland Fossil Plant |
| CUG | Cumberland Gas Plant |
| CWA | Clean Water Act |
| CWIS | Cooling Water Intake Structure |
| DSM | Digital Surface Models |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |

| Acronym | Description |
|---|---|
| ELG | Effluent Limit Guidelines |
| EO | Executive Order |
| ESA | Endangered Species Act |
| FEIS | Final Environmental Impact Statement |
| FGD | Flue Gas Desulfurization |
| GHG | Greenhouse Gas |
| GIS | Global Information System |
| GWP | Global Warming Potential |
| HAP | Hazardous Air Pollutant |
| IDL | Industrial Landfill |
| IPaC | Information for Planning and Consultation |
| IRP | Integrated Resource Plan |
| IWG | Interagency Working Group |
| kV | Kilovolt |
| LCA | Life Cycle Analysis |
| LF | Linear Foot |
| LiDAR | Light-Detection-and-Ranging |
| MMBtu | Million British Thermal Units |
| MOA | Memorandum of Agreement |
| MW | Megawatt |
| $N_2O$ | Nitrous Oxide |
| NAAQS | National Ambient Air Quality Standards |
| Nashville CBSA | Nashville-Davidson-Murfreesboro-Franklin, Tennessee, Core Based Statistical Area |
| NEPA | National Environmental Policy Act |
| NOPP | Notice of Planned Participation |
| $NO_x$ | Oxides of Nitrogen |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| NSPS | New Source Performance Standard |
| PCCC | Permanent Cessation of Coal Combustion |
| PDC | Power Distribution Center |

| Acronym | Description |
|---|---|
| PEA | Programmatic Environmental Assessment |
| PM | Particulate Matter |
| PSA | Power Service Area |
| PSD | Prevention of Significant Deterioration |
| PVC | Polyvinyl Chloride |
| RFFA | Reasonably Foreseeable Future Actions |
| ROD | Record of Decision |
| ROW | Right-of-Way |
| SEIS | Supplemental Environmental Impact Statement |
| SHPO | State Historic Preservation Office |
| SME | Subject Matter Expert |
| $SO_2$ | Sulfur Dioxide |
| SPCC | Spill Prevention Counter Measure and Control |
| SWPPP | Stormwater Pollution Prevention Plan |
| TDEC | Tennessee Department of Environment and Conservation |
| TVA | Tennessee Valley Authority |
| USC | U.S. Code |
| USCB | U.S. Census Bureau |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| ZLD | Zero Liquid Discharge |

# CHAPTER 1 – PURPOSE AND NEED FOR ACTION

In December 2022, the Tennessee Valley Authority (TVA) issued an environmental impact statement (EIS) evaluating the environmental effects of the retirement and demolition of Cumberland Fossil Plant's (CUF) two coal-fired units by the end of 2028 and the construction and operation of partial replacement generation (TVA 2022a). In the January 2023 Record of Decision (ROD), TVA elected the phased decommissioning, decontamination, and demolition of the two CUF units. TVA proposed to replace the generation of one of the retired units with the construction and operation of a natural gas–fired combined cycle (CC) plant, the Cumberland Gas Plant (CUG), on TVA's Cumberland Reservation. Planning for the replacement generation for the second retired CUF unit was deferred to allow consideration of a broader range of replacement generation alternatives depending on system needs and the state of technology at the time replacement is needed (TVA 2023a). Construction at the CUG is ongoing and is expected to be completed in 2026. The two CUF coal units have not retired and are currently operating.

Because of the increase in power demand and associated reliability concerns that have affected the project's original purpose and need, TVA prepared this supplemental environmental impact statement (SEIS) to assess the environmental impacts associated with the proposed alternative to continue operation of both CUF units past 2028 along with CUG. The proposed alternative allows for use of an existing asset to ensure reliable service to TVA customers at the lowest feasible cost to meet this growing demand.

In accordance with the National Environmental Policy Act of 1969, as amended (NEPA) (42 United States [U.S.] Code [USC] § 4321 et seq.), TVA's NEPA procedures (18 Code of Federal Regulations [CFR] Part 1318]), and Executive Order (EO) 14154 (Unleashing American Energy), TVA has prepared this SEIS to inform decision-makers, regulatory agencies, and the public of the potential environmental, cultural, and socioeconomic impacts of the proposed alternative and alternatives. This SEIS also addresses requirements associated with relevant federal, state, and local regulations, including but not limited to Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act (ESA), and Sections 401 and 404 of the Clean Water Act (CWA).

CUF is situated on a 2,388-acre reservation on the Cumberland River at its confluence with Wells Creek (Figure 1-1). The Cumberland Reservation is located in Cumberland City, Stewart County, Tennessee, approximately 22 miles southwest of Clarksville. The two-unit, coal-fired, steam-generating plant has a summer net generating capacity of 2,470 megawatts (MW). CUF was built between 1968 and 1973. The CUG is being constructed within the 2,388-acre reservation as analyzed in the 2022 Cumberland Fossil Plant Retirement Final EIS.

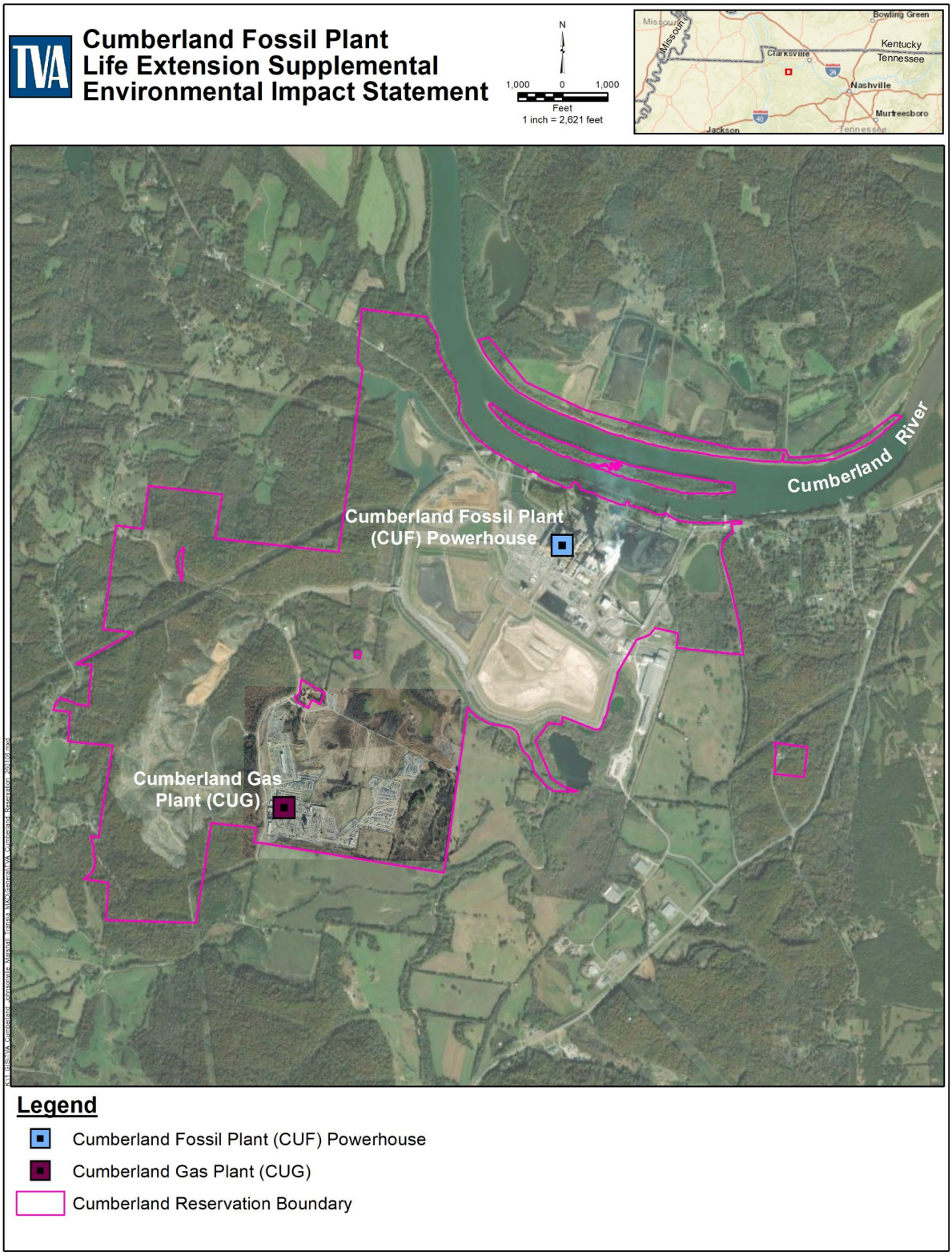



**Figure 1-1. Map of the Cumberland Reservation**

## 1.1. Purpose and Need

After a decade of flat electricity demand, the TVA region is experiencing rapidly increasing demand for electricity beyond the growth expected when the Cumberland retirement and replacement decision was made. Accelerated electricity demand growth is being driven by growth in data center use, population, and employment, and increasing electricity demand. In addition to load growth, delays in planned resource additions have increased pressure to meet demand with all available assets.

TVA requires firm, dispatchable power to reliably meet system demands and planning reserve margin targets. Firm, dispatchable power refers to a generating resource that can adjust power output up or down on demand within the specific operating limitations of that resource. It ensures that TVA can call on the generating capacity year-round, particularly during peak load events—those periods of maximum electricity demand from customers, typically late afternoon in the summer and before or around dawn in the winter.

To address the overall need for more generating capacity, TVA is engaging in the following:

- Investing in the existing natural gas fleet and in additional gas capacity.
- Implementing new demand-side programs.
- Exploring new nuclear opportunities and pursuing license extension for operational nuclear units.
- Maintaining reliability with past investments in coal-fired units.
- Securing market capacity and related on- and off-system resources.

Despite these efforts, more generating capacity is needed to meet demand, prompting the consideration of continuing coal operations.

Investing in TVA's existing fleet would allow TVA to safeguard against reliability risks that may come with purchasing power from the market. Market capacity may be limited or unavailable as neighboring electric utility companies are experiencing similar issues (e.g., load growth, need for capacity, etc.). Relying on purchased power can adversely affect TVA's ability to meet required year-round generation, maximum capacity system demands, and planning reserve margin targets. Investing in the existing coal fleet would help close the capacity gap.

The purpose of the proposed alternative is to meet the increasing demand for electricity in alignment with the 2019 Integrated Resource Plan (IRP) (TVA 2019a). The 2019 IRP considers customer priorities around power cost and reliability across a set of different futures. The document identified a set of near-term actions including conducting an evaluation of planned retirement dates for aging fossil units to inform long-term planning. This near-term action was met by the 2021 Aging Coal Fleet Evaluation, which recommended coal fleet planned retirement dates to reduce economic, reliability, and environmental risks. However, since this study was completed in 2021, the

Tennessee Valley region has experienced high population growth and industrial growth, which, in TVA's experience and expertise, has led to increased and increasing electricity demand. Based on this, and for the reasons discussed above, TVA is considering continued operations of CUF to maintain a low-cost, reliable, and resilient electric system and comply with the TVA Act.

This SEIS tiers from the 2019 IRP EIS (TVA 2019b) and supplements the 2022 Cumberland Fossil Plant Retirement Final Environmental Impact Statement (referred to throughout this document as the FEIS or the CUF FEIS) and builds on its findings with site-specific analyses for the generating resources under consideration. The IRP is discussed in Section 1.1 of the FEIS, and that discussion is incorporated by reference in this SEIS. Additional background information that informs the purpose and need for the proposed alternative is provided in the following sections.

### 1.1.1 Least-Cost Planning and the TVA Act

TVA's core statutory objectives under the TVA Act are to provide the people of the Tennessee Valley with low-cost and reliable electricity, environmental stewardship, and a prosperous economy (16 USC §§ 831 et seq.). Consistent with, and as mandated by the Energy Policy Act of 1992, TVA engages in a long-range, "least-cost planning" process that "evaluates the full range of existing and incremental resources (including new power supplies, energy conservation and efficiency, and renewable energy resources) to provide adequate and reliable service to electric customers of [TVA] at the lowest system cost" (16 USC § 831m-1(b)(1)). TVA engages in the "least-cost planning" process through development of the IRP.

### 1.1.2 Growth in the Tennessee Valley and TVA Power Service Area

In 1950, about 2 percent of the energy used in the U.S. was delivered in the form of electricity. Today, this number has increased to approximately 22 percent and continues to grow (TVA 2023b). During the decade before the 2020 COVID pandemic, TVA's seven-state region saw almost no electric load growth. In the years since the COVID pandemic, the region has experienced tremendous and unexpected economic growth, driven in part by a post-pandemic migration into TVA's Power Service Area (PSA) by new residents, businesses, and major industries. The full-time work-from-home culture born from the COVID pandemic triggered large waves of migration across the country, with southern states comprising the fastest growing region in the nation (Business Insider 2024).

A comparison of U.S. Census Bureau (USCB) population statistics (USCB 2025) for the counties in TVA's PSA to population statistics for all U.S. counties combined was done for the period from July 1, 2021, through July 1, 2024. During this period, the population of TVA's PSA grew to over an estimated 10.9 million people and had a 1.1 percent average annual growth rate, which was 1.4 times the U.S. population growth rate. The rate of population growth in TVA's PSA increased by more than 1 percent in each of the three years, whereas the forecasted national growth rate for these same three years was under 1 percent each year (USCB 2025).

Until October 1, 2023, when a base rate increase was put into effect, TVA's base power rates had remained relatively flat during the past four years while significant investments were made in TVA's power system. Over the last 10 years, TVA has invested $25 billion in existing and new generation. In addition, TVA is working to offset approximately 30 percent of forecasted new load growth in the next 10 years through energy efficiency and demand response programs. TVA anticipates investing $1.5 billion in fiscal years 2023–2027 in energy efficiency and demand response programs to accomplish this, continuing to help lower energy bills (TVA 2023b). TVA is focused on meeting growing electricity demand while maintaining energy security, reliability, and affordability.

TVA continuously monitors a variety of market signals to inform its planning, including forecasts for loads, commodities, and resource costs. Higher demand expectations for residential and support services, such as data centers, are driven by an observed shift in interstate migration patterns into the Tennessee Valley that is expected to continue.

## 1.2. Decision to Be Made

The decision TVA must make is whether to proceed with the currently planned retirement, decommissioning, and demolition of CUF coal units based on the 2021 Aging Coal Fleet Evaluation or to continue operation of the CUF units beyond the retirement dates indicated in the FEIS in conjunction with the construction and operation of CUG, to reflect current conditions. This SEIS has been prepared to inform TVA decision-makers, regulatory agencies, and the public about the environmental consequences of the proposed alternative.

## 1.3. Related Environmental Reviews

Related environmental documents and materials relevant to this assessment are listed below. The contents of these documents help describe the affected properties and are incorporated by reference as appropriate.

- **Groundwater Corrective Action Final Programmatic Environmental Assessment (2025):** This Programmatic Environmental Assessment (PEA) (TVA 2025c) programmatically assesses the effects of groundwater corrective actions implemented to address exceedances of groundwater protection standards at one or more coal plants. As part of this programmatic assessment, TVA developed new guidance, including an Environmental Screening Checklist and a bounding analysis, that complies with NEPA's procedural requirements, up to and including potential site-specific considerations of groundwater corrective actions at one or more of these coal plants, including CUF.
- **Construction and Operation of Beneficiation Processing Facilities Programmatic Environmental Assessment (April 2025):** This PEA (TVA 2025a) evaluated the construction of coal combustion residuals (CCR) beneficiation processing facilities (BPFs) at former and existing TVA coal-fired power plant sites (coal plants) within the TVA PSA. As part of this programmatic assessment, TVA developed new guidance, including an Environmental Screening Checklist and a bounding analysis, that complies with NEPA's

procedural requirements, up to and including potential site-specific considerations of BPFs at one or more of these coal plants.

- **Cumberland Fossil Plant Retirement FEIS (December 2022):** This EIS (TVA 2022a) evaluated the retirement and demolition of the two CUF units and the addition of at least 1,450 MW of replacement generation. The ROD approving the retirement and demolition of CUF and the construction of a new CC plant was issued in January 2023. The new CC plant will consist of two natural gas units.
- **TVA Aging Coal Fleet Evaluation (May 2021):** This evaluation (TVA 2021a) was performed to recommend near-term retirement planning assumptions to reflect practical timelines for replacement generation. The first draft of the evaluation was completed during fiscal year 2020, with refinements made in May 2021.
- **TVA Integrated Resource Plan and EIS (July 2019):** The 2019 IRP programmatic EIS (TVA 2019b) evaluated the potential effects of TVA's long-term IRP, which provides direction on how TVA can best meet future electricity demand. The 2019 IRP evaluated six scenarios (plausible futures) and five strategies (potential TVA responses to those futures) and identified a range of potential resource additions and retirements throughout the TVA PSA. The 2019 IRP remains valid and guides future generation planning consistent with least-cost planning procedures.
- **Cumberland Fossil Plant Wastewater Treatment Facility EA (July 2019):** This EA (TVA 2019c) evaluated the environmental consequences of the proposed construction and operation of a new wet flue gas desulfurization (FGD) wastewater treatment system at CUF.
- **Cumberland Fossil Plant Coal Combustion Residuals Management Operations EIS Supplement (August 2019):** This supplemental analysis (TVA 2019d) evaluated the potential impacts associated with the proposed change in the future on-site CCR landfill boundary and the use of this on-site landfill as a repository for both existing and future CCR.
- **Cumberland Fossil Plant Coal Combustion Residuals Management Operations (April 2018):** This EIS (TVA 2018) evaluated the construction and operation of a bottom ash dewatering facility, an on-site CCR landfill, and process water basins at CUF.
- **Cumberland Fossil Plant Borrow Areas and Access Road EA (August 2017):** This EA (TVA 2017) evaluated the development of a new access road and on-site borrow sites at CUF to support ongoing operations, including partial closure of the fly ash and gypsum stacks, in accordance with Tennessee Department of Environment and Conservation (TDEC) regulations.
- **Fossil Plant Ash Impoundment Closure Programmatic EIS (June 2016):** This programmatic EIS (TVA 2016) evaluated the closure of ash impoundments containing CCR at fossil fuel–plants across the Tennessee Valley to support the implementation of TVA's goal to eliminate all wet CCR storage at its coal plants.

## 1.4. Scope of the Environmental Review

NEPA requires federal agencies to consider the environmental effects of their proposed actions in their decision-making. Actions, in this context, include new and continuing activities that are conducted, financed, assisted, regulated, or approved by federal agencies. The NEPA review process is intended to ensure federal agencies consider the environmental effects of their actions in the decision-making process (NEPA; 42 USC § 4321 et seq.).

Based on review of activities associated with Alternative D, TVA has reviewed the analysis presented in the FEIS for the following resources and determined there would be no new impacts. That analysis is incorporated herein by reference and therefore these resources do not warrant further discussion:

- Physical Characteristics (including geology, soils, and prime farmland)
- Natural Areas, Parks, and Recreation
- Land Use
- Safety
- Noise

This SEIS discusses potential impacts to floodplains, water resources, air quality and greenhouse gas (GHG) emissions, climate change, biological resources including threatened and endangered species, transportation, utilities, cultural resources, solid and hazardous waste, socioeconomics, and visual resources.

## 1.5. Scoping and Public Involvement

Section 1.4 of the CUF FEIS describes scoping and public involvement to date and is incorporated herein by reference. In accordance with TVA's NEPA regulations §1318.401, during the development of the SEIS, TVA obtained comments from the U.S. Environmental Protection Agency (USEPA). Substantive comments were addressed in the SEIS, and the comments are summarized in Appendix B.

## 1.6. Necessary Permits, Licenses, and Consultations

TVA holds the permits necessary for the current operations of CUF and would obtain all necessary permits or permit modifications, licenses, and approvals required for the selected alternative. Necessary permits would be evaluated based on site-specific conditions. Permits or consultation requirements relevant to the proposed alternative are identified in subsequent sections. TVA consulted with the tribal, state, and federal agencies relevant to the proposed action. Documentation of agency correspondence is provided in Appendix B.

To implement the proposed alternative, TVA would maintain, obtain, or seek modifications to the following permits:

- Tennessee Stormwater Multi-Sector General Permit for Industrial Activities – TNR051933
- National Pollutant Discharge Elimination System (NPDES) permit – TN0005789
- CUF Operating Permit (Title V) – 577855
- Cumberland Permit to Construct / Modify Air Contaminant Source(S) – 981885
- CUF Gypsum Disposal Complex and Dry Ash Stack CCR Landfill – Industrial Landfill (IDL) 81-102- 0086
- CUF – Proposed Cumberland Fossil Plant CCR Landfill – IDL 81-000-0222
- CUF Special Waste Permits
- Tennessee Construction Stormwater General Permit coverage for all qualifying construction activities – TNR10000

# CHAPTER 2 – ALTERNATIVES

This SEIS supplements the CUF Retirement EIS (TVA 2022a), which analyzed the retirement of CUF and a range of alternatives for generation replacement. In the CUF FEIS, four alternatives were evaluated. Under the No Action Alternative, TVA evaluated continuing to operate CUF. All action alternatives considered the decommissioning and demolition of CUF together with replacement generation. Alternative A, the preferred alternative in the CUF FEIS, considered construction and operation of CUG on the Cumberland Reservation, and construction of approximately 32 miles of a new 30-inch-diameter natural gas pipeline lateral and associated gas system infrastructure. Alternative B considered construction and operation of simple cycle combustion turbine (CT) gas plants at alternative locations, and Alternative C considered construction and operation of solar and energy storage facilities. TVA issued a ROD in January 2023, memorializing the adoption of Alternative A and has since proceeded with physical construction of CUG. Construction is not complete, and the gas units are not in operation. The CUF coal units continue to operate and are not retired.

The FEIS considered the continued operation of the coal units (as the No Action Alternative) and the construction and operation of a gas plant (as Alternative A). The FEIS did not analyze the continued operation of CUF together with operation of CUG.

Therefore, Alternative D represents the proposed alternative being considered in this supplemental analysis: the continued operation of CUF along with the construction and operation of a gas plant (described and analyzed in Alternative A).

## 2.1 Description of Alternatives

### 2.1.1 Alternatives Considered in the FEIS

The No Action Alternative and Alternative A were previously analyzed in the FEIS. This document supplements that analysis with a new alternative, Alternative D. All associated analysis of the alternatives previously studied is incorporated herein by reference. Therefore, these alternatives will not be discussed in significant detail in this SEIS.

### 2.1.2 Alternative D – Continued Operation of the CUF Plant in Conjunction with Construction and Operation of a CC Gas Plant on the Cumberland Reservation

Under Alternative D (proposed alternative), TVA would continue to operate both CUF coal units in conjunction with the previously characterized and analyzed CUG. The construction and operation of CUG was fully analyzed in the FEIS and is not reanalyzed here. The following activities would support the continued operation of CUF under Alternative D at historic levels of reliability.

#### 2.1.2.1 CUF Powerhouse Interior Updates

Repairs and maintenance to maintain historic levels of operation for existing equipment located within the CUF Powerhouse include:

- Turbine maintenance and repair
- Feedwater heater replacement
- Repairs of scrubber absorber modules
- Air preheater basket replacement
- Distributed control system upgrades
- Continuous emission monitoring system upgrades
- Condenser circulating water pump excitation system replacement
- Other maintenance and repairs, as needed

#### 2.1.2.2 Facility Effluent Limitation Guidelines and Requirements

As explained in Chapter 2 of the FEIS, construction would be required at CUF to comply with the USEPA's CCR rule and Steam Electric Effluent Limit Guidelines (ELGs). To bring CUF into compliance with the 2015 ELGs via a phased approach, TVA previously constructed a bottom ash dewatering system (BADW), which separates the bottom ash solids from the liquid waste stream. The ELG rules provide for certain compliance options, known as subcategories in the rule, and allow for certain transfers between subcategories. TVA previously submitted a Notice of Planned Participation (NOPP) to TDEC on October 6, 2021, to preserve the option of CUF participating in the retirement subcategory of permanent cessation of coal combustion (PCCC) by 2028. Under current regulations, continued operations of CUF beyond 2028 would require transfer from the 2028 PCCC subcategory.

After publication of the FEIS, the USEPA finalized the 2024 ELG rule, which established more stringent discharge standards for FGD wastewater, bottom ash transport water (BATW), and combustion residual leachate. The rule also established new effluent limitations for various legacy wastewaters, which may be present in surface impoundments. The 2024 ELG rule created a new subcategory for coal-fired units that permanently cease coal combustion by 2034. Units in this new subcategory are required to meet the 2020 rule requirements for FGD wastewater and BATW. The USEPA has published a supplement to the 2024 ELG rule in December 2025 that extends specific compliance and NOPP deadlines and grants state permitting authorities additional flexibility to extend deadlines based on demand, reliability, and supply chain concerns.

With permitting authority regulatory approval, installation of a new high-recycle recirculation system for BATW, along with the previous installation of the FGD wastewater treatment system, allows for transfer to the 2034 PCCC subcategory. Construction of the BATW recirculation system would include circulation pumps, transformers, a BATW power distribution center (PDC), piperacks, lift pumps, sluice

lines, recirculation tanks, and sump pit modifications. This equipment, the proposed location of which is shown in Figure 2-1, would be an addition to the existing BADW infrastructure, which would continue to operate. The addition of a BATW recirculation system was previously analyzed in the Cumberland Fossil Plant Coal Combustion Residuals Management Operations EIS (TVA 2018).

The existing FGD water treatment system satisfies the requirements for the High Flow Subcategory in the 2020 Effluent Limitation Guideline Rule. Groundwater remediation and pore water treatment applicable to CCR management and closure is required regardless of the decision on plant operations and the NEPA review of these actions was considered in the Groundwater Corrective Action PEA (TVA 2025c). Operational changes may also be implemented for the existing FGD water treatment and management system. These activities would occur within the existing Cumberland Reservation in a previously developed area adjacent to the existing BADW and FGD water treatment facilities.

Under the 2024 ELG rule, continued operation of CUF past 2034 would require the design and commissioning of a zero liquid discharge (ZLD) system for BATW, FGD, and combustion residual leachate. The USEPA has communicated that it is currently reevaluating the 2024 ELG rule, including the ZLD as a best available technology requirement (USEPA 2025a). However, under the current USEPA ELG regulations, to operate CUF past 2034, further environmental review would be necessary to evaluate installation of ZLD systems for BATW and FGD waste streams to meet longer term ELG requirements.

Groundwater remediation and pore water treatment applicable to CCR management and closure is required regardless of the decision on plant operations, and the NEPA review of these actions has been considered in the Groundwater Corrective Action PEA (TVA 2025a).

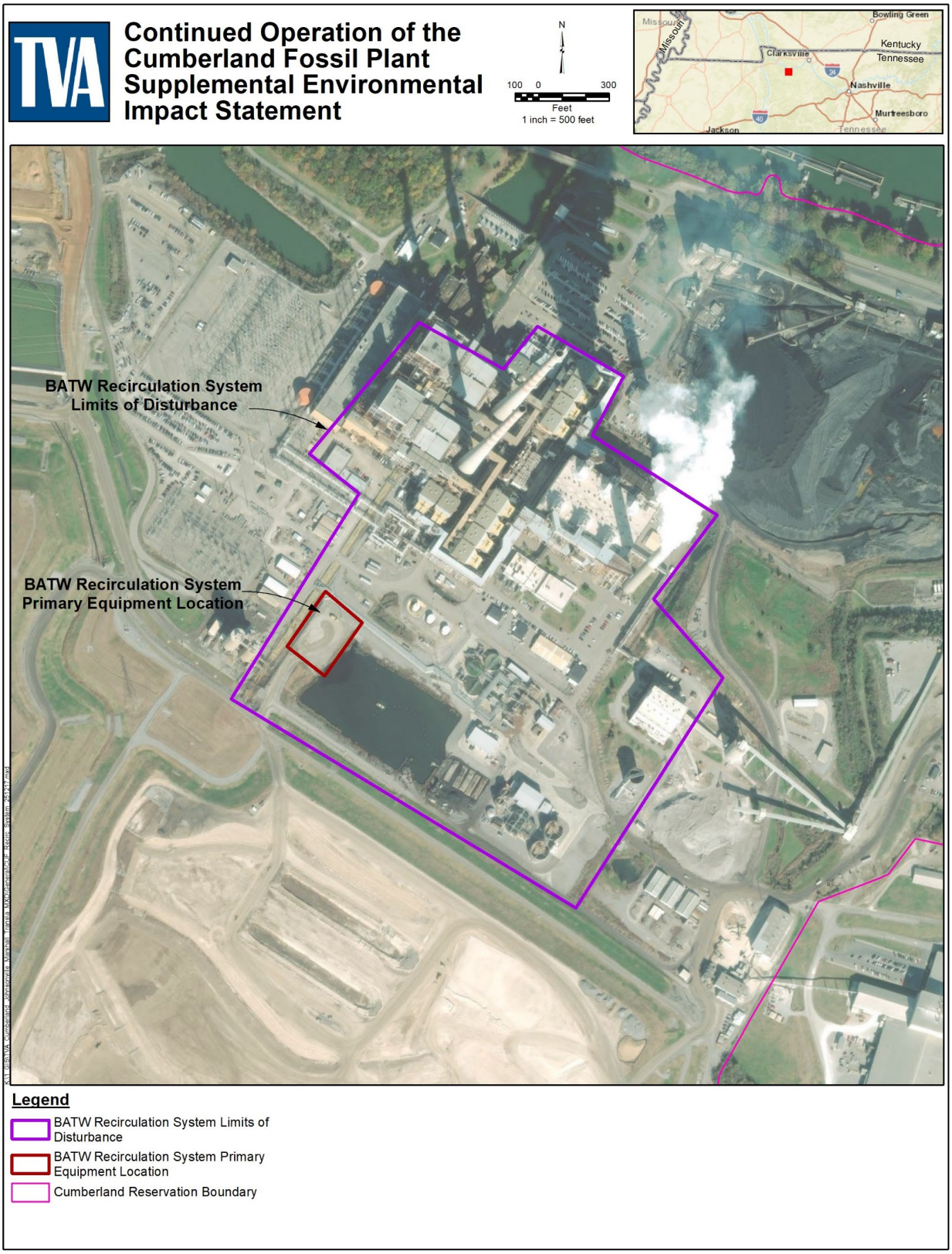



**Figure 2-1. BATW Recirculation System Location**

#### 2.1.2.3 Transmission and Electrical System Components

The continued operation of CUF would be supported by new transmission line corridors on the Cumberland Reservation and possible modifications within an existing, adjacent off-site transmission line right-of-way (ROW). New ROW acquisition would not be required under the proposed alternative. Required transmission line construction would include approximately 0.5 miles of new 500-kilovolt (kV) line to tie the Cumberland–Johnsonville 500-kV and Cumberland–Marshall 500-kV lines together (Tie Option 1) or an alternative jumper configuration outside of the existing Cumberland Fossil Plant Switchyard to tie the Cumberland–Johnsonville 500-kV and Cumberland–Marshall 500-kV lines together (Tie Option 2) (Figure 2-2). Additionally, two options are being considered to create a new loop connecting the Cumberland–Johnsonville 500-kV line to the Cumberland CC switchyard. Both options include constructing an approximately 1.5-mile new 500-kV loop from a point on the Cumberland–Johnsonville 500-kV line to the Cumberland CC switchyard (Figure 2-2). All new on-site transmission line corridors would have a permanent width of approximately 100 to 500 feet.

Additional on-site transmission upgrades could include breaker reconfigurations, relaying/protection changes, construction of new breaker bays, and relocation of the existing 500-kV loop to a new breaker bay.

Off-site transmission upgrades may be required, such as buswork, breaker replacements, associated equipment for communication and protection purposes, reconductoring of existing transmission lines, and switch replacements. These activities, if necessary, would occur within existing TVA facilities and/or ROWs and would be addressed as necessary under separate environmental reviews.

If future studies indicate improvements are required to the regional transmission system to maintain system stability and reliability, TVA may need to provide operating guides for CUF or identify other transmission projects and additional site-specific NEPA reviews would be completed as appropriate for those additional transmission system needs.

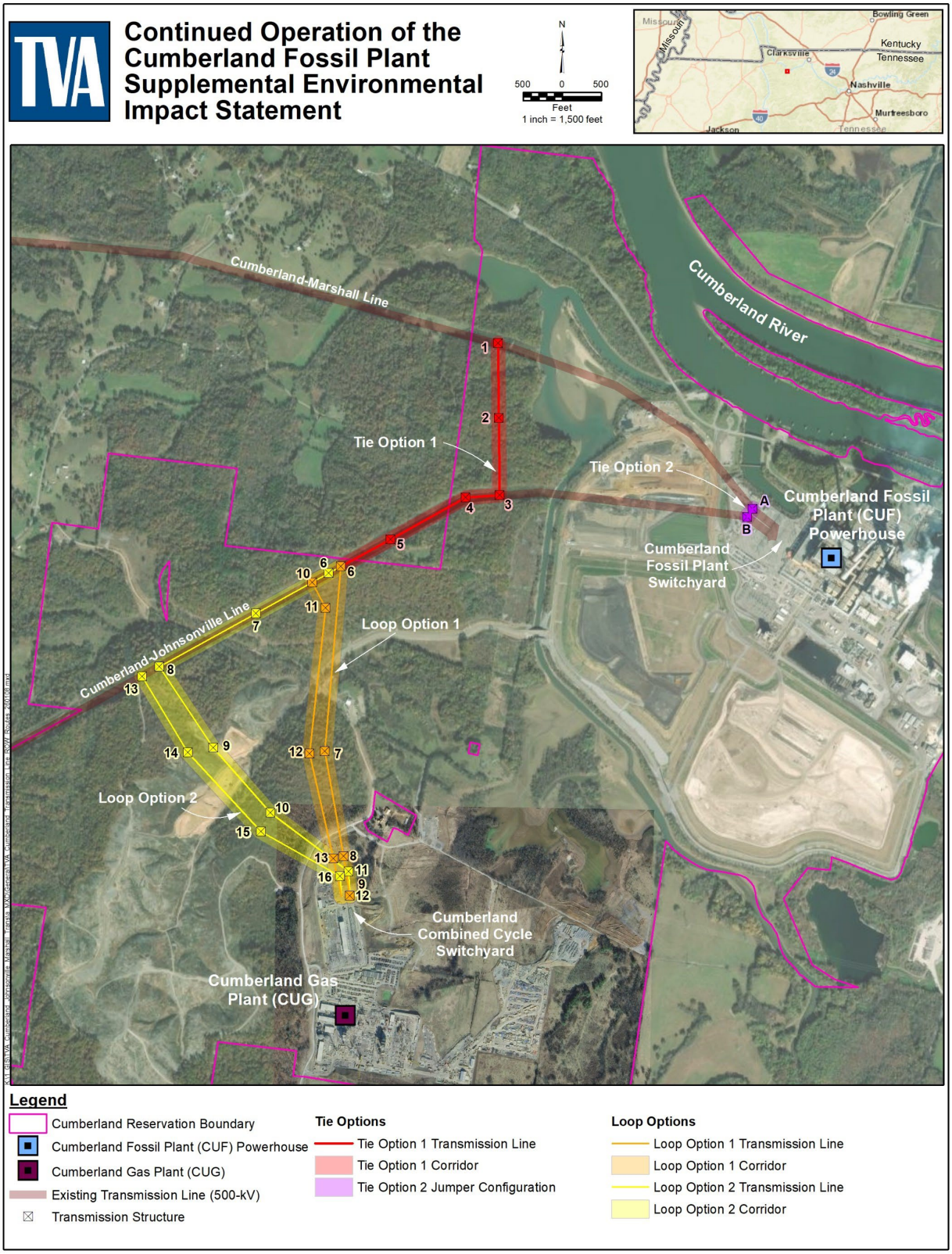



**Figure 2-2. Proposed Transmission Upgrades**

#### 2.1.2.4 Water Intake Upgrades

Under Section 316(b) of the CWA, facilities that withdraw more than 2 million gallons per day of cooling water are required to implement Best Technology Available (BTA) to minimize adverse environmental impacts associated with cooling water intake structures (CWIS). Continued operation of CUF would require a revised approach to achieve CWA Section 316(b) compliance. CUF's current NPDES permit states that the existing CWIS is BTA based on the flow reductions, via retirement, no longer impacting aquatic organisms. CUF must engage with regulatory authorities to formally revise its impingement compliance strategy. This would require the evaluation and selection of one of the following compliance options to reduce impacts on fish and other aquatic life from the CWIS. The options currently under consideration for CUF include those identified at 40 CFR 125.94(c)(3), (5), (6), and (7). These options would be evaluated based on their technical feasibility, alignment with operational requirements, risk tolerance, and compatibility with permitting and implementation schedules. A summary of each option and its associated environmental impacts is provided below.

*Through-Screen Velocity of 0.5 Feet per Second*

Operation of a CWIS with a maximum through-screen intake velocity of 0.5 foot per second. Compliance may be achieved through operational flow reductions or replacement of existing pumps to reduce intake flow rates. No physical modifications to the existing intake structure are anticipated.

*Modified Traveling Screens*

Under this option, TVA would install modified traveling screens that meet the definition in 40 CFR 125.92(s) and are determined by the TDEC Director of Water Resources—based on the impingement technology performance optimization study (40 CFR 122.21(r)(6)(i))—to represent BTA for CUF. Implementation would involve the timed removal and replacement of existing screens during scheduled outages. The new screens would be designed to fit within existing housings, avoiding structural modifications to the CWIS.

A fish return system would need to be constructed to safely convey impinged organisms back to the source waterbody. This system would typically consist of a polyvinyl chloride (PVC) or similar return pipe or flume, which may require the installation of support pilings to maintain structural integrity. Additionally, the use of raw water to transport the organisms could result in minor flow alterations at the discharge location.

*System of Technologies*

The facility would implement a combination of technologies, operational measures, and management practices that, upon review of the optimization study (40 CFR 122.21(r)(6)(ii)), are determined by the TDEC Director of Water Resources to represent BTA. These measures may include, but are not limited to, barrier nets, variable speed pumps, or behavioral deterrents. The selected system must be supported by enforceable permit conditions to ensure performance consistency.

*Impingement Mortality Performance Standard*

This would require the facility to demonstrate a 12-month average impingement mortality rate of no more than 24 percent for nonfragile species. This would not prescribe specific technologies, allowing flexibility in compliance strategies. Measures could include installation of new or modified intake structures, with associated construction impacts or deployment of monitoring infrastructure, such as fish collection and sampling systems. These activities could require in-water work or vessel activity. Adaptive management changes would also be evaluated potentially resulting in iterative construction or retrofitting of current intake structures.

Each of the CWA Section 316(b) impingement compliance options would undergo further evaluation during the detailed design phase to assess site-specific environmental impacts and ensure consistency with applicable regulatory requirements. Any necessary permit modifications, including updates to the NPDES permit, would be obtained prior to implementation.

#### 2.1.2.5 Coal Combustion Residuals Management

Continued operation of CUF would result in production of additional CCR. This material would either be stored on-site in the existing CUF permitted landfill or processed in a beneficial reuse facility, in accordance with current CCR operations. TVA would implement specific actions related to wastewater treatment and the management and disposal of CCR at CUF. CCR management projects have been previously analyzed in NEPA documents listed in Section 1.3. The listed CCR management projects have been completed, are underway, or would start within the next five years. CCR management actions would occur if CUF continues to operate (Alternative D) or is retired.

Alternatively, a new BPF would be constructed at CUF to process some of this material. Such a facility would be addressed under the Construction and Operation of BPFs process that was evaluated in TVA's 2025 PEA (TVA 2025a). Therefore, that action is not addressed further in this SEIS.

#### 2.1.2.6 Other Activities at the Cumberland Reservation

In addition to continued operation of CUF, conditions at the Cumberland Reservation would include continued construction and operation of CUG, as described in Alternative A in the FEIS and incorporated herein by reference.

### 2.1.3 Alternatives Considered but Eliminated from Further Discussion

TVA considered the construction and operation of a 900-MW simple cycle combustion plant at a federally owned property managed by TVA in Cheatham County, Tennessee to replace one CUF unit upon retirement. Based upon feedback received during TVA's public scoping process and listening sessions with the Board of Directors, TVA suspended environmental studies at this location.

Construction and operation of solar and storage facilities were considered in the FEIS. As described in Section 2.4 of the FEIS, a combination of solar and storage would require substantial transmission upgrades and lengthy timeframes for the transmission work. Furthermore, it would not provide dispatchable power needed to meet year-round generation. Thus, a combination of solar and storage facilities would not meet the purpose and need.

### 2.1.4 Comparison of Alternatives

Impacts evaluated may be beneficial or adverse and may apply to the full range of natural, aesthetic, historic, cultural, and socioeconomic resources within the project areas of each alternative and within the surrounding areas. Impact severity is dependent upon their relative magnitude and intensity and resource sensitivity. In both the FEIS and SEIS, four descriptors are used to characterize the level of impacts in a manner that is consistent with TVA's current practice. In order of degree of impact, the descriptors are as follows:

- No Impact (or "absent") – Resource not present or, if present, not affected by project alternatives under consideration.
- Minor – Environmental effects are not detectable or are so minor that they would not noticeably alter any important attribute of the resource.
- Moderate – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
- Significant (or "large") – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

Chapter 3 describes the potential impacts associated with the alternatives reviewed in this SEIS. The analysis presented in Chapter 3 is summarized in Table 2-1.

**Table 2-1. Summary and Comparison of Alternatives by Resource Area**

| Resource Area | FEIS No Action Alternative | FEIS Alternative A | SEIS Alternative D |
|---|---|---|---|
| Floodplains | No impact. | Construction of the CC plant, barge unloading area, and pipeline would result in both temporary and permanent impacts within the 100-year floodplain; no significant impact on floodplains and their natural and beneficial values. | Construction and operation of required additional infrastructure below elevation 380.6 could affect floodplains on the CUF property. Therefore, additional floodplain review would be required for all facilities, activities, or structures, including CCR, if proposed below elevation 380.6 on the Cumberland Reservation. No direct impacts to floodplains for those actions occurring above elevation 380.6 on the Cumberland Reservation. Indirect impacts are anticipated to be minor. |
| Water Resources<br>- *Groundwater*<br>- *Surface Water and Water Quality*<br>- *Wetlands* | Minor effects on groundwater from ongoing CCR activities that would be reduced using appropriate BMPs.<br>No impact on surface water and water quality and wetlands. | Potential for minor effects on groundwater during construction.<br>Permanent fill effects to ephemeral channels within the gas plant footprint. Moderate, temporary effects during construction of pipeline would result in minor effects to surface waters and wetlands with the use of BMPs to minimize effects to the greatest extent possible.<br>Minor, temporary effects to wetlands from pipeline installation. Moderate, permanent effects due to conversion of wetland habitat types. | Transmission line construction would result in temporary minor impacts to groundwater if encountered during construction.<br>Stormwater runoff from construction of the new transmission lines would result in minor indirect effects on surface waters and water quality. With implementation of BMPs during vegetation management for transmission lines, impacts to surface waters and water quality would be minor.<br>A BATW treatment system would be required, which could temporarily result in ground disturbance to be managed with BMPs during construction, and minor direct effects during operation.<br>In-water construction and dewatering for the water intake upgrades may result in minor, localized, and temporary direct impacts to water quality from increased turbidity. Periodic in-water work associated with operation and maintenance may result in temporary and minor impacts to water quality.<br>Stormwater runoff from construction of transmission lines would result in minor effects to wetlands. Conversion of forested wetland to shrub-scrub or emergent wetland from transmission lines would be minor.<br>The net benefit of reducing effluent discharges under Alternative A would be negated and there would be a nominal increase in effluent flows relative to the No Action Alternative. Effluent discharges from CUF and CUG would adhere to NPDES rules including new ELG requirements and other relevant regulations. Impacts from combined effluent discharges of CUF and CUG would be minor.<br>Alternative D would result in a very small amount of wetland conversion that would be in addition to wetland conversion under Alternative A. Overall impacts to groundwater, surface water and wetlands from continued operation of CUF in conjunction with operation of CUG would be minor. |

| Resource Area | FEIS No Action Alternative | FEIS Alternative A | SEIS Alternative D |
|---|---|---|---|
| Air Quality and Greenhouse Gases/Climate Change | No impact.<br>The No Action Alternative would be comparable to current emissions. | Short-term, minor effects during construction of gas plant and pipeline. Long-term, beneficial effects during operation. | Temporary and minor impacts to air quality during activities described in Section 2.1.2.<br>Continued operation of CUF in conjunction with CUG would negate the net air quality and GHG emissions reductions described under Alternative A. Continued operation of CUF and CUG concurrently would not result in exceedances of primary NAAQS standards as TVA would comply with all applicable federal and state regulations stipulated in current and future permits. Continued operation of CUF in conjunction with the operation of CUG under Alternative D would represent an increase (5.10 percent TVA systemwide) in future estimated GHG emissions. |
| Biological Resources<br>- *Vegetation*<br>- *Wildlife*<br>- *Aquatic Life*<br>- *Threatened and Endangered Species* | No impact. | Temporary impacts to vegetation during construction. Permanent effects through land conversion within transmission line and pipeline ROWs.<br>Minor, temporary effects to wildlife and aquatic life during construction, barge dock upgrades, and pipeline installation. Moderate, permanent effects from forest conversion to managed ROW.<br>Effects to bats from tree roosting habitat loss (accounted for through existing BO). | Permanent conversion of deciduous forest to herbaceous habitats would result in minor impacts.<br>Temporary indirect impacts to wildlife may occur as a result of noise and increased presence of workers during activities described in Section 2.1.2.<br>Roosting bats and protected bird species would experience minor effects from small localized loss of forested areas from transmission corridor clearing. Habitat loss for bats is covered by TVA BO. Similar forest habitats are widely available in the vicinity and impacts to protected birds would be minor.<br>Retrofitting and/or construction activities associated with the CWIS upgrades would have minor adverse effects on aquatic life, including protected fish species; however, upgrades to the CWIS would result in permanent long-term benefits to aquatic life, relative to existing conditions, by reducing the risk of impingement and entrainment. |
| Transportation | No impact. | Effects to transportation from traffic volume generated by the construction workforce and the construction-related vehicles would have a moderate, short-term impact to driver safety and roadway degradation. Long-term beneficial effects due to decreased workforce traffic. | Temporary, moderate impacts to transportation resulting from the peak on-site workforce, which includes CUF operations and outage personnel, as well as CUG construction workforce. Long-term effects from small increase in combined CUF and CUG operations personnel would not be discernable. |

| Resource Area | FEIS No Action Alternative | FEIS Alternative A | SEIS Alternative D |
|---|---|---|---|
| Utilities | No impact. | Temporary, minor adverse impacts if temporary waterline disruptions occur. Long-term, beneficial effects due to decreased water use. | Reliable year-round generation and meeting maximum capacity demands could result in long-term beneficial effects; however, the long-term beneficial effects due to decreased water use described for Alternative A would be negated. Impacts to existing utilities are anticipated to be minor, and there would be no impact on the greater utility systems in the surrounding area. |
| Cultural Resources | No impact. | No direct effects to significant cultural resources within the impact area. Traffic-related construction effects to the Henry Hollister House would be avoided or minimized by routing truck traffic along Old Scott Road from the south. Direct adverse visual effects to the Henry Hollister House from the proposed plant/transmission infrastructure would be mitigated through the September 22, 2022, MOA with the SHPO. | Construction and placement of the new transmission lines would not substantially diminish further the integrity, significance, or visual setting of the Henry Hollister House and the MOA with the SHPO from September 22, 2022, would be updated to reflect that adverse effects from transmission lines are sufficiently mitigated through previously agreed upon mitigation measures. |
| Solid and Hazardous Waste | No impact. | Temporary increase in generation of hazardous waste during construction. Long-term generation of waste at CC plant; overall, significant decrease in long-term amount of waste generated compared to coal plant. | Under Alternative D, the decrease in long-term waste generation associated with the retirement of CUF would be negated. Some CCR material may be processed at a BPF. Waste generation from the concurrent operation of CUF and CUG would be minor. |
| Socioeconomics | No impact. | Long-term employment loss from CUF closure would be offset by new employment options due to construction and operations of the gas plant and the pipeline. | Temporary increase in the on-site workforce during activities described in Section 2.1.2 would have a minor beneficial impact on local employment levels. Long-term increase in the operational workforce would have minor beneficial effects on local employment by retaining existing positions and supporting temporary labor needs during operational periods. Impacts to housing and community resources would be temporary and minor. Operation of CUF would contribute to reliable year-round generation and peak demand needs and provide electricity at the lowest feasible rate for customers. |

| Resource Area | FEIS No Action Alternative | FEIS Alternative A | SEIS Alternative D |
|---|---|---|---|
| Visual Resources | No impact. | Short-term, minor effects during construction. Long-term effects due to pipeline easement. | Construction of new transmission lines would result in temporary minor visual effects. Presence of the new transmission lines would not result in a reduction in the scenic class by two or more levels and impacts would be minor. |

Key: BMP = best management practices; BO = biological opinion; CUF = Cumberland Fossil Plant; CWIS = cooling water intake structure; GHG = greenhouse gas; MOA = memorandum of agreement; NAAQS = National Ambient Air Quality Standards; ROW = right-of-way; SHPO = state historic preservation office; TVA = Tennessee Valley Authority

## 2.2 Identification of Mitigation Measures

Best management practices (BMPs), mitigation measures, and commitments identified in Section 2.3 of the FEIS are incorporated by reference with the following changes.

### 2.2.1 Standard Practices and Routine Measures

#### 2.2.1.1 Surface Water

For ground-disturbing activities, TVA would develop project specific stormwater pollution prevention plans (SWPPPs) and obtain a Tennessee Construction Stormwater General Permit (TNR100000) prior to the start of construction.

Regulated aquatic resources, including streams, reservoirs, and wetlands that could be affected by activities described in Section 2.1.2, would be avoided and minimized to the extent practicable by design. TVA would comply with requirements in the applicable CWA 404 and 401 and TDEC Aquatic Resources Alteration Permits (ARAP). Standard BMPs as identified in a project SWPPP and TVA's Guide for Environmental Protection and Best Management Practices (TVA 2022b) would be used to minimize runoff and indirect impacts to aquatic resources.

Equipment washing and dust control discharges would be handled in accordance with BMPs described in the SWPPP for water-only cleaning and Tennessee Erosion and Sediment Control Handbook (TDEC 2012).

TVA would comply with the terms of CUF's individual NPDES permit TN0005789 for industrial wastewater discharges by ensuring the proposed process water discharge meets applicable effluent limits and water quality standards, as identified in the existing, modified, or renewed NPDES permit.

#### 2.2.1.2 Air Quality

Fugitive dust produced from construction activities would be controlled by BMPs (e.g., wet suppression) as provided in TVA's fugitive dust control plans. Construction permits contain language for fugitive emissions, including the development of a dust management plan. TVA would comply with all applicable federal and state regulations stipulated in current and future permits.

### 2.2.2 Non-routine Mitigation Measures

#### 2.2.2.1 Floodplains

Construction of the new transmission lines would adhere to the 1980 TVA Subclass Review Criteria for Transmission Line Location in Floodplains (TVA 1980).

New construction of access roads or modifications to existing access roads within 100-year floodplains would be constructed in such a manner that upstream flood elevations would not be increased by more than 1.0 foot.

Additional floodplain review would be required if modified traveling screens, a system of technologies, or impingement mortality performance standard were selected as the CWA Section 316(b) compliance option.

Additional floodplain review would be required for all facilities, activities, or structures, including CCR, proposed below elevation 380.6 on the Cumberland Reservation.

#### 2.2.2.2 Threatened and Endangered Species

Unavoidable impacts to potential suitable summer roosting habitat for the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) would be addressed using TVA's programmatic consultation on routine actions with potential to affect federally listed bats that was completed in April 2018 and updated May 2023 and November 2024 with the U.S. Fish and Wildlife Service (USFWS) in accordance with Section 7(a)(2) of the ESA. For those activities with the potential to affect bats, TVA committed to implementing conservation measures established through the programmatic consultation. The conservation measures required for the proposed alternative are identified in the TVA Bat Strategy Project Screening Form (Appendix C), and they would be implemented as part of the proposed alternative. Conservation measures implemented through TVA's bat programmatic consultation would also minimize unavoidable impacts to summer roosting habitat for the proposed endangered tricolored bat (*Perimyotis subflavus*).

## 2.3 The Preferred Alternative

TVA's preferred alternative is Alternative D – Continued Operation of the CUF Plant in conjunction with Construction and Operation of a CC Gas Plant on the Cumberland Reservation. Alternative D meets the purpose and need to address TVA's projected capacity needs in a way that is consistent with the recommendations in the 2019 IRP to meet the increasing demand for electricity. Alternative D also ensures that TVA can reliably meet required year-round generation, maximum capacity system demands, and planning reserve margin targets, while also complying with the requirement under the TVA Act that power be sold at rates as low as feasible.

# CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the baseline environmental conditions (affected environment) of environmental resources in the study areas and the anticipated environmental consequences (or impacts) that would occur from the implementation of the alternatives described in Chapter 2. NEPA requires federal agencies to evaluate reasonably foreseeable environmental effects of proposed actions.

## 3.1 Scope of Analysis

The scope of analysis for this SEIS includes activities proposed under Alternative D that were not previously analyzed in the FEIS. The analysis also updates the affected environment with any new information necessary to support the impact assessment. For many resources, the affected environment analysis and impacts determinations rely on analyses from the FEIS and incorporate those analyses by reference. The following subsections detail the analysis approach.

### 3.1.1 Impact Assessment

This SEIS supplements the FEIS and updates the affected environment and related impact analyses associated with the alternatives analyzed in the FEIS as they relate to the actions considered under Alternative D. The assessment of impacts associated with the continued operation of CUF were previously considered under the No Action Alternative in the FEIS and are herein incorporated by reference. However, the following elements proposed under Alternative D and described in detail in Section 2.1.2 require additional analysis as they are new or conditions have changed since the FEIS and ROD were issued:

- CUF Powerhouse Interior Updates
- Facility Effluent Limitation Guidelines and Requirements
- Transmission and Electrical System Components
- Water Intake Upgrades
- CCR Management

Additionally, under Alternative D, the continued operation of CUF would occur in conjunction with actions evaluated in Alternative A of the FEIS – namely, construction and operation of the CUG on the Cumberland Reservation, and the construction and operation of the associated natural gas pipeline. Notably, the deconstruction and decommissioning of CUF, which was also evaluated under Alternative A, would not occur under Alternative D. Thus, impacts described in the FEIS resulting from deconstruction and decommissioning activities would not occur and would not be included in impacts that are otherwise incorporated by reference from Alternative A.

The environmental consequences assessed in this section include those associated with continued operation of CUF and the components listed above—specifically, where impacts differ from previous FEIS alternatives due to new project components, or because additional impacts would result from concurrent operation of CUF and CUG. The combined effects from concurrent operation of CUF and CUG are presented in resources where applicable. Impacts from these activities are evaluated in this chapter. As described in Section 2.1.4, both the FEIS and this SEIS use the descriptors below for the impact assessment:

- No Impact (or “absent”): Resource not present or, if present, not affected by project alternatives under consideration.
- Minor: Environmental effects are not detectable or are so minor that they would not noticeably alter any important attribute of the resource.
- Moderate: Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
- Significant (or “large”): Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

### 3.1.2 Supplemental Environmental Impact Statement Scope

As part of the development of this SEIS, TVA evaluated whether there was any new information relevant to the assessment of potential impacts of continued operation of CUF that differ from those activities considered in the FEIS. This thorough and systematic review considered changes in the characteristics of baseline environmental conditions (affected environment) since 2022, and the potential impacts based on the description of the proposed alternative in Chapter 2.

As part of this analysis, TVA reviewed each resource category to identify key information relied upon to support the findings and conclusions in the FEIS including:

- Characteristics of the affected environment for each environmental resource
- Continued operation characteristics and any design or facility needs to support continued operation

Using their experience and expertise, resource subject matter experts (SMEs) reviewed the affected environment, assessed impacts to respective resources and compared their findings to those in the FEIS. Assessment of environmental impacts for each resource followed a typical analysis of reasonably foreseeable effects of the proposed alternative on environmental resources. As appropriate, this analysis considered the relevant context (geographic reference areas), sensitivity or rarity of the resource, and magnitude (intensity) of effect. Use of BMPs and measures to avoid, minimize, or mitigate potential impacts were also considered in the impact assessment process.

SMEs determined whether the information relevant to the SEIS was consistent with the previous information included in the FEIS or notably different, as described below:

- Consistent: information that was effectively the same or substantially similar to that considered in the FEIS.
- Notably different: information that was new and not previously considered or substantially different from that considered in the FEIS.

Information determined to be “consistent” correspond to topics or analyses that are incorporated by reference from the FEIS, whereas information determined to be “notably different” are discussed in relevant sections within this chapter, as appropriate.

### 3.1.3 Resources Incorporated by Reference

Information from the FEIS that is substantively unchanged and therefore not notably different is incorporated by reference into this SEIS. Having conducted the review described in Section 3.1.2, TVA determined several resource sections are fully bounded by the analyses, control measures, and commitments included in the FEIS. Either the information and the related impact analyses for the resource may be unchanged or the impacts of any new information were effectively the same as that described for the FEIS. Some resources listed below would not be affected with implementation of Alternative D and therefore are not carried forward for further analysis in this SEIS. The following resource analyses are incorporated by reference from the FEIS in their entirety:

- Geology, Soils, and Prime Farmland (FEIS Section 3.5.1):

  TVA considered all new information in combination with FEIS Section 3.5.1 to assess the potential effects from continued operation of CUF. Minor direct effects to potential subsurface geological resources are anticipated from ground disturbance associated with certain activities described in Section 2.1.2. Vegetation clearing, grading, and other site preparation activities have the potential to disturb soil stability and increase erosion. Small amounts of prime farmland soils are located within the footprint of proposed activities. TVA determined the overall impact on these resources is similar to the impacts described in the FEIS. Therefore, the assessment of construction and operational impacts to geology, soils, and prime farmland in FEIS Section 3.5.1 is incorporated by reference, and impacts are minor.

- Natural Areas, Parks, and Recreation (FEIS Section 3.9):

  TVA considered all new information in combination with FEIS Section 3.9 to assess the potential effects on natural areas, parks, and recreation from continued operation of CUF. Temporary noise, traffic, and visual disturbances from activities described in Section 2.1.2 would be similar to those construction impacts assessed in the FEIS. As noted in Section 3.9.2.3.1 of the FEIS, construction of CUG includes improvements to the barge unloading area on the Cumberland Reservation, which also serves as a public boat ramp. Temporary closure of the boat ramp would reduce boat access to waters around the plant

site during construction but would improve the public access in the long term. Following construction activities, continued operation of CUF in conjunction with CUG would not negatively affect public use of the boat ramp or result in additional impacts to other natural areas or recreational facilities. TVA determined the overall impact of Alternative D on these resources is similar to the impacts assessed in the FEIS. Therefore, the assessment of construction and operational impacts in FEIS Section 3.9 is incorporated by reference, and impacts are minor.

- Land Use (FEIS Section 3.10):

  TVA considered all new information in combination with FEIS Section 3.10 to assess the potential effects from continued operation of CUF. The proposed CUF Powerhouse and ELG requirement activities would occur within existing industrial areas of the facility adjacent to similar land uses. The new transmission lines would be constructed within the Cumberland Reservation boundary or within existing TVA ROW. Therefore, no impacts to land use from these activities are anticipated. TVA determined the overall impact on land use is similar to the impacts assessed in the FEIS. Therefore, the assessment of impacts to land use in FEIS Section 3.10 is incorporated by reference.

- Safety (FEIS Section 3.15):

  TVA considered all new information in combination with FEIS Section 3.15 to assess the potential effects on safety from continued operation of CUF. TVA would continue to operate and maintain the CUF Plant and adhere to all applicable safety standards. TVA determined the impact on worker safety is similar to the impacts assessed in the FEIS. As noted in the FEIS, safety impacts would be mitigated through BMPs and site-specific health and safety plans. Therefore, the assessment of impacts to worker health and safety in FEIS Section 3.15 is incorporated by reference. The public health and safety effects of changes to air quality resulting from the continued operation of CUF in conjunction with CUG are discussed in Section 3.4.1 of this SEIS.

- Noise (FEIS Section 3.17):

  TVA considered all new information in combination with FEIS Section 3.17 to assess the potential effects from continued operation of CUF. Noise associated with the activities described in Section 2.1.2 would be similar to those construction noise impacts assessed in the FEIS. Based on the predictive sound modeling for operation of CUG (Appendix N of the FEIS), the distance between the CUF and CUG facilities, their proximity to sensitive noise receptors, and the additive nature of logarithmic decibel levels, concurrent operation of CUF and CUG is not expected to cause perceptible noise increases at sensitive receptors. Therefore, the assessment of construction and operational impacts to noise in FEIS Section 3.17 is incorporated by reference.

Resources carried forward for analysis are presented in Sections 3.2 through 3.11, below. The resources are presented in the same order as they are discussed in the FEIS.

### 3.1.4 Reasonably Foreseeable Future Actions

Having conducted the review described in Section 3.1.2 of this document, TVA did not identify new information related to the characterization of reasonably foreseeable future actions (RFFAs) included in the FEIS Table 3.1-1. However, in addition to the RFFAs in the FEIS, facilities associated with FEIS Alternative A, including construction of the gas plant and associated pipeline and transmission infrastructure, are underway or will be in the near future. These facilities, while evaluated in the FEIS in conjunction with the RFFAs discussed therein, are now RFFAs for this SEIS. Therefore, Section 3.1.2 of the FEIS is incorporated by reference, and with the addition of FEIS Alternative A facilities, represents the RFFAs for this SEIS.

## 3.2 Floodplains

### 3.2.1 Affected Environment

As described in the FEIS, designated 100- and 500-year floodplains encompass portions of the Cumberland Reservation. Floodplain locations are present along the Cumberland River, Wells Creek, and other tributaries.

Floodplain information for the Cumberland Reservation is provided in FEIS Section 3.5.2.2. TVA identified new information related to the characterization of the affected environment for floodplains: EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, was revoked January 20, 2025, in EO 14154, *Unleashing American Energy*. The remainder of FEIS Section 3.5.2.2 remains valid and is incorporated by reference.

### 3.2.2 Environmental Consequences

Under Alternative D, TVA would continue to operate both coal units in conjunction with the CUG. Laydown areas, storage areas, construction buildings, geotechnical borings, groundwater monitoring wells, flood-damageable facilities, and any other nonrepetitive or repetitive action would be located outside the 100-year floodplain (elevation 380.6), if practicable (TVA 1981). Additional floodplain review would be required for any facilities, activities, or structures proposed below elevation 380.6 that have not been previously analyzed.

If activities occur above elevation 380.6 at CUF, there would be no effects on the natural and beneficial values of floodplains. If any construction is proposed below elevation 380.6, then further floodplains review would be required as described in Section 2.2.2.1, and would likely result in minor adverse effects.

TVA considered all new information in combination with FEIS Section 3.5.2 to assess the potential effects on floodplains and flood risk. TVA determined that the overall impact on floodplains and flood risk is similar to the impacts assessed in the FEIS, as any activities within floodplains would adhere to EO 11988 and the TVA Flood Storage Loss Guideline. Therefore, the assessment of construction impacts on floodplains and flood risk in FEIS Section 3.5.2 is incorporated by reference, and overall impacts are anticipated to be minor.

In addition, specific activities described in Section 2.1.2 are analyzed below.

### *CUF Powerhouse Interior Updates*

These activities would include repairs and maintenance for existing equipment located within the CUF Powerhouse to support historic levels of operation. As such, they would also be located outside the 100-year floodplain, which would be consistent with EO 11988. There would be no indirect effects on floodplains and their natural and beneficial values.

### *Facility Effluent Limitation Guidelines and* Requirements

Continued operation of the CUF units would require construction affecting the existing BADW system, specifically construction of a new BATW recirculation system which would include circulation pumps, transformers, BATW PDC, pipe rack, lift pumps, sluice lines, recirculation tanks, and sump pit. As shown in Figure 3-1, these activities would occur on the existing Cumberland Reservation in areas located outside the 100-year floodplain, which would be consistent with EO 11988.

### *Transmission and Electrical System Components*

New transmission lines would need to be constructed on the Cumberland Reservation. Portions of the corridor and transmission structures could be located within the 100-year floodplain below elevation 380.6. Construction of the lines would be consistent with EO 11988 provided the 1980 TVA Subclass Review Criteria for Transmission Line Location in Floodplains are followed (TVA 1980). New access roads or modifications to existing access roads could be constructed within the 100-year floodplain. Such new construction or modifications would be consistent with EO 11988 provided that upstream flood elevations would not be increased by more than 1.0 foot.

### *Water Intake Upgrades*

The specific upgrade for the water intake has not been chosen, and design plans are not yet final. Of the water intake upgrades proposed, only the through-screen velocity of 0.5 foot per second option would result in no physical modifications to the intake structure, which would be consistent with EO 11988.

Additional floodplain review would be required if modified traveling screens, a system of technologies, or impingement mortality performance standard were selected as the CWA Section 316(b) compliance option.

### Coal Combustion Residuals Management

CCR management would be consistent with EO 11988 provided that the CCR would be stored in the existing CUF landfill or processed at a beneficial reuse facility. Additional floodplain review would be required for any CCR facilities, activities, or structures proposed below elevation 380.6.

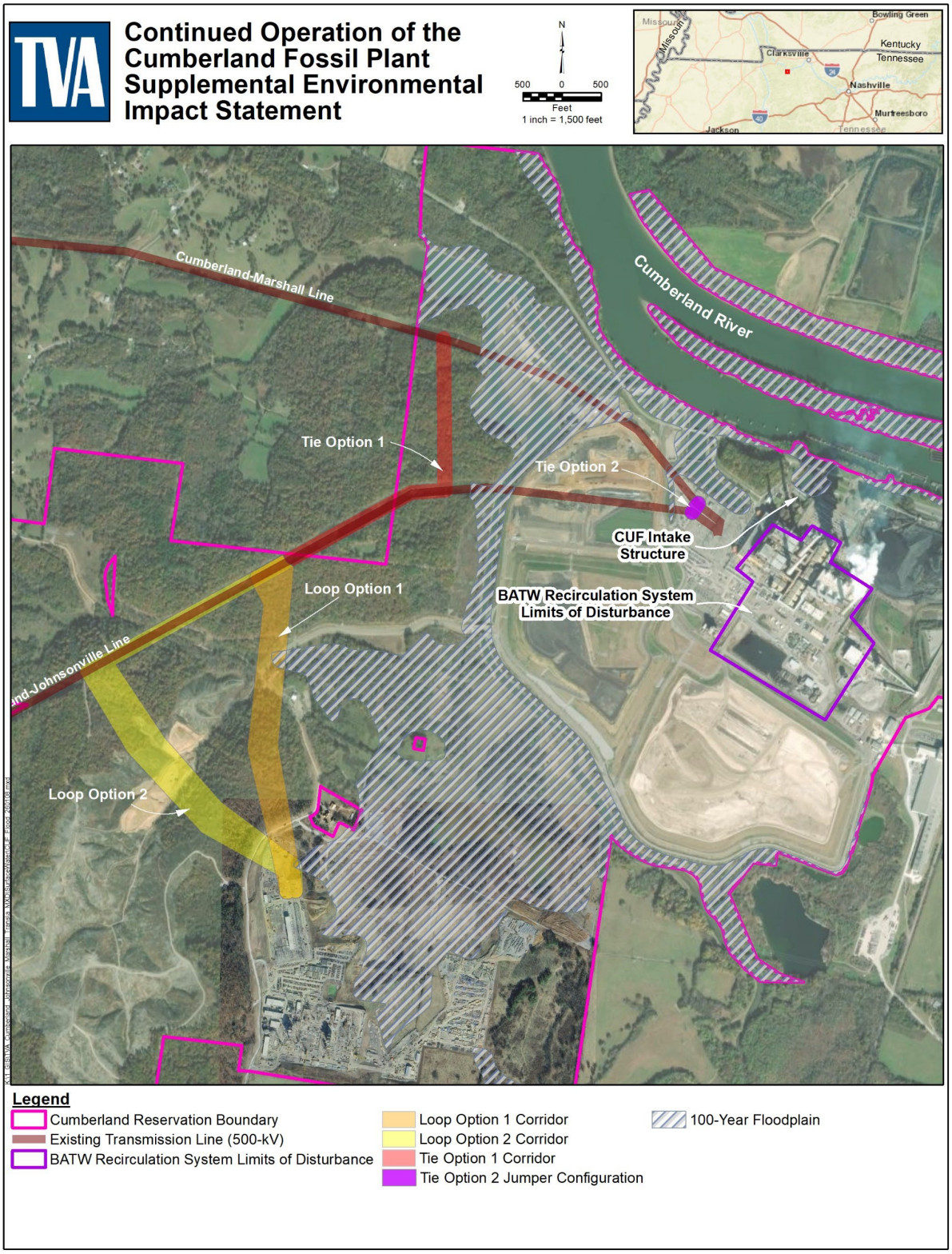



**Figure 3-1. Floodplains in Proximity to Proposed Project Actions**

### *Summary of Impacts to Floodplains*

Implementation of Alternative D may result in minor impacts to floodplains from construction of new transmission lines or from water intake upgrades. Project elements would be consistent with EO 11988. Any activities proposed below elevation 380.6 would require additional floodplain review. Overall, floodplain and flood-risk impacts would be similar to those previously evaluated in the FEIS and impacts to floodplains from continued operation of CUF in conjunction with construction and operation of CUG would be minor.

## 3.3 Water Resources

### 3.3.1 Groundwater

#### 3.3.1.1 Affected Environment

TVA did not identify new information related to the federal and state regulatory setting relevant to the Cumberland Reservation, which includes all areas considered for continued operation of CUF; therefore, FEIS Section 3.6.1 is incorporated by reference. Additionally, TVA did not identify new information related to the physiographic setting of the Cumberland Reservation, aquifers underlying the Cumberland Reservation, local and regional groundwater quality, or groundwater levels and flow within the Cumberland Reservation.

TVA identified the following new information that was determined to be notably different from the information considered in the FEIS:

- 2024 groundwater sampling results
- Wells within a one-mile radius of the Cumberland Reservation

Since the production of the FEIS, TVA completed groundwater monitoring activities in accordance with existing assessment monitoring program requirements. In 2024, one new statistically significant increase for molybdenum was observed in well CUF-208 and two previously statistically significant increases in lithium and molybdenum were no longer observed in wells 93-3 and CUF-209, respectively (Stantec 2025a, 2025b).

According to TDEC's Water Well Desktop Application, there are 59 wells within a 1-mile buffer of the Cumberland Reservation. Three wells are backfilled and abandoned, one well is used for irrigation, four are used for industrial purposes, and 51 are used for residential supplies (TDEC 2025a).

#### 3.3.1.2 Environmental Consequences

Impacts from the construction and operation of CUG on groundwater, including those from the construction and operation of CC gas plant and natural gas pipeline are assessed in FEIS Sections 3.6.1.2.3.1 and 3.6.1.2.3.2, respectively. TVA did not identify new information related to these impact assessments; therefore, FEIS Sections 3.6.1.2.3.1 and 3.6.1.2.3.2 are applicable to Alternative D and are incorporated by reference. Impacts from construction and operation of the BADW facility, including

BATW recirculation system upgrades, were assessed in Section 3.6.3.2.1 of the 2018 CUF CCR Management Operations EIS and are incorporated by reference.

Updates to the CUF Powerhouse would occur within existing facilities and in previously disturbed areas; therefore, no impacts on groundwater would occur.

### *Transmission and Electrical System Components*

Construction activities, such as clearing and grading that are associated with new transmission lines and some existing transmission equipment upgrades, would entail localized ground disturbance and shallow excavation, and would be limited to the substation footprint and transmission line corridors. If pilings are necessary to support transmission and electrical system components, they would be driven into the ground and would not be expected to expose surface activity to groundwater. Piles would also be constructed of re-enforced concrete which would not impact groundwater quality.

If groundwater is encountered during construction activities, dewatering may be required and would only be performed to the extent that groundwater is locally lowered within the footprint of the project area and not the surrounding areas. Additionally, all federal, state, and local requirements related to groundwater protection would be followed. The implementation of BMPs, a SWPPP, a Spill Prevention Counter Measure and Control (SPCC) plan, would avoid and minimize temporary and minor groundwater impacts during construction. No impacts to groundwater from operation of the transmission lines and electrical systems would occur.

### *Water Intake Upgrades*

Construction of the water intake upgrades is not expected to impact groundwater levels. Any dewatering required during construction would be confined within the construction footprint and would not affect groundwater levels in adjacent areas. Operational flow reductions may create minor localized changes in surface water levels near the intake, but these changes would have no impact on groundwater.

### *Coal Combustion Residuals Management*

CCR management would involve operation of the existing on-site CCR landfill with the addition of bottom ash, pyrite, and fly ash waste streams produced from the BADW facility upgrades and continued operation of CUF. The assessment of groundwater impacts provided in the 2018 CUF CCR Management Operations EIS and updated in the 2019 Assessment of Proposed Change to the CUF CCR Management Operation EIS (2019 Assessment of Proposed Change) is incorporated by reference as applicable. TVA does not currently have plans to construct the new landfill evaluated in those documents at present; however, groundwater impacts related to CCR management in general and the BADW are relevant to Alternative D.

Considering updates to the NPDES permit requirements and ELGs that necessitate many of the proposed upgrades under Alternative D, the impacts of CCR management on groundwater would still be consistent with those discussed in the 2018 CUF CCR

Management Operation EIS and 2019 Assessment of Proposed Change. Implementation of a stormwater management system and groundwater monitoring program in addition to BMPs and compliance with existing and updated permit requirements would result in groundwater impacts that would be minor.

Additionally, for over a decade, TVA has been executing an in-depth investigation of CCR management under Commissioner's Order No. OGC15-0177 issued by TDEC on August 6, 2015. The scope of this effort includes a thorough analysis of site-specific hydrogeology, ground water flows and quality, and a water use survey to investigate potential impacts to wells and water sources near CUF. This work, executed under the independent oversight of TDEC, identified 13 parcels located south–southeast of the plant that have the potential to be impacted by CCR management operations as determined by groundwater flow directions. TVA contacted the parcel owners through correspondence or by telephone between October and November 2022. The owner responses indicated that only one spring and no water supply wells existed on the properties. Further investigations and sampling of this spring indicated that the spring is 28 to 30 feet above groundwater elevations measured in monitoring wells associated with the CUF Plant. Water quality observed at the spring was similar to historical background information and not attributable to CCR management activities at CUF. Therefore, no impact is expected to the off-site wells identified within a 1-mile radius of the Cumberland Reservation (TVA 2023c).

CCR management may also involve construction and operation of a BPF at CUF. Impacts to groundwater from the construction and operation of a BPF are assessed in Section 3.4.2.2 of the TVA Construction and Operation of Beneficiation Processing Facilities Final PEA (TVA 2025a) (Beneficiation PEA), which is incorporated by reference.

***Summary of Impacts to Groundwater***

Impacts to groundwater from construction of transmission lines would be temporary and minor. Impacts to groundwater as a result of CCR management would be minor with implementation of measures (e.g., geosynthetic cap, leachate collection system, etc.) and BMPs. Overall impacts to groundwater from continued operation of CUF in conjunction with operation of CUG would be minor.

## 3.3.2 Surface Water and Water Quality

### 3.3.2.1 Affected Environment

#### 3.3.2.1.1 Surface Waters

The federal and state regulatory setting and classification of surface waters relevant to the Cumberland Reservation, which includes all areas considered for continued operations of CUF, are discussed generally in FEIS Section 3.6.2, which is incorporated by reference. Surface water resources within the vicinity and boundary of the Cumberland Reservation are described in FEIS Section 3.6.2.1.1, which discusses the results of field surveys performed within the Cumberland Reservation in 2021. TVA did not identify new information related to the characterization of the affected environment

for surface water resources within the boundaries of the Cumberland Reservation, the CC plant, and the natural gas pipeline corridor; therefore, FEIS Sections 3.6.2.1.1 and 3.6.2.1.2 are incorporated by reference.

TVA identified new information that is notably different than what was considered in the FEIS related to Alternative D proposed activities: water resources within the footprint of the disturbance area and updates made to ELGs since the publication of the FEIS in December 2022 (see SEIS Section 2.1.2.2 for more background) which require additional facilities for wastewater treatment.

There are no jurisdictional water features within the limits of construction for the proposed BATW recirculation system and no jurisdictional water features were observed within the proposed transmission corridor for the tie between the Cumberland–Johnsonville and Cumberland–Marshall 500-kV lines (Tie Option 1) or the alternative jumper configuration outside of the existing Cumberland Fossil Plant Switchyard (Tie Option 2). Existing surface water features located within the proposed transmission corridor for Loop Options 1 and 2 are summarized in Table 3-1 and shown in Figure 3-2.

**Table 3-1. Summary of Streams and Open Water Features Present within the Boundary of Proposed Transmission Upgrades**

| Feature | Field ID | Number of Features | Total Extent |
|---|---|---|---|
| **Loop Option 1** | | | |
| Perennial | 007, 008 | 2 | 1085 LF |
| Intermittent | 010 | 1 | 21 LF |
| Wet Weather Conveyance | E007 | 1 | 374 LF |
| **Loop Option 2** | | | |
| Perennial | 007, 008 | 2 | 772 LF |
| Intermittent | 010 | 1 | 55 LF |
| Wet Weather Conveyance | E006, E007 | 2 | 519 LF |

Key: LF = linear feet

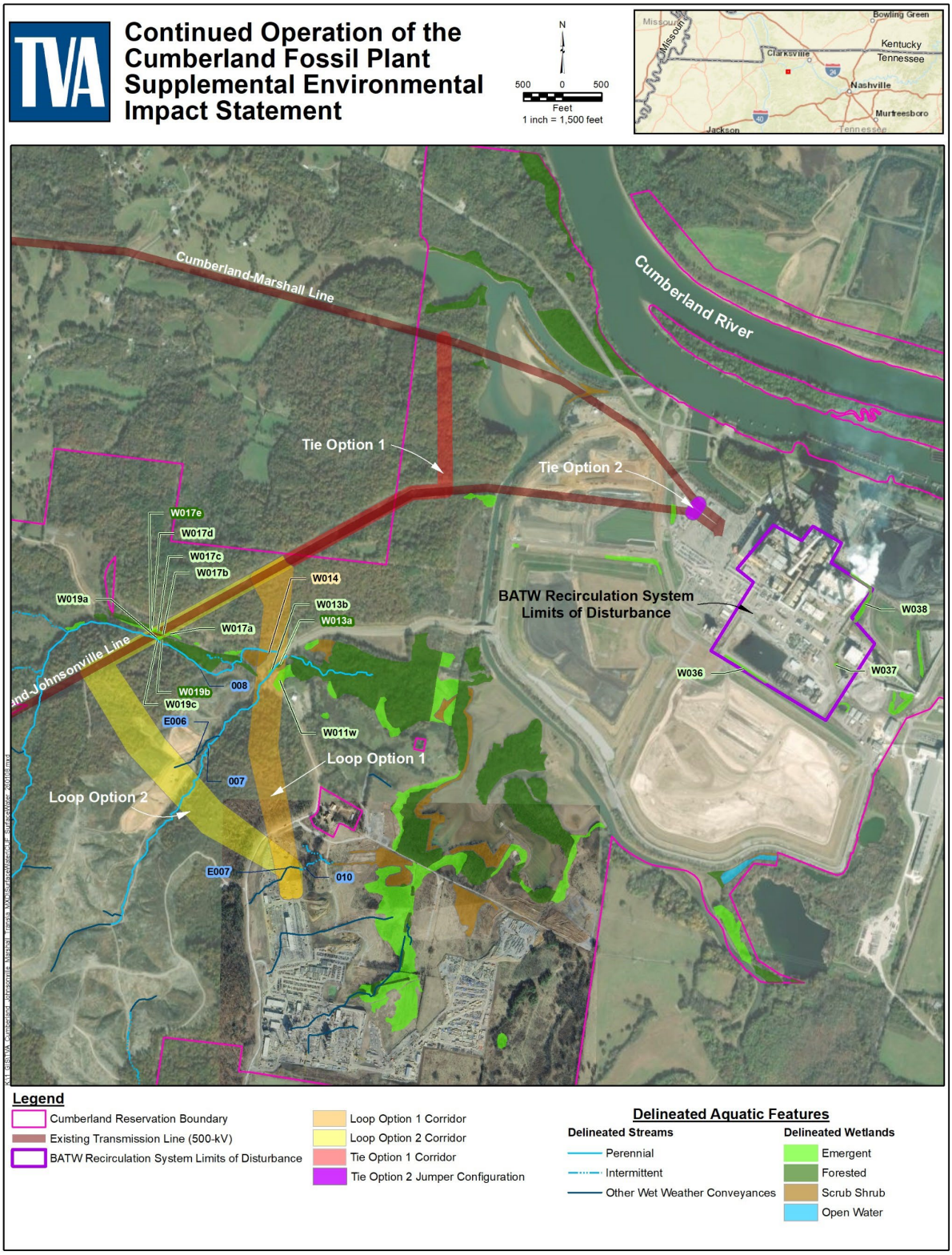



**Figure 3-2. Delineated Aquatic Features on the Cumberland Reservation**

#### 3.3.2.1.2 Water Quality

The federal and state regulatory setting, permit requirements, and surface water quality standards applicable to the Cumberland Reservation and surrounding water resources are discussed generally in FEIS Section 3.6.2 and are incorporated by reference. Use classifications and existing impairments in waters within the boundary and vicinity of CUF as well as withdrawals, discharges (i.e., wastewater, stormwater, thermal), and existing permits and their limits associated with the Cumberland Reservation are described in FEIS Section 3.6.2.1.1 and are incorporated by reference.

TVA identified the following new information related to surface water quality that remains consistent with that considered in Section 3.6.2.1.1.2 of the FEIS:

- Surface Water Impairments. The 2024 USEPA approved List of Impaired and Threatened Waters (303d list) and the updated draft 2026 303d list maintain the Cumberland River as unlisted and Wells Creek as listed for *Escherichia coli* consistent with the FEIS (TDEC 2024a, 2025b).
- Surface Water Use. TDEC Surface Water Classifications for Wells Creek and other surface waters not specifically noted were updated in March 2024 and are consistent with the FEIS (TDEC 2024b).

TVA also identified the following new information that is notably different from that considered in the FEIS:

- Surface Water Use. The addition of “Navigation” as a surface water use classification for the Cumberland River from river mile 74.6 to 118.3 (TDEC 2024b)
- Permit Modifications. As a result of updates made to ELGs since the publication of the FEIS in December of 2022 (see SEIS Section 2.1.2.2 for more background), TVA submitted a modification request for individual NPDES wastewater permit (TN0005789) on August 6, 2024, to include all 2024 ELG rule compliance pathways in CUF’s NPDES permit (TVA 2024a). Permit modification requests would be submitted to align CUF’s NPDES permit with the newly finalized ELG Deadline Extension rule as well as any forthcoming ELG supplements or revised final rule.

### 3.3.2.2 Environmental Consequences

Impacts from the construction and operation of CUG on surface water, including those from the construction and operation of CC gas plant and natural gas pipeline are assessed in FEIS Sections 3.6.2.2.3.1 and 3.6.2.2.3.2, respectively. TVA did not identify new information related to these impact assessments with the exception of regulatory changes. Impacts from operation of the BADW facility, including BATW recirculation system upgrades, were assessed in Section 3.7.2.2 of the 2018 CUF CCR Management Operations EIS and are incorporated by reference. ELG conformance through installation of the BATW high-recycle system would require regulatory approval for an extended timeline to meet compliance. The effluent discharges associated with operating both CUF and CUG would be additive. However, compliance with water

quality criteria and ELGs would be included in regulatory evaluation to ensure permitted discharges meet required standards protective of the aquatic environment. Under current regulations, CUF operations past 2034 would require ZLD for BATW and FGD waste streams, which would require further environmental evaluation.

Updates to the CUF Powerhouse would occur within existing facilities and in previously disturbed areas; therefore, no impacts on surface water would occur from these activities.

### *Transmission and Electrical System Components*

Construction activities such as clearing and grading that are associated with new transmission lines and some existing transmission equipment upgrades would entail localized ground disturbance and excavation. This work would be limited to the substation footprint and proposed transmission corridor for Loop Options 1 and 2. Construction stormwater runoff may result in temporary impacts to surface waters. Removal of the tree canopy along stream crossings could lead to impacts to surface water quality from increased water temperatures, algal growth, and dissolved oxygen depletion. Improper use of herbicides to control vegetation during operation could also result in indirect surface water quality impacts from runoff to streams. TVA routinely includes precautions in the design, construction, and maintenance of its transmission projects to minimize potential direct and indirect impacts. Construction-related ground disturbance is expected to be greater than 1 acre; therefore, a Construction General Permit (CGP) would be obtained to comply with federal and state NPDES requirements. To avoid and minimize indirect impacts from stormwater runoff during construction activities, BMPs (per Section 2.2.1.1) would be used and a SWPPP and SPCC plan would be followed.

Streams and other aquatic features would be avoided to the maximum extent practicable. Crossings that cannot be avoided would be designed to minimize impacts to runoff patterns and the natural movement of aquatic fauna. If a stream crossing is necessary, TVA would secure the required permits, including an Aquatic Resources Alteration Permit/Section 401 Water Quality Certification and a Section 404 permit from the U.S. Army Corps of Engineers. Additionally, TVA would minimize any surface water disturbance by following standard BMPs, as found in A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities (TVA 2022b). These standards include sediment and erosion control processes and principles. Other specifications that TVA would follow during construction to avoid and minimize impacts to surface waters and quality include TVA Right-of-Way Clearing Specifications (2022c), TVA Site Clearing and Grading Specifications (2022d), TVA Transmission Construction Guidelines Near Streams (2022e), and TVA Environmental Quality Protection Specifications for Transmission Line Construction (2022f).

During operation, vegetation would be managed as outlined in accordance with TVA's Transmission System Routine Periodic Vegetation Management Fiscal Years 2025 and 2026 Final Environmental Assessment (TVA 2024b), and TVA's A Guide for

Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities Revision 4 (2022b). TVA's current routine transmission line vegetation management practices are governed by an injunction entered by the U.S. District Court for the Eastern District of Tennessee. Once this injunction is lifted, such vegetation management would be performed pursuant to TVA's Transmission System Vegetation Management Programmatic Environmental Impacts Statement (TVA 2019a). Transmission line corridor maintenance would employ manual and low-impact methods wherever possible. In areas requiring chemical treatment, only USEPA-registered herbicides would be used in accordance with label directions designed to restrict applications near receiving waters and to prevent unacceptable aquatic impacts.

Proper implementation of TVA specifications, the use of BMPs, a SWPPP, and an SPCC plan, as well as compliance with federal, state, and local regulations and permit requirements are expected to result in only minor impacts to surface waters from the construction and operation of the transmission and electrical system components.

No jurisdictional surface waters were located within the proposed transmission corridor for the tie between the Cumberland–Johnsonville and Cumberland–Marshall 500-kV lines (Tie Option 1) or the alternative jumper configuration outside of the existing Cumberland Fossil Plant Switchyard (Tie Option 2). This includes all areas within the limits of the Cumberland Reservation and the small segment of ROW outside the Cumberland Reservation that is part of Tie Option 1 (Figure 3-2). Therefore, no effect to surface waters would occur as a result of transmission Tie Option 1 or Tie Option 2.

### *Water Intake Upgrades*

Each of the CWA Section 316(b) compliance options would undergo further evaluation during the detailed design phase to assess site-specific environmental impacts and ensure consistency with applicable regulatory requirements as described in Section 2.1.2.4. Any necessary permit modifications, including updates to the NPDES permit, CWA Section 401 and 404, and TDEC ARAP, would be obtained prior to implementation.

#### *Through-Screen Velocity of 0.5 Feet per Second*

No physical modifications to the intake structure are anticipated under this upgrade option; therefore, no direct impacts on surface waters would occur from operational flow reduction. Reduction in flow velocity associated with the operation of this option to minimize fish impingement may lead to indirect beneficial impacts to surface water quality in the form of sediment scour reduction.

#### *Modified Traveling Screens*

The new screens used to replace existing screens as part of this upgrade option would be designed to fit within existing housings, thereby avoiding structural modifications to the CWIS. The type of screen and installation method would be determined during design and dewatering the screens with stop logs may be necessary prior to installation

of new screens. In-water construction and dewatering may result in localized and temporary direct impacts to water quality from increased turbidity that would not noticeably alter surface water quality beyond the duration of in-water activities. This upgrade option would also require the construction of a fish return system consisting of a PVC pipe or flume installed on support piling. Pilings would be installed above the ordinary high-water mark (outside the intake structure) with exact placement determined as part of detailed design. Construction-related impacts would be localized, temporary (limited to the duration of construction), and minor, and all in-water work would be performed in compliance with federal, state, and local regulations and permit requirements.

Operation of the proposed intake would involve ongoing maintenance, which may require periodic in-water access resulting in direct impacts like those from construction. Similarly, impacts associated with operation and maintenance would be periodic, temporary, and minor, as potential increases in turbidity would not noticeably alter surface water quality beyond the duration of in-water maintenance activities.

*System of Technologies*

This option would involve a combination of technologies, operational measures, and management practices, such as barrier nets, variable speed pumps, and behavioral deterrents, among other possible options. Effects would vary depending on the option retained. If in-water construction is necessary, fill or sediment disturbance can directly and indirectly impact surface waters and quality. Stormwater runoff may lead to erosion, sedimentation, and construction-related chemicals entering surface waters but would be minimized or avoided using BMPs, an SWPPP, and an SPCC plan (Section 2.2.3) in compliance with the CGP. Ultimately, construction-related impacts would be temporary (limited to the duration of construction) and minor because all in-water work would be performed in compliance with federal, state, and local regulations.

Operational measures and management practices would have no direct impacts on surface waters. Operational flow changes may indirectly impact surface waters and quality by altering flow characteristics, scour, and sediment movement within the immediate vicinity of the intake. Maintenance may also require periodic in-water access, resulting in direct impacts to surface water like those of construction. Impacts associated with operation and maintenance would be minor, as potential alterations in flow, scour, and sediment movement would be incorporated into upgrade design considerations. Additionally, maintenance would be periodic and temporary.

*Impingement Mortality Performance Standards*

Like the System of Technologies option, this option may require constructing technologies; however, this option may also require in-water work or vessel activity for monitoring as well as iterative construction or retrofitting. Mitigation measures, as described in Section 2.2, would be implemented to avoid and minimize potential effects on surface waters and quality. Any necessary permit modifications, including updates to the NPDES permit, would be obtained prior to implementation. Ultimately, the impacts

of this upgrade option would be minor and similar to those associated with the System of Technologies option.

#### *Coal Combustion Residuals Management*

The impacts associated with CCR management involving the placement of CCR into an on-site landfill were previously assessed in Section 3.7.2.3 of the 2018 CUF CCR Management Operations EIS and updated in the 2019 Assessment of Proposed Change. These prior assessments did not consider updates to the NPDES permits or ELGs required for continued operation of CUF; however, considering these updates, impacts to surface water would remain minor and consistent with those previously determined in the 2018 CUF CCR Management Operations EIS and in the 2019 Assessment of Proposed Change and are incorporated by reference. Additionally, surface water impacts from the construction and operation of a BPF are provided in Section 3.5.2.2 of the Beneficiation PEA and are incorporated by reference.

#### *Summary of Impacts to Surface Water and Water Quality*

Impacts to surface waters and water quality from transmission line and electrical system components would be temporary and minor with implementation of avoidance and minimization measures and BMPs. Impacts to surface waters as a result of transmission line vegetation management and maintenance would be minimized with implementation of TVA standard measures and BMPs and impacts would be minor. Construction impacts from water intake upgrades would be temporary and minor and ultimately the selected water intake option would result in a net benefit to surface waters relative to existing conditions. The net benefit of reducing effluent discharges under FEIS Alternative A would be negated, and there would be a nominal increase in effluent flows with continued operation of CUF in conjunction with CUG, relative to the No Action Alternative. However, effluent discharges from CUF and CUG would adhere to NPDES requirements including new ELG requirements and other relevant regulations. Overall impacts to surface waters from continued operation of CUF in conjunction with operation of CUG would be minor.

### 3.3.3 Wetlands

#### 3.3.3.1 Affected Environment

Wetlands within the vicinity and boundary of the Cumberland Reservation are described in Section 3.6.3.1.1 and Appendix F of the FEIS, including the results of field surveys performed within the Cumberland Reservation in 2021. TVA did not identify new information related to the characterization of the affected environment for wetlands within the boundaries of the Cumberland Reservation, the CC plant, and the natural gas pipeline corridor; therefore, FEIS Section 3.6.3.3.1 and Appendix F are incorporated by reference.

TVA identified new information that was notably different than what was considered in the FEIS related to Alternative D proposed activities. The FEIS did not consider water resources within the footprint of the disturbance area of the proposed BATW

recirculation system upgrades and the transmission and electrical system components associated with Alternative D.

Existing wetlands located within the boundary of the proposed activities associated with continued operation of CUF are shown in Figure 3-2 and summarized in Table 3-2. No wetlands were observed within the proposed footprint of either of the proposed options for the transmission line tie between the Cumberland–Johnsonville and Cumberland–Marshall 500-kV lines, within the Cumberland Reservation boundary.

**Table 3-2. Summary of Wetlands Present within the Boundary of Proposed CUF Upgrades**

| Wetland Habitat Type[1] | Identifier | Acreage | Description |
|---|---|---|---|
| **BATW Recirculation System** | | | |
| PEM/SS1Ex | W037 | 0.03 | Saturated excavated drain |
| PEM1Ex | W034 | 0.31 | Swale, human-made and used as part of plant operations |
| | W038 | 0.10 | Human-made drainage swale |
| **BATW Recirculation System Total** | | **0.44** | |
| **Transmission Upgrades – Loop Option 1** | | | |
| PEM1E | W011w | 0.50 | Emergent wetland finger associated with large wetland complex in floodplain of Wells Creek |
| | W013b | 0.04 | Wetland ditch |
| PFO1E | W013a | 0.07 | Wetland remaining after access road construction |
| | W019b | 0.01 | Forest wetland surrounding stream, between road and steep embankment |
| PSS1E | W014 | 0.40 | Wetland associated with stream channel, remaining after road |
| **Loop Option 1 Total** | | **1.02** | |
| **Transmission Upgrades – Loop Option 2** | | | |
| PEM1E | W017a | 0.04 | Along road ROW |
| | W017b | 0.01 | Inundated and saturated |
| | W017c | 0.11 | Highly disturbed, piles of wet soil and gravel with pockets of water |
| | W017d | 0.04 | In maintained ROW |
| | W019a | 0.15 | Emergent wetland surrounding stream, between road and steep embankment |
| | W019c | <0.01 | Emergent wetland surrounding stream, between road and steep embankment |
| PFO1E | W017e | <0.01 | Intact forested wetland located outside of the maintained emergent wetland |
| | W019b | 0.03 | Forest wetland surrounding stream, between road and steep embankment |
| **Loop Option 2 Total** | | **0.38** | |

[1] Classification codes are defined in Cowardin et al. 1979.
Key: BATW = bottom ash transport water; E = seasonally flooded/saturated; P = Palustrine; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; EM1 = emergent, persistent vegetation; FO1 = forested, broad-leaved deciduous vegetation, seasonally flooded/saturated; ROW = right-of-way; SS1 = scrub-shrub, broad-leaved deciduous vegetation; UB = unconsolidated bottom; x = excavated.

### 3.3.3.2 Environmental Consequences

Impacts from the construction and operation of CUG on wetlands, including those from the construction and operation of the CC gas plant and natural gas pipeline, are assessed in FEIS Sections 3.6.3.2.3.1 and 3.6.3.2.3.2. Impact determinations from those sections are applicable to Alternative D and are incorporated by reference here. Impacts from operation of the BADW facility (including BATW recirculation system upgrades) and CCR management (involving future CCR placement in an on-site landfill) on wetlands are assessed in Section 3.13.2.3 of the 2018 CUF CCR Management Operations EIS, with on-site landfill impacts updated in the 2019 Assessment of Proposed Change; therefore, these previously assessed impacts are incorporated by reference. Additionally, impacts on wetlands from the construction and operation of a BPF were previously assessed and determined to have no effect in Section 3.11.2.2 of the Beneficiation PEA and are incorporated by reference.

Updates to the CUF Powerhouse would occur within existing facilities and in previously disturbed areas; therefore, no impacts on wetlands would occur. Water intake upgrades would have no impact on wetlands because no wetlands are located within the footprint of proposed intake upgrades. Sediment disturbances associated with in-water work would be localized, with sediments expected to settle shortly after in-water work is complete.

#### *Transmission and Electrical System Components*

*Loop Option 1*

Loop Option 1 involves spanning a total of 1.02 acres of wetlands within the proposed corridor for the transmission line. Of the 1.02 acres of wetlands, 0.54 acres are low-growing emergent wetland habitat, 0.40 acres are scrub-shrub wetland habitat, and 0.08 acres are forested wetland habitat (portions of W013a and W019b). The establishment of a new transmission line necessitates vegetation clearing across the full corridor, which would include the removal of trees to ensure adequate clearance between tall vegetation and transmission line conductors.

The emergent wetland areas would not require clearing because of the existing low stature of the vegetation and minimal clearing would be required in the scrub-shrub wetland areas to accommodate transmission line construction. The 0.08-acre forested wetland would be permanently converted to emergent or scrub-shrub wetlands.

TVA would avoid wetlands to the maximum extent practicable during construction and would use BMPs as outlined in A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities Revision 4 (2022b). BMPs include eliminating mechanized clearing in wetlands, using low ground-pressure equipment, and using mats during clearing and construction to reduce rutting and soil compaction. Additional guidelines for avoiding and minimizing wetland impacts include TVA ROW Clearing Specifications (2022c), TVA Site Clearing and Grading Specifications (2022d), and TVA Transmission

Construction Guidelines Near Streams (2022e). TVA would comply with all applicable federal (CWA Section 401 and 404) and state (TDEC ARAP) requirements.

Ongoing maintenance requires the management of vegetation to maintain clearance and prevent interference with overhead wires. TVA would continue to follow BMPs to minimize any disturbance to wetlands during operation.

With implementation of BMPs, and adherence to federal and state wetland regulations, both temporary and permanent direct impacts from construction and operation on emergent and scrub-shrub wetlands would be minor. Permanent conversion of 0.08 acres of forested wetlands to emergent or scrub-shrub types would also be minor.

*Loop Option 2*

Approximately 0.38 acres of wetlands are located within the boundary of Loop Option 2. Of these wetlands, 0.35 acres consist of low-growing emergent wetland habitat, while the remaining 0.03 acres (portions of W017e and W019b) are forested wetland habitat situated along the outer edges of the existing corridor. All wetlands within the proposed Loop Option 2 boundary are located inside an existing transmission line corridor, which has previously been cleared of incompatible vegetation and maintained to ensure proper clearance between vegetation and transmission lines. During construction, TVA would operate within these existing transmission line corridors and would avoid all wetlands to the maximum extent practicable.

TVA would avoid wetlands to the maximum extent practicable during construction and would use BMPs as outlined in A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities Revision 4 (2022b). BMPs include eliminating mechanized clearing in wetlands, using low ground-pressure equipment, and using mats during clearing and construction to reduce rutting and soil compaction. Additional guidelines for avoiding and minimizing wetland impacts include TVA Right-of-Way Clearing Specifications (2022c), TVA Site Clearing and Grading Specifications (2022d), and TVA Transmission Construction Guidelines Near Streams (2022e). TVA would comply with all applicable federal (CWA Sections 401 and 404) and state (TDEC ARAP) wetland regulations.

Ongoing maintenance requires the management of vegetation to maintain clearance and prevent interference with overhead wires. TVA would continue to follow BMPs to minimize any disturbance to wetlands during operation. With implementation of BMPs, and adherence to federal and state wetland regulations, impacts from construction and operation on all wetlands would be minor.

*Tie Options 1 and 2*

No wetlands were identified within the proposed footprint of either of the proposed options for the transmission line tie between the Cumberland–Johnsonville and Cumberland–Marshall 500-kV lines, within the limits of the Cumberland Reservation. However, a small segment of the required transmission Tie Option 1 is located within the existing Cumberland–Johnsonville 500-kV ROW, outside the Cumberland

Reservation, and has not been surveyed for wetlands. Based on desktop analysis, wetlands are not expected in this area. Should wetlands be encountered, impacts would resemble those under Loop Option 2, as all work would occur within an existing transmission line ROW. Consequently, direct and indirect impacts would be minor.

*Updates to Existing On-Site Transmission Equipment*

Updates to existing on-site transmission equipment would be conducted within TVA's existing facilities and transmission line rights-of-way. Impacts to wetlands associated with these upgrades would not be anticipated. If wetlands are present in the upgrade area, they would be avoided to the maximum extent practicable. If avoidance is not possible, TVA would minimize any disturbance to wetlands by following standard BMPs documented in A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities Revision 4 (2022b).

***Summary of Impacts to Wetlands***

Impacts to wetlands from construction of transmission system Loop Option 1 or Loop Option 2 would be minimized with implementation of BMPs and adherence to all regulatory requirements. However, Loop Option 1 would result in conversion of a 0.08-acre forested wetland habitat to scrub-shrub habitat, which would be a minor impact. All activities for Loop Option 2 are proposed within the existing transmission corridor where vegetation is already maintained. Ongoing vegetation management and corridor maintenance would implement TVA's standard BMPs; therefore, impacts to wetlands would be minor. Overall impacts to wetlands from continued operation of CUF in conjunction with operation of CUG would be minor.

## 3.4 Air Quality and Greenhouse Gases/Climate Change

### 3.4.1 Air Quality

#### 3.4.1.1 Affected Environment

The federal and state regulatory setting, classification, and elements of air quality relevant to the Cumberland Reservation are generally discussed in FEIS Sections 3.7.1.1.1 through 3.7.1.1.7, and 3.7.1.2. As noted in the FEIS, the CUF continues to operate under the conditions stipulated by Tennessee Air Pollution Control Board, (Title V) Operating Permit No. 577855 (expiring June 30, 2026) (TDEC 2025c).

TVA identified new information related to the characterization of the affected environment for air quality within the boundaries of the Cumberland Reservation (FEIS Alternative A). Therefore, FEIS Sections 3.7.1.1.1.1 through 3.7.2.1.1.7 and 3.7.1.2 are incorporated by reference, except where noted as follows:

- FEIS Section 3.7.1.1.1 Ambient Air Quality Standards: Effective May 6, 2024, the USEPA changed the National Ambient Air Quality Standard (NAAQS) for annual particulate matter (PM) less than or equal to 2.5 microns wide ($PM_{2.5}$) from 12 micrograms per cubic meter ($\mu g/m^3$) to 9 $\mu g/m^3$. The USEPA has since filed a

motion to vacate the revised standard in the U.S. Court of Appeals for the District of Columbia Circuit, urging the Court to vacate the rule prior to the deadline for nonattainment area designations under the revised standard (February 7, 2026). However, as of the date of this SEIS, the more stringent annual $PM_{2.5}$ standard (9 µg/$m^3$) remains in effect.

- FEIS Section 3.7.1.1.3 New Source Performance Standards (NSPS): On May 9, 2024, after the completion of the FEIS, the USEPA released the Final Rule: NSPS for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-fired Electric Generating Stations (Subpart TTTTa). The rule establishes new carbon pollution standards for modified coal- and new gas-fired power plants that began construction, reconstruction, or modification after May 23, 2023.
- FEIS Section 3.7.1.1.3 New Source Performance Standards (NSPS): On May 9, 2024, after the completion of the FEIS, the USEPA released the Final Rule: Emission Guidelines for Greenhouse Gas Emissions for Electric Utility Generating Units (Subpart UUUUb). This rule sets emission guidelines for existing fossil fuel-fired electric generating units, including coal-fired units built on or before May 23, 2023.
- FEIS Section 3.7.1.2 CUF Reservation: Monitored air quality in the region of the Cumberland Reservation, depicted in Table 3.7-2 of the FEIS for ozone, sulfur dioxide ($SO_2$), and $PM_{2.5}$, has been reviewed for more recent years. There are no formal, valid data for $SO_2$ since completion of the FEIS. For ozone, the 2022 dataset is incomplete and there are no data available for 2023 or 2024 at the monitoring site identified in the FEIS. $PM_{2.5}$ monitoring data for 2022–2024 is in compliance with the 24-hour and annual $PM_{2.5}$ standards (USEPA 2025b). The USEPA's website shows preliminary 2023–2025 ozone design value for one monitor (Sumner County) in the Nashville-Davidson-Murfreesboro-Franklin, Tennessee, Core Based Statistical Area (CBSA) (Nashville CBSA) above the 2015 8-hour ozone NAAQS (USEPA 2025c). However, the 2025 data is preliminary and has not been finalized. There are other ozone monitors within the Nashville CBSA that show preliminary 2023–2025 design values below the ozone NAAQS. The Nashville CBSA is currently in attainment. The Cumberland Reservation is located in Stewart County, which is not part of the Nashville CBSA. Stewart County is designated as unclassifiable/attainment for all NAAQS pollutants. The Prevention of Significant Deterioration (PSD) permitting process (discussed in 3.4.1.2.3) would ensure that the operation of CUG along with the operation of CUF would not cause or contribute to an ozone NAAQS violation.
- FEIS Section 3.7.1.2 CUF Reservation: TDEC issued permits to construct for CUG on June 20, 2023, and on March 27, 2025.

On June 11, 2025, USEPA Administrator Lee Zeldin proposed to repeal all GHG emissions standards for the power sector under Section 111 of the Clean Air Act (CAA) (USEPA 2025d), including 40 CFR Part 60, Subparts TTTT, TTTTa, and UUUUb. As an alternative, USEPA also proposed to repeal a narrower set of requirements that includes the emission guidelines for existing fossil fuel-fired steam-generating units

(Subpart UUUUb), the carbon capture and sequestration/storage (CCS)-based standards for coal-fired steam-generating units undertaking a large modification, and the CCS-based standards for new base load stationary CTs. USEPA has not published a final rule. These regulations (Subparts TTTT, TTTTa, and UUUUb) are currently in effect as of the date of this SEIS.

### 3.4.1.2 Environmental Consequences

The environmental consequences of the air quality resources associated with Alternative D are addressed below in terms of construction, regulatory requirements, and operational impacts for continued operation of the CUF coal-fired units in conjunction with construction and operation of CUG.

#### 3.4.1.2.1 Construction Impacts

Construction impacts associated with CUG are assessed in FEIS Section 3.7.2.3.1. TVA did not identify new information related to this impact assessment for air quality resources; therefore, FEIS Section 3.7.2.3.1 is applicable to Alternative D and is incorporated by reference.

In contrast to the added construction for CUG, generation of fugitive particulate matter addressed in FEIS Section 3.7.2.2 relative to deconstruction and demolition of CUF would no longer occur under Alternative D. To this end, Alternative D in this SEIS eliminates the deconstruction aspect of this impact.

Activities that support continued operation of CUF at historical levels of reliability are described in Section 2.1.2. These activities would be relatively small scale and would result in temporary, minor emissions from gasoline and diesel fuel combustion by vehicles and equipment, as well as fugitive dust generated during clearing and grading activities. Fugitive dust produced from these activities would be controlled by BMPs (e.g., wet suppression) as provided in TVA's fugitive dust control plans.

#### 3.4.1.2.2 Operational Impacts – Title V Operating Permit

CUF maintains an existing Title V Operating Permit (No. 577855), which is required for facilities that have emissions exceeding the major source thresholds for criteria pollutants, hazardous air pollutants (HAPs), and in certain cases, GHGs. The existing CUF Title V permit includes emission limits (as established by local/state/federal regulation) as well as the data tracking, recordkeeping, and reporting measures to verify compliance.

Operations associated with Alternative D and support facilities would ultimately require significant modification of the Title V permit to incorporate combined operation of gas and coal at the Cumberland Reservation. The requirements set forth in the construction permit issued by TDEC would be incorporated into the Title V permit. As of the date of this SEIS, requirements would include the following, as applicable:

- 40 CFR 60, Subpart KKKK, is applicable to all stationary gas CT units with a heat input at peak load equal to or greater than 10 Million British Thermal Units

(MMBtu) per hour for which construction or modification is commenced after February 18, 2005. This subpart regulates nitrogen oxides ($NO_X$) and $SO_2$ emissions. There are options for compliance with the $SO_2$ limit, one of which is a sulfur content in fuel limit of 0.06 pounds (lb) $SO_2$/MMBtu heat input. The $NO_X$ standard of this subpart would be met.[1]

- 40 CFR 60, Subpart TTTT establishes emission standards and compliance schedules for the control of GHG emissions from a stationary CT that commences construction after January 8, 2014, but on or before May 23, 2023, or commences reconstruction after June 18, 2014, but on or before May 23, 2023, and has been determined to be applicable to the CC units. Each affected stationary CT must not discharge any gases that contain $CO_2$ in excess of 1,000 lb $CO_2$ per megawatt hour.
- 40 CFR 60, Subpart UUUUb is applicable to existing fossil fuel–fired steam-generating units that commenced construction on or before May 23, 2023.
- 40 CFR 60, Subpart IIII is applicable to the black-start generators with requirements, including the use of ultra-low-sulfur diesel, which would be met, as well as certification of engines to appropriate standards and recordkeeping requirements.
- 40 CFR 63, Subpart YYYY establishes national emission limitations and operating limitations for HAP emissions from stationary CTs located at major sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

The anticipated repairs and maintenance would be evaluated to determine whether any permit modifications are required. If needed, TVA would apply for and comply with any necessary permit modifications which would include applicable emission standards including analysis of GHG standards applicability for modified coal-fired steam electric generating units. If warranted, additional NEPA studies would be completed.

#### 3.4.1.2.3 Operational Impacts – Regulatory Requirements

With the continued operation of CUF in conjunction with the operation of CUG under Alternative D, the net decrease of regulated pollutants considered in the FEIS would not occur. PSD review for CUG was not required due to this net decrease. TVA is currently in the early stages of preparing a PSD permit application, tentatively targeted for submittal as early as May 2026. The PSD permit application would include modeling analysis, which requires modeling proposed emissions for significant impacts and conducting cumulative impact analyses and assessing background concentrations as applicable. For cumulative analysis, models require emission inventories from all the sources in the impacted area, building downwash parameters, five years of representative meteorological data, and terrain data to analyze air quality impacts. PSD

[1] On January 15, 2026, the USEPA issued a final rule (Subpart KKKKa) for new, modified, or reconstructed combustion turbines that began construction, modification, or reconstruction after December 13, 2024, changing the NOx standards. The final rule would not apply to CUG units based on commencement of construction.

modeling would demonstrate that the operation of CUG in conjunction with the operation of CUF would not cause or contribute to a violation of NAAQS or exceed allowable increments. The PSD permit issued would set requirements for compliance with all applicable standards. In addition, Best Available Control Technology (BACT) evaluation would be performed in the PSD permit application. TVA would select state-of-the-art controls that would meet BACT for all PSD applicable gas process units. Once issued, the PSD permit would supersede related air permits for CUG.

Through completion and submittal of the PSD permit application, TVA would demonstrate compliance with all required elements of the PSD process, including protection of ambient air quality and adherence to NAAQS primary standards. As required by the CAA (40 CFR part 50), NAAQS are developed to protect human health, including the health of sensitive or at-risk groups, with an adequate margin of safety.

Continued operation under Alternative D would not cause or contribute to exceedances of primary NAAQS standards, as TVA would comply with all applicable federal and state regulations stipulated in current and future permits, thereby ensuring protection of public health.

#### 3.4.1.2.4 Summary of Impacts to Air Quality

Implementation of Alternative D would negate the emissions reductions associated with the retirement of CUF as presented in Section 3.7.2.3.1 of the FEIS. Regional air quality impacts of Alternative D would remain within the limits set by applicable permits and air quality standards. The coal units would continue to operate at historical emissions levels as discussed in Table 3.7-3 of the FEIS, which is incorporated by reference.

The new gas plant would incorporate state-of-the-art emission control technology. Table 3-3 provides a summary of the maximum preliminary annual emission estimates for the new gas plant for determining PSD applicability.

Potential emissions from the new gas plant would exceed PSD significance thresholds, as shown in Table 3-3. As such, PSD review and permitting would be triggered.

**Table 3-3. Maximum Project Annual Emission Estimates and Prevention of Significant Deterioration Significant Emission Rates for New Gas Plant**

| Pollutant | Emission Increases (tons/year) | Significant Emission Rates (tons/year) | PSD Triggered |
|---|---|---|---|
| CO | 442 | 100 | Yes |
| $NO_x$ | 2,591 | 40 | Yes |
| $SO_2$ | 244 | 40 | Yes |
| Filterable PM | 248 | 25 | Yes |
| $PM_{10}$ | 311 | 15 | Yes |
| $PM_{2.5}$ | 311 | 10 | Yes |
| VOC | 119 | 40 | Yes |
| Pb | 0.04 | 0.6 | No |
| Sulfuric Acid Mist | 23 | 7 | Yes |
| $CO_2e$ | 5,530,450 | 75,000 | Yes |

Key: CO = carbon monoxide; $CO_2e$ = carbon dioxide equivalent; NOx = nitrogen dioxide; Pb = lead; PM = particulate matter; $PM_{2.5}$ = particulate matter less than 10 microns in diameter; $PM_{10}$ = particulate matter less than 10 microns in diameter; PSD = Prevention of Significant Deterioration; $SO_2$ = sulfur dioxide; VOC = volatile organic compounds

Note: These are preliminary estimates and may change with the PSD application process.

Compliance with permit requirements would be protective of ambient air quality and would ensure the operation of CUG along with the continued operation of CUF does not cause or contribute to NAAQS violations.

### 3.4.2 Greenhouse Gases/Climate Change

#### 3.4.2.1 Affected Environment

GHGs and climate change elements relevant to the Cumberland Reservation are generally discussed in FEIS Sections 3.7.1.1.8 and 3.7.2.3.1. TVA identified new information related to the characterization of the affected environment for GHGs and climate change. Therefore, FEIS Sections 3.7.1.1.8 and 3.7.2.3.1 are incorporated by reference, except as noted below:

- FEIS Section 3.7.1.1.8, Greenhouse Gas Emissions: Updated Global Warming Potential (GWP) per 40 CFR 98, Table A-1 to Subpart A: methane ($CH_4$) GWP = 28; nitrous oxide ($N_2O$) GWP = 265; and sulfur hexafluoride ($SF_6$) GWP = 23,500.
- FEIS Section 3.7.1.1.8, GHG and Climate Assessment Methodology and Section 3.7.2.3.1, GHG Effects from Direct and Indirect Emissions – Life Cycle Analysis (LCA) regarding specific references to GHG LCA for FEIS alternatives: This analysis is not applicable to this SEIS because of recent executive actions, detailed below.

- FEIS Section 3.7.1.1.8, EOs Addressing GHG Emissions Reductions:
  - On January 9, 2023, the Council on Environmental Quality (CEQ) issued guidance on conducting GHG emissions analysis and calculating and presenting Social Cost of Greenhouse Gases in NEPA EAs/EISs using the Interagency Working Group (IWG) on Social Cost of Greenhouse Gases social cost rates.
  - Since the completion of the FEIS in December 2022, there have been updates to EOs and other actions under the Trump Administration. On January 20, 2025, President Trump issued a series of presidential actions related to climate change and GHG. EO 14148, Initial Recension of Harmful Executive Orders, revoked EOs 13990 and 14008. Additionally, EO 14154, Unleashing American Energy, directed CEQ to propose rescinding its NEPA-implementing regulations. On February 25, 2025, CEQ published an Interim Final Rule to remove its NEPA regulations from the CFR; the rule became effective on April 11, 2025.
  - EO 14154 also disbanded the IWG, which was established pursuant to EO 13990, as well as any guidance, instruction, recommendation, and documents issued by the IWG. EO 14154 directs the Administrator of the USEPA to issue guidance to address the Social Cost of Carbon, including consideration of eliminating the calculation from any federal permitting or regulatory decision. Prior to further guidance issued by the USEPA, EO 14154 directs agencies to "…ensure estimates to assess the value of changes in greenhouse gas emissions resulting from agency actions, including with respect to the consideration of domestic versus international effects and evaluating appropriate discount rates, are, to the extent permitted by law, consistent with the guidance contained in the Office of Management and Budget's Circular A-4 of September 17, 2003 (Regulatory Analysis)."

### 3.4.2.2 Environmental Consequences

Climate change is a global issue that results from several factors, including, but not limited to, the release of GHGs, land use management practices, and the albedo effect, or reflectivity of various surfaces (including reflectivity of clouds). Climate change may result in altered weather patterns including increases in storm intensity and frequency. This can lead to increased precipitation which can result in more frequent and larger flooding events. The CUF facility is located near the Cumberland River. Although facilities are outside the 100-year floodplain, larger flooding events that may result from climate change could result in flooding outside the 100-year floodplain. In addition, these same storm events may result in more frequent and longer sustained wind events that can result in downed power lines and impacts to transmission.

For the purposes of this assessment, the evaluation of climate change impacts focuses on the net change in GHG emissions resulting from the proposed alternative.

Under Alternative D, TVA would continue to operate CUF coal-fired units in conjunction with the construction and operation of CUG. Based on operational emissions data from

Table 3.7-3 of the FEIS, and current GWPs established in Table A-1 of 40 CFR 98, the estimated change in annual GHG emissions and the associated $CO_2e$ emissions increase at the Cumberland Reservation from implementation of Alternative D is summarized below. The net emissions increase would occur in the first full year after CUG would begin operation (anticipated in 2027) and is characterized as the net change from existing baseline conditions resulting from Alternative D, with the change being the combined operation of CUF and CUG:

- Increase of approximately 2,760,529.8 tons per year of $CO_2$, 195.5 tons per year of $CH_4$, and 68.1 tons per year of $N_2O$.
- Based on emissions conversions using GWPs, an increase of approximately 18,047 tons per year $CO_2e$ from $N_2O$ and an increase of 5,474 tons per year $CO_2e$ from $CH_4$.
- Total net increase of 2,784,050.3 tons per year $CO_2e$ from GHGs.

The values above are derived from the “Proposed CCs at CUF – Alternative A Emissions” column in Table 3.7-3 of the FEIS and do not include operational emissions from CUF because they are integrated into the current baseline condition. The PSD requirements for NAAQS pollutants may affect GHG emissions estimates, potentially reducing emissions from those reported for CUF in Table 3.7-3 of the FEIS. The net GHG emissions increases also do not reflect any fluctuations in operation of CUG with respect to capacity factors or compliance with 40 CFR 60, Subpart TTTT.

Emissions of $CO_2$ from energy consumption are being used as an operational GHG emissions geographic comparison analysis, as those data are the most readily available and consistent across state, U.S., and global data sources. Based on the most recent estimates of $CO_2$ emissions by the U.S. Energy Information Administration, total emissions of $CO_2$ for the state of Tennessee were 88.5 million metric tons in 2023 (USEIA 2025a). The most recent data for emissions of $CO_2$ from all TVA-owned and operated units, including TVA’s purchased power, and Renewable Energy Credit retirement adjustments which reduce $CO_2$ emissions, were approximately 49 million metric tons (TVA 2024c).

The most recent annual $CO_2$ emissions for the U.S. caused by energy consumption were 4,772 million metric tons of $CO_2$ in 2024 (USEIA 2025b). The most recent annual global $CO_2$ emissions due to energy consumption were 37,079 million metric tons of $CO_2$ in 2023 (USEIA 2025c). Therefore, the net near-term increase in emissions of approximately 2.50 million metric tons of $CO_2$ per year associated with implementation of Alternative D (as converted from 2,760,529.8 tons $CO_2$ per year identified above) would represent an increase of approximately 5.10 percent of total TVA system-wide $CO_2$ emissions, approximately 2.82 percent of total statewide emissions, approximately 0.05 percent of the total U.S. emissions, and approximately 0.007 percent of the total global GHG emissions. Additionally, implementation of Alternative D would negate the emissions reductions associated with the retirement of CUF as presented in Section 3.7.2.3.1 of the FEIS. As such, the continued operation of CUF in conjunction with the operation of CUG under Alternative D would represent an increase in future estimated

GHG emissions, particularly in the context of its contribution to TVA's system-wide GHG emissions and Tennessee's GHG emissions.

## 3.5 Biological Environment

### 3.5.1 Vegetation

The federal and state regulatory setting for vegetation relevant to the Cumberland Reservation is discussed generally in FEIS Section 3.8.1, which is incorporated by reference.

#### 3.5.1.1 Affected Environment

Vegetation communities in the Cumberland Reservation are described in Section 3.8.1.1 of the FEIS (TVA 2022a). Field surveys and aerial photo interpretation were completed in 2021, covering the entire Cumberland Reservation (TVA 2022a, Appendix J). The previous site survey is valid for 10 years unless new species are listed and have the potential to occur in the reservation. TVA has confirmed that no updates have been applied to the Tennessee Rare Plant List (TDEC 2021) since publication of the FEIS and that no additional federally listed plants have been identified (USFWS 2025); therefore, Section 3.8.1.1 is incorporated by reference.

A considerable portion of the Cumberland Reservation consists of disturbed areas associated with the CUF, CUG (under construction), and supporting infrastructure (Figure 3-3). In areas in and around the CUF and CUG, vegetation communities are characterized as disturbed, consisting mainly of open ruderal vegetation, early-successional vegetation, and disturbed fields. As described in Appendix J of the FEIS (TVA 2022a), most of these herbaceous vegetation communities are dominated by nonnative plant species that possess little conservation value. The western portion of the reservation is dominated by deciduous forests, with a few patches of mixed evergreen forest cover. Most of these forested areas have experienced extensive previous disturbance and are degraded by nonnative species infestations.

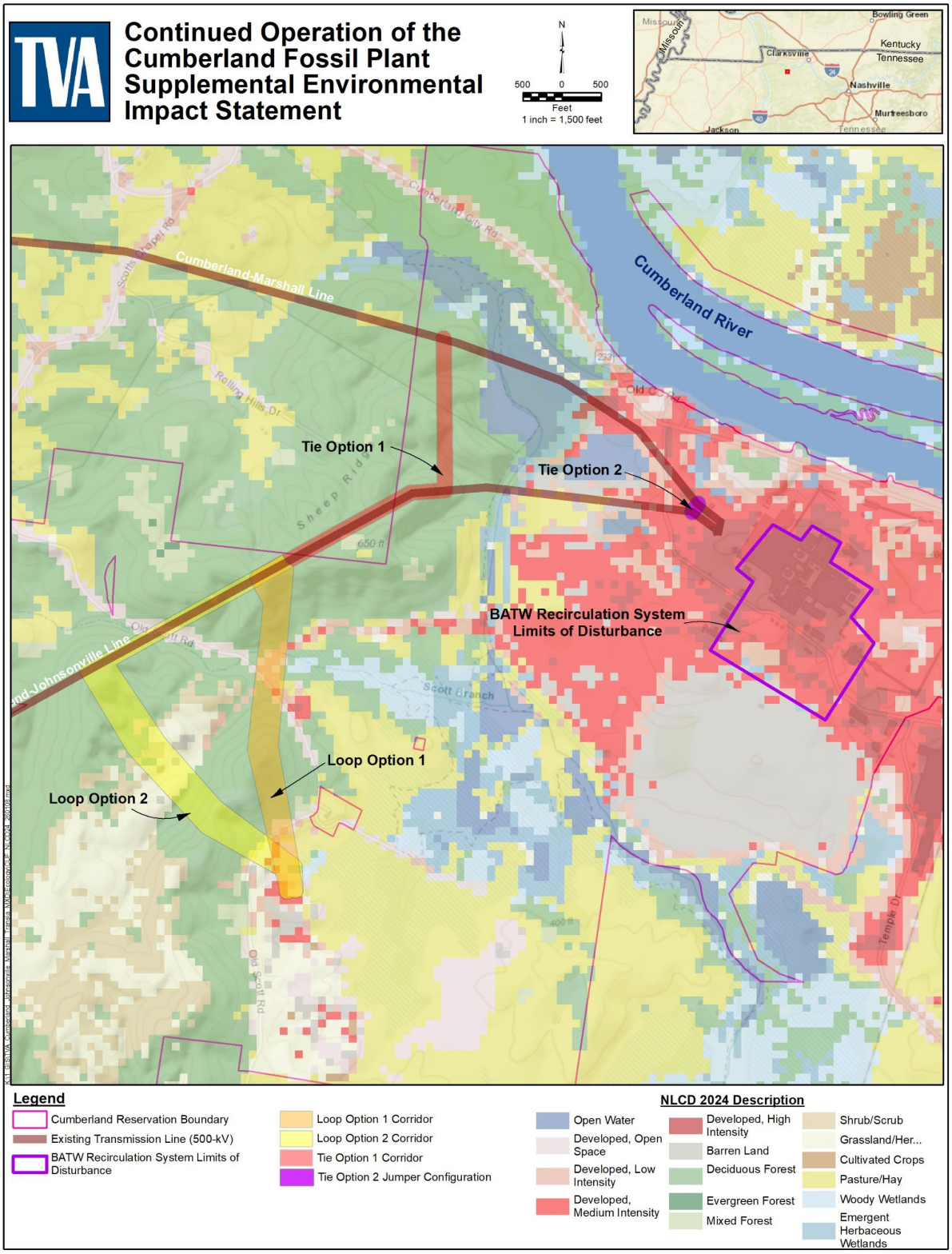



**Figure 3-3. Land Cover on the Cumberland Reservation**

Overall, most of the vegetation communities identified in the boundaries of the Cumberland Reservation do not support unique vegetation communities, nor do they have potential to support state or federally listed plant species (see Section 3.5.4 of the SEIS for discussion of listed species). Specific to the limits of disturbance for Alternative D, the following is noted:

- No native vegetation communities occur inside the boundary identified for the CUF Powerhouse activities, the ELG facility requirements, or the CUF plant water intake upgrades. Patches of nonnative invasive *Phragmites* have established around the retention pond and grassy (ruderal) vegetation is present around the industrial facilities.
- The transmission line corridors mostly include a mix of deciduous forest and disturbed early-successional vegetation. Small patches of wetland habitat are present.
- Along Loop Option 1, there are remnant wetlands along Old Scott Road and the unnamed access road leading to the tailings facility. These include 1.02 ac of forested, emergent, and scrub-shrub wetlands (Table 3-2 in Section 3.3.3).
- Along Loop Option 2, there are remnant wetlands in the existing Cumberland–Johnsonville 500-kV transmission corridor, along Old Scott Road. These include 0.38 acres of emergent and forested wetlands (Table 3-2 in Section 3.3.3).

#### 3.5.1.2 Environmental Consequences

Activities associated with the CUF Powerhouse interior updates, the facility ELG requirements, water intake upgrades, and CCR management do not require removal of native vegetation. Therefore, no impacts on native vegetation communities are expected from these activities.

Loss and conversion of native vegetation would occur from the construction of new transmission line corridors, including a new tie to connect the Cumberland–Johnsonville and Cumberland–Marshall 500-kV lines together, and a new loop connecting the Cumberland–Johnsonville 500-kV line to the Cumberland CC switchyard (Figure 3-3). Habitat acreages provided in the following analysis are conservative estimates derived from National Land Cover Database (NLCD) data (USGS 2024) which depicts areas of deciduous forest within the existing, cleared transmission line corridor.

For Tie Option 1, habitat conversion, from tree cover to herbaceous cover, would occur along the transmission line corridor between structures 1 and 3 (approximately 19.5 acres, including 19.4 acres of deciduous forest and 0.1 acres of mixed forest). Minimal, if any, change to native vegetation would occur from updates along the existing Cumberland–Johnsonville 500-kV corridor between structures 3 and 6. There would be no native habitat removal associated with the Tie Option 2 jumper configuration outside of the existing Cumberland Fossil Plant Switchyard.

Additional habitat conversion would occur for the new loop between the Cumberland–Johnsonville 500-kV line and the Cumberland CC switchyard. Two loop options are under consideration, with similar impacts predicted:

- Loop Option 1: Approximately 1.5 miles of new transmission line corridor. This option would convert 26.1 acres of deciduous forest cover to herbaceous cover and a small permanent loss associated with three transmission structures. As described in Section 3.3.3, 0.08 acres of forested wetland habitat would be permanently converted to emergent or scrub-shrub wetlands.
- Loop Option 2: Approximately 1.5 miles of new transmission line corridor. This option would convert 36.6 acres of deciduous forest cover to herbaceous cover and a small permanent loss associated with three transmission structures.

Overall, Alternative D would result in the permanent conversion of between 26.1 and 56.1 acres of deciduous forest cover to herbaceous cover, depending on the combination of options selected for the transmission loop and tie components. With implementation of routine measures to limit the introduction and spread of invasive species (Section 2.2.1), herbaceous habitat in the new transmission corridors would contribute biological value by providing suitable habitat for herbaceous plant communities, pollinators, and other species associated with early-successional habitats. Impacts to native vegetation communities would be minor.

### 3.5.2 Wildlife

#### 3.5.2.1 Affected Environment

Terrestrial wildlife communities in the Cumberland Reservation are described in Section 3.8.2.1.1 of the FEIS (TVA 2022a). TVA did not identify new information related to the characterization of the affected environment for wildlife. Therefore, FEIS Section 3.8.2.1.1 is incorporated by reference.

Wildlife species assemblages of the reservation are shaped by the types of habitat present and the condition of those habitats. Vegetation communities in the reservation are largely fragmented and degraded. The herbaceous and forested habitats, including wetlands, are representative of ecosystems that are widely distributed in the region. Habitats are predominantly suitable for generalist species (Figure 3-3).

Field surveys conducted in 2011 and 2021 show that the Cumberland Reservation supports a diverse assemblage of common wildlife species (TVA 2022a). Thirty-one bird species, four reptiles, five amphibians, eleven mammals, and four insect species have been recorded in the vicinity of the Cumberland Reservation (TVA 2022a, Table 3.8-4). Most species recorded were detected in or are associated with forested habitat.

Osprey (*Pandion haliaetus*) has confirmed occurrences in the Cumberland Reservation. Although 16 osprey nests have been recorded in the Cumberland Reservation (Figure 3.8-2 of the FEIS), none of them are located within the limits of disturbance for Alternative D. Two nests are within 0.25 miles of the limits of disturbance for the BATW

recirculation system. Four additional nests are in proximity to the intake channel, along the shoreline of the Cumberland River.

Specific to the limits of disturbance for Alternative D, the following is noted:

- No wildlife habitat occurs inside the boundary identified for the CUF Powerhouse activities, the ELG facility requirements, and the CUF plant water intake upgrades. Although patches of grassy (ruderal) vegetation are present around the industrial facilities and could support occasional use by disturbance-tolerant animals, these areas are of very low suitability for most wildlife.
- Deciduous and mixed forests in the proposed transmission line corridors have the highest potential to support wildlife.
- Remnant patches of wetland habitat occur in the existing transmission corridor, located along Old Scott Road. These could support wetland-associated wildlife but likely constitute low-quality wildlife habitat due to their small size, fragmentation effects, proximity to road infrastructure, and occurrence within an existing transmission corridor.
- Loop Option 1 intersects five wetland polygons over a total acreage of 1.02 acres, including forested wetlands, emergent wetlands, and a scrub-shrub wetland (Table 3-2 in Section 3.3.3). Three of these were rated as having low value because of their small size and disturbance regime; the others were rated as having moderate value (TVA 2022a, Appendix F).
- Loop Option 2 intersects eight wetland polygons, over a total acreage of 0.38 acres (Table 3-2 in Section 3.3.3). These wetlands are associated with two wetland complexes that include emergent and forested wetlands. Five of the wetland polygons were rated as having low value because of their small size and disturbance; the others were rated as having moderate value (TVA 2022a, Appendix F).

#### 3.5.2.2 Environmental Consequences

Activities associated with the CUF Powerhouse interior updates, the facility ELG requirements, water intake upgrades, and CCR management would not require removal of terrestrial or wetland habitats. Therefore, no impacts on wildlife communities are expected from these activities.

As described in Section 3.3.3 of the SEIS, the new transmission line corridors encompass some wetland habitat; however, TVA would avoid placing transmission line structures in wetlands (Figure 3-2). As needed, localized wetland tree removal would occur to ensure vegetation within the transmission corridor is compatible with the safety and operational requirements of the transmission line. By applying the BMPs described in Section 2.2, potential direct and indirect impacts to stream/wetland-associated species would be minimal, if any.

As described in Section 3.5.1.2 of this SEIS, permanent conversion of between 26.1 and 56.1 acres of forested habitat would occur during construction of the transmission

lines. Conversion of 0.08 acres of forested wetlands could also occur with the implementation of Loop Option 1. These changes would result in a small loss of habitat for species associated with forested habitats and an increase in habitat for species associated with herbaceous/early-successional habitats.

Although some habitat loss would occur, the types of forested habitat affected are common and widely available outside of the project area; therefore, mobile species (birds, bats, medium/large mammals) would be expected to disperse into nearby suitable habitats. Less mobile species, such as small mammals, amphibians, and reptiles, could be directly affected during vegetation clearing, as well as juveniles, eggs and nests of mobile species.

Activities associated with Alternative D would not directly interfere with existing osprey nests. Upgrades to achieve facility ELG and proposed updates to the CWIS would occur near six osprey nests. Ospreys nesting near these proposed facilities occupy an industrial area and are considered tolerant to potential disturbance from construction noise and the increased presence of people. Therefore, no direct or indirect impacts to ospreys or their habitat would be expected.

Short-term effects may occur during transmission line construction and during periodic maintenance because of noise and presence of workers. Effects could include short-term displacement and localized avoidance of work areas. These effects would be small because the habitats adjacent to proposed work areas are of low quality and are occupied by adaptable species that are typically described as disturbance tolerant.

Overall, construction and operation activities associated with Alternative D would have minor impacts on wildlife because the amount of habitat impacted would be small, the types of habitats affected are common and widely distributed in the region, and the wildlife species affected are common and tolerant of disturbance.

### 3.5.3 Aquatic Life

The federal and state regulatory setting for aquatic life relevant to the Cumberland Reservation is discussed generally in FEIS Section 3.8.3, which is incorporated by reference.

#### 3.5.3.1 Affected Environment

Aquatic communities and surface water habitats in and around the Cumberland Reservation are described in Section 3.8.3.1.1, Appendix E, and Appendix F of the FEIS (TVA 2022a). TVA did not identify new information related to the characterization of aquatic life. Therefore, FEIS Section 3.8.3.1.1 is incorporated by reference.

Surface water features and wetlands in the limits of disturbance for Alternative D are described in Sections 3.3.2 and 3.3.3, Table 3-1, and Figure 3-2.

The intake channel, connecting the fossil plant’s CWIS to the Cumberland River, is the most likely feature to support aquatic life in the project footprint. It is an embayment of the Cumberland River, covering an area of less than 3 acres. Aquatic life in the intake

channel would be similar to that of the Cumberland River, which is described in Section 3.8.3.1.1 of the FEIS and is incorporated by reference. The Cumberland River is characterized as having poor-to-fair shoreline aquatic habitat, no aquatic macrophytes, and a warmwater fish community typical of river and reservoir habitats. Fish and benthic invertebrate health ratings, measured in 2015, ranged from fair to good (TVA 2016). Nearby river substrates were previously described as degraded/sub-optimal with clay as the dominant substrate overlain by silt (TVA 2022a). Similar benthic habitat occurs within the intake channel. Habitats in the intake channel would support mainly disturbance-tolerant species.

The retention pond, located next to the limits of disturbance for the BATW recirculation system, is a human-made feature and does not support ecologically important aquatic life.

Surface water features intersected by the proposed transmission loop options are stream 007 (Loop Options 1 and 2), stream 008 (Loop Option 1), stream 010 (Loop Options 1 and 2), wet weather conveyance E006 (Loop Option 2), and wet weather conveyance E007 (Loop Options 1 and 2). These surface water features are described as follows (Appendix E in FEIS):

- 007: Perennial stream with presence of aquatic life, including fish, salamander, odonates, crayfish, and other macrobenthos. The feature was historically impacted by logging.
- 008: Perennial stream with presence of fish and macrobenthos.
- 010: Intermittent stream with presence of fish and macrobenthos. Cattle impact this feature.
- E006: Wet weather conveyance with no aquatic life recorded.
- E007: Wet weather conveyance with no aquatic life recorded. The feature is identified as a ditch, impacted by cattle.

### 3.5.3.2 Environmental Consequences

No temporary or permanent impacts to aquatic life would occur from activities associated with the CUF Powerhouse interior updates, the facility ELG requirements, or CCR management. These activities do not affect surface water features.

#### *Water Intake Upgrades*

Depending on the option selected to achieve CWA Section 316(b) compliance, upgrades to the CWIS could result in disturbance of aquatic habitat in proximity to the intake during retrofitting or construction. However, the upgrades are intended to reduce the risk of impingement and entrainment for aquatic organisms, which would correspond to a permanent benefit for aquatic life, relative to existing conditions. Although compliance options would undergo a thorough evaluation of site-specific impacts as part of the detailed design phase, possible adverse effects from the CWIS upgrades are discussed below by option.

*Through-Screen Velocity of 0.5 Feet per Second*

This would involve either a reduction in operation flow or the replacement of existing pumps to reduce the intake flow rates. Physical modification of the CWIS would not be required to implement either of these options; therefore, no effects to aquatic habitats or aquatic life would occur.

*Modified Traveling Screens*

This option would involve replacing existing screens with new traveling screens during a scheduled outage. The new screens would fit within the CWIS' housing, thus avoiding the need for structural modifications. However, dewatering the screens with stop logs would likely be required prior to installation of new screens. This option would also require the construction of a fish return system, which would consist of a PVC pipe or flume installed on support pilings. Pilings would be installed above the ordinary high-water mark (outside the intake structure) and exact placement of the pilings and location of discharge would be confirmed as part of detailed design. Localized, temporary disturbance and degradation of aquatic habitat within the intake channel would result from construction activities and dewatering. Small, localized but permanent flow alterations could also occur in the intake channel, at the discharge site. Impacts on aquatic life would be minor.

*System of Technologies*

This option would involve a combination of technologies, operational measures, and management practices. TVA would consider measures such as barrier nets, variable speed pumps, and behavioral deterrents, among other possible options. Effects would vary depending on the option retained. In general, short-term temporary disturbance and degradation of aquatic habitat would be expected if dewatering or construction and retrofitting activities are required in the intake channel. The use of barrier nets and deterrents (e.g., strobe lights, air bubble curtains, or acoustic devices) would result in functional aquatic habitat loss within the intake channel due to physical exclusion or avoidance behavior. Impacts to aquatic life would be minor given the low ecological sensitivity of the intake channel.

*Impingement Mortality Performance Standard*

This option would require TVA to demonstrate that the CUF has a 12-month average impingement mortality rate of no more than 24 percent for nonfragile species. Monitoring requirements would likely necessitate the deployment of monitoring infrastructure, such as fish collection and sampling systems, as well as in-water inventory work or vessel activity. The need for updated technologies, operational measures, or management practices would be informed by monitoring results. Depending on the study's findings, iterative retrofitting and upgrades could be implemented as part of an adaptive management approach. In general, if upgrades are deemed necessary, they would likely entail one or more of the options discussed above. Accordingly, impacts to aquatic life would be minor. Effects are likely to extend over a

longer duration, which would include a minimum 12-month monitoring period and possibly the iterative implementation of the CWIS updates.

#### *Transmission and Electrical System Components*

Construction of the new loop between the Cumberland–Johnsonville 500-kV line and the Cumberland CC switchyard could impact aquatic life. Two loop options are under consideration, with similar impacts predicted.

*Loop Option 1*

The transmission corridor crosses two perennial streams (007 and 008) and one intermittent stream (010), all of which support aquatic life. No permanent impacts to the streams would occur because the transmission structures would be placed outside of the streams and their banks. Indirect impacts from erosion and sedimentation could occur during construction and cause temporary, localized reductions in water quality and aquatic life habitat. Effects would be minimized with implementation of standard BMPs defined in the SWPPP and TVA's Guide for Environmental Protection and Best Management Practices (TVA 2022b).

*Loop Option 2*

The transmission corridor crosses one perennial stream (008) and one intermittent stream (010), both of which support aquatic life. As described for Loop Option 1 above, no permanent impacts to the stream would occur. With effective implementation of minimization measures, small, localized indirect impacts from erosion and sedimentation could occur during construction.

#### *Summary of Impacts to Aquatic Life*

Alternative D is likely to have minor adverse effects to aquatic life from retrofitting and construction activities associated with the CWIS upgrades and construction of the transmission lines. Anticipated adverse effects would be short term and reversible, except for a possible small permanent flow alteration in the intake channel if a modified traveling screens and fish return system is retained as the compliance solution. Regardless of the option selected, upgrades to the CWIS would result in permanent benefits, relative to existing conditions, by reducing the risk of impingement and entrainment.

### 3.5.4 Threatened and Endangered Species

The federal and state regulatory setting for threatened and endangered species relevant to the Cumberland Reservation are discussed generally in FEIS Section 3.8.4, which is incorporated by reference.

#### 3.5.4.1 Affected Environment

Threatened, endangered, and other protected species with potential to occur in the Cumberland Reservation are described in Section 3.8.4.1.1 of the FEIS, which is

incorporated by reference. Appendix D provides an updated summary of the 47 state and federally threatened, endangered, and other protected species identified from a desktop review of the USFWS Information for Planning and Consultation (IPaC) tool (USFWS 2025), the TDEC Rare Species List (TDEC 2025d), and TVA's Regional Natural Heritage Database (TVA 2025b). Appendix D includes an assessment of the likelihood of occurrence of each species in the Cumberland Reservation. Table 3-4 summarizes the listed and protected species with potential to occur in the Cumberland Reservation.

A review of the USFWS IPaC, TDEC Rare Species List, and TVA's Regional Natural Heritage Database resulted in the identification of four species that had not previously been included in the FEIS: little brown bat (*Myotis lucifugus*), meadow jumping mouse (*Zapus hudsonius*), smooth rabbitsfoot (*Quadrula cylindrica*), and winged mapleleaf (*Quadrula fragosa*). Based on the suitable habitat for each species and Natural Heritage Database occurrence data, only little brown bat has the potential to occur in the Cumberland Reservation (Appendix D).

**Table 3-4. Assessment of the Potential for Threatened, Endangered, and Other Protected Species Evaluated to Occur in the Cumberland Reservation**

| Common Name | State Rank and Listing Status[1] | Federal Listing Status[1] | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation and Impact | Reference |
|---|---|---|---|---|---|
| **Birds** | | | | | |
| Henslow's Sparrow *Centronyx henslowii* | S1B, T | -- | Damp open fields and meadows with grass interspersed with weeds or shrubs. | **Possible**; some potentially suitable habitat is present; however, no individuals observed during field surveys. No records in the TVA Natural Heritage Database. Species would be found in or near wetlands contained in the former agricultural fields or in early-successional habitat along existing transmission corridors. **Impacts, though unlikely, would be minor.** | TDEC 2025d; TVA 2021b; TVA 2025b |
| Bald Eagle[2] *Haliaeetus leucocephalus* | -- | DL | Forested areas adjacent to large bodies of water for nesting habitat. Tall, mature coniferous or deciduous trees that afford a wide view of the surroundings are used as nest trees and roost trees. | **Likely**; suitable nesting trees exist along Wells Creek and the Cumberland River. No nests or individuals observed during field surveys. TVA Natural Heritage Database identified verified extant population within 3 miles. Included on TDEC Rare Species List. Plant staff indicate that they have seen them fly near CUF in the past, suggesting bald eagles are likely to occur periodically within the boundaries of the reservation. Suitable foraging habitat for bald eagles occurs over Wells Creek and the Cumberland River. **While impacts are unlikely and expected to be minor at most, TVA would comply with the Bald and Golden Eagle Protection Act regarding any seasonal restrictions or permitting should an active nest be identified.** | TDEC 2025d; TVA 2021b; TVA 2025b; USFWS 2025 |
| Swainson's Warbler *Limnothlypis swainsonii* | S3, D | -- | Mature, rich, damp, deciduous floodplain and swamp forests. | **Possible**; potentially suitable habitat present; however, no individuals observed during field surveys. No records in the TVA Natural Heritage Database. Included on TDEC Rare Species List. Mesic forest patches, including those adjacent to the Cumberland River and Wells Creek may provide suitable habitat. **Impacts, though unlikely, would be minor.** | TDEC 2025d; TVA 2021b; TVA 2025b |

| Common Name | State Rank and Listing Status[1] | Federal Listing Status[1] | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation and Impact | Reference |
|---|---|---|---|---|---|
| Cerulean Warbler *Setophaga cerulea* | S3B, D | -- | Mature deciduous forest, particularly in floodplains or mesic conditions. | **Possible**; potentially suitable habitat present; however, no individuals observed during field surveys. No records in the TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in mature forest stands near the transmission line corridor, particularly around floodplain areas. **Impacts, though unlikely, would be minor.** | TDEC 2025d; TVA 2021b; TVA 2025b, |
| Bewick's Wren *Thryomanes bewickii* | S1, D | -- | Brushy areas, thickets and scrub in open country, open and riparian woodland. | **Possible**; potentially suitable habitat present; however, no individuals observed during field surveys. TVA Natural Heritage Database identified verified extant population within 3 miles. Included on TDEC Rare Species List and IPaC. Species would be found in previously disturbed areas such as existing transmission corridors or former agricultural fields on site. **Impacts, though unlikely, would be minor.** | TDEC 2025d; TVA 2021b; TVA 2025b, USFWS 2025 |
| **Mammals** | | | | | |
| Gray Bat *Myotis grisescens* | S2, E | E | Cave obligate year-round; frequents forested areas; migratory. | **Possible**; natural roosting habitat (caves) is absent from the reservation. Suitable foraging habitat exists over waterbodies on the industrial portion of the plant property, over wetlands and streams in the undeveloped areas, and over Wells Creek and the Cumberland River. However, no individuals observed during field surveys. TVA Natural Heritage Database includes estimated viable and historical population in Stewart County. Included on TDEC Rare Species List and IPaC. Species would be found foraging over water features in the reservation or along the Cumberland River shoreline. **Not likely to adversely affect the species**. | TDEC 2025d; TVA 2021b; TVA 2025b, USFWS 2025 |

| Common Name | State Rank and Listing Status[1] | Federal Listing Status[1] | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation and Impact | Reference |
|---|---|---|---|---|---|
| Northern Long-eared Bat<br>*Myotis septentrionalis* | S1S2, T | E | Summer roosts may include caves, mines, live trees and snags; hibernates in caves and mines, often using small cracks and fissures. | **Possible**; suitable summer roosting and foraging habitat present. However, no individuals observed during field surveys. TVA Natural Heritage Database includes one population of unknown status in a 3-mi radius. Included on TDEC Rare Species List and IPaC. Suitable low to high-quality summer roosting habitat observed across the reservation, including forested areas, fence rows, and tree lines. Suitable foraging habitat exists over bodies of water on the industrial portion of plant property, over wetlands and streams in the undeveloped areas, and over Wells Creek and the Cumberland River. **Not likely to adversely affect the species**. | TDEC 2025d; TVA 2021b; TVA 2025b; USFWS 2025 |
| Indiana Bat<br>*Myotis sodalis* | S1, E | E | Hibernates in caves; spring/summer maternity roosts are normally under the bark of standing trees. | **Possible**; suitable roosting and foraging habitat present. However, no individuals observed during field surveys. TVA Natural Heritage Database includes one verified extant population in Stewart County. Included on TDEC List of Rare Species and IPaC; the reservation is within a known swarming area for Indiana bats. Like northern long-eared bat, may forage over water features and near forested areas across the reservation and may roost in deciduous forest patches across the reservation. Low to high-quality summer roosting habitat identified in the reservation. **Not likely to adversely affect the species.** | TDEC 2025d; TVA 2021b; TVA 2025b, USFWS 2025 |
| Tricolored Bat<br>*Perimyotis subflavus* | S2S3, T | PE | Generally associated with forested landscapes but may roost near openings. | **Confirmed**; three individuals captured during 2011 field surveys. Suitable summer roosting and foraging habitat observed across the reservation. TVA Natural Heritage Database includes one verified extant population within 3-mi. Not included on TDEC Rare Species List. Included on IPaC. Species would be found roosting in forested habitats. **Not likely to jeopardize the continued existence of the species.** | TDEC 2025d; TVA 2021b; TVA 2025b; USFWS 2025 |

| Common Name | State Rank and Listing Status[1] | Federal Listing Status[1] | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation and Impact | Reference |
|---|---|---|---|---|---|
| Little Brown Bat *Myotis lucifugus* | S3, T | UR | Summer roosts include rocky crevices, hollow trees, loose bark, or under shingles or siding of buildings. Hibernate in limestone caves during the winter. | **Possible**; suitable roosting and foraging habitat present; however, no individuals observed during field surveys. TVA Natural Heritage Database includes one verified extant population within 3-mi. Not included on TDEC Rare Species List. Included on IPaC. Species would be found in forested habitat. **Impacts would be minor.** | TDEC 2025d; TVA 2025b; TWRA 2025; USFWS, 2025 |
| **Reptiles** | | | | | |
| Alligator Snapping Turtle *Macrochelys temminckii* | S2S3, T | PT | Slow-moving, deep water of rivers, sloughs, oxbows, swamps, and lakes. | **Possible**; potentially suitable foraging habitat identified, but no individuals observed. TVA Natural Heritage Database includes one verified extant population within a 3-mi radius. Included on TDEC Rare Species List. Potential foraging habitat is present in the Cumberland River. Potential foraging and nesting habitat in and around Wells Creek. **Impacts, though unlikely, would be minor.** | TVA 2021b, Appendix K; TDEC 2025d; TVA 2025b |
| **Fish** | | | | | |
| Lake Sturgeon *Acipenser fulvescens* | S1, T | -- | Bottoms of large, clean rivers and lakes. | **Possible**; suitable habitat and one individual collected each year from 2009 to 2016 during biological surveys. TVA Natural Heritage Database includes one verified extant population within the watershed boundary. Included on TDEC Rare Species List. Species would be found in main sections of the Cumberland River. **Minor impacts from temporarily altered water quality during water intake structure upgrade; potential benefit from permanent reduction in impingement risk, relative to existing conditions.** | TVA 2020 |

| Common Name | State Rank and Listing Status[1] | Federal Listing Status[1] | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation and Impact | Reference |
|---|---|---|---|---|---|
| Blue Sucker<br>*Cycleptus elongatus* | S2, D | -- | Swift waters over firm substrates in big rivers. | **Possible**; suitable habitat and two individuals collected during electrofishing surveys in 2019. TVA Natural Heritage Database includes one possibly historical population within the watershed boundary. Included on TDEC Rare Species List. Species would be found in main sections of the Cumberland River. **Minor impacts from temporarily altered water quality during water intake structure upgrade; potential benefit from permanent reduction in impingement risk, relative to existing conditions.** | TVA 2020 |
| **Plants** | | | | | |
| Viscid Bushy Goldenrod<br>*Euthamia gymnospermoides* | S1, E | -- | Prairies and barrens | **Confirmed**; suitable habitat and 30 individuals observed in Cumberland–Johnsonville 500-kV transmission line corridor during field surveys. TVA Natural Heritage Database includes one verified extant population within 3-mi radius. Not included on TDEC Rare Species List. Species would be found near the overgrown grassy hillside or abandoned farmland along the site perimeter. **No adverse impacts would be anticipated; potential benefit from an increase in habitat**. | TVA 2021b, Appendix J; TDEC 2021; TDEC 2025d; TVA 2025b |
| American ginseng<br>*Panax quinquefolius* | S3S4, S-CE | -- | Rich woods | **Confirmed**; suitable habitat and 7 individuals observed during field surveys. TVA Natural Heritage Database includes one verified extant population within 3-mi radius. Species would be found under deciduous tree canopy with rich, moist, light, and porous rich loam. **Impacts, though unlikely, would be minor.** | TVA 2021b, Appendix J; TDEC 2025d; TVA 2025b |

| Common Name | State Rank and Listing Status[1] | Federal Listing Status[1] | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation and Impact | Reference |
|---|---|---|---|---|---|
| **Insect** | | | | | |
| Monarch Butterfly *Danaus plexippus* | -- | PT | Milkweeds and flowering plants | **Possible**; potentially suitable habitat, but no species observed during field surveys. No records in TVA Natural Heritage Database. Not included on TDEC Rare Species List. Included in IPaC. Species would be found near roadsides, open areas such as fields, transmission corridors, and wet areas with flowering species. **No adverse effect; potential benefit from an increase in habitat.** | TVA 2021b, Appendix J; TDEC 2025d; TVA 2025b; USFWS 2025 |

Key:
1) S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; SX = Presumed Extirpated; B = Status assigned to Breeding Population; C= Candidate; D= Deemed in Need of Management; DL = Delisted; E= Endangered; EXPN = Experimental Population, Non-Essential; PE = Proposed Endangered; PT = Proposed Threatened; T= Threatened; S= Special Concern; S-CE= Special Concern/Commercially Exploited; SH = Possibly Extirpated; UR = Under Review.[2] Protected under Bald Eagle and Golden Eagle Protection Act.

#### 3.5.4.1.1 Terrestrial Species

Five listed and/or protected bird species have potential to occur in the Cumberland Reservation (Table 3-4).

Bald eagles (*Haliaeetus leucocephalus*) are likely to occur periodically, having been observed nearby by CUF plant staff. No nesting habitat is present in the reservation, nor in the limits of disturbance for Alternative D. Suitable nesting trees exist along Wells Creek and the Cumberland River, outside of the limits of disturbance for Alternative D. Bald eagles are not expected in the limits of disturbance for Alterative D.

Potentially suitable habitat for Henslow's sparrow (*Centronyx henslowii*) is present in the reservation, including areas of damp open fields and grassy meadows with interspersed weeds or shrubs. Its presence in the reservation remains unconfirmed as it has not been recorded during field surveys, but it occurs in Stewart County (TDEC 2025d). Potentially suitable habitat exists within the limits of disturbance for Alternative D, in particular near wetlands along the existing and proposed transmission corridors. If present, Henslow's sparrow would occur for a brief time during migration between breeding and nonbreeding grounds; its breeding range is mainly north of Tennessee, and it overwinters in the southern U.S. (Herkert et al. 2020).

Potentially suitable forested habitat for Swainson's warbler (*Limnothlypis swainsonii*) and Cerulean warbler (*Setophaga cerulea*) is present in the reservation, in particular patches of mature, moist forest. Their presence in the reservation remains unconfirmed as they have not been recorded during field surveys, but they have been recorded in Stewart County (TDEC 2025d). Potential habitat exists in and near the limits of disturbance for Alternative D, including patches of deciduous forest along the proposed transmission line corridors. Swainson's warbler is considered unlikely to occur regularly in the Cumberland Reservation because the reservation is outside of its core breeding and overwintering range (Anich et al. 2020). The affected area overlaps Cerulean warbler breeding range, meaning it could be present during the breeding season (Buehler et al. 2020).

Potentially suitable habitat for Bewick's wren (*Thryomanes bewickii*) is present in the reservation, including brushy areas, thickets, and scrub. Its presence in the reservation remains unconfirmed as it has not been recorded during field surveys, but there is a confirmed occurrence within 3 miles of the reservation (TVA 2025b). Potential habitat exists in the limits of disturbance for Alternative D, mainly along the existing transmission line corridors. The affected area is near Bewick's wren breeding range, meaning it could be present during the breeding season (Kennedy et al. 2020).

As depicted in Figure 3.8-3 of the FEIS, suitable bat roosting and foraging habitats are available in the reservation, including for Indiana bat, northern long-eared bat, tricolored bat, gray bat (*Myotis grisescens*), and little brown bat. No suitable habitat is found within the limits of disturbance for the BATW recirculation system. However, deciduous forest cover along the proposed transmission corridors constitutes potential roosting and foraging habitats. Forested habitat in the transmission corridors cover between 26.1 acres and 56.1 acres, depending on the combination of options selected for the

transmission loop and tie components. Based on mapping from the FEIS, Loop Option 1 crosses a patch of high-quality roosting habitat while Loop Option 2 crosses medium quality roosting habitat.

Only tricolored bats have confirmed occurrences in the Cumberland Reservation (from 2011 surveys), whereas northern long-eared bats and little brown bats have known occurrences within 3 miles of the Cumberland Reservation (TVA 2025b) and gray bats and Indiana bats have occurrences in Stewart County (TDEC 2025d; TVA 2025b). The Cumberland Reservation overlaps with a known swarming area for Indiana bat (TVA 2022a).

Viscid bushy goldenrod (*Euthamia gymnospermoides*) occurs in the Cumberland Reservation and is associated with barrens and prairie habitat. Thirty individuals were observed in the existing Cumberland–Johnsonville 500-kV transmission line corridor, outside the limits of disturbance for Alternative D (see Figure 3.8-2 in Section 3.8.4.1.1.1 of the FEIS). Suitable habitat for viscid bushy goldenrod in the limits of disturbance for Alternative D include herbaceous vegetation communities within the proposed and existing transmission corridors.

American ginseng (*Panax quinquefolius*) occurs in the Cumberland Reservation and is associated with rich forest habitat. Seven individuals were recorded in dry deciduous forest habitat, in an isolated patch of the reservation, near Highway 149 (see Figure 3.8-2 and Appendix J in the FEIS). These occurrences are outside the limits of disturbance for Alternative D. Potential suitable habitat is available in the limits of disturbance for Alternative D, specifically in forested areas of the proposed transmission corridors.

Northern pricklyash (*Zanthoxylum americanum*) occurs in the Cumberland Reservation and is associated with various types of forested habitats, typically moist riverbanks, ravines, thickets, and woods. No suitable habitat is present within the limits of disturbance for the BATW recirculation system; however, deciduous forest cover along the proposed transmission corridors constitutes potential habitat. In particular, 10 northern pricklyash trees were recorded in a disturbed, deciduous bottomland forest stand that is traversed by the Loop Option 1 transmission corridor (Figure 3.8-2 in Section 3.8.4.1.1.1 of the FEIS). This forest stand is near the junction of Old Scott Road and the access road to the tailings facility.

Monarch butterfly (*Danaus plexippus*) has potentially suitable habitat in the Cumberland Reservation, including areas of herbaceous vegetation cover with milkweed and flowering plants. Its presence in the reservation remains unconfirmed as it has not been detected during field surveys and as a recently proposed species, this species has not previously been tracked by Natural Heritage Programs; there are no records of monarch butterfly in TVA's Natural Heritage Database. Potentially suitable habitat within the limits of disturbance for Alternative D includes herbaceous habitat in transmission corridors or in ditches along roadways.

#### 3.5.4.1.2 Aquatic Species

Potential habitat for alligator snapping turtle (*Macrochelys temminckii*) occurs in and near the Cumberland Reservation; however, presence of this species in the reservation remains unconfirmed as it has not been recorded during field surveys. A verified extant population occurs within 3 miles of the reservation (TVA 2025b). Suitable habitat includes slow-moving, deep water of rivers, sloughs, oxbows, swamps, and lakes. Limited potentially suitable habitat for alligator snapping turtle is present within the limits of disturbance for Alternative D and would be restricted to areas near the intake channel. The intake channel would be of limited ecological value for the species, representing habitat of marginal value.

Lake sturgeon (*Acipenser fulvescens*) occurs in the vicinity of the Cumberland Reservation and was captured annually between 2009 and 2016 during biological monitoring of the Cumberland River (TVA 2022a). Lake sturgeon is typically associated with clean waters of large rivers and lakes. It may occur periodically in the CUF plant cooling water intake channel, as evidenced by its detection during impingement sampling completed between 2005 and 2007 (TVA 2022a). The intake channel would be of limited ecological value for the species.

Blue sucker (*Cycleptus elongatus*) occurs in the vicinity of the Cumberland Reservation and was captured upstream and downstream of the CUF plant during biological monitoring of the Cumberland River in 2015 and 2019 (TVA 2022a). Blue sucker is typically associated with swift waters in large rivers or the lower parts of major tributaries. It could occasionally occur in the cooling water intake channel as the species has been recorded in some impoundments (NatureServe 2025). The intake channel would be of limited ecological value for the species.

### 3.5.4.2 Environmental Consequences

#### 3.5.4.2.1 Terrestrial Species

Direct impacts to Henslow's sparrow are considered unlikely as vegetation clearing for the corridors would mainly involve conversion of forested habitat. Areas of potentially suitable habitat in the transmission corridors, which include 0.3 acres (Loop Option 1) to 6.9 acres (Loop Option 2) of herbaceous cover, are compatible with transmission line operation and therefore do not require clearing. In addition, Henslow’s sparrow is most likely to occur in areas near emergent wetlands, which would be avoided for placement of permanent transmission structures. Impacts to Henslow's sparrow, if any, would be minor because habitats affected do not constitute essential breeding or wintering habitats, their presence would consist of transient occurrences during migration, and similar suitable habitats are widely available in the region.

Alternative D would result in the permanent conversion of between 26.1 acres and 56.1 acres of potential habitat for Swainson's warbler and Cerulean warbler. The change in habitat availability would be small and localized, representing approximately 0.1 percent or less of the 42,587.7 acres of forested habitat available in a five-mile radius from the project. Further, habitat conversion would involve habitat patches that are assumed to be of low value due to existing levels of fragmentation and proximity to developed

areas. Impacts on Swainson's warbler and Cerulean warbler would be minor, if any, and would not threaten either species' viability. Given that neither species have confirmed occurrences in the Cumberland Reservation, the likelihood of impacts is low, especially for Swainson's warbler whose core breeding and overwintering ranges fall outside of the reservation.

Construction of Loop Option 2 would result in the loss of potential suitable habitat for Bewick's wren, including 2.2 acres of scrub-shrub habitat. The transmission corridor for Loop Option 1 does not include scrub/shrub habitat. Vegetation assemblages within the transmission corridor may continue to provide suitable habitat for the species, particularly in areas where vegetation returns to thick brushy cover. The change in habitat availability would be small and localized and similar suitable habitats are widely available in the region. Impacts to Bewick's wren would be minor, if any, and would not threaten the species' viability.

Tree removal during transmission corridor clearing for Alternative D would permanently convert between 26.1 acres and 56.1 acres of deciduous forest cover to herbaceous cover, depending on the combination of options selected for the transmission loop and tie components. The affected areas constitute potential summer roosting and foraging habitat for bats, including Indiana bat, northern long-eared bat, tricolored bat, gray bat, and little brown bat. Conversion of forested areas to herbaceous cover may increase the availability of foraging habitat, considering that the transmission corridors are generally surrounded by forest cover.

TVA's programmatic consultation with the USFWS addresses impacts to federally listed bats on numerous routine activities that TVA carries out, including those associated with the expansion or construction of new transmission assets (including tree removal). The programmatic consultation can be summarized as follows:

- In September 2017, TVA completed a programmatic biological assessment (BA) to address the potential for impacts of specific TVA actions on federally listed bat species whose ranges overlap with actions either funded, permitted, or carried out by TVA. The BA addresses 10 overarching actions and 96 routine activities and how these actions and activities may affect the Indiana bat, northern long-eared bat, and gray bat.[2] TVA determined that 21 of the 96 routine activities would have no effect on these listed bat species or their critical habitat.
- On March 8, 2018, the USFWS responded to the BA with concurrence that the remaining 75 routine activities are not likely to adversely affect the gray bat, or critical habitat of the Indiana bat. The USFWS also agreed that 72 of the 96 proposed routine actions are not likely to adversely affect the Indiana bat or northern long-eared bat.

[2] The biological assessment also includes Virgina big-eared bat (*Corynorhinus townsendii virginianus*); however, the species' range does not overlap the Cumberland Reservation.

- The USFWS subsequently provided a biological opinion (BO) regarding specific activities that could result in adverse effects to Indiana bat and northern long-eared bat (vegetation removal, hazard tree removal, and prescribed burning). The BO concluded that the action is not likely to jeopardize the continued existence of Indiana bat or northern long-eared bat and included an Incidental Take Statement, which defined the "action is reasonably certain to cause incidental take of individual [Indiana bats]." Because of the difficulty of detecting the take of Indiana bats, TVA must quantify the extent of take by using the annual and 20-year (2018–2038) cumulative acreages of tree removal and prescribed burning under the programmatic action as a surrogate measure, as defined in the BO.
- In 2023, TVA reinitiated this consultation due to the uplisting of northern long-eared bat from threatened to endangered. TVA prepared an updated BA requesting the addition of Incidental Take for northern long-eared bat and no revision to previously issued Incidental Take amounts for Indiana bat.
- In May 2023, TVA received an additional BO from the USFWS for the reinitiated consultation in which an Incidental Take Statement was issued for northern long-eared bat (USFWS 2023).
- In 2024, TVA again reinitiated this consultation because of the proposed listing of the tricolored bat as endangered. TVA prepared an updated BA requesting the addition of Incidental Take for tricolored bat and no revision to previously issued Incidental Take amounts for Indiana bat or northern long-eared bat (TVA 2024d).
- In November 2024, TVA received a conference opinion from the USFWS (which includes the same analysis as a BO but applies to species proposed for listing) for the reinitiated consultation in which an Incidental Take Statement was issued for the tricolored bat (USFWS 2024).

Effects to bats would be minimized by use of specific conservation measures established through TVA's updated programmatic consultation with the USFWS for protected bats. Relevant conservation measures to the proposed alternative are listed in TVA's bat strategy form for Alternative D (Appendix C) and must be reviewed and implemented as part of the approved project. No more than 56.1 acres of forested habitat would be removed within the proposed and existing transmission line corridors and the acreage would count towards TVA's cumulative Incidental Take amounts for Indiana bat and northern long-eared bat.

In accordance with the conclusions presented in the BO (USFWS 2023) and the conference opinion (USFWS 2024), the proposed alternative is not likely to adversely affect the Indiana bat, northern long-eared bat, or gray bat, and is not likely to jeopardize the continued existence of tricolored bat.

Considering the application of conservation measures for federally listed bats, direct impacts to little brown bat (not currently federally listed) would be unlikely. Loss of potential summer roosting habitat would have a minor impact on little brown bat because suitable roosting habitat is widely available in the region. The change in habitat

availability would be small and localized, representing approximately 0.1 percent or less of the 42,587.7 acres of forested habitat available in a 5-mile radius of the Cumberland Reservation.

Vegetation clearing for Alternative D would not directly affect known occurrences of viscid bushy goldenrod. Suitable habitat for viscid bushy goldenrod, which includes herbaceous vegetation communities within transmission corridors, would not be lost due to the project because this vegetation type is compatible with the construction and operation of transmission lines. Given the species' occurrence within the Cumberland–Johnsonville transmission corridor, habitat availability for viscid bushy goldenrod may increase as a result of forest conversion. Alternative D would therefore have no permanent adverse impacts, and possibly a small benefit.

Vegetation clearing for Alternative D would not directly affect known occurrences of American ginseng. Transmission corridor clearing would, however, result in the permanent conversion of between 26.1 acres and 56.1 acres of potential habitat, depending on the combination of options selected for the transmission loop and tie components. The change in habitat availability would be small and localized, representing approximately 0.1 percent or less of the 42,587.7 acres of forested habitat available in a 5-mile radius of the Cumberland Reservation. Impacts on American ginseng would be minor and would not threaten the species' viability.

Vegetation clearing for Loop Option 1 could result in the loss of one or more northern pricklyash trees. The proposed Loop Option 1 transmission corridor overlaps with a small portion of a forest stand that contains 10 northern pricklyash trees near the junction of Old Scott Road and the access road to the tailings facility. If practicable, TVA would clear the corridor in a manner that avoids the removal of these trees. The limits of disturbance for Loop Option 2 do not include known occurrences of the species. It is unlikely that impacts to northern pricklyash trees would occur outside the aforementioned forest patch because botanical surveys covering the limits of disturbance for Alternative D were completed and did not detect this conspicuous species. Construction of Loop Option 1 would have a minor impact on northern pricklyash trees but would not threaten its viability. Construction of Loop Option 2 would have no impact.

Potentially suitable habitat for monarch butterfly would not be impacted by the proposed alternative. The species is associated with herbaceous vegetation communities, which are compatible with the construction and operation of transmission lines. Monarch butterflies are known to use disturbed areas, provided suitable plant assemblages, such as milkweeds and flowering plants, are present. Accordingly, habitat availability for monarch butterfly may increase as a result of forest conversion. Alternative D would therefore have no permanent adverse impacts and possibly a small benefit.

Overall, long-term effects to protected terrestrial species would be minor because similar suitable habitat (e.g., forested areas, herbaceous vegetation, etc.) in the vicinity of project activities is readily available.

#### 3.5.4.2.2 Aquatic Species

Small temporary effects to alligator snapping turtle, lake sturgeon, and blue sucker could occur from changes in water quality in the intake channel during retrofitting and construction activities associated with the CWIS upgrades. Changes would be similar to those described in Section 3.5.3.2 for aquatic life. The likelihood of impacts on alligator snapping turtle is highly uncertain as the species has no confirmed occurrences in the Cumberland Reservation, and the intake channel is unlikely to be occupied regularly. Potential impacts are unlikely and would be minor and would not affect the alligator snapping turtle's viability. Adverse effects to lake sturgeon and blue sucker would only materialize if these species were present near the CWIS during the brief time required for retrofitting or construction of the intake structure upgrades. Impacts on these fish species from altered water quality would be minor, if any. Upgrades to the CWIS would also result in a permanent reduction in impingement risk, which would constitute a potential benefit for lake sturgeon and blue sucker, compared to current operating conditions.

Under Alternative D, adverse impacts to protected aquatic species from CWIS upgrades would be temporary and minor. In the long term, protected fish species would benefit from a reduction in impingement risk, relative to current conditions.

## 3.6 Transportation

### 3.6.1 Affected Environment

The transportation network in the vicinity of the Cumberland Reservation is characterized in Section 3.11.1.1 of the FEIS. TVA did not identify new information related to the characterization of the affected environment for transportation, with the exception of the 2024 Tennessee Department of Transportation average annual daily traffic (AADT) volumes for the key roadways that serve the Cumberland Reservation. Therefore, FEIS Section 3.11.1.1 is incorporated by reference, with the exception of Table 3-5, which is updated below.

**Table 3-5. Average Daily Traffic Volume on Major Roadways Near Cumberland**

| Location (Station Number) | 2020–2021 AADT (vehicles/day) | 2024 AADT (vehicles/day) |
|---|---|---|
| Cumberland City Road, N of CUF (81000059) | 3,561 | 2,126 |
| SR-46/Grices Creek Road, 1.2 mi E of CUF (81000063) | 781 | 635 |
| Highway 149, 0.8 mi SE of CUF (81000073) | 4,941 | 4,525 |
| Highway 149, 0.4 mi E of CUF (81000058) | 1,834 | 1,659 |
| Scotts Chapel Road, 1.2 mi W of the CC plant site (81000060) | 355 | 387 |

Source: TVA 2022a, Table 3.11-1; TDOT 2024
Key: AADT = average annual daily traffic; CC = combined cycle; CUF = Cumberland Fossil Plant; mi = mile

### 3.6.2 Environmental Consequences

Under Alternative D, activities described in Section 2.1.2 would take place during scheduled outages, over a period of 3 to 4 years. Vehicular traffic on public roads near the Cumberland Reservation would increase during this time because of worker vehicles and materials moving to and from the plant. TVA estimates that the peak on-site workforce at the Cumberland Reservation could include up to 2,550 personnel. This estimate represents a conservative upper limit and includes all CUF operational staff, outage personnel, and the CUG construction workforce. While the FEIS originally analyzed a construction workforce of up to 600 personnel, actual conditions during CUG construction have shown that a larger workforce is needed. The peak on-site workforce used in this analysis reflects that realization.

Workforce traffic would mainly consist of a mix of passenger cars and light-duty trucks. Traffic is expected to be distributed during a peak morning period (to the site) and a peak evening period (away from the site). Assuming one person per commuting vehicle, there would be a daily average morning inbound traffic volume of up to 2,550 vehicles and a daily outbound traffic volume of up to 2,550 vehicles, for a total of up to 5,100 vehicles per day. Anticipated changes in traffic volume on nearby roadways resulting from the peak on-site workforce under Alternative D are provided in Table 3-6. These volumes include CUF operational staff and outage personnel, as well as the CUG construction workforce. As the CUG construction is underway, a substantial portion of this traffic volume is already being experienced under current conditions.

**Table 3-6. Changes in Traffic on Nearby Roadways From Peak On-Site Workforce**

| Location (Station Number) | Existing AADT (vehicles/day) | Existing AADT + Peak Workforce Traffic (vehicles/day) | Temporary Traffic Increase from Peak Workforce (%) |
|---|---|---|---|
| Cumberland City Road, N of CUF (81000059) | 2,126 | 7,226 | 240% |
| SR-46/Grices Creek Road, 1.2 mi E of CUF (81000063) | 635 | 5,735 | 803% |
| Highway 149, 0.8 mi SE of CUF (81000073) | 4,525 | 9,625 | 113% |
| Highway 149, 0.4 mi E of CUF (81000058) | 1,659 | 6,759 | 307% |
| Scotts Chapel Road, 1.2 mi W of the CC plant site (81000060) | 387 | 5,487 | 1,318% |

Source: TDOT 2024
Key: AADT = average annual daily traffic; CC = combined cycle; CUF = Cumberland Fossil Plant; mi = mile

The traffic volume increases presented in Table 3-6 represent conservative estimates, as they assume all project-related vehicles would use each affected roadway. In practice, the Cumberland Reservation can be accessed via multiple routes, so traffic would be distributed, and only a portion of the additional vehicles would use any single road. Nevertheless, during the construction period, local roads with typically low traffic

volumes may experience notable, temporary increases in congestion, particularly during peak commuting hours when workers arrive and depart.

Additional truck traffic would also occur in the area during the outage and construction phase due to material and equipment deliveries to the project area. However, as this increase would primarily occur during the mobilization and demobilization phases, impacts to the surrounding transportation network would be minimal. Consistent with the FEIS, most construction materials, equipment, and plant components are anticipated to be delivered by truck; however, larger components may be delivered to the site by barge or rail.

TVA would mitigate congestion or delays near the project site by implementing appropriate traffic controls such as staging of trucks, spacing logistics, staggering work shifts, or timing truck traffic to occur during lighter traffic hours, as needed. With implementation of these mitigation measures, impacts of the proposed alternative on transportation are expected to be localized, moderate, and limited to the 3- to 4-year outage and CUG construction period.

Following this peak workforce period, existing CUF operations jobs would be maintained, and the operation of CUG would require an operations staff of approximately 25 to 35 employees. This would represent a small increase in long-term operations workforce traffic compared to current baseline conditions but would have no discernable effect on transportation and the local roadway network.

## 3.7 Utilities

### 3.7.1 Affected Environment

Existing utilities serving the Cumberland Reservation are described in Section 3.12.1.1 of the FEIS. TVA did not identify new information related to the characterization of the affected environment for utilities. Therefore, FEIS Section 3.12.1.1 is incorporated by reference.

### 3.7.2 Environmental Consequences

Continued operation of CUF would be supported by the activities described in Section 2.1.2, including modifications to the existing transmission infrastructure as described in that section and depicted in Figure 2-2. If future studies indicate improvements are required to the regional transmission system to maintain system stability and reliability, TVA may need to provide operating guides for CUF or identify additional transmission projects, for which additional site-specific NEPA reviews would be completed.

Prior to construction and maintenance activities, existing utility lines would be located and marked to prevent accidental damage. Current water use associated with operation of CUF would continue and would not notably increase with the concurrent operation of CUG because TVA has elected to use air cooling at the gas plant. However, the long-term beneficial effects due to decreased water use described for FEIS Alternative A would be negated. Impacts to existing utilities are anticipated to be minor, and there would be no impact on the greater utility systems in the surrounding area.

As described in Section 1.1, TVA's PSA has experienced notable load growth in recent years, which is expected to continue. The added dispatchable generation capacity resulting from the concurrent operation of CUF and CUG would have potential long-term beneficial impacts by helping to ensure that TVA can reliably meet required year-round generation, maximum capacity system demands, and planning reserve margin targets.

## 3.8 Cultural Resources

### 3.8.1 Affected Environment

The regulatory framework and existing cultural resources on and in the vicinity of the Cumberland Reservation are described in Sections 3.13.1 and 3.13.2.1 of the FEIS. TVA did not identify new information related to the characterization of the affected environment for cultural resources. Therefore, FEIS Sections 3.13.1 and 3.13.2.1 are incorporated by reference.

### 3.8.2 Environmental Consequences

None of the activities described in Section 2.1.2 would impact previously identified archaeological sites. Ground disturbance for the proposed transmission line corridors fall within areas previously surveyed on the Cumberland Reservation (Hunter et al., 2022) or within existing surveyed ROW. No archaeological resources were identified within the proposed transmission corridor for the tie between the Cumberland–Johnsonville and the Cumberland–Marshall 500-kV lines or an alternative jumper configuration outside of the existing Cumberland Fossil Plant Switchyard, or within the proposed transmission corridor for either Loop Option 1 or Loop Option 2 connecting the Cumberland–Johnsonville 500-kV line to the Cumberland CC switchyard (Figure 2-2). The Tennessee State Historic Preservation Office (SHPO) concurred with these findings in a letter dated April 14, 2022.

One historical architectural property, SW-745 (Henry Hollister House), is located within a half mile of both the Loop Option 1 and Option 2 corridors. This property is listed on the National Register of Historic Places (NRHP). In April 2022, TVA determined, in consultation with the SHPO and other consulting parties, that FEIS Alternative A would have an adverse effect on the Henry Hollister House, resulting from the combined visual effects of CUG, its switchyard, and the two new transmission lines running between CUG and the CUF switchyard. This adverse effect was mitigated through the memorandum of agreement (MOA) executed with the SHPO in September 2023. TVA has completed two of the mitigation measures (visual screening and delineation survey of the Graveyard Hill Cemetery) and is working to complete the remaining two (historic signage and revised NRHP nomination).

The Henry Hollister House was listed in the NRHP in 1988, and TVA is currently undertaking updates to the NRHP documentation as a mitigation measure agreed upon in the MOA. The Henry Hollister House is located on a 5-acre property that also contains the Hollister Family Cemetery. It and the Graveyard Hill Cemetery are included as contributing resources in the forthcoming updates to the NRHP documentation.

TVA has made considerable effort to minimize the visual impact on the Henry Hollister House by evaluating multiple transmission corridor options, including evaluating whether the new line could be sited within the same corridor as lines currently being constructed for the CUG. However, that option would require additional ROW acquisition and removal of vegetation from the eastern edge of the property, which would cause more significant visual impacts to the Henry Hollister House. Loop Option 1 and Option 2 (Figure 2-2) are the results of collaborative efforts with TVA's project teams to develop routes having the minimum amount of visual disruption and impact on historic properties.

To determine the extent that the Henry Hollister House would be within the viewshed of the proposed transmission line, TVA completed a viewshed analysis using a geographic information system (GIS) and digital surface models (DSM) constructed with light-detection-and-ranging (LiDAR) data collected by the U.S. Geological Survey. The DSMs contain information on both terrain relief and winter (leaf off) vegetative cover. The proposed transmission structure locations and estimated heights were used to demonstrate that both options would be partially visible from the Henry Hollister House. However, they would be far less visible than the other transmission structures proposed with the original scope of work for the CUG facility, given that the extensive vegetation of the ridge would limit visibility of the full structures.

TVA determined that the visual effects introduced by either Loop Option 1 or Option 2 would not create a visual intrusion that would be substantially greater than the modern intrusions currently present or resulting from planned construction as a part of the undertaking covered by the MOA. The components already under construction, including transmission and power generation infrastructure, have introduced greater intrusions than the proposed transmission line. Loop Option 2 introduces slightly less visual intrusion owing to its greater physical distance from the property and the lower proposed tower heights that would allow existing vegetative cover to block a greater portion of the transmission structure from view (approximately 120 feet for the structures closest to the Henry Hollister House compared to approximately 145 feet for Loop Option 1). Additionally, TVA finds that the proposed transmission line would not alter the ability of the Henry Hollister House to convey its historic significance as a single-family residential dwelling designed in the Greek Revival and Italianate architectural styles during the height of the iron ore industry in the Western Highland Rim.

Given the prior disturbance in the viewshed by the aforementioned construction and undertakings mitigated in the prior MOA, TVA finds that the proposed alternative would not further diminish the integrity, significance, or visual setting of the Henry Hollister House. In a letter dated November 11, 2025, the Tennessee SHPO disagreed with TVA's findings and found that the proposed undertaking would adversely affect the Henry Hollister House and that the proposed transmission line corridor (either Loop Option 1 or 2) may add to the aggregate visual effects of CUG, its switchyard, and the transmission lines running between CUG and the CUF switchyard, but that the mitigation measures agreed upon in the existing MOA are sufficient and no new measures would be necessary to mitigate the new adverse effect (Appendix B). TVA would amend the existing MOA to modify the description of the undertaking to include

the new transmission line corridors. Thus, TVA has no additional obligations for the proposed alternative under Section 106 of the National Historic Preservation Act, beyond those stipulated by the existing MOA.

## 3.9 Solid and Hazardous Waste

### 3.9.1 Affected Environment

TVA did not identify any information related to the characterization of the affected environment for solid and hazardous waste that was determined to be notably different from that considered in the FEIS. Therefore, FEIS Section 3.14.2 is incorporated by reference.

### 3.9.2 Environmental Consequences

TVA identified information related to operation impacts on solid and hazardous waste that was determined to be notably different from that considered in the FEIS, as discussed below.

Wastes that would have been generated from retirement, decommissioning, decontamination, and deconstruction of CUF described in FEIS Section 3.14.3.2 would not occur. TVA would continue to operate CUF. TVA would implement all planned actions related to the current and future management and storage of CCR at CUF, which have been reviewed in previous NEPA analyses. Under continued operation of CUF, existing solid and hazardous waste management would not change from current operations.

A new BPF could be constructed at CUF as a part of CCR management. Such a facility would be addressed under the Construction and Operation of BPFs process that was evaluated in TVA's 2025 PEA (TVA 2025a). As noted previously, that action is not addressed further in this SEIS.

TVA considered all new information in combination with FEIS Section 3.14.3 to assess the potential effects from continued CUF operation on solid and hazardous wastes. Continued operation of CUF in conjunction with operation of CUG would result in solid and hazardous waste generation impacts similar to that assessed in the FEIS. Continued operation of CUF in conjunction with operation of CUG would result in minor impacts to the production and disposal of hazardous and solid waste.

## 3.10 Socioeconomics

### 3.10.1 Affected Environment

Demographic characteristics of the Cumberland labor market area are described in Sections 3.4.1.1 and 3.16.1.1 of the FEIS. The Cumberland labor market area is defined as Stewart County, where the Cumberland Reservation is located, and Benton, Dickson, Henry, Houston, Humphreys, and Montgomery Counties, in Tennessee, as well as Calloway, Christian, and Trigg Counties in Kentucky. Demographic and economic characteristics of potentially affected populations were assessed in the FEIS using the data from the 2020 Census and 2015–2019 American Community Survey

(ACS) 5-year estimates. The identification of low-income populations within a 10-mile radius of the Cumberland Reservation are shown in Figure 3.4-3 of the FEIS, and incorporated by reference. No significant concentration of minority populations were identified. Characterization of the direct employment at CUF, the indirect and induced effects of CUF operation on the local economy, and TVA's payments in lieu of taxes are described in Section 3.16.1.1.2 of the FEIS and are also incorporated by reference.

TVA identified the following information that has been updated since that considered in the FEIS: 2019-2023 ACS 5-year estimates (USCB 2023).

The most recent population data for the Cumberland labor market and the states of Tennessee and Kentucky (USCB 2023) are provided in Table 3-7, shown in relation to population statistics from the 2010 and 2020 Census. Between 2020 and 2023, most counties in the Cumberland labor market saw population growth, with the exception of Christian County, Kentucky.

**Table 3-7. Population Change for the Cumberland Labor Market Area**

| Geography | 2010 Total Population | 2020 Total Population | Percent Change 2010–2020 | 2023 Total Population | Percent Change 2020–2023 |
|---|---|---|---|---|---|
| ***Tennessee*** | ***6,346,105*** | ***6,910,840*** | ***8.9*** | ***6,986,082*** | ***1.1*** |
| Stewart County (Cumberland) | 13,324 | 13,657 | 2.5 | 13,859 | 1.5 |
| Benton County | 16,489 | 15,864 | -3.8 | 15,948 | 0.5 |
| Dickson County | 49,666 | 54,315 | 9.4 | 55,197 | 1.6 |
| Henry County | 32,330 | 32,199 | -0.4 | 32,345 | 0.5 |
| Houston County | 8,426 | 8,283 | -1.7 | 8,293 | 0.1 |
| Humphreys County | 18,538 | 18,990 | 2.4 | 19,074 | 0.4 |
| Montgomery County | 172,331 | 220,069 | 27.7 | 227,957 | 3.6 |
| ***Kentucky*** | ***4,339,367*** | ***4,505,836*** | ***3.8*** | ***4,510,725*** | ***0.1*** |
| Calloway County | 37,191 | 37,103 | -0.2 | 37,882 | 2.1 |
| Christian County | 73,955 | 72,748 | -1.6 | 72,599 | -0.2 |
| Trigg County | 14,339 | 14,061 | -1.9 | 14,211 | 1.1 |

Sources: TVA 2022a, Table 3.16-1; USCB 2023

The most recent demographic characteristics of the Cumberland labor market counties, as compared with the states of Tennessee and Kentucky, are shown in Table 3-8 (USCB 2023). Consistent with the FEIS, the populations of the Cumberland labor market were generally older than the state populations, with the exception of Montgomery, Calloway, and Christian counties, where larger cities are present. Since publication of the FEIS, the populations of both the states and most of the counties in the Cumberland labor market have aged, reflected by increases in median age and the proportion of residents age 65 and older. Stewart County has one of the lowest proportions of minority residents in the Cumberland labor market and is notably lower than the minority percentages of both Tennessee and Kentucky.

**Table 3-8. Demographic Characteristics for the Cumberland Labor Market Area**

| Geography | Percent of Population 65 Years and Older | Median Age | Percent Minority[1] | Percent High School or Higher[2] | Percent of Occupied Housing Units, Renter Occupied | Median Year Housing Units Built |
|---|---|---|---|---|---|---|
| *Tennessee* | *16.8* | *38.9* | *28.5* | *89.6* | *33.0* | *1986* |
| Stewart County (Cumberland) | 21.0 | 44.6 | 9.3 | 89.9 | 16.4 | 1989 |
| Benton County | 23.7 | 47.5 | 8.8 | 87.2 | 25.3 | 1983 |
| Dickson County | 16.6 | 39.0 | 12.5 | 89.2 | 19.7 | 1987 |
| Henry County | 23.5 | 45.8 | 13.8 | 88.4 | 24.4 | 1983 |
| Houston County | 20.0 | 44.2 | 9.4 | 87.3 | 18.8 | 1981 |
| Humphreys County | 20.6 | 43.7 | 9.8 | 87.7 | 20.5 | 1978 |
| Montgomery County | 9.8 | 31.7 | 39.8 | 94.3 | 37.1 | 1997 |
| *Kentucky* | *17.0* | *39.1* | *17.7* | *88.5* | *31.7* | *1982* |
| Calloway County | 16.8 | 35.4 | 12.3 | 91.4 | 36.3 | 1985 |
| Christian County | 12.6 | 28.6 | 35.6 | 86.9 | 47.8 | 1984 |
| Trigg County | 22.5 | 46.6 | 13.6 | 87.5 | 25.8 | 1985 |

Source: USCB 2023
Notes:
1) Percent of population that identify themselves as Asian or Pacific Islander; American Indian or Alaskan Native; Black or African American; Hispanic or Latino; or two or more races.
2) Percent of population over 25 years that have graduated high school; includes high school equivalency.

Consistent with the FEIS, the majority of counties in the Cumberland labor market have lower percentages of people who were high school graduates or higher than the associated states. Additionally, most of the labor market counties, including Stewart County, had lower percentages of renter-occupied housing units than their respective state. In six of the labor market counties, including Stewart County, housing units were generally newer than those found in their respective state (Table 3-8).

Table 3-9 summarizes the most recent data on employment and income for the Cumberland labor market counties, as compared with the states of Tennessee and Kentucky (USCB 2023). Consistent with the FEIS, the majority of counties in the Cumberland labor market had a smaller share of its population in the labor force than the state. In 2023, Dickson County was the only exception. As reported in the FEIS, in 2019, 9 out of the 10 counties had unemployment rates above that of their respective state. By 2023, only half of the counties in the labor market had unemployment rates above that of the state.

Consistent with the FEIS, education services, healthcare, and social services, and manufacturing remain the leading industries for employment in the Cumberland labor market area. Although per capita incomes rose in 2023 compared to those reported in the FEIS, counties in the labor market still have per capita incomes below that of their respective states. The percentage of low-income residents in Stewart County (26.4 percent) is lower than in much of the Cumberland labor market, where low-income residents make up 25.8 to 44.5 percent of the total population. However, two census block groups with concentrations of low-income residents were previously identified west adjacent of the Cumberland Reservation (FEIS Figure 3.4-3).

**Table 3-9. Employment and Income Characteristics for the Cumberland Labor Market Area**

| Geography | Percent of Civilian Population in Labor Force[1] | Unemployment Rate | Percent Employed in Education Services, Healthcare, and Social Services | Percent Employed in Manufacturing | Per Capita Income | Percent Low-Income[2] |
|---|---|---|---|---|---|---|
| *Tennessee* | *61.7* | *4.7* | *22.3* | *19.9* | *$37,866* | *32.1* |
| Stewart County (Cumberland) | 51.8 | 3.0 | 22.0 | 22.2 | $29,881 | 26.4 |
| Benton County | 49.6 | 5.4 | 22.2 | 25.2 | $28,169 | 38.8 |
| Dickson County | 62.6 | 3.0 | 23.3 | 23.0 | $37,163 | 25.8 |
| Henry County | 50.7 | 3.4 | 20.4 | 22.2 | $29,136 | 40.0 |
| Houston County | 52.3 | 6.7 | 18.5 | 25.2 | $30,169 | 38.4 |
| Humphreys County | 55.2 | 9.7 | 20.6 | 26.6 | $30,868 | 36.9 |
| Montgomery County | 59.5 | 4.9 | 24.2 | 16.2 | $33,645 | 29.5 |
| *Kentucky* | *59.2* | *4.8* | *24.2* | *21.1* | *$34,960* | *35.0* |
| Calloway County | 57.8 | 4.4 | 28.8 | 18.2 | $29,862 | 40.0 |
| Christian County | 47.6 | 6.1 | 19.6 | 23.1 | $26,445 | 44.5 |
| Trigg County | 50.9 | 4.1 | 25.4 | 23.8 | $31,732 | 39.1 |

Source: USCB 2023
Notes:
1) Percent of civilian population aged 16 years and older who are either employed or actively looking for work.
2) Percent of population below the low-income threshold, which is defined as two times the national poverty level (ratio of income to poverty level ≤1.99)

### 3.10.2 Environmental Consequences

Under Alternative D, activities described in Section 2.1.2 would take place during scheduled outages. Outages would last for approximately 90 to 100 days at a time, over a period of 3 to 4 years, until all activities are completed. The outage workforce would consist of approximately 500 workers, in addition to the approximately 400 workers (plant employees, TVA support staff, and contractors) employed for regular CUF operations. TVA projects that the combined peak on-site workforce at the Cumberland Reservation could include up to 2,550 personnel. This estimate represents a conservative upper limit and includes all CUF operational staff, outage personnel, and the CUG construction workforce. The increased on-site workforce needed during the estimated 3- to 4-year period during which CUG plant construction and CUF outage activities would occur would result in temporary, beneficial impacts on employment in the Cumberland labor market.

Following the outages and CUG construction phase, CUF operations jobs would be maintained, and the reduction of employment associated with plant retirement under FEIS Alternative A would not occur. Additionally, the operation of CUG would require an operations staff of approximately 25 to 35 employees, resulting in operational employment of approximately 430 workers between both CUF and CUG. This would represent a small increase in long-term staffing compared to current baseline conditions, resulting in a minor benefit to employment and the local economy.

Based on the temporary nature of peak workforce activities, and the small increase in long-term employment associated with Alternative D, impacts to local demographics, housing availability, and community resources would be minor.

As described in Section 1.1, TVA's PSA has experienced notable load growth in recent years, which is expected to continue. Without the additional generation capacity afforded by continued operation of CUF, TVA would meet peak demand by purchasing available electricity from the market, potentially reducing grid reliability and increasing electricity costs to customers, as reliance on purchased power is generally less cost-effective than using TVA's own generation resources. Thus, continued operation of CUF in conjunction with the operation of CUG would support TVA's ability to reliably meet year-round generation requirements, system peak demands, and planning reserve margin targets, using least-cost planning principles to provide electricity at the lowest feasible rate for customers.

Impacts to minority and low-income communities resulting from the continued operation of CUF were assessed in Section 3.4.2.1 of the FEIS, while impacts resulting from the construction and operation of CUG were assessed in each applicable resource section, and summarized in Table 3.4-16 of the FEIS; this content is incorporated by reference. Under Alternative D, impacts to minority and low-income communities near the Cumberland Reservation would be consistent with those analyzed in the FEIS, as the concurrent operation of CUF and CUG would not result in notable changes to physical impacts such as increased noise, traffic, or fugitive dust. Combined air emissions would remain within the limits set by applicable permits and air quality standards which are protective of ambient air quality and human health.

## 3.11 Visual Resources

### 3.11.1 Affected Environment

TVA did not identify any information that was determined to be notably different from that considered in the FEIS. Therefore, FEIS Section 3.18.1.1 is incorporated by reference. Potential visual effects to cultural and historic resources are not included in this analysis as they are assessed separately in Section 3.8 of this SEIS.

### 3.11.2 Environmental Consequences

The activities described in Section 2.1.2 would primarily occur in previously developed, industrial areas within the CUF Reservation, resulting in negligible changes to the visual landscape. However, the new transmission line corridors on the Cumberland Reservation would present a visual change. Proposed transmission upgrades include approximately 0.5 miles of new 500-kV line, within a 200-foot-wide corridor, to connect the Cumberland–Johnsonville 500-kV and Cumberland–Marshall 500-kV lines (Tie Option 1) or an alternative jumper configuration outside of the existing Cumberland Fossil Plant Switchyard (Tie Option 2). There are also two options for creating a new loop between the Cumberland–Johnsonville 500-kV line and the Cumberland CC switchyard (Figure 2-2). Both options propose building a new approximately 1.5-mile 500-kV loop, with an up to 500-foot-wide corridor, from a point on the Cumberland–Johnsonville 500-kV line to the Cumberland CC switchyard. All transmission upgrades would be located within the Cumberland Reservation, except for an approximately 0.25-mile segment within the existing, adjacent Cumberland–Johnsonville 500-kV line ROW. Construction of the proposed transmission lines would result in both temporary and long-term impacts on visual resources. During the approximately 10-week transmission line construction period, there would be some visual discord from existing conditions because of an increase in personnel and equipment coupled with disturbances of the current site characteristics. However, this would be contained within the immediate vicinity of the construction activities and would only last until all project activities have been completed and the disturbed areas have been seeded and restored through the use of TVA's standard BMPs (TVA 2022b). Because of their temporary nature, construction-related impacts to local visual resources would be minor.

Long-term impacts consist of visible alterations associated with new transmission structures, overhead wires, and corridor clearing. The most visible elements of the electric transmission system are the transmission structures (with a maximum height of approximately 150 feet above ground) and the permanent removal of woody vegetation resulting in a visible corridor. However, the addition of lines on or near existing structures or within an existing utility or transportation corridor increases compatibility with the landscape and minimizes visual impacts. Although much of the proposed transmission line would not be visible to the public because of the distance from developed areas and presence of forested buffers, it would likely be visible to rural residential receptors near the Cumberland Reservation. At the background distance, the proposed alternative is not expected to be discernible because of the screening effects of terrain and overall distance, and they would not contrast with the overall landscape. Employees, facility operators, and motorists on the adjacent Old Scott Road would be

the primary viewers of the new transmission lines. Border trees and hedges may be planted as needed, and existing border vegetation would be maintained. The transmission lines would generally be absorbed by surrounding industrial components and would become visually subordinate to the overall landscape character associated with the Cumberland Reservation.

While Alternative D would contribute to a minor decrease in visual integrity of the landscape, the proposed transmission lines would be visually similar to other industrial elements present in the current landscape. Therefore, visual impacts resulting from the implementation of Alternative D would be minor.

## 3.12 Unavoidable Adverse Environmental Impacts

The unavoidable adverse impacts from the additional activities supporting the continued operation of CUF would be consistent with the impacts from construction activities described in the FEIS. These impacts are primarily attributed to activities involving land disturbance that in the FEIS are the result of gas plant, pipeline, and transmission line construction. These activities would result in vegetation clearing, excavation, grading, crossing streams and waterways and adding impervious surfaces. Section 3.19 of the FEIS includes an analysis of unavoidable adverse impacts and is hereby incorporated by reference with the exception of those associated with the deconstruction and decommissioning of CUF. Alternative D would result in similar, unavoidable effects to resources such as transportation and visual resources.

Alternative D would result in new, unavoidable adverse impacts related to air quality and GHG emissions as a result of concurrent operation of CUF and CUG, as well as new impacts to wetlands and protected species habitat during construction of the proposed transmission lines. The addition of the transmission lines would result in a new adverse effect on the historic Hollister House but mitigation that was agreed upon with the SHPO from the FEIS was determined by TVA and the SHPO to adequately mitigate this new adverse effect.

## 3.13 Relationship of Short-Term Uses and Long-Term Productivity

NEPA requires a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. This SEIS focuses on the analyses of environmental effects associated with continued operation of CUF and associated activities as described in Section 2.1.2. These activities are considered short-term uses of the environment for the purposes of this section. In contrast, long-term productivity is considered to be that which occurs beyond the conclusion of decommissioning the plants and associated infrastructure. This section includes an evaluation of the extent to which the short-term uses preclude any options for future long-term use of the project site.

Construction of the BATW recirculation system, water intake system upgrades, and new transmission lines would occur within the existing Cumberland Reservation or TVA ROW. Short-term effects to wildlife, aquatic life, water resources, and air quality may occur. However, construction of these facilities would not result in effects on the long-

term productivity of the land or its resources. Continued operation of CUF would preclude the long-term productivity of the land for other purposes while these facilities are in operation. Operational impacts on air quality would be noticeable but not destabilizing. Impacts would remain within the limits set by applicable permits and air quality standards. Compliance with permit requirements would be protective of ambient air quality and would ensure the proposed alternative does not cause or contribute to NAAQS violations. As such, regional air quality and attainment status within Stewart County would be unchanged by Alternative D. Operational impacts to climate change would increase but would not affect the enhancement of long-term productivity related to air quality or climate change.

## 3.14 Irreversible and Irretrievable Commitments of Resources

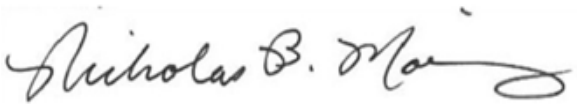
The term “irreversible commitments of resources” describes environmental resources that are potentially changed by the construction or operation of a proposed action that could not be restored to their prior state by practical means at some later time. Irreversible commitments generally occur to nonrenewable resources such as minerals or cultural resources and to those resources that are renewable only over long timespans, such as soil productivity. A resource commitment is considered irretrievable when the use or consumption is neither renewable nor recoverable for use until reclamation is successfully applied. Irretrievable commitments generally apply to the loss of production, harvest, or other natural resources and are not necessarily irreversible.

Resources required for activities supporting continued operation of CUF would be irretrievably lost through the use of gasoline and diesel-powered equipment. However, their limited use would not adversely affect the overall future availability of these resources.

Land used for the continued operation of CUF is not irreversibly committed because once coal operations cease and the plant is deconstructed and decommissioned, the land could be returned to other industrial or nonindustrial uses. The use of the coal that supplies power generation at CUF is an irreversible commitment of this resource because of the geologic timescale necessary to produce fossil fuels.

## 3.15 NEPA Compliance Certification

Consistent with 18 CFR 1318.106(e) and 1318.401(g), the Tennessee Valley Authority certifies that this document represents TVA's good-faith effort to fulfill the requirements of NEPA within the Congressional timeline established at NEPA Section 107(g) and according to page limits established at NEPA Section 107(e). In this document, TVA prioritizes documentation of the most important considerations based on its expert judgment. Any considerations addressed briefly or unaddressed are, in TVA's judgment, comparatively less substantive. In TVA's expert opinion, the factors mandated by NEPA have been thoroughly considered, and the analysis contained in this document is adequate to inform and reasonably explain TVA's final decision regarding the proposed federal action.



*on behalf of*

Dawn Booker, Senior Manager
NEPA Compliance
Environment and Stewardship
Tennessee Valley Authority

February 9, 2026

Date Signed

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# APPENDIX A – LIST OF PREPARERS

## NEPA Project Management

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## Other Contributors

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| Name: | **Leah Stephens (WSP)** |
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| Experience: | 6 years of experience in NEPA analysis and documentation |

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| Education: | B.A., Environmental Studies |
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| Experience: | 2 years of experience in NEPA documentation and environmental consulting |

# APPENDIX B – USEPA COMMENTS AND SHPO CORRESPONDENCE

# USEPA Comments

| Comment No. | Comment Type | Section/ Page/ Paragraph | Background Statement | Recommended Action(s) | Basis for the Comment (such as law, policy, or guidance) | TVA Response |
|---|---|---|---|---|---|---|
| 1 | Air Quality | Section 3.4.1.2.4 | Section 3.4.1.2.4 includes a very brief discussion of emissions but provides no numerical values of emissions expected from Alternative C. | Pursuant to 42 U.S.C. § 4332(C)(i) and 40 CFR 52.21(m)(1)(i), the expected emission rates (in tons per year) should be included for expected air pollutants when both the coal and gas units will be operating. | 42 U.S.C. § 4332(C)(i), 40 CFR 52.21(m)(1)(i). | TVA has added emission information to Section 3.4.1.2.4. |
| 2 | Air Quality | Section 3.4.1.2.3 | The final Supplemental Environmental Impact Statement (SEIS) mentions modeling for the Prevention of Significant Deterioration (PSD) permit TVA Cumberland will require. Section 3.4.1.2.3 also states that "continued operation under Alternative D would not result in exceedances of primary NAAQS standards" but does not contain any data or modeling results to support this claim. | Pursuant to 40 CFR 52.21(k), (l), and (m), modeling is required to demonstrate the project's impact on air quality. Per 42 U.S.C. § 4332(C)(i) and (ii), the data/ modeling results should be included in the SEIS to support the conclusion that continued operation under Alternative D would not result in exceedances of the National Ambient Air Modeling Standards (NAAQS). | 40 CFR 52.21(k), (l), and (m), 42 U.S.C. § 4332(C)(i) and (ii). | TVA is in the early stages of preparing a Prevention of Significant Deterioration (PSD) permit application and has not completed modeling. Any PSD permit applications submitted to TDEC would include modeling. TVA has added information about the modeling requirement into Section 3.4.1.2.3. The PSD permit would set requirements for compliance with all applicable standards. |
| 3 | Air Quality | Section 3.4.1.1 | Section 3.4.1.1 includes a discussion of the monitored air quality in the region of the Cumberland Reservation. This section states that there are no data available for 2023 or 2024 at the monitoring site identified in the SEIS. At least one nearby monitor does show preliminary 2023-2025 design value data over the 2015 8-hour ozone NAAQS of 70 ppb. | Per 40 CFR 52.21(k), (l), and (m), it must be demonstrated that projects will not cause or contribute to a NAAQS violation. Consequently, the SEIS should address nearby preliminary design values over the 2015 8-hour ozone NAAQS of 70 ppb in relation to the operation of both the Cumberland Fossil Plant (CUF) and Cumberland Gas Plant (CUG). | 40 CFR 52.21(k), (l), and (m). | TVA has added information into Section 3.4.1.1. We are assuming that USEPA is referring to Nashville ozone monitor about design value exceedance. The 2025 ozone values will not be finalized until May 2026. Therefore, conclusions cannot be made regarding the 2025 design values. The 2022-2024 design values around the Nashville area showed no violations of the ozone NAAQS; the Nashville CBSA is currently in attainment for ozone. The PSD permitting process will ensure that the project will not cause or contribute to an ozone NAAQS violation. |
| 4 | Air Quality | Section 3.4.1 | Section 3.4.1 Air Quality does not discuss Best Available Control Technology (BACT). | Pursuant to 40 CFR 52.21(j), the project will require BACT to reduce air emissions, and these mitigation measures should be included in the SEIS. | 40 CFR 52.21(j). | TVA has added information on BACT evaluation to Section 3.4.1.2.3. |
| 5 | Air Quality | Section 3.4.1 | The proposed action includes updates to transmission and electrical system components, including potential construction of new breaker bays and breaker replacements, but does not discuss potentially related mitigation. | Pursuant to 42 U.S.C § 4332(C)(i), discuss environmental effects of different options for switching station technology. | 42 U.S.C § 4332(C)(i) | The switchgear units that would be utilized for this project are manufactured to meet industry standards. As stated in Section 3.7.2.3.3. of the FEIS, some older existing electrical equipment may contain the GHG sulfur hexafluoride (SF6) gas (e.g., electrical switchgear, circuit breakers), which could have minor leaks, mostly associated with maintenance or long-term equipment degradation. Newer switchgear and breakers, which may also contain the SF6 gas, would be installed with more efficient operation and maintenance techniques and leak detection, and these features would minimize SF6 emissions. TVA is not aware of an SF6 free alternative that is a proven mature technology for these voltage levels. A system-wide review of SF6 switchgear conversion would be outside the scope of this analysis; however, TVA actively monitors evolving technology for future consideration and for demonstrated market experience would like to see some experience on the market with proven reliability at these voltages before implementation. |
| 6 | Air Quality | Section 2.1.2.1 | The New Source Performance Standard for Greenhouse Gas Emissions for Modified Coal-Fired Steam Electric Generating Units and New Construction and Reconstruction Stationary Combustion Turbine Electric Generating Units is applicable to Alternative D as of January 23, 2026. Section 2.1.2.1 discusses required updates to CUF but omits discussion of carbon capture and storage installation. | Discuss potential applicability of carbon capture and storage requirement while ensuring that the preferred alternative meets the purpose and need of the project, i.e. "reliable service to TVA customers at the lowest feasible cost to meet growing demand." | 40 CFR Part 60 Subpart TTTTa - Table 2, 89 FR 39798 [40 CFR 60.22a(a), 40 CFR 60.20a(a)]. | TVA has added information to Section 3.4.1.2.2. |

# USEPA Comments

| Comment No. | Comment Type | Section/ Page/ Paragraph | Background Statement | Recommended Action(s) | Basis for the Comment (such as law, policy, or guidance) | TVA Response |
|---|---|---|---|---|---|---|
| 7 | Air Quality | Section 3.4.1.2.3 | In 2025, TVA Cumberland was issued conditional major construction permit #981885 which requires in term G18 that “one of the existing coal-fired boilers shall be idled upon completion of this project (no specific date included). Both coal units shall permanently cease operating no later than 12/31/2028.” Section 3.4.1.2.3 states that “the continued operation of CUF in conjunction with the operation of CUG under Alternative D would trigger a Prevention of Significant Deterioration (PSD) modification” and that “TVA is currently in the early stages of preparing a PSD permit application.” | Per 40 CFR 52.21(a)(2), update the language in section 3.4.1.2.3 to include how TVA plans to comply with permitting requirements by superseding the requirements of permit #981915 with a new PSD permit . | 40 CFR 52.21(a)(2). | TVA has added information to Section 3.4.1.2.3. |
| 8 | Water Quality | P.4/iii/ Summary | The SEIS states that the "The USEPA has communicated that it is currently reevaluating the 2024 ELG [effluent limitations guidelines] rule." This is no longer correct and should be corrected. | On December 23, 2025, EPA announced a final rule extending several wastewater compliance deadlines for coal-fired powerplants that were finalized by the Biden Administration; see 90 Federal Register 61328 dated December 31, 2025. This final rule is part one of a three-phased approach. The final rule extends seven implementation dates by: 1) providing six more years (to December 31, 2031) for existing steam electric power plants to assess potential compliance pathways for their continued operations; 2) extending compliance deadlines by five years (to December 31, 2034) related to zero-discharge limitations for flue gas desulfurization wastewater, bottom ash transport water, and combustion residual leachate; and 3) providing more time for compliance with three zero-discharge limitations for power plants that send wastewater to wastewater treatment plants for processing. The agency’s proposal would align these deadlines with the deadlines for power plants that discharge directly to waterways. Operation beyond 2034 may require additional controls and additional National Environmental Policy Act (NEPA) review, as appropriate. | 90 Federal Register 61328 dated December 31, 2025. See: https://www.epa.gov/eg/steam-electric-power-generating-effluent-guidelines-deadline-extensions-rule#prop-dfr | SEIS Section 2.1.2.2 updated with reference. U.S. Environmental Protection Agency (USEPA). 2025a. Effluent Guidelines Steam Electric Public Hearing: Proposed Deadline Extension Rule [PowerPoint slides]. U.S. Environmental Protection Agency. The language in the SEIS correctly reflects USEPA's reevaluation of the 2024 ELGs, according to USEPA's Office of Water (Washington DC) public hearing presentation held 10/14/2025 and 11/12/2025. USEPA announced a two phased approach, of which the first phase comprised the now final supplemental Deadline Extension Rule. USEPA proposed the second phase to reconsider best available technology for combustion residual leachate and additional wastestreams as warranted. |

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

November 12, 2025

Ms. Miranda Montgomery
State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37214

Dear Ms. Montgomery:

TENNESSEE VALLEY AUTHORITY (TVA), NEW 500-KILOVOLT (KV) LOOP LINE AT CUMBERLAND COMBINED CYCLE COMBUSTION TURBINE PLANT, STEWART COUNTY, TENNESSEE (36.37783, -87.67521), TN SHPO #SHPO0001507, TVA TRACKING NUMBER – CRMS 80696

TVA has identified the need for additional transmission infrastructure at the future Cumberland Combined Cycle Combustion Turbine Plant (Cumberland Gas Plant, CUG). TVA proposes to construct an approximately 1.5-mile, 500-kV transmission line (TL) loop that would tie the Cumberland-Johnsonville 500-kV TL (L6067) to the CUG switchyard. After reviewing several options, TVA has identified two potential routes for this TL loop —Option 1 and Option 2 (Figures 1-4).

This proposed work represents a modification of the undertaking and expansion of the area of potential effects (APE) established by the September 2023 Memorandum of Agreement (MOA) regarding the Cumberland Fossil Plant retirement and replacement generation project. The APE would be expanded to include areas within a half-mile and within line of sight of the new lines where visual effects could occur.

Proposed ground disturbance falls completely within areas previously surveyed by Wood Environment & Infrastructure Solutions in 2021 (Hunter, et al, 2022). No archaeological resources were identified within the current project footprint. Your office concurred with these findings in a letter dated April 14, 2022. The proposed project will have no effect on archaeological resources.

Option 1 would utilize the existing L6067 infrastructure before pivoting south to the CUG switchyard near Structure 163 to run over the top of the unnamed ridge northwest of the CUG property. Estimated structure heights for this option run between 140 to 160 feet. Option 2 would utilize the existing L6067 infrastructure before pivoting to the southeast towards the CUG switching station near Structure 161. This path would take the line behind and to the south of the unnamed ridge northwest of the CUG property. Estimated structure heights for this option run between 100 to 160 feet.

TVA has conducted background research and desktop analysis to identify historic architectural resources within the APE. One National Register-listed historic architectural property, SW-745 (Henry Hollister House) is located within less than one-half mile east of both Option 1 and Option 2. SW-745 was listed in the National Register of Historic Places (NRHP) in 1988, and TVA is currently undertaking updates to the documentation as a mitigation measure for the larger CUG project. SW-745 is located on a five-acre property that also contains the Hollister Family Cemetery (referred to as the Brunsoni/Hollister Cemetery in previous consultation). It and the Graveyard Hill Cemetery are included as contributing resources in the forthcoming updates to the NRHP documentation.

To determine whether SW-745 would be within the viewshed of the proposed transmission line, TVA completed a GIS-based viewshed analysis. Viewshed analysis was conducted using a geographic information system and digital surface models (DSM) constructed with light-detection-and-ranging (LiDAR) data collected by the U.S. Geological Survey. The DSMs contain information on both terrain relief and winter/“leaf off” vegetative cover. The proposed transmission structure locations and estimated heights were used to demonstrate that both options would be partially visible from the Henry Hollister House (SW-745) (Figures 5 and 6). However, they would be far less visible than the other transmission structures proposed with the original scope of work for the CUG facility, given the extensive vegetation of the ridge that would limit visibility of the full structures.

TVA took topography, vegetation, and distance into consideration when evaluating whether the undertaking’s visual effect would diminish the ability of SW-745 to convey its historic significance. In both options, two structures placed on a forested hillside to the west of the property would be visible from SW-745. Tree heights on this hillside average around 90 feet. Option 1 would place the structures near the crest of the hill within the most heavily forested portion 1100 feet from SW-745. The height of the structures in Option 1 would be approximately 145 feet tall. Option 2 would place towers at a distance of 1400 feet on the southern downslope of the hill. The immediate area around the structures in Option 2 consists of shorter secondary vegetation but with the outer edges ringed in trees 70-80 feet in height. Structure heights on the hill for Option 2 would be around 120 feet. Both options would also place three structures to the south of the SW-745 property within the bounds of the planned CUG switchyard. These structures would be around 120 feet in height. An existing row of trees approximately 60 feet in height lies between these proposed structures and SW-745.

In April 2022, TVA determined, in consultation with your office and other consulting parties, that the replacement generation project undertaking would have an adverse effect on the property, resulting from the combined visual effects of CUG, its switchyard, and the two new transmission lines running between CUG and the Cumberland Fossil Plant switchyard. This adverse effect was mitigated through the MOA executed with your office in September 2023. TVA has completed two of the mitigation measures (visual screening and delineation survey of the Graveyard Hill cemetery) and is working to complete the remaining two (historic signage and revised NRHP nomination).

Since the execution of the MOA, the construction of CUG and its supporting transmission infrastructure has begun. The construction of the gas plant and associated transmission assets represents a significant alteration of the visual setting around SW-745. These visual intrusions are demonstrated in renderings showing the gas plant and transmission infrastructure in their fully completed states in relation to the surrounding area (Figures 7, 8, and 9). These renderings do not show the currently proposed undertaking, only those previously consulted on and pre-existing development.

TVA finds that the visual effects introduced by either Option 1 or Option 2 would be much smaller than the modern intrusions that currently present as a result of existing and planned updates as a part of the previous undertaking covered by the MOA. The components already under construction—including transmission and power generation infrastructure—have introduced greater intrusions than the proposed TL due to their size and proximity to SW-745 and the nearly complete lack of forest cover (with the exception of trees along the property's edge and the vegetative screening that TVA planted as part of the mitigation for the previous adverse effect finding). Additionally, the existing vegetative cover would reduce the visibility and intrusion into the viewshed of SW-745, by preventing them from being fully visible to viewers from this location. Option 2 introduces slightly less visual intrusion owing to its greater physical distance from the property and the lower proposed tower heights that would allow existing vegetative cover to block a greater portion of the TL structure from view. Additionally, TVA finds that the proposed TLs would not alter the ability of SW-745 to convey its historic significance as a single residential dwelling designed in the Greek Revival and Italianate architectural styles during the height of the iron ore industry in the Western Highland Rim.

Given the prior disturbance in the viewshed by the aforementioned TLs and the adverse visual effect mitigated in the prior MOA, TVA finds neither option would further diminish the integrity, significance, or visual setting of SW-745.

Furthermore, TVA has made considerable effort to minimize the visual impact to historic architectural resources by evaluating multiple alternative routes, including evaluating if the new line could be sited within the same corridor as lines currently being constructed for the CUG. This alternative would require additional right-of-way acquisition and removal of vegetation from the eastern edge of the SW-745 property that would have resulted in more significant visual intrusions to SW-745. The two options provided are the results of collaborative efforts with project teams to develop routes having the minimum amount of visual disruption and effect on historic properties.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding properties within the proposed project's APE that may be of religious and cultural significance to them and eligible for the NRHP.

Pursuant to 36 CFR Part 800.5(c) we are notifying you of TVA's finding of no adverse effect to the Henry Hollister House; providing the documentation specified in § 800.11(e); and inviting you to review the finding.

Please contact Jacob Wall by email jwall0@tva.gov with your comments.

Sincerely,

Steve C. Cole
Manager, Cultural Project Reviews—Energy
Cultural Resources

JIW:ERB
Enclosures
cc (Enclosures):
Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

**Reference Cited:**

Hunter, John, Elise Hargiss, Bridget Mohr, and Allison Soergel.
2025. *Phase I Archaeological Survey for TVA Cumberland Fossil Plant, Previously Unsurveyed Areas, Stewart County, Tennessee.* Report prepared by Wood Environment and Infrastructure for the Tennessee Valley Authority. Knoxville, Tennessee.

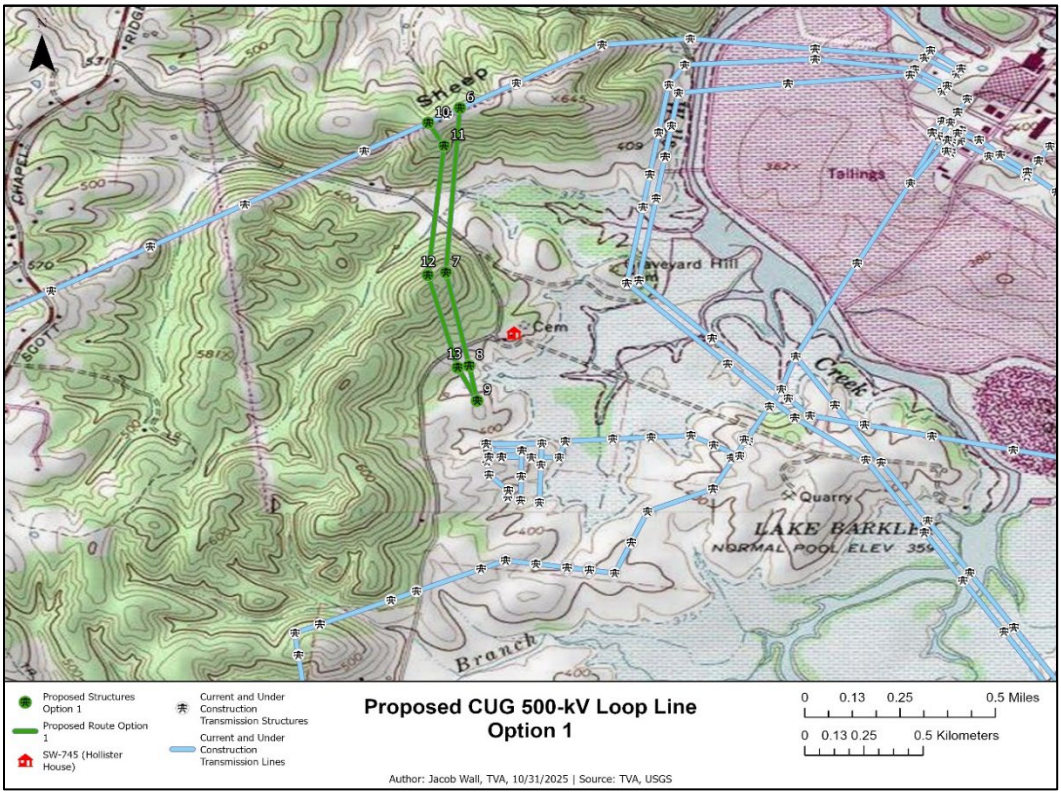


Figure 1 - Map showing Option 1.

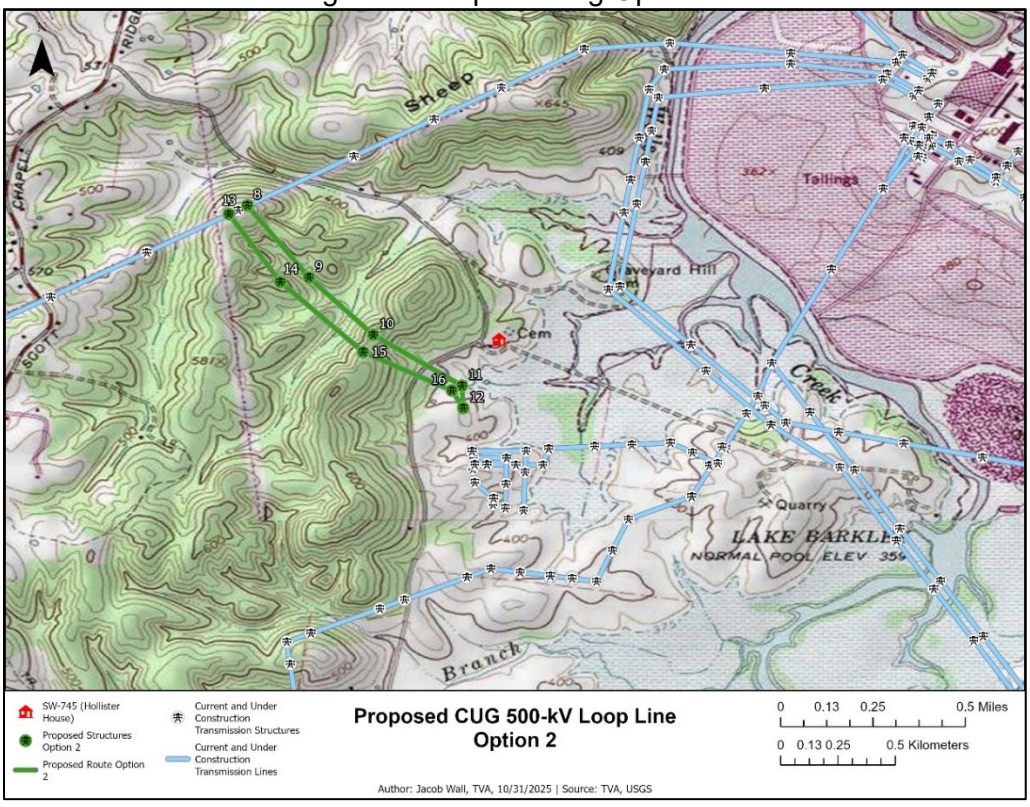


Figure 2 - Map showing Option 2.

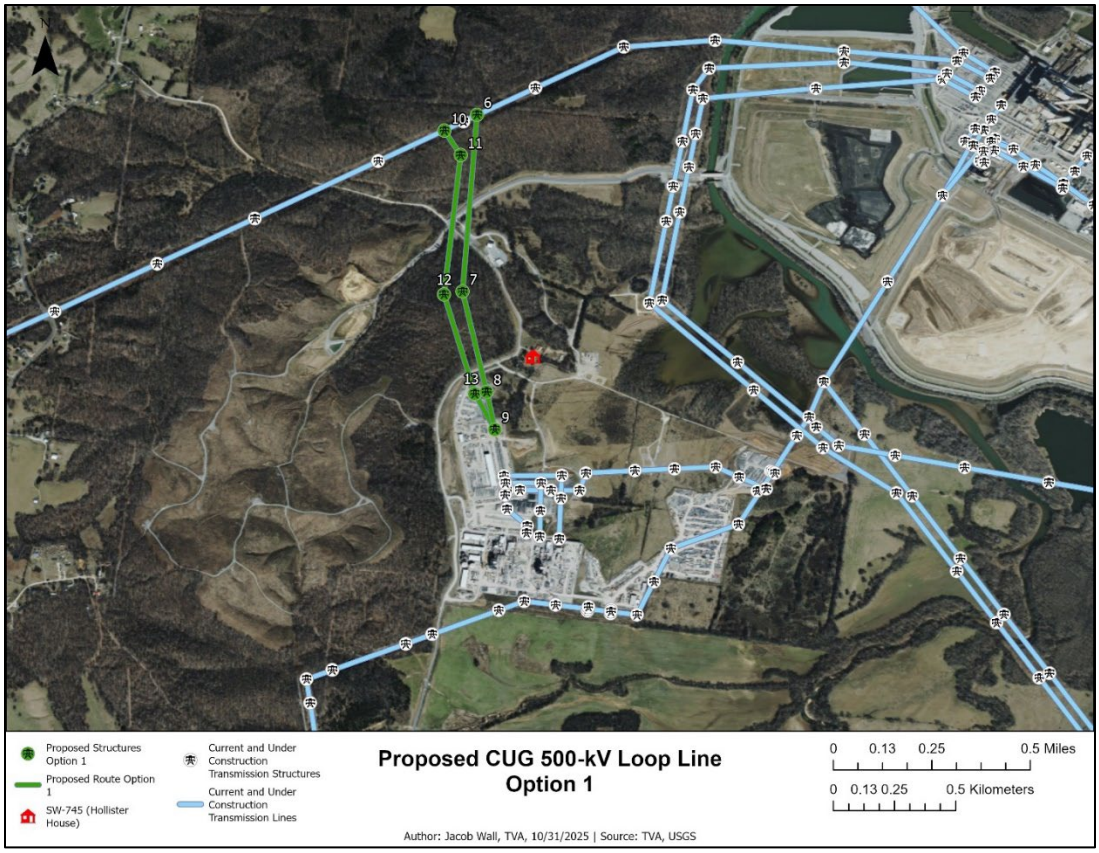


Figure 3 - Map of Option 1 on aerial map (Vexcel 2025)

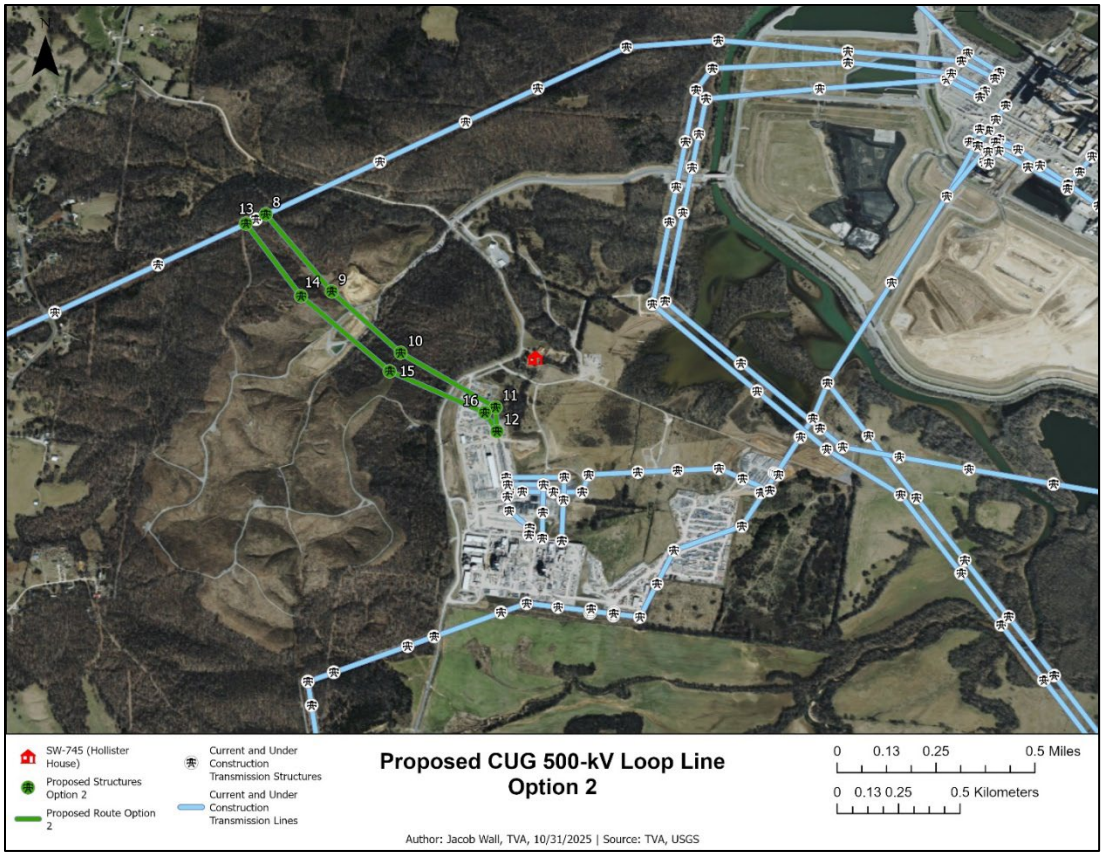


Figure 4 - Map of Option 2 on aerial map (Vexcel 2025).

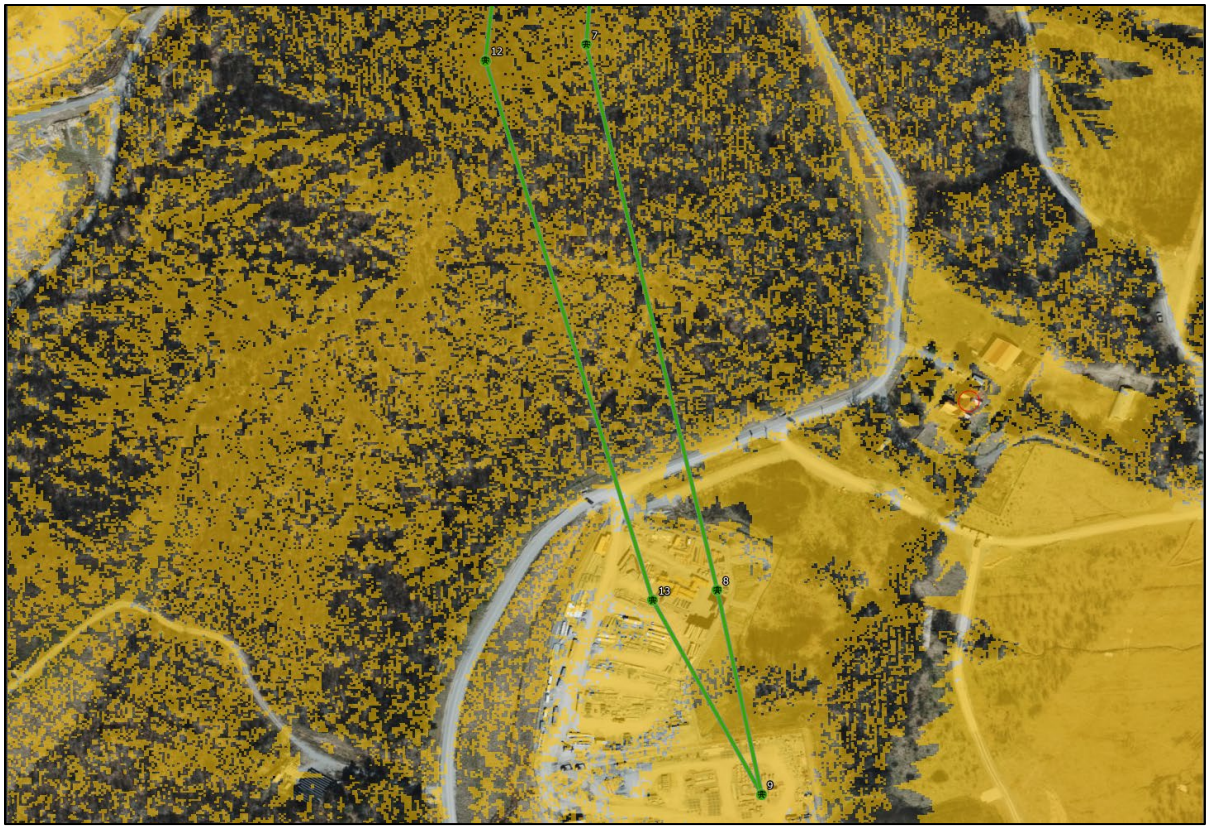


Figure 5 - Viewshed analysis results for Option 1 with SW-745 indicated.

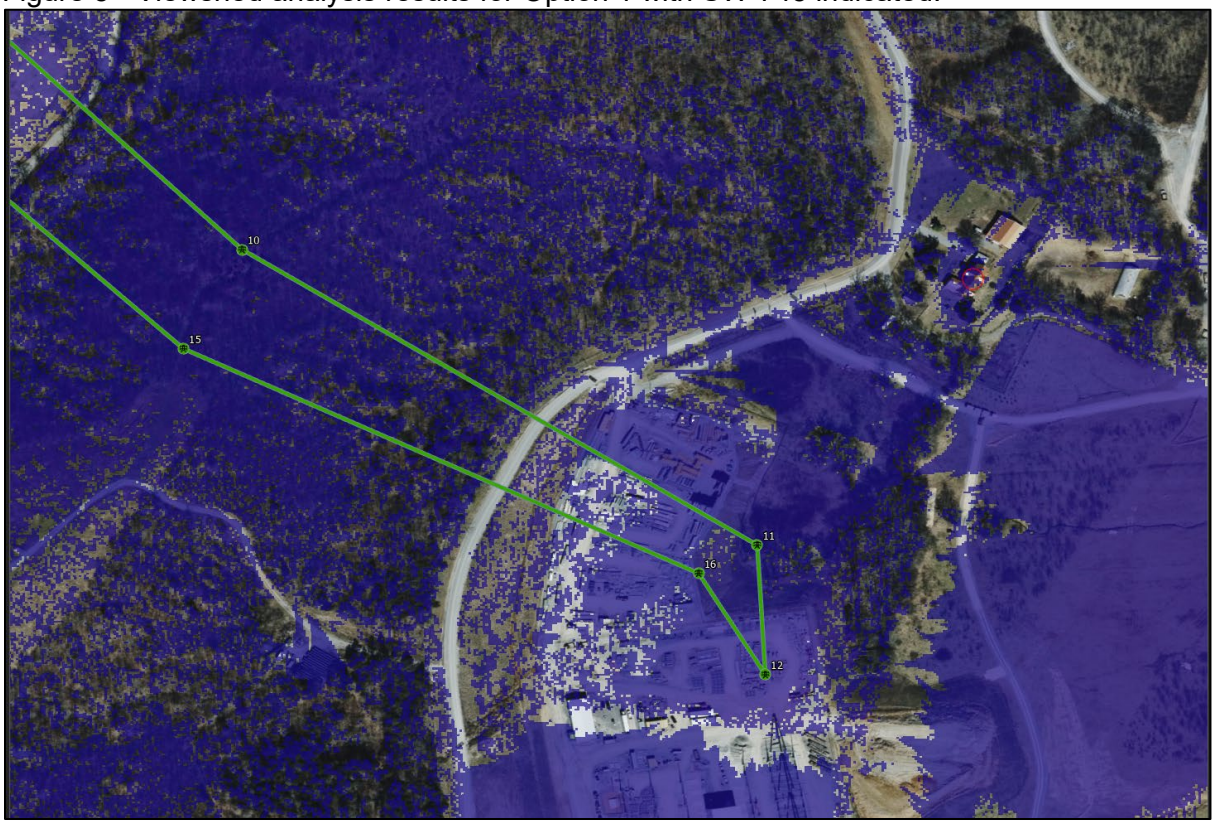


Figure 6 - Viewshed analysis results for Option 2 with SW-745 indicated.

Figure 7 - Photo rendering showing CUG under construction, looking northwest. Existing and planned transmission infrastructure can be seen in relation with SW-745 in the middle of the image (marked with red circle).

Figure 8 - Crop of above image showing SW-745 in relation to existing and planned infrastructure.

Figure 9 – Photo rendering of overview of CUG and switchyard looking north with SW-745 immediately out of frame to the north.

| | |
|---|---|
| **From:** | TN Help |
| **To:** | Beliles, Emily |
| **Cc:** | Cole, Steve C; Wall, Jacob |
| **Subject:** | Retirement of Cumberland Fossil Plant and Replacement of one Generation Unit, CID 80696 - Project # SHPO0001507 |
| **Date:** | Wednesday, November 19, 2025 7:50:37 AM |
| **Attachments:** | Mi[illegible].png<br>image |



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

2025-11-19 06:46:40 CST

Dr. Steve Cole
Tennessee Valley Authority

RE: Tennessee Valley Authority (TVA), Retirement of Cumberland Fossil Plant and Replacement of one Generation Unit, CID 80696, Project#: SHPO0001507, Stewart County, TN

Dear Dr. Steve Cole:

In response to your request, we have reviewed the documents submitted regarding your proposed amended undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739) .

Considering available information, we still concur that the undertaking as currently proposed will adversely affect the Henry Hollister House and that the amended undertaking may add to the cumulative effects. You should amend the existing Memorandum of Agreement (MOA) to modify the description of the undertaking. Our office requests no additional mitigation as we think what is already in the MOA is sufficient. Please direct questions and comments to Casey Lee at

Casey.Lee@tn.gov.  We appreciate your cooperation.

Sincerely,

Miranda Montgomery
State Historic Preservation Officer

Ref:MSG18032268_xQ00fGJJgdqDr9HPGFU

# APPENDIX C – TVA BAT STRATEGY PROJECT SCREENING FORM

**Project Review Form - TVA Bat Strategy** *(04/2025)*

*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:** Continued Operation of the Cumberland Fossil Plant **Date:** 10/28/2025

**Contact(s):** Erica McLamb, Chris Bone **CEC#:** NA **Project ID:** 2026-6

**Project Location (City, County, State):** Stewart County, Tennessee

**Project Description:**

Due to an unexpected increase in power demand, reliability concerns, and changes in the regulatory landscape, the Tennessee Valley Authority (TVA) prepared this Supplemental Environmental Impact Statement (SEIS) to assess the environmental impacts associated with the proposed action to continue operation of both CUF units past 2028. The proposed action allows for use of an existing asset to ensure reliable service to TVA customers at the lowest system cost to meet this growing demand.

## 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 | 6 Maintain Existing Electric Transmission Assets |
| 2 Protect Cultural Resources on TVA-Retained Land | 7 Convey Property associated with Electric Transmission |
| 3 Manage Land Use and Disposal of TVA-Retained Land | ■ 8 Expand or Construct New Electric Transmission Assets |
| 4 Manage Permitting under Section 26a of the TVA Act | 9 Promote Economic Development |
| ■ 5 Operate, Maintain, Retire, Expand, Construct Power Plants | 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 12)**

**Project Review Form - TVA Bat Strategy** *(04/2025)*

**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 | Winter Hibernation | Winter Torpor | Spring Staging, Fall Swarming | Pup Season | Summer Gap | Year |
|---|---|---|---|---|---|---|
| VA, TN, NC | Nov 16 - Mar 31 | N/A | Apr 1 - May 14, Aug 16 - Nov 15 | May 15 - Jul 31 | Aug 1 - Aug 15 | |
| KY | Nov 16 - Mar 31 | N/A | Apr 1 - May 14, Aug 16 - Nov 15 | May 15 - Jul 31 | Aug 1 - Aug 15 | |
| AL, GA MS (Hibernation Range)* | Nov 16 - Mar 14 | N/A | Mar 15 - Apr 30, Sept 1 - Nov 15 | May 15 - Jul 31 | Aug 1 - Aug 30 | |
| MS (Year-round Range)* | N/A | Dec 15 - Feb 15 | N/A | May 1 - Jul 15 | Feb 16 - Apr 30, Jul 16 - Dec 14 | |

*MS (Year-round Range) = Attala, Wintson, Noxubee, Leake, Neshoba, Kemper, Rankin, Scott, and Newton Counties, Mississippi
*MS (Hibernation Range) = All MS counties in the TVA Region excluding those listed above in the Year-round Range

**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: 35.7 ◉**ac** ○**trees** ○**N/A**

| STATE | Winter Hibernation | Winter Torpor | Spring Staging, Fall Swarming | Pup Season | Summer Gap | Year |
|---|---|---|---|---|---|---|
| VA, TN, NC | ■ Nov 16 - Mar 31 | N/A | ■ Apr 1 - May 14, Aug 16 - Nov 15 | ■ May 15 - Jul 31 | ■ Aug 1 - Aug 15 | |
| KY | Nov 16 - Mar 31 | N/A | Apr 1 - May 14, Aug 16 - Nov 15 | May 15 - Jul 31 | Aug 1 - Aug 15 | |
| AL, GA MS (Hibernation Range)* | Nov 16 - Mar 14 | N/A | Mar 15 - Apr 30, Sept 1 - Nov 15 | May 15 - Jul 31 | Aug 1 - Aug 30 | |
| MS (Year-round Range)* | N/A | Dec 15 - Feb 15 | N/A | May 1 - Jul 15 | Feb 16 - Apr 30, Jul 16 - Dec 14 | |

*MS (Year-round Range) = Attala, Wintson, Noxubee, Leake, Neshoba, Kemper, Rankin, Scott, and Newton Counties, Mississippi
*MS (Hibernation Range) = All MS counties in the TVA Region excluding those listed above in the Year-round Range

**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 Reviewer?** ◉ **YES** ○ **NO** (Go to Step 12)

Info below completed by: ☐ **Heritage Reviewer** (name) _____ Date _____

▣ **Terrestrial Zoologist** (name) Maria Aguirre Date 2/3/26

| Species | None | Within a Distance Of: | Cave/Winter Roost | Capture | Summer Roost / Roost Tree | Within the County |
|---|---|---|---|---|---|---|
| Gray Bat | | 3 mi | ■ | ■ | N/A | ■ |
| Indiana Bat | | ■ 10 mi | ■ | ■ | ■ | ■ |
| Northern Long-Eared Bat | | ■ 5 mi | ■ | ■ | | ■ |
| Tricolored Bat | | ■ 3 mi | ■ | ■ | | ■ |
| Virginia Big-Eared Bat | ■ | 6 mi | | | | |

**Amount of SUITABLE habitat to be removed/burned (may differ from STEP 4e):** 28.76 (◉**ac** ○**trees**)* ○**N/A**

**Project Review Form - TVA Bat Strategy** *(04/2025)*

**STEP 6) Provide any additional notes resulting from Heritage Reviewer records review in Notes box below then . . . . . Go to Step 12**

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

Project has yet to determine when tree removal will occur. Project area is within Known Habitat for Indiana Bat and NLEB. IPaC has determined that MYGR, MYSO, MYSE, and PESU can occur within the project area. All records within 10 miles are pre-wns. Three priority hibernacula are known within 10 miles.

## STEPS 7-11 To be Completed by Terrestrial Zoologist (if warranted):

**STEP 7) Project will involve removal of suitable trees within documented habitat?** ○ **YES** ◉ **NO**

| Hibernation Zone | Within Swarming Habitat | Near Post-WNS Captures | Near Post-WNS Summer Roosts |
|---|---|---|---|
| **Indiana Bat** | ■ < 10 mi | < 5 mi | < 2.5 mi |
| **Northern Long-Eared Bat** | ■ < 5 mi | < 1.5 mi | < 0.25 mi |
| **Tricolored Bat** | < 3 mi | < 1.5 mi | < 0.25 mi |

| Year-Round Zone | Near Post-WNS Captures | Near Post-WNS Summer Roost Trees |
|---|---|---|
| **Northern Long-Eared Bat** | < 1.5 mi | < 0.25 mi |
| **Tricolored Bat** | < 1.5mi | < 0.25 mi |

**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 28.76 ◉ **acres or** ○ **trees** proposed to be used during the ○ **WINTER** ○ **VOLANT SEASON** ◉ **NON-VOLANT SEASON** ○ **N/A**

**STEP 11) Remaining Incidental Take (prior to accounting for this project) as of** 2/3/26

| Species | Total Suitable Habitat to be Removed | Winter Season Removal | Winter Season Take Remaining* | Volant Season Removal | Volant Season Take Remaining* | Pup Season Removal | Pup Season Take Remaining* |
|---|---|---|---|---|---|---|---|
| Indiana Bat | 28.76 | 0 | 4286.27 | 0 | 1228.32 | 28.76 | 1372.70 |
| NLEB | 28.76 | 0 | 4732.41 | 0 | 1231.25 | 28.76 | 1205.77 |
| Tricolored Bat | 35.7 | 0 | N/A | 0 | N/A | 28.76 | N/A |

Take Estimates are for TVA Action 8 - Expand or Construct New Electric Transmission Assets

**Amount contributed to TVA's Bat Conservation Fund upon activity completion: $** 28,760.00 **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 12) 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 13)

◉ **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).

Manual Override

Maria Aguirre

## 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.

| 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. |
| ☐ | 16, 25, 26, 37, 47, 52, 62, 63, 64, 65, 70, 71, 73, 78, 80, 82, 83, 86, 91 | **NV2** - Drilling, blasting, or any other activity that involves continuous noise (i.e., longer than 24 hours) disturbances greater than 75 decibels measured on the A scale (e.g., loud machinery) **within a 0.5 mile radius of documented winter and/or summer roosts** (caves, trees, unconventional roosts) will be conducted when bats are absent from roost sites. |
| ☐ | 16, 26, 62 | **NV3** - Drilling or blasting **within a 0.5 mile radius of documented cave** (or unconventional) roosts will be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of the roost site. |
| ☐ | 16, 26, 62 | **NV4** - Drilling or blasting **within 0.5 miles of a documented roost site** (cave, tree, unconventional roost) that needs to occur when bats are present will first involve development of project-specific avoidance or minimization measures in coordination with the USFWS. |
| ☐ | 15, 26, 92 | **HP1** - Site-specific cases in which potential impact of human presence is heightened (e.g., conducting environmental or cultural surveys within a roost) will be closely coordinated with staff bat biologists to avoid/ minimize impacts below any potential adverse effect. Any take from these activities would be covered by TVA's Section 10 permit. |
| ☐ | 15, 26, 92 | **HP2** - Entry into roosts known to be occupied by federally listed bats will be communicated to the USFWS when impacts to bats may occur if not otherwise communicated (i.e., via annual monitoring reports per TVA's Section 10 permit). Any take from these activities would be covered by TVA's section 10 permit. |
| ☐ | 23 | **SHF1** - Fire breaks will be used to define and limit burn scope. |
| ☐ | 17, 23, 34 | **SHF2** - Site-specific conditions (e.g., acres burned, transport wind speed, mixing heights) will be considered to ensure smoke is limited and adequately dispersed away from caves so that smoke does not enter cave or cave-like structures. |
| ☐ | 23 | **SHF3** - Acreage will be divided into smaller units to keep amount of smoke at any one time or location to a minimum and reduce risk for smoke to enter caves. |
| ☐ | 17, 23, 34 | **SHF4** - If burns need to be conducted when there is some potential for bats to present on the landscape and more likely to enter torpor due to colder temperatures, burns will only be conducted if the air temperature is 55° or greater, and preferably 60° or greater. |
| ☐ | 23 | **SHF5** - Fire breaks will be plowed immediately prior to burning, will be plowed as shallow as possible, and will be kept to minimum to minimize sediment. |
| ☐ | 23 | **SHF6** - Tractor-constructed fire lines will be established **greater than 200 feet from cave entrances**. Existing logging roads and skid trails will be used where feasible to minimize ground disturbance and generation of loose sediment. |
| ☐ | 17, 22, 23, 32, 33, 34, 35, 36 | **SHF7** - Burning will only occur if site specific conditions (e.g. acres burned, transport wind speed, mixing heights) can be modified to ensure that smoke is adequately dispersed away from caves or cave-like structures. This applies to prescribed burns and burn piles of woody vegetation. |
| ☐ | 17, 22, 23, 32, 33, 34, 35, 36 | **SHF8** - Brush piles will be burned a **minimum of 0.25 mile from documented, known, or obvious caves or cave entrances** and otherwise in the center of newly established ROW when proximity to caves on private land is unknown. |

| | | |
|---|---|---|
| ☐ | 17, 23, 34 | **SHF9** - A **0.25 mile buffer of undisturbed forest** will be maintained around documented or known gray bat maternity and hibernation colony sites, documented or known Virginia big-eared bat maternity, bachelor, or winter colony sites, Indiana bat hibernation sites, northern long-eared bat hibernation sites, and tricolored bat hibernation sites. Prohibited activities within this buffer include cutting of overstory vegetation, construction of roads, trails or wildlife openings, and prescribed burning. Exceptions may be made for maintenance of existing roads and existing ROW, or where it is determined that the activity is compatible with species conservation and recovery (e.g., removal of invasive species). |
| ■ | 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 | **TR2** - Removal of suitable summer roosting habitat **within 0.5 mile of Priority 1/Priority 2 Indiana bat hibernacula, 0.25 mile of Priority 3/Priority 4 Indiana bat hibernacula, 0.25 miles of any northern long-eared bat hibernacula, or 0.25 miles of any tricolored bat hibernacula** will be prohibited, regardless of season, with very few exceptions (e.g., vegetation maintenance of TL ROW immediately adjacent to a known cave). |
| ■ | 33, 34 | **TR3*** - Removal of suitable summer roosting habitat within documented habitat (i.e., within 10 miles, 5 miles, and 3 miles of documented Indiana bat, northern long-eared bat, and tricolored bat hibernacula, respectively; within 5 miles, 1.5 miles, and 1.5 miles of documented post-white-nose syndrome Indiana bat, northern long-eared bat, and tricolored bat capture sites, respectively; and within 2.5 miles, 0.25, and 0.25 miles of documented Indiana bat northern long-eared bat, and tricolored bat post-white-nose syndrome summer roost trees, respectively) will be tracked, documented, and included in annual reporting. |
| ☐ | 33, 34 | **TR4*** - Removal of suitable summer roosting habitat within potential habitat for Indiana bat, northern long-eared bat, and tricolored bat will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff. |
| ☐ | 33, 34 | **TR5*** - In areas where northern long-eared bat and tricolored bat remain active year-round, continuing to roost in trees, tree removal within documented habitat (1.5 miles of northern long-eared bat and tricolored bat post-white nose syndrome captures sites, and 0.25 miles of northern long-eared bat and tricolored bat post-white-nose syndrome roosts) will be tracked, documented, and included in annual reporting. |
| ☐ | 33, 34 | **TR6** - Removal of any trees within 0.25 miles of a documented Indiana bat maternity roost tree, or post-white nose syndrome northern long-eared bat or tricolored bat maternity summer roost tree or the roost tree itself during pup season, will first require a site-specific review and assessment. If pups are present in trees to be removed (determined either by mist netting and assessment of pregnant, lactating, or post lactating adult females, or by visual assessment of trees following evening emergence counts for Indiana bats and northern long-eared bats), TVA will coordinate with the USFWS to determine how to avoid direct and minimize indirect impacts to pups to the extent possible. This may include establishment of artificial roosts before loss of roost tree(s). |
| ☐ | 33, 34 | **TR7** - In areas where northern long-eared bat and tricolored bat remain active year-round, continuing to roost in trees, tree removal within 0.25 miles of documented post-white-nose syndrome northern long-eared bat or tricolored bat roosts during winter torpor TVA will coordinate with the USFWS to determine how to avoid direct and minimize indirect impacts to pups to the extent possible. |
| ☐ | 33, 34 | **TR8** (**Existing Transmission ROW only**) - **Tree removal within 100 feet of existing transmission ROWs will be limited to hazard trees**. On or adjacent to TLs, a hazard tree is a tree that is tall enough to fall within an unsafe distance of TLs under maximum sag and blowout conditions and/or are also dead, diseased, dying, and/or leaning. Hazard tree removal includes removal of trees that 1) currently are tall enough to threaten the integrity of operation and maintenance of a TL or 2) have the ability in the future to threaten the integrity of operation and maintenance of a TL. |
| ☐ | 33, 34 | **TR9** (**TVA Reservoir Land only**) - Requests for removal of hazard trees on or adjacent to TVA reservoir land will be inspected by staff knowledgeable in identifying hazard trees per International Society of Arboriculture and TVA's checklist for hazard trees. Approval will be limited to trees with a defined target. |
| ■ | 33, 34 | **TR10** - 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. |

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| ☒ | 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 following the USFWS Survey Guidelines. Structural assessment will include:<br>○ 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.<br>○ 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.<br>○ Features with high-medium likelihood of harboring bats but cannot be checked visually include soffits, cavity walls, space between roof covering and roof lining.<br>○ Applies to culverts that are at least 23 feet in length with one or more of the following characteristics that make the culvert potentially suitable:<br>• Minimum culvert entrance height/diameter 3 feet<br>• Openings protected from high winds<br>• Not susceptible to enough flooding that the remaining unflooded space would be less than 3 feet.<br>• Inner areas relatively dark with roughened walls or ceilings (this may include corrugated metal culverts with rusting walls)<br>• Crevices, weep holes, imperfections, or swallow nests<br>○ Bridge survey protocols will be adapted from the latest USFSW Survey Guidelines.<br>○ Bat surveys usually are NOT needed in the following circumstances:<br>• Domestic garages /sheds with no enclosed roof space (with no ceiling)<br>• Modern flat-roofed buildings<br>• Metal framed and roofed buildings<br>• 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). |
| ☐ | 91 | **AR3** - Bridge survey protocols will be implemented, either by permittee (e.g., state DOT biologists) or qualified personnel. If a bridge is determined to be in use as an unconventional roost per the latest USFWS Guidelines, subsequent protocols will be implemented. |
| ☐ | 69, 89 | **AR4** - Removal of buildings with suitable roost characteristics within six miles of known or presumed occupied roosts for Virginia big-eared bat would occur between Nov 16 and Mar 31. Buildings may be removed other times of the year once a bat biologist evaluates a buildings' potential to serve as roosting habitat and determines that this species is not present and/or is not using structure(s). |

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| ■ | 16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 56, 61, 62, 63, 64, 65, 67, 69, 84, 89 | **SSPC1** (**Transmission only**) - Transmission actions and activities will continue to Implement A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities. This focuses on control of sediment and pollutants, including herbicides. Following are key measures:<br>o BMPs minimize erosion and prevent/control water pollution in accordance with state-specific construction storm water permits. BMPS are designed to keep soil in place and aid in reducing risk of other pollutants reaching surface waters, wetlands and ground water. BMPs will undertake the following principles:<br>• Plan clearing, grading, and construction to minimize area and duration of soil exposure.<br>• Maintain existing vegetation wherever and whenever possible.<br>• Minimize disturbance of natural contours and drains.<br>• As much as practicable, operate on dry soils when they are least susceptible to structural damage and erosion.<br>• Limit vehicular and equipment traffic in disturbed areas. Keep equipment paths dispersed or designate single traffic flow paths with appropriate road BMPs to manage runoff.<br>• Divert runoff away from disturbed areas.<br>• Provide for dispersal of surface flow that carries sediment into undisturbed surface zones with high infiltration capacity and ground cover conditions.<br>• Prepare drainage ways and outlets to handle concentrated/increased runoff.<br>• Minimize length and steepness of slopes. Interrupt long slopes frequently.<br>• Keep runoff velocities low and/or check flows.<br>• Trap sediment on-site.<br>• Inspect/maintain control measures regularly & after significant rain.<br>• Re-vegetate and mulch disturbed areas as soon as practical.<br>o Specific guidelines regarding sensitive resources and buffer zones:<br>• Extra precaution (wider buffers) within SMZs is taken to protect stream banks and water quality for streams, springs, sinkholes, and surrounding habitat.<br>• BMPs are implemented to protect and enhance wetlands. Select use of equipment and seasonal clearing is conducted when needed for rare plants; construction activities are restricted in areas with identified rare plants.<br>• Standard requirements exist to avoid adverse impacts to caves, protected animals, unique/ important habitat (e.g., cave buffers, restricted herbicide use, seasonal clearing of suitable habitat). |
| ☐ | 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. |

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|---|---|---|
| ■ | 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:<br>○ Best Management Practices (BMPs) in accordance with regulations:<br>• Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy<br>• Maintain every site with well-equipped spill response kits, included in some heavy equipment<br>• Conduct Quarterly Internal Environmental Field Assessments at each sight<br>• Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant.<br>• 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<br>○ Construction Site Protection Methods<br>• Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites<br>• Storm drain protection device<br>• Check dam to help slow down silt flow<br>• Silt fencing to reduce sediment movement<br>○ Storm Water Pollution Prevention (SWPP) Pollution Control Strategies<br>• Minimize storm water contact with disturbed soils at construction site<br>• Protect disturbed soil areas from erosion<br>• Minimize sediment in storm water before discharge<br>• Prevent storm water contact with other pollutants<br>• Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac)<br>○ 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<br>• Minimize fuel and chemical use Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy<br>• Maintain every site with well-equipped spill response kits, included in some heavy equipment<br>• Conduct Quarterly Internal Environmental Field Assessments at each sight<br>• Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant.<br>• 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<br>○ Construction Site Protection Methods<br>• Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites<br>• Storm drain protection device<br>• Check dam to help slow down silt flow<br>• Silt fencing to reduce sediment movement<br>○ Storm Water Pollution Prevention (SWPP) Pollution Control Strategies<br>• Minimize storm water contact with disturbed soils at construction site<br>• Protect disturbed soil areas from erosion<br>• Minimize sediment in storm water before discharge<br>• Prevent storm water contact with other pollutants<br>• Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac)<br>○ 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 |
| ☐ | 17, 22, 32, 33, 34, 35, 36 | **SSPC4** (**Transmission only**) - Woody vegetation burn piles associated with transmission construction will be placed in the center of newly established ROWs to minimize wash into any nearby undocumented caves that might be on adjacent private property and thus outside the scope of field survey for confirmation. Brush piles will be burned a **minimum of 0.25 miles from documented caves** and otherwise in the center of newly established ROW when proximity to caves on private land is unknown. |

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| ☐ | 17, 18, 21, 22, 24, 25, 26, 30, 31, 33, 34, 35, 36, 40, 46, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 66, 67, 68, 69, 70, 72, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 87, 88, 91, 93, 95, 96 | **SSPC5** (**26a, Solar, Economic Development only**) - Section 26a permits and contracts associated with solar projects, economic development projects or land use projects include standards and conditions that include standard BMPs for sediment and contaminants as well as measures to avoid or minimize impacts to sensitive species or other resources consistent with applicable laws and Executive Orders. |
| ☐ | 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. |
| ☐ | 17, 21, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 54, 55 | **SSPC7** - Clearing of vegetation **within a 200-ft radius of documented caves** will be limited to hand or small machinery clearing only (e.g., chainsaws, bush-hog, mowers). This will protect potential recharge areas of cave streams and other karst features that are connected hydrologically to caves. |
| ☒ | 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 (04/2018) and updates (05/2023 and 10/2024), which includes gray bat (listed in 1976), Indiana bat (listed in 1967), northern long-eared bat (listed in 2015), tricolored bat (anticipated listing in the future), and Virginia big-eared bat (listed in 1979).

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

Project has yet to determine when tree removal will occur. This bat form has Pup Season selected as the tree removal time frame; however, this form and the Take Tracking sheet will need to be revisited to update this time frame when more information is available. USFWS must also be notified of Take in Known habitat once time frame information becomes available. 28.76 suitable acres are proposed for removal in Known Habitat for Indiana bat and northern long-eared bat. One cave is known within three miles, approx 2.28 miles from the project area; no impacts to caves are expected. Structures proposed for renovation may require bat surveys closer to modification date.

**STEP 13) 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:**

Erica McLamb, Chris Bone (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***

☒ 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 28.76 ○ ac ○ trees and that use of Take will require $ 28,760.00 contribution to TVA's Conservation Fund upon completion of activity (amount entered should be $0 if cleared in winter).

Terrestrial Zoologist acknowledges that Project Lead/Contact (name) E. McLamb, C. Bone, M has been informed of any relevant conservation measures and/or provided a copy of this form.

**Terrestrial Zoologist Acknowledgment. Finalize and Print to Non-Editable PDF**

# APPENDIX D – THREATENED AND ENDANGERED SPECIES LIST AND EVALUATION OF LIKELIHOOD OF OCCURRENCE

**Assessment of the Potential for Threatened, Endangered, and Other Protected Species Evaluated to Occur on the Cumberland Reservation**

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| **Birds** | | | | | |
| Henslow's Sparrow *Centronyx henslowii* | S1B, T | -- | Damp open fields and meadows with grass interspersed with weeds or shrubs. | **Possible**; Some potential suitable habitat is present; however, no individuals observed during field surveys. No records in the TVA Natural Heritage Database. Species would be found in or near wetlands contained in the former agricultural fields or in early successional habitat along existing transmission corridors. | TDEC 2025; TVA 2022; TVA 2025, |
| Whooping Crane *Grus americana* | S1B | EXPN | Breeds, migrates, winters and forages in a variety of habitats, including coastal marshes and estuaries, inland marshes, lakes, open ponds, shallow bays, salt marsh and sand or tidal flats, upland swales, wet meadows and rivers, pastures and agricultural | **Very Unlikely**; No suitable habitat, no individuals observed during field surveys. No records in the TVA Natural Heritage Database (presumed extirpated). Not included on TDEC Rare Species List. Would be found in shallow, marshy areas of the Cumberland River and Wells Creek (seasonally). | TVA 2022; TVA 2025; USFWS 2025a |
| Bald Eagle[(a)] *Haliaeetus leucocephalus* | S3 | DL | Forested areas adjacent to large bodies of water for nesting habitat. Tall, mature coniferous or deciduous trees that afford a wide view of the surroundings are used as nest trees and roost trees | **Likely**; suitable nesting trees exist along Wells Creek and the Cumberland River. No nests or individuals observed during field surveys. TVA Natural Heritage Database identifies verified extant population within 3 miles. Included on TDEC Rare Species List. Plant staff indicate that they have seen them fly near CUF in the past, suggesting bald eagles are likely to occur periodically within the boundaries of the reservation. Suitable foraging habitat for bald eagles occurs over Wells Creek and the Cumberland River. | TDEC 2025; TVA 2022; TVA 2025; USFWS 2025a |

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| Swainson's Warbler<br>*Limnothlypis swainsonii* | S3 | -- | Mature, rich, damp, deciduous floodplain and swamp forests. | **Possible**; Potential suitable habitat present; however, no individuals observed during field surveys. No records in the TVA Natural Heritage Database. Included on TDEC Rare Species List. Mesic forest patches, including those adjacent to the Cumberland River and Wells Creek may provide suitable habitat. | TDEC 2025; TVA 2022; TVA 2025 |
| Osprey<br>*Pandion haliaetus* | S3, D | -- | Nests on trees (live and dead), and man-made structures such as lighting towers, utility poles, buildings and channel markers near lakes and rivers where fish are abundant | **Confirmed**; suitable nesting trees exist along Wells Creek and the Cumberland River. 16 osprey nests observed across the site during field surveys. Multiple extant osprey nest points within a 3-mile radius of CUF. Not included on TDEC Rare Species List or IPaC. Could be found nesting on lighting towers and transmission towers across the reservation. | TDEC 2025; TVA 2022; TVA 2025 |
| Cerulean Warbler<br>*Setophaga cerulea* | S3B | -- | Mature deciduous forest, particularly in floodplains or mesic conditions. | **Possible**; Potential suitable habitat present; however, no individuals observed during field surveys. No records in the TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in mature forest stands near the transmission line corridor, particularly around floodplain areas. | TDEC 2025; TVA 2022; TVA 2025 |
| Bewick's Wren<br>*Thryomanes bewickii* | S1, D | -- | Brushy areas, thickets and scrub in open country, open and riparian woodland. | **Possible**; Potential suitable habitat present; however, no individuals observed during field surveys. TVA Natural Heritage Database identifies verified extant population within 3 miles. Included on TDEC Rare Species List and IPaC. Species would be found in previously disturbed areas such as existing transmission corridors or former agricultural fields on site. | TDEC 2025; TVA 2022; TVA 2025; USFWS 2025a |

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| **Mammals** | | | | | |
| Gray Bat<br>*Myotis grisescens* | S2, E | E | Cave obligate year-round; frequents forested areas; migratory. | **Possible**; Natural roosting habitat (caves) is absent from the reservation. Suitable foraging habitat exists over bodies water in the industrial portion of the plant property, over wetlands and streams in the undeveloped areas, and over Well Creek and the Cumberland River. However, no individuals observed during field surveys. TVA Natural Heritage Database includes estimated viable and historical population in Stewart County. Included on TDEC Rare Species List and IPaC. Species would be found foraging over water features in the reservation or along the Cumberland River shoreline. | TDEC 2025; TVA 2022; TVA 2025; USFWS 2025a |
| Northern Long-eared Bat<br>*Myotis septentrionalis* | S1S2, T | E | Summer roosts may include caves, mines, live trees and snags; hibernates in caves and mines, often using small cracks and fissures. | **Possible**; Suitable summer roosting and foraging habitat present. However, no individuals observed during field surveys. TVA Natural Heritage Database includes one population of unknown status in a 3-mi radius. Included on TDEC Rare Species List and IPaC. Suitable low to high-quality summer roosting habitat observed across the reservation, including through forested areas, fence rows, and tree lines. Suitable foraging habitat for northern long-eared bat exists over bodies of water in the industrial portion of plant property, over wetlands and streams in the undeveloped areas, and over Wells Creek and the Cumberland River. | TDEC 2025; TVA2022; TVA 2025; USFWS 2025a |

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| Indiana Bat<br>*Myotis sodalis* | S1, E | E | Hibernates in caves; spring/summer maternity roosts are normally under the bark of standing trees. | **Possible**; Suitable roosting and foraging habitat present. However, no individuals observed during field surveys. TVA Natural Heritage Database includes one verified extant population in Stewart County. Included on TDEC List of Rare Species and IPaC; the reservation is within a known swarming area for Indiana bats. Like northern long-eared bat, may forage over water features and near forested areas across the reservation and may roost in deciduous forest patches across the reservation. Low to high-quality summer roosting habitat identified in the reservation. | TDEC 2025; TVA 2022; TVA 2025; USFWS 2025a |
| Tricolored Bat<br>*Perimyotis subflavus* | S2S3, T | PE | Generally associated with forested landscapes but may roost near openings | **Confirmed**; Three individuals captured during 2011 field surveys. Suitable summer roosting and foraging habitat observed across the reservation. TVA Natural Heritage Database includes one verified extant population within 3-mi. Not included on TDEC Rare Species List. Included on IPaC. Species would be found roosting in forested habitats. | TDEC 2025; TVA 2022; TVA 2025; USFWS 2025a |
| Little Brown Bat<br>*Myotis lucifugus* | S3 | UR | Summer roost include rocky crevices, hollow trees, loose bark, or under shingles or siding of buildings. Hibernate in limestone caves during the winter. | **Possible**; Suitable roosting and foraging habitat present; however, no individuals observed during field surveys. TVA Natural Heritage Database includes one verified extant population within 3-mi. Not included on TDEC Rare Species List. Included on IPaC. Species would be found in forested habitat. | TDEC 2025; TVA 2025; TWRA 2025; USFWS 2025a |
| Meadow Jumping Mouse<br>*Zapus hudsonius* | S4, D | -- | Open grassy fields; often abundant in thick vegetation near water bodies. | **Not likely**; potential suitable habitat may be present. TVA Natural Heritage Database includes one verified extant population in the county. Included on TDEC Rare Species List. Species would be found in grassy areas near Wells Creek or the Cumberland River. | TDEC 2025; TVA 2025 |

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| **Reptiles** | | | | | |
| Alligator Snapping Turtle *Macrochelys temminckii* | S2S3, T | PT | Slow-moving, deep water of rivers, sloughs, oxbows, swamps, and lakes. | **Possible**; Potential suitable foraging habitat identified, but no individuals observed. TVA Natural Heritage Database includes one verified extant population within a 3-mi radius. Included on TDEC Rare Species List. Potential foraging habitat is present in the Cumberland River. Potential foraging and nesting habitat in and around Wells Creek. | TVA 2022, Appendix K; TDEC 2025; TVA 2025 |
| Northern Pinesnake *Pituophis melanoleucus melanoleucus* | S3, T | -- | Well-drained sandy soils in pine/pine-oak woods; dry mountain ridges. | **Not Likely**; No suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Species would be found in the large undisturbed forest fragments immediately adjacent to the landfill and along the northwestern edge of Wells Creek. | TDEC 2025; TVA 2022; TVA 2025 |
| Western Pygmy Rattlesnake *Sistrurus miliarius streckeri* | S2S3, T | -- | Usually near water in river floodplains, swamps, marshes, and wet prairies; occasionally drier wooded uplands. | **Not Likely**; Potential suitable habitat, but no individuals observed during field surveys. No records in TVA Natural Heritage Database. Species would be found in floodplain areas along Wells Creek and the Cumberland River. | TDEC 2025; TVA 2022; TVA 2025 |
| **Amphibians** | | | | | |
| Eastern Hellbender *Cryptobranchus alleganiensis* | S3, E | PE | Rocky, clear creeks and rivers with large shelter rocks. | **Very Unlikely**; no potential suitable habitat identified and no individuals observed during field surveys. TVA Natural Heritage Database includes one historical population in county. Included on TDEC Rare Species List. Not included in IPaC. Species would be found in rocky, free-flowing areas of the Cumberland River or Wells Creek. | TDEC 2025; TVA 2022; TVA 2025; USFWS 2025a |

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| **Fish** | | | | | |
| Lake Sturgeon<br>*Acipenser fulvescens* | S1, T | -- | Bottoms of large, clean rivers and lakes. | **Possible**; suitable habitat and one individual collected each year from 2009 to 2016 during biological surveys. TVA Natural Heritage Database includes one verified extant population within the watershed boundary. Included on TDEC Rare Species List. Species would be found in main sections of the Cumberland River. | TVA 2020 |
| Blue Sucker<br>*Cycleptus elongatus* | S2, T | -- | Swift waters over firm substrates in big rivers. | **Possible**; suitable habitat and two individuals collected during electrofishing surveys in 2019. TVA Natural Heritage Database includes one possibly historical population within the watershed boundary. Included on TDEC Rare Species List. Species would be found in main sections of the Cumberland River. | TVA 2020 |
| ***Mollusks*** | | | | | |
| Pink Mucket<br>*Lampsilis abrupta* | S2, E | E | Generally a large river species, preferring sand-gravel or rocky substrates with moderate-strong currents; Tennessee and Cumberland River systems. | **Not Likely**; river substrates categorized as degraded/sub-optimal and considered poor habitat for mussels. No individuals observed during field surveys. TVA Natural Heritage Database includes one historical population in Stewart County. Included on TDEC Rare Species List. Not included on IPaC. Species would be found in main sections of the Cumberland River. | TVA 2020; TVA 2022 |
| Clubshell<br>*Pleurobema clava* | SH, E | E, EXPN | Clean, loose sand and gravel in medium to small rivers and streams. | **Very Unlikely**; no potential suitable habitat identified during desktop review. TVA Natural Heritage Database includes one historical population in the watershed boundary. Not included on TDEC Rare Species List or IPaC; Cumberland Reservation does not overlap federally mapped range. | TDEC 2025; TVA 2025; USFWS 2003; USFWS 2025a |

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| Smooth Rabbitsfoot<br>*Quadrula cylindrica cylindrica* | S3, T | T | Small to medium-sized streams and some larger rivers. In substrate of sand and gravel. | **Very Unlikely**; no potential suitable habitat identified during desktop review; river substrates categorized as degraded/sub-optimal and considered poor habitat for mussels. TVA Natural Heritage Database includes one historical population in the watershed boundary. Not included on TDEC Rare Species List or IPaC; Cumberland Reservation does not overlap federally mapped range. | TDEC 2025; TVA 2020; TVA 2025; USFWS 2025a; USFWS 2025b |
| Winged Mapleleaf<br>*Quadrula fragosa* | SX, X | E, EXPN | Fast-flowing riffles in medium-sized rivers; clean gravel, sand or rubble bottom | **Very Unlikely**; no potential suitable habitat identified during desktop review; river substrates categorized as degraded/sub-optimal and considered poor habitat for mussels. TVA Natural Heritage Database includes one extirpated population in the watershed boundary. Not included on TDEC Rare Species List or IPaC; Cumberland Reservation does not overlap federally mapped range. | TDEC 2025; TVA 2025; USFWS 2025a; USFWS 2025c |
| **Plants** | | | | | |
| Viscid Bushy Goldenrod<br>*Euthamia gymnospermoides* | S1, E | -- | Prairies and barrens | **Confirmed**; suitable habitat and 30 individuals observed in Cumberland-Johnsonville 500-kV transmission line corridor during field surveys. TVA Natural Heritage Database includes one verified extant population within 3-mi radius. Not included on TDEC Rare Species List. Species would be found near the overgrown grassy hillside or abandoned farmland along the site perimeter. | TVA 2022, Appendix J; TDEC 2021; TDEC 2025; TVA 2025 |
| American ginseng<br>*Panax quinquefolius* | S3S4, S-CE | -- | Rich woods | **Confirmed**; suitable habitat and 7 individuals observed during field surveys. TVA Natural Heritage Database includes one verified extant population within 3-mi radius. Species would be found under deciduous tree canopy with rich, moist, light, and porous rich loam. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |

| Common Name | State Rank and Listing Status | Federal Listing Status | Habitat Requirement | Potential for Species Occurrence in the Cumberland Reservation | Reference |
|---|---|---|---|---|---|
| Swamp Lousewort *Pedicularis lanceolata* | S1S2, S | -- | Wet acidic barrens and seeps | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. TVA Natural Heritage Database includes one possibly historical population within a 3-mi radius. Species would be found near dry powerline openings, bog and wet meadows, and disturbed prairie habitat. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Northern Pricklyash *Zanthoxylum americanum* | S2, S | -- | Riverbanks and in moist ravines, thickets, and woods. It is also found in somewhat drier areas such as upland rocky hillsides, bluffs, and open woods | **Confirmed**; suitable habitat and 10 trees observed on a disturbed, deciduous bottomland forest stand in the central-west portion of the Cumberland Reservation during field surveys. TVA Natural Heritage Database includes one verified extant population within a 3-mi radius. Not included on TDEC Rare Species List. | TVA 2022, Appendix J; TDEC 2025; TVA 2025; USDA NRCS 2001 |
| Price's Potato-bean *Apios priceana* | S3, E | T | Openings in rich woods | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. TVA Natural Heritage Database includes population with fair estimated viability in Stewart County. Included on TDEC Rare Species List and IPaC. Species would be found near woodland openings along the transmission line corridor. | TVA 2022, Appendix J; TDEC 2025; TVA 2025; USFWS 2025a |
| Purple Milkweed *Asclepias purpurascens* | S1, S | -- | Barrens | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in open areas along the shoreline of the Cumberland River and Wells Creek. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Cream Wild-indigo *Baptisia leucophaea var. leucophaea* | S1S2, S | -- | Dry oak woods and barrens | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in dry open areas along the shoreline of the Cumberland River and Wells Creek. | TVA 2022, Appendix J; TDEC 2025; TVA 2025; USFS 2025 |

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|---|---|---|---|---|---|
| Bristly Sedge<br>*Carex comosa* | S2, T | -- | Swamps | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in low-lying, partially inundated areas near Wells Creek or unnamed tributaries to Wells Creek. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Matted Spike-rush<br>*Eleocharis intermedia* | S1, E | -- | Wet areas | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in wetland areas throughout the site. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Lance-like Spike-rush<br>*Eleocharis lanceolata* | S1, S | -- | Wet areas | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in wetland areas throughout the site. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Sweet-scented Indian-plantain<br>*Hasteola suaveolens* | S2, S | -- | Alluvial woods, moist slopes | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in forested floodplain areas near the transmission line corridor and along the Cumberland River and Wells Creek. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Cow-parsnip<br>*Heracleum maximum* | S2, S | -- | Moist woods and floodplains | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in low-lying, moist areas near the shoreline. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Blue Mud-plantain<br>*Heteranthera limosa* | S1S2, T | -- | Mud flats | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found near flat, muddy areas along the shoreline of the Cumberland River and Wells Creek, or along unnamed tributaries to Wells Creek near the transmission line corridor. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |

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|---|---|---|---|---|---|
| Hairy Hawkweed<br>*Hieracium longipilum* | S1, S | -- | Dry fields and sandy road banks | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in dry fields around the perimeter of the site and sandy road banks along the Cumberland River and Wells Creek. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Lamance Iris<br>*Iris brevicaulis* | S1, E | -- | Bottomlands | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in moist low-lying areas near the transmission line corridor or along the bank of the Columbia River. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Butternut<br>*Juglans cinerea* | S3, T | -- | Rich woods and hollows | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in dense forest stands near the transmission line corridor or around the western perimeter of the site. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Fen Orchis<br>*Liparis loeselii* | S1, T | -- | Calcareous seeps | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in cool, moist areas around wetlands or near shoreline. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Fraser's Loosestrife<br>*Lysimachia fraseri* | S2, E | -- | Dry open woods | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in well-drained, open woodlands around the perimeter of the site. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Bearded Rattlesnake-root<br>*Nabalus barbatus* | S2, S | -- | Barrens and dry woodlands | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in well-drained barren areas. | TVA 2022, Appendix J; TDEC 2025; TVA 2025; |

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|---|---|---|---|---|---|
| Lake Cress<br>*Rorippa aquatica* | S2, S | -- | Gum or cypress swamps | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in forested wetlands throughout the site, particularly along the transmission line corridor and along the shoreline. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Sweet Coneflower<br>*Rudbeckia subtomentosa* | S2, T | -- | Barrens | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in sparsely vegetated, undisturbed areas within the site boundary. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Short-beaked Arrowhead<br>*Sagittaria brevirostra* | S1, T | -- | Swamps and floodplains | **Not Likely**; potential suitable habitat. No individuals observed during field surveys. No records in TVA Natural Heritage Database. Included on TDEC Rare Species List. Species would be found in forested wetlands throughout the site, particularly along the transmission line corridor and along the shoreline. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| Blue Sage<br>*Salvia azurea var. grandiflora* | S3, S | -- | Barrens | **Very Unlikely**; no suitable habitat and no individuals observed during field surveys. No records in TVA Natural Heritage Database. | TVA 2022, Appendix J; TDEC 2025; TVA 2025 |
| **Insect** | | | | | |
| Monarch Butterfly<br>*Danaus plexippus* | S4 | PT | Milkweeds and flowering plants | **Possible**; Potential suitable habitat, but no species observed during field surveys. No records in TVA Natural Heritage Database. Not included on TDEC Rare Species List. Included in IPaC. Species would be found near roadsides, open areas such as fields, transmission corridors, and wet areas with flowering species. | TVA 2022, Appendix J; TDEC 2025; TVA 2025; USFWS 2025a |

Note:
(a) Protected under Bald Eagle and Golden Eagle Protection Act
Key: B = Status assigned to Breeding Population; C = Candidate; CUF = Cumberland Fossil Plant; D = Deemed in Need of Management; DL = Delisted; E= Endangered; EXPN = Experimental Population, Non-Essential; IPaC = Information for Planning and Consultation; PE = Proposed Endangered; PT = Proposed Threatened; S= Special Concern; S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S-CE= Special Concern/Commercially Exploited; SEIS = Supplemental Environmental Impact Statement; SH = Possibly Extirpated; SX = Presumed Extirpated; T= Threatened;

TDEC = Tennessee Department of Environment and Conservation; TVA = Tennessee Valley Authority; TWRA = Tennessee Wildlife Resources Agency; UR = Under Review; USFS = U.S. Forest Service; USFWS = U.S. Fish and Wildlife Service

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