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NORTH OAKLAND-COFFEEVILLE 161-KV TRANSMISSION LINE

ENVIRONMENTAL ASSESSMENT

Yalobusha County, Mississippi

EAXX-455-00-000-1725449009

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Acronyms, Abbreviations, and Glossary of Terms Used

Acre	A unit measure of land area equal to 43,560 square feet
access road	A dirt, gravel, or paved road that is either temporary or permanent, and is used to access the right-of-way and transmission line structures for construction, maintenance, or decommissioning activities
ACS	American Community Survey
APE	Area of potential effect
BMP	Best management practice or accepted construction practice designed to reduce environmental effects
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
circuit	A section of conductors (three conductors per circuit) capable of carrying electricity to various points
conductors	Cables that carry electrical current
CT	Current Transformers
CWA	Clean Water Act
danger tree	A tree located outside the right-of-way that could pose a threat of grounding a line if allowed to fall near a transmission line or a structure
dB	Decibels
dBA	A-weighted decibel
DNL	Day/Night Average Sound Level
EA	Environmental Assessment
easement	A legal agreement that gives TVA the right to use property for a purpose such as a right-of-way for constructing and operating a transmission line
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
endangered species	A species in danger of extinction throughout all or a significant part of its range
EO	Executive Order
EPA	United States Environmental Protection Agency
ephemeral stream	Watercourses or ditches that only have water flowing after a rain event; also called a wet-weather conveyance
ESA	Endangered Species Act
FICON	Federal Interagency Committee on Noise

FIRM	Flood Insurance Rate Map
feller-buncher	A piece of heavy equipment that grasps a tree while cutting it, which can then lift the tree and place it in a suitable location for disposal; this equipment is used to prevent trees from falling into sensitive areas, such as a wetland
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GIS	Geographic Information System
groundwater	Water located beneath the ground surface in the soil pore spaces or in the pores and crevices of rock formations
guy	A cable connecting a structure to an anchor that helps support the structure
HSNF	Holly Springs National Forest
HUC	Hydrologic Unit Code
hydric soil	A soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop conditions of having no free oxygen available in the upper part
hydrophytic vegetation	Aquatic and wetland plants that have developed physiological adaptations allowing a greater tolerance to saturated soil conditions including with limited or absence of oxygen
IPaC	The United States Fish and Wildlife Services' "Information for Planning and Conservation" database tool that allows users to identify managed resources quickly and easily
IRP	Integrated Resource Plan
kV	Symbol for kilovolt (1 kV equals 1,000 volts)
Ldn	Day-night sound level
load	That portion of the entire electric power in a network consumed within a given area; also synonymous with "demand" in a given area
MDAH	Mississippi Department of Archives and History
MDEQ	Mississippi Department of Environmental Quality
MDOT	Mississippi Department of Transportation
NERC	North American Electric Reliability Corporation
NEPA	National Environmental Policy Act
NESC	National Electric Safety Code
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service

NRHP	National Register of Historic Places
NWI	National Wetland Inventory
Outage	An interruption of the electric power supply to a user
OPGW	Optical Ground Wire
PEIS	Programmatic Environmental Impact Statement
PI	Point of intersection at which two straight transmission line sections intersect to form an angle
riparian	Related to or located on the banks of a river or stream
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-way, a corridor containing a transmission line
runoff	That portion of total precipitation that eventually enters a stream or river
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SMZ	Streamside management zone
structure	A pole or tower that supports a transmission line
substation	A facility connected to a transmission line used to reduce voltage so that electric power may be delivered to a local power distributor or user
surface water	Water collecting on the ground or in a stream, river, lake, or wetland; it is naturally lost through evaporation and seepage into the groundwater
Switch	A device used to complete or break an electrical connection
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TVARAM	Tennessee Valley Authority Rapid Assessment Method developed to rapidly determine the condition of a wetland in the field based solely on hydrogeomorphic classification meant to be a “snapshot” of current condition based on on-site and external influences and variables relative to a reference standard within the Tennessee Valley. Information on the condition of the wetland is then used to evaluate a proposed impact justification and assess mitigation needs.
TVEPA	Tallahatchie Valley Electric Power Association
threatened species	A species likely to become endangered within the foreseeable future
TVA	Tennessee Valley Authority
US	United States
USACE	United States Army Corps of Engineers
USCB	U.S. Census Bureau
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
WOTUS	Waters of the United States
wetland	A marsh, swamp, or other area of land where the soil near the surface is saturated or covered with water, especially one that forms a habitat for wildlife
WHO	World Health Organization
WWC	Wet-weather Conveyance. See definition above for ephemeral stream.

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CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Proposed Action – Improve Power Supply

The Tennessee Valley Authority (TVA) proposes to improve the existing power supply in an area of northern Mississippi served by Tallahatchie Valley Electric Power Association (TVEPA), to provide greater reliability and improved operations flexibility in the area. TVA's proposal includes the construction, operation, and maintenance of a new 16.9-mile 161-kilovolt (kV) transmission line between TVEPA's North Oakland Metering Station and TVA's Coffeeville Switching Station in Yalobusha County, Mississippi (see Figure 1-1). This new North Oakland-Coffeeville 161-kV Transmission Line would be in support of the bulk power system.

The proposed 16.9-mile single-circuit transmission line, inclusive of optical ground wire (OPGW), would be centered on new, 100-foot-wide right-of-way (ROW) totaling about 205 acres. The line would utilize primarily steel, single-pole structures, however some H-frame (multi-pole) structures would also be required.

The new line would terminate into a new breaker bay (Breaker A), which would be added to the east end of the 161-kV switchyard at the Coffeeville161-kV Switching Station. The breaker bay would include bus work, switches, and jumpers. New telecommunications equipment would also be installed. Additionally, communication upgrades and relay protection would be required at the existing Batesville and Oxford 161-kV Substations.

1.2 Need for the Proposed Action

TVA plans its transmission system according to industry-wide standards established by the North American Electric Reliability Corporation (NERC). Those standards state that the TVA transmission system must be able to survive NERC defined contingency event while continuing to serve customer loads[1] with adequate voltage and no overloaded facilities, while maintaining adequate transmission line clearances as required by the National Electric Safety Code (NESC).

Currently, under heavy loading conditions, the loss of one of three transmission lines that serve the Batesville, Mississippi service area (Batesville-Oxford [L5131], Batesville-East Batesville [L5352], and East Batesville-Coffeeville [L5854]) results in the overloading of the other two lines. The proposed project would resolve this overloading issue, providing greater reliability and improving flexibility for the transmission system. In addition, three substations – West Batesville, West Charleston, and North Oakland – are currently on a radial line[2] which would eliminate outages for maintenance, shorten outage durations for sustained faults, and bring a third power source to the area to allow additional maintenance flexibility. See for existing system configuration in the area (Figure 1-2). Any failures could result in loss of service to the area.

Unless action is taken, the increasing power loads caused by commercial and residential growth in the area could result in overloaded transformers and other electrical equipment damage or failure. Overloading of a transmission line can cause alternating heating and cooling of the conductor material, thus weakening the transmission line over time.

[1] "Load" is defined as that portion of the entire electric power in a network that is consumed within a given area. The term is synonymous with "demand" in a given area.
[2] A single transmission line from a substation out to a number of customers.

Overloading can also cause a transmission line to sag in excess of design criteria, resulting in inadequate clearance between the transmission line and the ground/and or vegetation. If a transformer and/or transmission line fail, the result is a power outage.

To ensure that the Batesville area has a continuous, reliable source of electric power for its future load growth, TVA needs to provide additional electric service to the area. Construction of the new North Oakland-Coffeeville 161-kV Transmission Line would provide a continuous, reliable source of electric power in the Batesville, Charleston, Coffeeville, and Oakland service areas. It would also remove customers – West Batesville, West Charleston, and North Oakland – off the radial transmission line, add necessary capacity to TVA's Bulk Transmission System, improve operational and maintenance flexibility, and support load growth and economic development in the Batesville area.

1.3 Decisions to be Made

The primary decision before TVA is whether to provide more reliable electric power to Batesville, Charleston, Coffeeville, and Oakland service areas by constructing a new 161-kV transmission line. If the proposed transmission line is to be built, other secondary decisions are involved. These include the following considerations:

- Timing of the proposed transmission line installation;
- Most suitable route for the proposed transmission line; and
- Determination of any necessary mitigation and/or monitoring to meet TVA standards and to minimize the potential for damage to environmental resources.

A detailed description of the alternatives is provided in Section 2.1.

1.4 Related Environmental Reviews or Documentation

In 2019, TVA completed the 2019 Integrated Resource Plan (IRP) and the associated environmental impact statement (EIS) (TVA 2019a). These documents provide direction on how TVA can best deliver clean, reliable, and affordable energy in the Tennessee River Valley over a 20-year planning period, and the associated EIS looks at the natural, cultural, and socioeconomic impacts associated with the IRP. TVA's IRP is based upon a "scenario" planning approach that provides an understanding of how future decisions would play out in future scenarios. In September 2024, TVA released a new Draft IRP for public review and comment. The 2019 IRP remains valid and guides future generation planning until TVA's subsequent IRP is issued as Final with any new or modified recommendations.

In 2019, TVA released a Transmission System Vegetation Management Programmatic Environmental Impact Statement (PEIS), which is incorporated by reference (TVA 2019b). This review more broadly represented a comprehensive analysis of management activities and potential environmental impacts associated with TVA's vegetation management program within the TVA power service area. The analysis considered various vegetation management methods and tools. TVA issued a Record of Decision on October 18, 2019, identifying its preferred vegetation management program alternative as a condition-based control strategy with a goal of maintaining the ROWs in a meadow-like end-state (84 FR 55995).

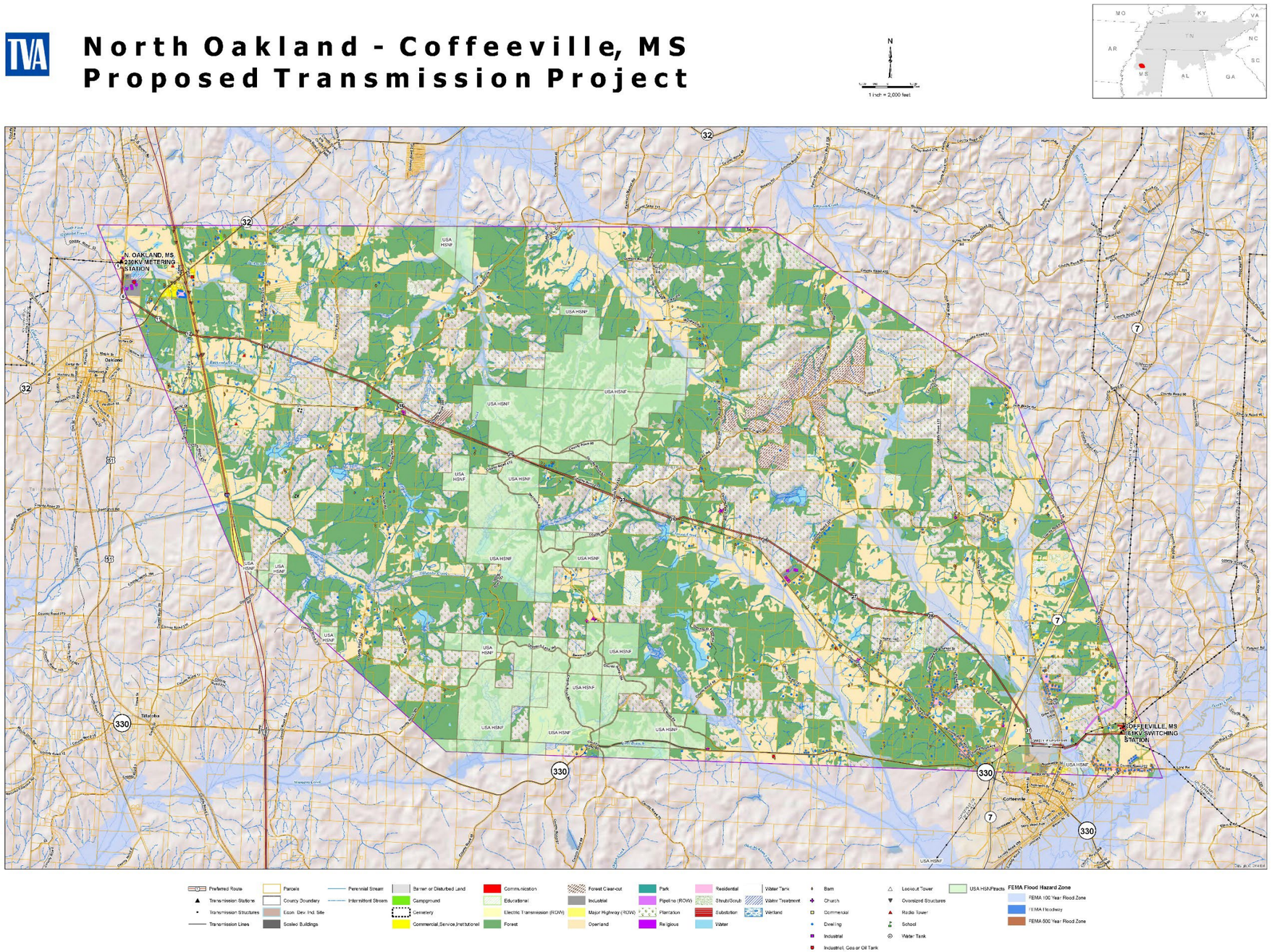

Figure 1-1. TVA's Preferred Transmission Line Route for the North Oakland-Coffeeville 161-kV Transmission Line in Yalobusha County, Mississippi

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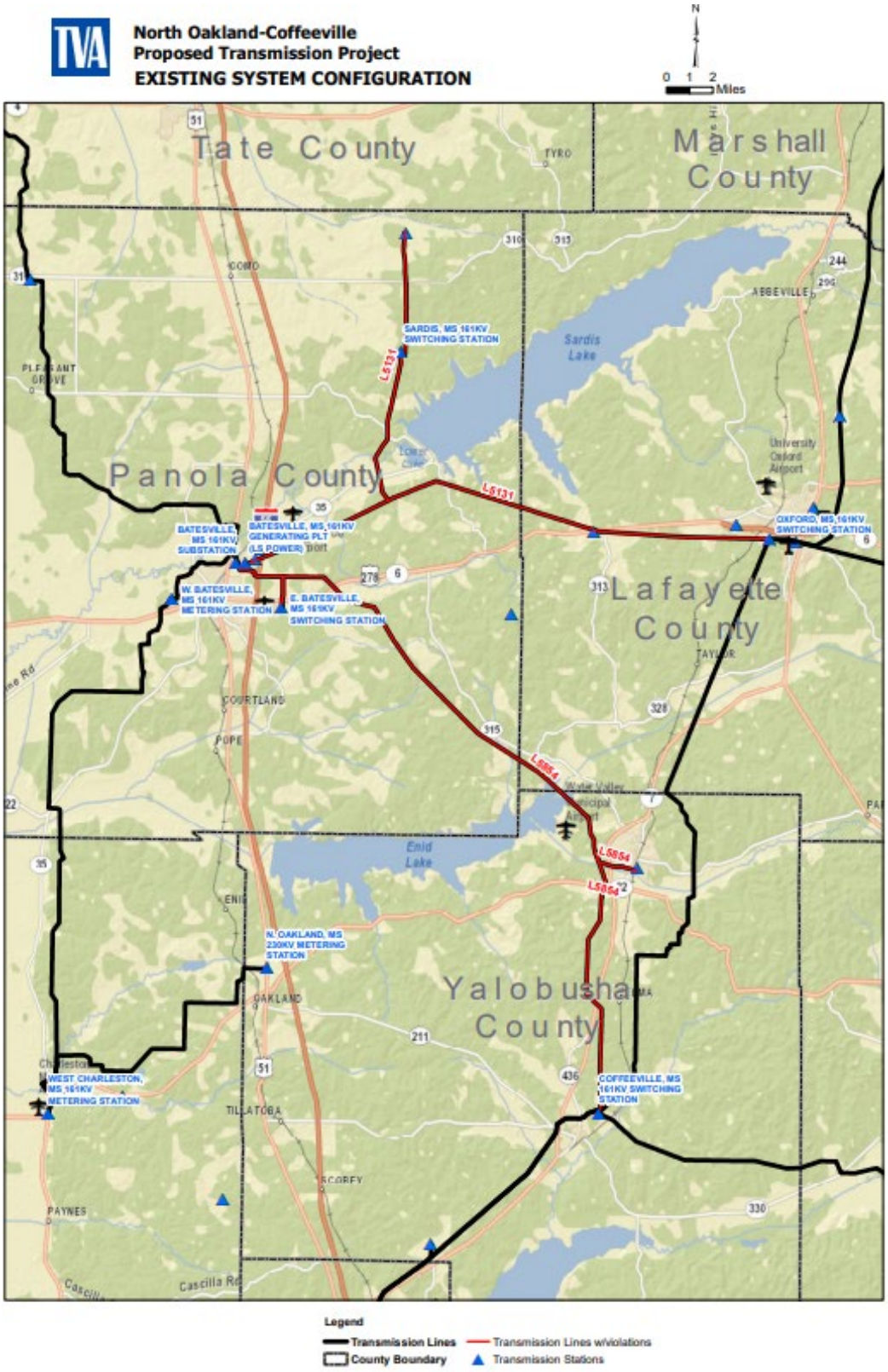

Figure 1-2. TVA's Existing Transmission System Configuration within the Area of Panola, Lafayette, Tallahatchie, and Yalobusha Counties, Mississippi

On September 27, 2024, TVA issued a final EA and Finding of No Significant Impact (FONSI) for its proposal to perform routine vegetation management on about one-third of its transmission system ROWs in each of its Fiscal Years (FY) 2025 and 2026 (TVA 2024a). TVA issued final EAs and FONSIs for similar proposals on November 9, 2020 (addressing FY 2021), on October 1, 2021 (addressing FYs 2022 and 2023), and October 19, 2023 (addressing FY24) (TVA 2020; TVA 2021; TVA 2023a). The management of vegetation is needed to ensure the transmission system can continue to provide reliable power and to prevent outages related to incompatible vegetation. Site-specific effects were considered within twelve managed Sectors in areas that had been previously and continuously maintained on a recurring cycle. The EAs tiered from the PEIS which evaluated and analyzed TVA's vegetation management program (TVA 2019b).

1.5 Scoping Process and Public Involvement

TVA contacted the following federal and state agencies, as well as federally recognized Native American Tribes (Tribes), concerning the proposed project:

- Absentee Shawnee Tribe of Indians of Oklahoma
- Mississippi Band of Choctaw Indians
- Alabama-Coushatta Tribe of Texas
- Jena Band of Choctaw Indians
- Chickasaw Nation
- Choctaw Nation of Oklahoma
- Coushatta Tribe of Louisiana
- Eastern Shawnee Tribe of Oklahoma
- Shawnee Tribe
- National Park Service (NPS) – Natchez Trace Parkway
- United States Army Corps of Engineers (USACE)
- United States Fish and Wildlife Service (USFWS)
- United States Forest Service (USFS)
- Mississippi State Historic Preservation Office (SHPO)

TVA developed a public communication plan that included a website with information about the project, a map of the alternative route segments, and numerous feedback mechanisms. A virtual open house was held from November 19 through December 21, 2020. Letters were sent to 196 property owners potentially affected by, or near to, any of the route alternative segments representing approximately 314 parcels, as well as to elected officials. For this project TVA considered properties within 400 feet of one of the route alternatives to be an affected property. Additional property owners were sent letters at the discretion of the siting engineer due to proximity or visual impact. Ads were placed in local newspapers to notify other interested members of the public of the proposed project and open house. The virtual open house presentation provided project information including a map with a network of 31 alternative transmission line routes (see Figure 1-3). The virtual open house website was accessed by 15 property owners resulting in an 8 percent attendance rate.

The virtual open house serves to effectively communicate TVA's proposed project and obtain information relevant to considering a preferred route. The virtual open house included differing stations for those that visited the site. The stations included the following:

- Station 1 - Welcome
- Station 2 - Need for Project
- Station 3 - Proposed Transmission Line Route Alternatives with 31 Segments and Possible Routes (Project Maps, Structure Photo)
- Station 4 – Interactive Geographic information system (GIS) application to show how the route might affect the property owner
- Station 5 - Siting Process
- Station 6 - Environmental Review
- Station 7 - Easement Purchase
- Station 8 -Transmission Line Construction
- Station 9 - TVA's Mission
- Station 10 - Thank you and Ask for Comments

Multiple avenues for feedback were provided such as an email, a toll-free number, mailing addresses and comment forms. A total of 11 comments were received during the comment period, some of which opposed multiple segments. Segment 18 received the most comments with strong opposition, followed by segments 15, 16, and 17. In general, public comments centered on impacts to timberland, future development, property values, and increasing impacts already incurred by the existing State ROW.

At the conclusion of the 30-day comment period and after consideration of public input, the alternative route segments were evaluated, and TVA developed a preferred route. TVA announced its preferred route to the public in July 2021 (Figure 1-3). Letters were sent to affected property owners and elected officials, and information was provided to the public through TVA's website.

As a result of information obtained following the announcement of the preferred route from both public and agency comments, as well as from environmental field surveys, TVA made additional route adjustments to the preferred transmission line route (Figure 1-1). These adjustments are described in Section 2.4.3.

1.6 Issues to be Addressed

This EA investigates the potential environmental and socio-economic effects of the proposed construction, operation, and maintenance of a new transmission line as well as the purchase of ROW for satisfying the projects purpose and need or taking no action.

TVA has determined the resources listed below are potentially affected by the alternatives considered. These resources were identified based on internal scoping as well as comments received during the scoping period.

- Water quality (surface waters and groundwater)
- Aquatic ecology
- Vegetation

- Wildlife
- Endangered and threatened species and their critical habitats
- Floodplains
- Wetlands
- Aesthetic resources (including visual and noise)
- Archaeological and historic resources
- Recreation, parks, and managed areas
- Socioeconomics

TVA's action would satisfy the requirements of Executive Orders (EO) 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), EO 12372 (Intergovernmental Review), EO 13112 (Invasive Species) and EO 13751 (Safeguarding the Nation From the Impacts of Invasive Species) that amends EO 13112, and applicable laws including the Farmland Protection Policy Act (FPPA), the National Historic Preservation Act (NHPA), the Endangered Species Act (ESA), the Clean Air Act (CAA), and the Clean Water Act (CWA). Correspondence received from agencies related to this review and coordination is included in Appendix A.

Potential effects related to prime farmland, transportation, air quality and global climate change, solid and hazardous waste, and health and safety were considered. Because of the nature of the action, any potential effects to these resources would be minor and insignificant. Thus, any further analysis for effects to these resources was not deemed necessary except as discussed in relation to other resource areas.

1.7 Necessary Permits or Licenses

Prior to construction, a permit would be required from Mississippi Department of Environmental Quality (MDEQ) for the discharge of construction site storm water associated with the construction of the transmission line. TVA would prepare the required erosion and sedimentation control plans and coordinate them with the appropriate state and local authorities. A Section 401 Water Quality Certification would be obtained as required for physical alterations to waters of the State. A Section 404 Nationwide Permit would be obtained from the USACE if construction activities would result in the discharge of dredge or fill into waters of the United States (U.S.). A permit would be obtained from the Mississippi Department of Transportation (MDOT) for crossing state highways or federal interstates during transmission line construction.

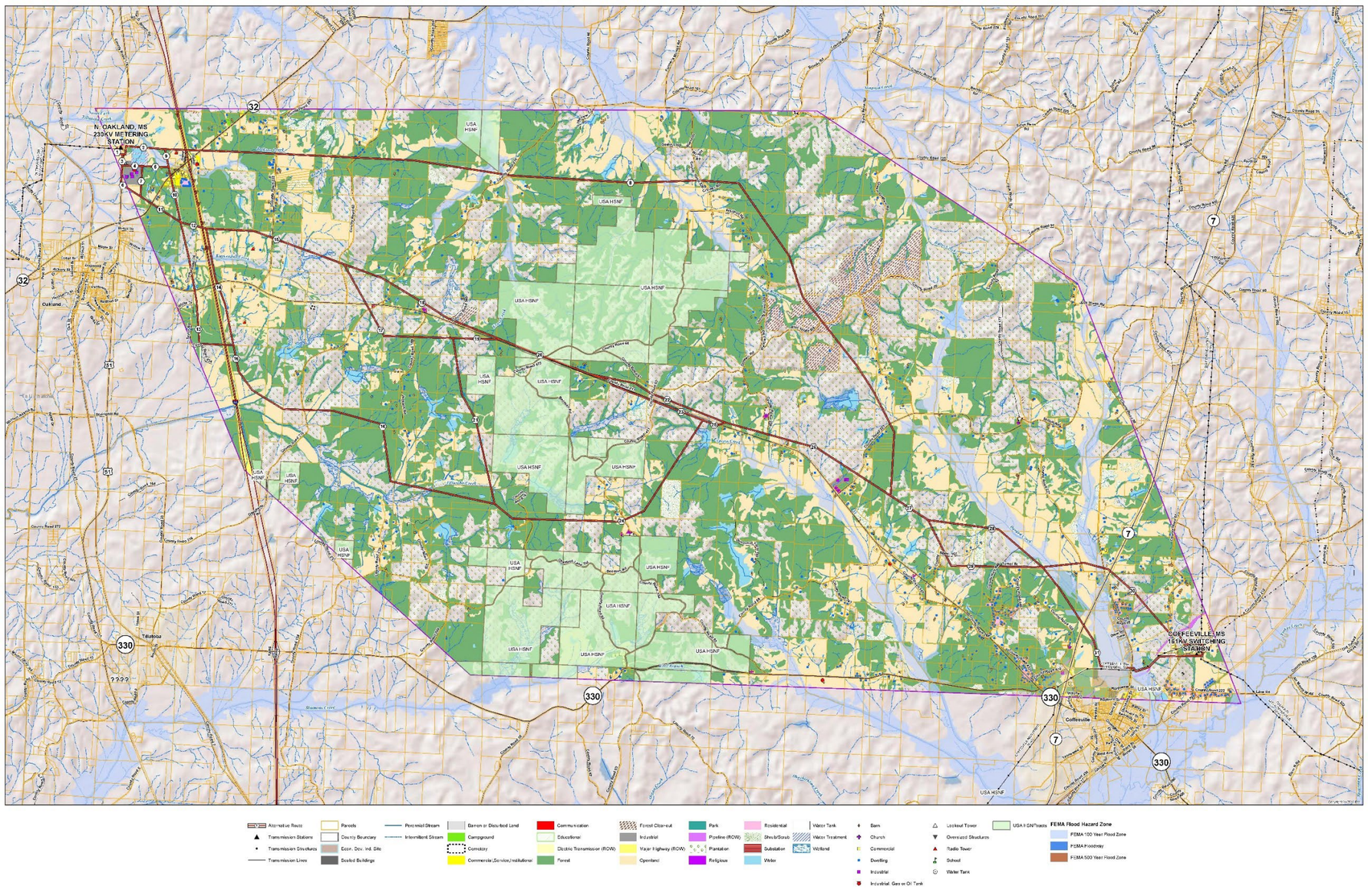

Figure 1-3. Alternative Routes Considered for TVA's Proposed North Oakland-Coffeeville 161-kV Transmission Line in Yalobusha County, Mississippi

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CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

As described in Chapter 1, TVA proposes to construct a new, 16.9-mile long 161-kV transmission line from the North Oakland 161-kV Metering Station to the Coffeeville 161-kV Switching Station. A description of the proposed action is provided below in Section 2.1.2. Additional background information about construction, operation, and maintenance of a transmission line is also provided in Section 2.2 and would be applicable regardless of the location of the proposed facilities.

This chapter has seven major sections:

1. A description of alternatives;
2. A description of the construction, operation, and maintenance of the proposed transmission line;
3. An explanation of the transmission line siting process;
4. A comparison of the alternative transmission line routes;
5. A comparison of anticipated environmental effects by alternative;
6. Identification of mitigation measures; and
7. Identification of the preferred alternative.

2.1 Alternatives

Two alternatives (i.e., the No Action Alternative and the Action Alternative) are addressed in further detail in this EA. Under the No Action Alternative, TVA would not implement the proposed action. The Action Alternative involves the purchase of easements for ROW and the construction, operation, and maintenance of the proposed transmission line.

2.1.1 The No Action Alternative – TVA Does Not Construct the North Oakland-Coffeeville 161-kV Transmission Line

Under the No Action Alternative, TVA would not construct the North Oakland-Coffeeville 161-kV Transmission Line to provide a reliable source of electric power in Yalobusha County, contrary to TVA's mission. As a result, the TVA power system in the service area would continue to operate under current conditions, increasing the risk for substation and transmission overloading, loss of service, and occurrence of violations of NERC reliability criteria. TVA's ability to provide a strong, reliable source of power for continued economic health and future residential and commercial growth in the area would be jeopardized.

In this case, other sources to provide the appropriate power supply could be evaluated. Should transmission service be provided by other sources to construct the new transmission line assets needed to provide power in the area, the potential environmental effects of implementing the No Action Alternative would likely be comparable to those of the Action Alternative described in this chapter. However, some variability of impacts could occur as effects of the construction would be dependent upon various factors, such as the route selected, and the construction methods used.

Considering TVA's obligation to provide reliable electric service, the No Action Alternative is not a reasonable alternative. However, the potential environmental effects of adopting the No

Action Alternative were considered in the EA to provide a baseline for comparison with respect to the potential effects of implementing the proposed action.

2.1.2 Action Alternative – TVA Constructs the North Oakland-Coffeeville 161-kV Transmission Line

Under the Action Alternative, TVA proposes to construct a 161-kV single-circuit transmission line between Oakland and Coffeeville in Yalobusha County. TVA's proposed transmission line would encompass approximately 205 acres composed of 16.9-miles new line centered on new 100-ft-wide ROW.

Additionally, to facilitate the operation of the new transmission line, TVA would install a new breaker and bay at the Coffeeville Switching Station. Communication upgrades and relay protection would be required at existing TVA substations: Batesville; North Oakland; Coffeeville; and Oxford.

2.1.3 Alternatives Considered but Eliminated from Further Discussion

The following alternatives were not feasible for the reasons provided below.

2.1.3.1 Uprate Existing Transmission Lines

Under this Alternative, TVA would uprate the Batesville-Oxford, Batesville-East Batesville, and East Batesville-Coffeeville transmission lines. Switches, pull-off, and jumpers at the Batesville 161-kV Substation would be replaced. TVA would replace a spare breaker, switches, current transformers (CTs), secondary devices, pull-off, bay equipment, and jumpers at the Coffeeville 161-kV Substation. In addition, secondary devices, spare bay equipment, and reverse trip relays would be replaced at Batesville 161-kV Substation. Approximately 36 miles of transmission line would be reconductored. Analysis of potential uprating and the proposed Action Alternative were estimated to cost approximately the same and have a similar project duration; However, the Action Alternative would also remove three customers/delivery points off of radial feeds (West Batesville, West Charleston, and North Oakland). Upon execution of the Action Alternative these customers would be fed from a line with a TVA source on each end, which would provide greater reliability and operational flexibility in the area, benefits that would not be realized through uprating, thereby not best meeting the project's purpose and need. While the benefits of the uprating option would resolve the overloading issue, this option was not selected since the Action Alternative proved more favorable in terms of reliability and cost.

2.1.3.2 Underground Utility Lines

A frequent objection to the construction of new transmission lines involves their adverse visual effects. Thus, a frequently suggested alternative is the installation of underground transmission lines.

Power lines can be buried. However, most buried transmission lines tend to be low-voltage distribution lines (lines that are 13-kV or less) rather than high-voltage transmission lines, which tend to be 69-kV and above. Although low-voltage distribution lines can be laid into trenches and buried without the need for special conduits, burying higher voltage transmission lines requires extensive excavation as these transmission lines must be encased in special conduits or tunnels. Additionally, measures to ensure proper cooling and to provide adequate access are required. Usually, a road along or within the ROW for buried transmission lines must be maintained for routine inspection and maintenance.

Although buried transmission lines are much less susceptible to catastrophic storm damage, especially wind damage, they tend to be very expensive to install and maintain. Depending on

the type of cable system used, special equipment or ventilation systems may be required to provide adequate cooling for the underground conductors. Similarly, they must be protected from flooding, which could cause an outage. Repairs of buried transmission lines may require excavation, and the precise location of problem areas can be difficult to determine.

The potential adverse environmental effects of constructing and operating a buried high-voltage transmission line would likely be greater overall than those associated with a traditional aboveground transmission line. In addition, the expense of a buried high-voltage transmission line would be prohibitive. For these reasons, burying the proposed transmission line is not a feasible option and this alternative was eliminated from further consideration.

2.2 Construction, Operation, and Maintenance of the Proposed Transmission Line

2.2.1 Transmission Line Construction

2.2.1.1 Right-of-Way Acquisition and Clearing

A ROW utilizes an easement that would be designated for a transmission line and associated assets. The easement would require maintenance to avoid the risk of fires and other accidents and to ensure reliable operation. The ROW provides a safety margin between the high-voltage conductors and surrounding structures and vegetation. The ROW for this project is described in Section 2.1.2.

TVA would purchase easements from landowners for the proposed new ROW. These easements would give TVA the right to clear the ROW and to construct, operate, and maintain the transmission line, as well as remove “danger trees” adjacent to the ROW. Danger trees include any trees located beyond the cleared ROW, but that are tall enough to pass within five feet of a conductor or strike a structure should it fall toward the transmission line. The fee simple ownership of the land within the ROW would remain with the landowner, and many activities and land uses could continue to occur on the property. However, the terms of the easement agreement prohibit certain activities, such as construction of buildings and any other activities within the ROW that could interfere with the operation or maintenance of the transmission line or create a hazardous situation.

Because of the need to maintain adequate clearance between tall vegetation and transmission line conductors, as well as to provide access for construction equipment, all trees and most shrubs would be removed from the entire width of the ROW. Equipment used during this ROW clearing would include chain saws, skidders, bulldozers, tractors, and/or low ground-pressure feller-bunchers[3]. Marketable timber would be salvaged where feasible; otherwise, woody debris and other vegetation would be piled and burned, chipped, or taken off site. In some instances, vegetation may be windrowed along the edge of the ROW to serve as sediment barriers.

[3] A feller-buncher is a self-propelled machine with a cutting head that is capable of holding more than one stem at a time. Tracked feller-bunchers are capable of operating on wet and loose soils, have a lower ground-pressure than wheeled equipment, and are less prone to rutting and compaction.

Vegetation removal in streamside management zones (SMZs) and wetlands would be restricted to trees tall enough, or with the potential to soon grow tall enough, to interfere with conductors. Clearing in SMZs would be accomplished using handheld equipment or remote-handling equipment, such as a feller-buncher, to limit ground disturbance.

TVA utilizes standard practices for ROW clearing and construction activities (TVA 2024b). These guidance and specification documents (listed below) are provided on TVA's transmission system projects web page and are taken into account when considering the effects of the proposed Action Alternative. TVA transmission projects also utilize best management practices (BMPs) as identified in TVA (2022) to provide guidance for clearing and construction activities.

1. *ROW Clearing Specifications*
2. *Environmental Quality Protection Specifications for Transmission Line Construction*
3. *Transmission Construction Guidelines Near Streams*
4. *Environmental Quality Protection Specifications for Transmission Substation or Communications Construction*
5. *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities* (hereafter referred to as "TVA 2022")

The emission of criteria pollutants or their precursors would not exceed *de minimis* levels specified in 40 CFR § 93.153(b). Thus, consistent with Section 176(c) of the CAA, project activities would be in conformity with the requirements of Mississippi's State Implementation Plan for attaining air quality standards.

Following clearing and construction, an appropriate vegetative cover on the ROW would be restored. TVA would utilize appropriate seed mixtures as described in TVA 2022 or work with property owners with impacted crop land to ensure restoration supports or minimizes impacts to production. Erosion controls would remain in place until the plant communities become fully established. Streamside areas would be revegetated as described in the above documents. Failure to maintain adequate clearance can result in dangerous situations, including ground faults. As such, native vegetation or plants with favorable growth patterns (slow growth and low mature heights) would be maintained within the ROW following construction. All future ROW maintenance would be performed in accordance with the 2019 vegetation management programmatic EIS (TVA 2019b) in accordance with the injunction arising under *Sherwood v. TVA* (Appendix I); until the *Sherwood* injunction is lifted by a court of competent jurisdiction, TVA will adhere to the terms and conditions of the injunction for all ROW maintenance actions within its scope.

2.2.1.2 Access Roads

Access roads would be needed to allow vehicular access to each structure and other points along the ROW. Typically, new permanent or temporary access roads used for transmission lines are located on the ROW wherever possible and are designed to avoid severe slope conditions and to minimize environmental resources such as stream crossings. Access roads are typically about 12 to 16 feet wide and are surfaced with dirt, mulch, or gravel.

Culverts and other drainage devices, fences, and gates would be installed as necessary. Culverts installed in any permanent streams would be removed following construction. However, in ephemeral[4] streams the culverts would be left or removed, depending on the wishes of the landowner or any permit conditions that might apply. If desired by the property owner, TVA would restore new temporary access roads to previous conditions. Additional applicable ROW clearing and environmental quality protection specifications are listed in *TVA ROW Clearing Specifications, Environmental Quality Protection Specifications for Transmission Line Construction* and *Transmission Construction Guidelines Near Streams* (TVA 2024b).

2.2.1.3 Construction Assembly Areas

A construction assembly area (or "laydown" area) would be required for worker assembly, vehicle parking, and material storage. This area may be on existing substation property or may be leased from a private landowner for the duration of the construction period. The property is typically leased by TVA about a month before construction begins. Properties such as existing parking lots or areas used previously as car lots are ideal laydown areas because site preparation is minimal. Selection criteria used for locating potential laydown areas include areas that are typically five acres in size; relatively flat; well drained; previously cleared; preferably graveled and fenced; preferably with wide access points with appropriate culverts; sufficiently distant from streams, wetlands, or sensitive environmental features; and located adjacent to an existing paved road near the transmission line. TVA initially attempts to use or lease properties that require no site preparation. However, at times, the property may require some minor grading and installation of drainage structures such as culverts. Likewise, the area may require graveling and fencing. Trailers used for material storage and office space would be parked on the site. Following completion of construction activities, all trailers, unused materials, and construction debris would be removed from the site. Removal of TVA-installed fencing and site restoration would be performed by TVA at the discretion of the landowner.

2.2.1.4 Structures and Conductors

The proposed transmission line would utilize single and double steel-pole structures. Examples of these structure types are shown in Figure 2-1. Structure heights would vary according to the terrain but would range between 75 and 140 feet.

Three conductors (the cables that carry the electrical current) are required to make up a single circuit in alternating current transmission lines. For a 161-kV transmission line, each single-cable conductor is attached to porcelain insulators suspended from the structure cross arms. A smaller overhead ground wire or wires are attached to the top of the structures.

Poles at angles (angle points) in the transmission line may require supporting screw, rock, or log-anchored guys. Some angle structures may be self-supporting poles or steel towers, which would require concrete foundations. Most poles would be directly imbedded in holes augured into the ground to a depth equal to 10 percent of the pole's length plus an additional two feet. Normally, the holes would be backfilled with the excavated material, but, in some cases, gravel or a concrete-and-gravel mixture would be used, depending on local soil conditions.

Equipment used during the construction phase would include trucks, truck-mounted augers and drills, excavators, as well as tracked cranes and bulldozers. Low ground-pressure-type equipment would be used in specified locations (such as areas with soft ground) to reduce the potential for environmental impacts.

[4] Ephemeral streams are also known as wet-weather conveyances or streams that run only following a rainfall.

Figure 2-1. Typical Single and Double Steel-Pole Structures

2.2.1.5 Conductor and Ground Wire Installation

Reels of conductor and ground wire would be delivered to the construction assembly area(s), and temporary clearance poles would be installed at road crossings to reduce interference with traffic. A small rope would be pulled from structure to structure. The rope would be connected to the conductor and ground wire and used to pull them down the line through pulleys suspended from the insulators. A bulldozer and specialized tensioning equipment would be used to pull conductors and ground wires to the proper tension. Crews would then clamp the wires to the insulators and remove the pulleys.

2.2.2 Operation and Maintenance

2.2.2.1 Inspection

Periodic inspections of 161-kV transmission lines are performed by helicopter or drone aerial surveillance after operation begins. Foot patrols or climbing inspections are performed to locate damaged conductors, insulators, or structures, and to discover any abnormal conditions that might hamper the normal operation of the line or adversely affect the surrounding area. During these inspections, the condition of vegetation within the ROW, as well as that immediately adjoining the ROW, is noted. These observations are then used to plan corrective maintenance and routine vegetation management.

2.2.2.2 Vegetation Management

Management of vegetation along the ROW would be necessary to ensure access to structures and to maintain an adequate distance between transmission line conductors and vegetation. Adequate ground clearance is important to account for construction, design, and survey tolerances (e.g., conductor sagging). TVA uses more conservative distances than NESC requirements. TVA uses a minimum ground clearance of 24 feet for a 161-kV transmission line at the maximum line operating temperature. Vegetation management along the ROW would consist of two different activities: felling danger trees adjacent to the cleared ROW (as described in Section 2.2.1.1), and vegetation control within the cleared ROW total width. These activities occur on approximately 3-year cycles.

As referenced in Section 1.4, TVA completed the Transmission System Vegetation Management PEIS in 2019 which addresses tools and methods TVA would use to manage ROW vegetation. Subsequent site specific National Environmental Policy Act (NEPA) documents which tiered from the PEIS were also completed (TVA 2020; TVA 2021; TVA 2023a; TVA 2024a) to ensure resource impacts would be avoided, minimized, or mitigated. Management of vegetation within the cleared ROW would include an integrated vegetation management approach designed to encourage the low-growing plant species and discourage tall-growing plant species. A vegetation re-clearing plan would be developed for each transmission line connection, based on the results of the periodic inspections described above. The two principal management techniques are mechanical mowing (using tractor-mounted rotary mowers) and herbicide application. Herbicides are normally applied in areas where heavy growth of woody vegetation is occurring on the ROW and mechanical mowing is not practical. Herbicides would be selectively applied from the ground with backpack sprayers or vehicle-mounted sprayers, or, in rare cases, by helicopter.

Any herbicides used are applied in accordance with applicable state and federal laws and regulations. Only herbicides registered with the U.S. Environmental Protection Agency (EPA) are used. A list of the herbicides currently used by TVA in ROW management is presented in Appendix B. This list may change over time as new herbicides are developed or new information on presently approved herbicides becomes available. Additionally, as described in Section 2.2.1.1 Right-of-Way Acquisition and Clearing, all vegetation management actions subject to the scope of the *Sherwood* injunction will comply with its terms and conditions until a court of competent jurisdiction actions to lift the injunction.

2.2.2.3 Structure Replacement

Other than vegetation management, only minor maintenance work is generally required. The transmission line structure and other components typically last several decades. If a structure needs to be replaced, the structure would normally be lifted out of the ground by crane-like equipment, and the replacement structure would be inserted into the same hole or an adjacent hole. Access to the structures would be via existing roads. Replacement of structures may require leveling the area surrounding the replaced structures, but additional area disturbance would be minor compared to the initial installation of the structure.

2.3 Siting Process

TVA's siting process is a complex weighing of relevant factors to achieve a preferred route alternative. In general, the relevant factors considered are Environmental, Land Use, Engineering, Cultural, and Economic impacts on the project. No simple formula dictates where TVA's preferred route for a transmission line should be located. The basic process for proposing a preferred transmission line route consists of the following.

- Define a Study Area.
- Gather all available data pertaining to the study area (i.e. environmental, land use, engineering, cultural, socio-economic)
- Define Corridors/Alternative Line Routes in the study area, where transmission line routes will have the least impact due to the relevant factors considered.
- Obtain Public Input.
- Analyze route alternatives incorporating Public Input.
- Define the Proposed Transmission Line Route.

In the process of implementing each step, additional information may be obtained and evaluated to assist in determining the preferred transmission line route. TVA uses several tools to evaluate alternative routes for new transmission lines and to identify a preferred route including:

- Information from property owners, open house participants, interest groups, elected officials, subject matter experts and others
- Topographic maps
- Aerial photography
- GIS constraint maps
- Field reconnaissance surveys
- Professional experience

Ultimately, TVA weighs and balances public input and all pertinent environmental, engineering, land use and cultural considerations. The final decision may not always be the shortest or least expensive route, and though individual property owners may feel significantly affected, the objective of the process is to ensure that the project objectives are realized and that overall project impacts, as well as impacts to the community at large, are minimized.

A GIS database and constraint map was developed identifying areas such as wetlands, biological sensitive areas, houses, commercial buildings, schools, streams and rivers, floodplains, open water/ponds, historical and archaeological areas, highways, cemeteries, open land, parks, disturbed areas, forested areas, airports, property boundaries, and other known obstructions. The constraint map was developed by photo interpretation of aerial photography of the study area and researching existing information regarding important natural, historical, and archaeological resources in the study area.

2.3.1 Definition of the Study Area

For this project, TVA defined a study area of approximately 85 square miles within portions of Yalobusha County (Figure 2-2). TVEPA's North Oakland 230-kV Metering Station is located at the southwest corner of the intersection of Highway 51 and County Road 23 in Oakland. TVA's Coffeeville 161-kV Switching Station is located on County Road 212, 1.5 miles east of intersection of County Road 436 near Coffeeville. The limit of the study area was established to ensure that both North Oakland and Coffeeville stations were included, and several potential route corridors could be identified. The study area is rural with a great amount of timberland, plantations, hunting land, and wetlands and streams in the area. There are some residential homes built up along State Highway 330 and other county roads that run through the study area. A large portion of the administrative boundary of the Holly Springs National Forest (HSNF) occurs within the study area. Route corridors were identified including one north of the HSNF, one south of the HSNF, and one route corridor that runs through the center of the forest area.

2.3.2 Description of the Study Area

The limit of the study area was established to ensure that both stations were included, and several potential route corridors could be identified. Route corridors were also identified that were north of the HSNF, south of the HSNF, and one route corridor that runs through the center of the forest area. The study area is rural with a great amount of timberland, plantations, hunting land, and wetlands/streams in the area. There are some residential homes built up along State Highway 330 and other county roads that run through the study area. See Figure 2-2 for map of study area.

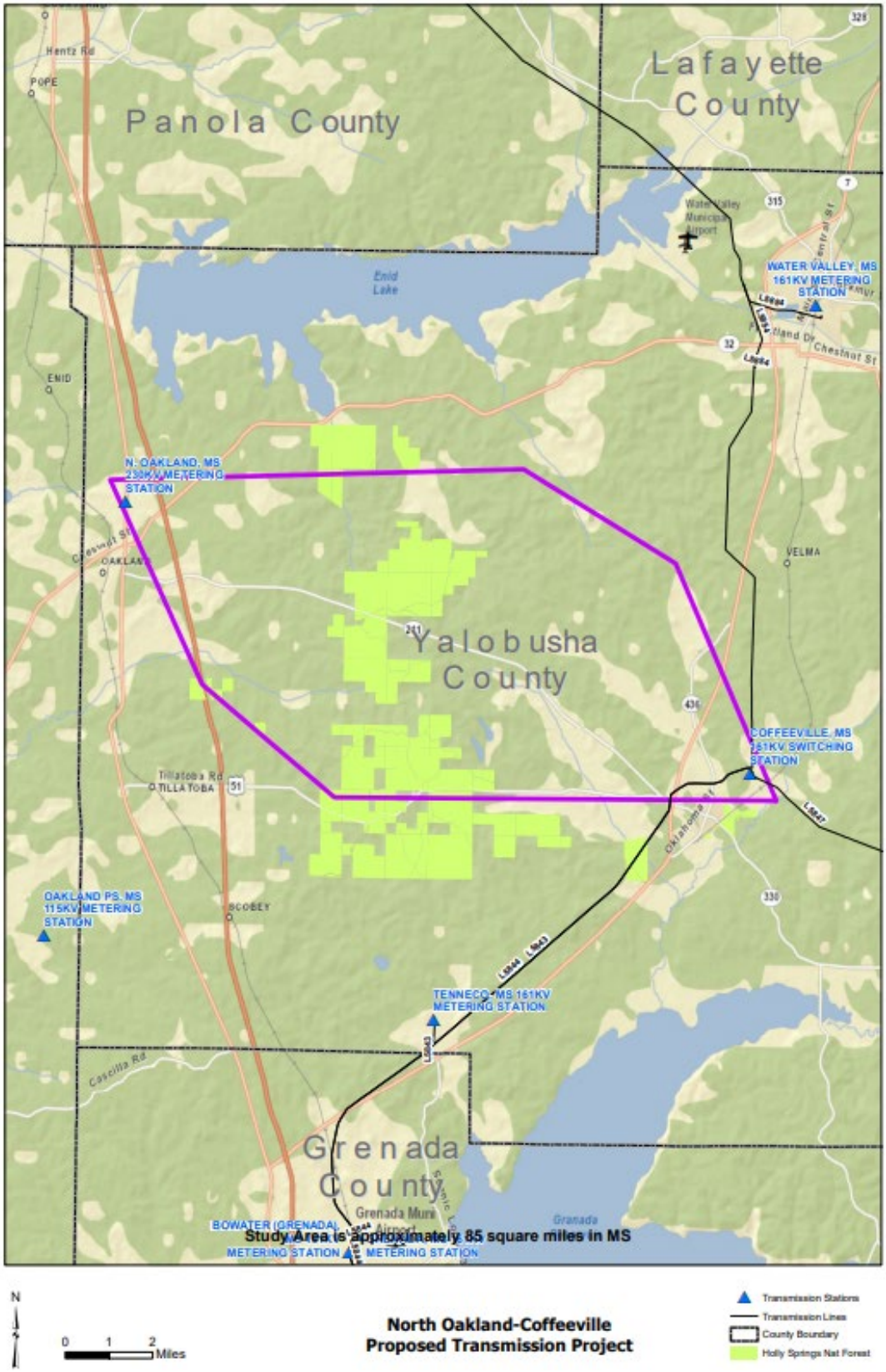

Figure 2-2. Defined study area for the North Oakland-Coffeeville Transmission Line

The study area has a mix of flat and gently rolling terrain, much of which is utilized for timber production, agriculture, and residential areas. Remaining forested land is a combination of commercial timber (pine plantations) and low-lying timberland likely to be floodplain or forested wetland. The farmland is a mixture of commercial farming (corn, soybeans, and cotton) and cattle pasture. The residential homes are built up around the main road systems. The City of Oakland is in the western portion of the study area and is a blend of residential and commercial development. The City of Coffeeville is in the eastern portion of the study area and is a blend of residential and small commercial development. The study area is largely characterized by a high density of undeveloped forested land.

2.3.3 Data Collection

TVA collected geographic data, such as topography, land use, transportation, environmental features, and cultural resources for the study area. Information sources used in the transmission line study included design drawings for area transmission lines, data collected into a GIS, including U.S. Geological Survey (USGS) digital line graphs, National Wetland Inventory (NWI) maps, wetland modelling results, photo-interpreted data including wetlands, and Yalobusha County tax maps. Also used were various proprietary data maintained by TVA in a corporate geo-referenced database (i.e., TVA Regional Natural Heritage file data on sensitive plants and animals and archaeological and historical resources).

Data were analyzed manually and with GIS. The use of GIS allows substantial flexibility in examining various types of spatially superimposed information. This system allowed the multitude of study area factors to be examined simultaneously for developing and evaluating numerous options and scenarios to select the transmission line route that would best meet project needs, which included avoiding or reducing potential environmental impacts.

Calculations from aerial photographs, tax maps, and other sources included, but was not limited to, the number of road crossings, stream crossings, and property parcels. The aerial photography, GIS-based map, and other maps and drawings were supplemented by reconnaissance throughout the study area by TVA.

2.3.4 Establishment and Application of Siting Criteria

TVA uses a set of evaluation criteria that represent opportunities and constraints for development of alternative transmission line routes. These criteria include social, engineering, and environmental factors such as existing land use, ownership patterns, environmental features, and cultural resources. Cost is also an important factor, with engineering considerations, materials, and ROW acquisition costs being the most important elements. Identifying feasible transmission line routes involves weighing and balancing these criteria.

Each of the transmission line route options were evaluated according to criteria related to engineering, social, and environmental concerns. Specific criteria are described below. For each feature identified as occurring along a proposed route option, specific considerations related to these features were identified and scored. In the evaluation, a higher score means a bigger constraint or obstacle for locating a transmission line. For example, a greater number of streams crossed, a longer transmission line route length, or a greater number of historic resources affected would produce a higher, more unfavorable score.

- **Engineering and Constructability Criteria** include considerations such as terrain (steeper slopes can present major challenges for design and construction), total length of the transmission line, pivot-irrigation systems (existing and planned, which can create operational challenges for both the irrigation system and the transmission line), number of primary and secondary road crossings, accessibility, the presence of pipeline and transmission line crossings, and total transmission line cost.

- **Social Criteria** include the total acreage of new ROW, number of affected property parcels, public comments, and proximity to schools, houses, commercial or industrial buildings, and barns.

- **Environmental Criteria** include the number of forested acres within the proposed ROW, the number of open water crossings, the number of floodplain or floodway crossings, the presence of wetlands, rare species habitat, sinkholes, and sensitive stream crossings (i.e., those supporting endangered or threatened species), the number of perennial and intermittent stream crossings, and the presence of archaeological and historic sites, churches, and cemeteries.

GIS data was obtained for each of 53 individual criteria (e.g., length of route, acres of forest within the ROW, number of road crossings) for each of the alternative routes. The length of each route segment was calculated using GIS data and the minimum, maximum, and average length was calculated for all routes. Then based on the minimum, maximum, and average length, the routes were normalized between 0 and 1 with the shortest route being 0 and the longest route assigned a 1. Normalizing each criterion allows attributes such as utilizing existing ROW to be better represented. Next, weights reflecting the severity of potential effects (i.e., the relative degree of constraint) were developed for each criterion. These weights ranged in value from 1 to 5. For example, crossings of a railroad by the ROW may have a lower weight than a stream crossing, indicating that railroad crossings pose less of a constraint than stream crossings. These criterion-specific weights were then multiplied by the individual alternative route rankings after they were normalized to create a table of weighted rankings. These weighted rankings for each alternative route were then added to develop overall scores by route. Routes with the lowest and highest impacts with respect to engineering, environmental, land use, and cultural resource criteria were identified. The weighted ranking scores for each of the 53 criteria were added to establish the overall score for each of the 234 routes.

These rankings made it possible to recognize which routes would have the least and the greatest impact on engineering, social, and environmental resources based on the data available at this stage in the siting process. Finally, the scores from each category were combined into an overall score. The alternative route options were then rank ordered by their overall scores.

2.4 Development of General Route Segments and Potential Transmission Line Routes

As described in Section 2.3.3, the collected data were analyzed to develop possible route segments that would best meet the project needs while avoiding or reducing conflict with constraints and by using identified opportunities. The straight-line distance between the identified power sources (North Oakland 161-kV and Coffeeville 161-kV stations) is about 16 miles. That distance, along with the constraints discussed above, limited the number of practicable alternative corridors that could be identified and studied for the project.

As stated in Section 1.2, the purpose of this project is to improve the reliability of the local power supply system by constructing a new transmission line to serve the regional 161-kV substation and to address the voltage and reliability problems within the regional service area.

As the transmission line corridor would traverse east from the North Oakland Metering Station toward the Coffeeville Switching Station, TVA had the option to largely avoid National Forest lands and route the transmission line along either the northern or southern portion of the study area. These options would have extended the length of the transmission line and would have increased the overall impacts on forested lands. While considering all transmission line alternatives within the study area, the impact of traversing large swaths of managed timber tracts and portions of National Forest land had to be considered.

Using the siting criteria identified in Section 2.3.4 and the identified termination points in Section 2.3.1, 31 potential transmission line route segments were developed and presented at the open houses (Figure 1-3).

2.4.1 Potential Transmission Line Corridors

Using the locations of the existing North Oakland and Coffeeville stations, TVA developed alternative transmission line routes. There were several general guidelines used when establishing the alternate route segments in the study area. These included the avoidance of major constraints such as: existing major highway interchanges, commercial and residential developments, barns, chicken houses, and known airports (glide paths if possible and if not, ensuring transmission line heights are below FAA imaginary surface elevations). Rivers and streams were to be crossed as close to 90 degrees where possible to reduce the amount clearing of the stream bank vegetative cover. Environmental, archaeological, and historic areas were also considered and outlined as constraints. Access to the line for construction and maintenance is typically a consideration as well. Other factors considered were engineering requirements, existing property lines, buffering around existing homes, and avoiding daycare and school facilities. Tax maps with parcel boundaries were also utilized to locate a route with minimum impact to the number of parcels as well as to individual owners. In addition, several site visits were made to observe any potential problem areas within the study area.

Three major route corridors were identified for the project (northern, central, and southern) that generally traverse west to east through the study area. The northern and southern routes avoid the HSNF, while the central route traverses through the forest service property along State Highway 330. The central route also allows for a southern bypass of the HSNF. In total, 31 route segments were developed which created 234 alternative routes and routes ranged from 16.5 miles to 23 miles in length. See Table 2-1 and Figure 1-3.

Table 2-1. Alternative Route Corridors with Constituent Segments

Route Number	Route Segments	Route Number	Route Segments
1	1,2,8,27,28,30	117	1,3,4,7,11,13,16,21,19,20,22,26,27,28,30
2	1,2,8,27,29,30	118	1,3,4,7,11,13,16,21,19,20,22,26,27,28,31
3	1,2,8,27,28,31	119	1,3,4,7,11,13,16,21,19,20,22,26,27,29,30
4	1,2,8,27,29,31	120	1,3,4,7,11,13,16,21,19,20,22,26,27,29,31
5	1,3,6,11,12,15,18,20,22,26,27,28,30	121	1,3,4,7,11,13,16,21,19,20,23,25,26,27,28,30
6	1,3,6,11,12,15,18,20,22,26,27,28,31	122	1,3,4,7,11,13,16,21,19,20,23,25,26,27,28,31
7	1,3,6,11,12,15,18,20,22,26,27,29,30	123	1,3,4,7,11,13,16,21,19,20,23,25,26,27,29,30
8	1,3,6,11,12,15,18,20,22,26,27,29,31	124	1,3,4,7,11,13,16,21,19,20,23,25,26,27,29,31
9	1,3,6,11,12,15,17,19,20,22,26,27,28,30	125	1,2,9,10,13,16,21,19,20,22,26,27,28,30
10	1,3,6,11,12,15,17,19,20,22,26,27,28,31	126	1,2,9,10,13,16,21,19,20,22,26,27,28,31
11	1,3,6,11,12,15,17,19,20,22,26,27,29,30	127	1,2,9,10,13,16,21,19,20,22,26,27,29,30
12	1,3,6,11,12,15,17,19,20,22,26,27,29,31	128	1,2,9,10,13,16,21,19,20,22,26,27,29,31
13	1,3,6,11,12,15,18,20,23,25,26,27,28,30	129	1,3,4,5,10,13,16,21,19,20,22,26,27,28,30
14	1,3,6,11,12,15,18,20,23,25,26,27,28,31	130	1,3,4,5,10,13,16,21,19,20,22,26,27,28,31
15	1,3,6,11,12,15,18,20,23,25,26,27,29,30	131	1,3,4,5,10,13,16,21,19,20,22,26,27,29,30
16	1,3,6,11,12,15,18,20,23,25,26,27,29,31	132	1,3,4,5,10,13,16,21,19,20,22,26,27,29,31
17	1,3,6,11,12,15,17,19,20,23,25,26,27,28,30	133	1,2,9,10,12,14,16,21,19,20,22,26,27,28,30
18	1,3,6,11,12,15,17,19,20,23,25,26,27,28,31	134	1,2,9,10,12,14,16,21,19,20,22,26,27,28,31
19	1,3,6,11,12,15,17,19,20,23,25,26,27,29,30	135	1,2,9,10,12,14,16,21,19,20,22,26,27,29,30
20	1,3,6,11,12,15,17,19,20,23,25,26,27,29,31	136	1,2,9,10,12,14,16,21,19,20,22,26,27,29,31
21	1,3,6,11,13,16,24,25,26,27,28,30	137	1,3,6,11,13,14,15,18,20,22,26,27,28,30
22	1,3,6,11,13,16,24,25,26,27,28,31	138	1,3,6,11,13,14,15,18,20,22,26,27,28,31
23	1,3,6,11,13,16,24,25,26,27,29,30	139	1,3,6,11,13,14,15,18,20,22,26,27,29,30
24	1,3,6,11,13,16,24,25,26,27,29,31	140	1,3,6,11,13,14,15,18,20,22,26,27,29,31
25	1,3,6,11,12,14,16,24,25,26,27,28,30	141	1,3,6,11,13,14,15,18,20,23,25,26,27,28,30
26	1,3,6,11,12,14,16,24,25,26,27,28,31	142	1,3,6,11,13,14,15,18,20,23,25,26,27,28,31
27	1,3,6,11,12,14,16,24,25,26,27,29,30	143	1,3,6,11,13,14,15,18,20,23,25,26,27,29,30
28	1,3,6,11,12,14,16,24,25,26,27,29,31	144	1,3,6,11,13,14,15,18,20,23,25,26,27,29,31
29	1,3,6,11,12,15,17,21,24,25,26,27,28,30	145	1,3,4,7,11,13,14,15,18,20,22,26,27,28,30
30	1,3,6,11,12,15,17,21,24,25,26,27,28,31	146	1,3,4,7,11,13,14,15,18,20,22,26,27,28,31
31	1,3,6,11,12,15,17,21,24,25,26,27,29,30	147	1,3,4,7,11,13,14,15,18,20,22,26,27,29,30
32	1,3,6,11,12,15,17,21,24,25,26,27,29,31	148	1,3,4,7,11,13,14,15,18,20,22,26,27,29,31
33	1,2,9,10,13,16,24,25,26,27,28,30	149	1,3,4,7,11,13,14,15,17,19,20,23,25,26,27,28,30
34	1,2,9,10,13,16,24,25,26,27,28,31	151	1,3,4,7,11,13,14,15,17,19,20,23,25,26,27,29,30
35	1,2,9,10,13,16,24,25,26,27,29,30	152	1,3,4,7,11,13,14,15,17,19,20,23,25,26,27,29,31
36	1,2,9,10,13,16,24,25,26,27,29,31	153	1,3,4,5,10,13,14,15,18,20,22,26,27,28,30
37	1,2,9,10,12,14,16,24,25,26,27,28,30	154	1,3,4,5,10,13,14,15,18,20,22,26,27,28,31
38	1,2,9,10,12,14,16,24,25,26,27,28,31	155	1,3,4,5,10,13,14,15,18,20,22,26,27,29,30
39	1,2,9,10,12,14,16,24,25,26,27,29,30	156	1,3,4,5,10,13,14,15,18,20,22,26,27,29,31

Route Number	Route Segments	Route Number	Route Segments
40	1,2,9,10,12,14,16,24,25,26,27,29,31	157	1,3,4,5,10,13,14,15,17,19,20,22,26,27,28,30
41	1,2,9,10,12,15,18,20,22,26,27,28,30	158	1,3,4,5,10,13,14,15,17,19,20,22,26,27,28,31
42	1,2,9,10,12,15,18,20,22,26,27,28,31	159	1,3,4,5,10,13,14,15,17,19,20,22,26,27,29,30
43	1,2,9,10,12,15,18,20,22,26,27,29,30	160	1,3,4,5,10,13,14,15,17,19,20,22,26,27,29,31
44	1,2,9,10,12,15,18,20,22,26,27,29,31	161	1,3,4,5,10,13,14,15,17,19,20,23,25,26,27,28,30
45	1,2,9,10,12,15,18,20,23,25,26,27,28,30	162	1,3,4,5,10,13,14,15,17,19,20,23,25,26,27,29,30
46	1,2,9,10,12,15,18,20,23,25,26,27,28,31	163	1,3,4,5,10,13,14,15,17,19,20,23,25,26,27,29,31
47	1,2,9,10,12,15,18,20,23,25,26,27,29,30	164	1,2,9,10,13,14,15,18,20,22,26,27,28,30
48	1,2,9,10,12,15,18,20,23,25,26,27,29,31	165	1,2,9,10,13,14,15,18,20,22,26,27,28,31
49	1,2,9,10,12,15,17,19,20,22,26,27,28,30	166	1,2,9,10,13,14,15,18,20,22,26,27,29,30
50	1,2,9,10,12,15,17,19,20,22,26,27,28,31	167	1,2,9,10,13,14,15,18,20,22,26,27,29,31
51	1,2,9,10,12,15,17,19,20,22,26,27,29,30	168	1,2,9,10,13,14,15,18,20,23,25,26,27,28,30
52	1,2,9,10,12,15,17,19,20,22,26,27,29,31	169	1,2,9,10,13,14,15,18,20,23,25,26,27,28,31
53	1,2,9,10,12,15,17,19,20,23,25,26,27,28,30	170	1,2,9,10,13,14,15,18,20,23,25,26,27,29,30
54	1,2,9,10,12,15,17,19,20,23,25,26,27,28,31	171	1,2,9,10,13,14,15,18,20,23,25,26,27,29,31
55	1,2,9,10,12,15,17,19,20,23,25,26,27,29,30	172	1,2,9,10,13,14,15,17,19,20,22,26,27,28,30
56	1,2,9,10,12,15,17,19,20,23,25,26,27,29,31	173	1,2,9,10,13,14,15,17,19,20,22,26,27,28,31
57	1,3,4,5,10,13,16,24,25,26,27,28,30	174	1,2,9,10,13,14,15,17,19,20,22,26,27,29,30
58	1,3,4,5,10,13,16,24,25,26,27,28,31	175	1,2,9,10,13,14,15,17,19,20,22,26,27,29,31
59	1,3,4,5,10,13,16,24,25,26,27,29,30	176	1,2,9,10,13,14,15,17,19,20,23,25,26,27,28,30
60	1,3,4,5,10,13,16,24,25,26,27,29,31	177	1,2,9,10,13,14,15,17,19,20,23,25,26,27,28,31
61	1,3,4,5,10,12,14,16,24,25,26,27,28,30	178	1,2,9,10,13,14,15,17,19,20,23,25,26,27,29,30
62	1,3,4,5,10,12,14,16,24,25,26,27,28,31	179	1,2,9,10,13,14,15,17,19,20,23,25,26,27,29,31
63	1,3,4,5,10,12,14,16,24,25,26,27,29,30	180	1,3,6,11,10,9,8,27,28,30
64	1,3,4,5,10,12,14,16,24,25,26,27,29,31	181	1,3,6,11,10,9,8,27,28,31
65	1,3,4,5,10,12,15,18,20,22,26,27,28,30	182	1,3,6,11,10,9,8,27,29,30
66	1,3,4,5,10,12,15,18,20,22,26,27,28,31	183	1,3,6,11,10,9,8,27,29,31
67	1,3,4,5,10,12,15,18,20,22,26,27,29,30	184	1,3,4,7,11,10,9,8,27,28,30
68	1,3,4,5,10,12,15,18,20,22,26,27,29,31	185	1,3,4,7,11,10,9,8,27,28,31
69	1,3,4,5,10,12,15,18,20,23,25,26,27,28,30	186	1,3,4,7,11,10,9,8,27,29,30
70	1,3,4,5,10,12,15,18,20,23,25,26,27,28,31	187	1,3,4,7,11,10,9,8,27,29,31
71	1,3,4,5,10,12,15,18,20,23,25,26,27,29,30	188	1,3,6,7,5,9,8,27,28,30
72	1,3,4,5,10,12,15,18,20,23,25,26,27,29,31	189	1,3,6,7,5,9,8,27,28,31
73	1,3,4,5,10,12,15,17,19,20,22,26,27,28,30	190	1,3,6,7,5,9,8,27,29,30
74	1,3,4,5,10,12,15,17,19,20,22,26,27,28,31	191	1,3,6,7,5,9,8,27,29,31
75	1,3,4,5,10,12,15,17,19,20,22,26,27,29,30	192	1,3,6,7,5,10,13,16,24,25,26,27,28,30
76	1,3,4,5,10,12,15,17,19,20,22,26,27,29,31	193	1,3,6,7,5,10,13,16,24,25,26,27,28,31
77	1,3,4,5,10,12,15,17,19,20,23,25,26,27,28,30	194	1,3,6,7,5,10,13,16,24,25,26,27,29,30
78	1,3,4,5,10,12,15,17,19,20,23,25,26,27,28,31	195	1,3,6,7,5,10,13,16,24,25,26,27,29,31
79	1,3,4,5,10,12,15,17,19,20,23,25,26,27,29,30	196	1,3,6,7,5,10,12,15,18,20,22,26,27,28,30

Route Number	Route Segments	Route Number	Route Segments
80	1,3,4,5,10,12,15,17,19,20,23,25,26,27,29,31	197	1,3,6,7,5,10,12,15,18,20,22,26,27,28,31
81	1,3,4,5,9,8,27,28,30	198	1,3,6,7,5,10,12,15,18,20,22,26,27,29,30
82	1,3,4,5,9,8,27,28,31	199	1,3,6,7,5,10,12,15,18,20,22,26,27,29,31
83	1,3,4,5,9,8,27,29,30	200	1,3,6,7,5,10,12,15,17,19,20,22,26,27,28,30
84	1,3,4,5,9,8,27,29,31	201	1,3,6,7,5,10,12,15,17,19,20,22,26,27,28,31
85	1,3,4,7,11,12,15,18,20,22,26,27,28,30	202	1,3,6,7,5,10,12,15,18,20,23,25,26,27,28,30
86	1,3,4,7,11,12,15,18,20,22,26,27,28,31	203	1,3,6,7,5,10,12,15,18,20,23,25,26,27,28,31
87	1,3,4,7,11,12,15,18,20,22,26,27,29,30	204	1,3,6,7,5,10,12,15,18,20,23,25,26,27,29,30
88	1,3,4,7,11,12,15,18,20,22,26,27,29,31	205	1,3,6,7,5,10,12,15,18,20,23,25,26,27,29,31
89	1,3,4,7,11,12,15,18,20,23,25,26,27,28,30	206	1,3,6,7,5,10,12,15,17,19,20,23,25,26,27,28,30
90	1,3,4,7,11,12,15,18,20,23,25,26,27,28,31	207	1,3,6,7,5,10,12,15,17,19,20,23,25,26,27,28,31
91	1,3,4,7,11,12,15,18,20,23,25,26,27,29,30	208	1,3,6,7,5,10,12,15,17,19,20,23,25,26,27,29,30
92	1,3,4,7,11,12,15,18,20,23,25,26,27,29,31	209	1,3,6,7,5,10,12,15,17,19,20,23,25,26,27,29,31
93	1,3,4,7,11,12,15,17,19,20,22,26,27,28,30	211	1,3,6,7,5,10,13,14,15,18,20,23,25,26,27,28,30
94	1,3,4,7,11,12,15,17,19,20,22,26,27,28,31	212	1,3,6,7,5,10,13,14,15,18,20,23,25,26,27,28,31
95	1,3,4,7,11,12,15,17,19,20,22,26,27,29,30	213	1,3,6,7,5,10,13,14,15,18,20,23,25,26,27,29,30
96	1,3,4,7,11,12,15,17,19,20,22,26,27,29,31	214	1,3,6,7,5,10,13,14,15,18,20,23,25,26,27,29,31
97	1,3,4,7,11,12,15,17,19,20,23,25,26,27,28,30	215	1,3,6,7,5,10,13,14,15,18,20,22,26,27,28,30
98	1,3,4,7,11,12,15,17,19,20,23,25,26,27,28,31	216	1,3,6,7,5,10,13,14,15,18,20,22,26,27,28,31
99	1,3,4,7,11,12,15,17,19,20,23,25,26,27,29,30	217	1,3,6,7,5,10,13,14,15,18,20,22,26,27,29,30
100	1,3,4,7,11,12,15,17,19,20,23,25,26,27,29,31	218	1,3,6,7,5,10,13,14,15,18,20,22,26,27,29,31
101	1,3,4,7,11,13,16,24,25,26,27,28,30	219	1,3,6,7,5,10,13,14,15,17,19,20,22,26,27,28,30
102	1,3,4,7,11,13,16,24,25,26,27,28,31	220	1,3,6,7,5,10,13,14,15,17,19,20,22,26,27,28,31
103	1,3,4,7,11,13,16,24,25,26,27,29,30	221	1,3,6,7,5,10,13,14,15,17,19,20,22,26,27,29,30
104	1,3,4,7,11,13,16,24,25,26,27,29,31	222	1,3,6,7,5,10,13,14,15,17,19,20,22,26,27,29,31
105	1,3,4,7,11,12,14,16,24,25,26,27,28,30	223	1,3,6,7,5,10,13,14,15,17,19,20,23,25,26,27,28,30
106	1,3,4,7,11,12,14,16,24,25,26,27,28,31	224	1,3,6,7,5,10,13,14,15,17,19,20,23,25,26,27,28,31
107	1,3,4,7,11,12,14,16,24,25,26,27,29,30	225	1,3,6,7,5,10,13,14,15,17,19,20,23,25,26,27,29,30
108	1,3,4,7,11,12,14,16,24,25,26,27,29,31	226	1,3,6,7,5,10,13,14,15,17,19,20,23,25,26,27,29,31
109	1,3,6,11,13,16,21,19,20,22,26,27,28,30	227	1,3,6,7,5,10,13,16,21,19,20,22,26,27,28,30
110	1,3,6,11,13,16,21,19,20,22,26,27,28,31	228	1,3,6,7,5,10,13,16,21,19,20,22,26,27,28,31
111	1,3,6,11,13,16,21,19,20,22,26,27,29,30	229	1,3,6,7,5,10,13,16,21,19,20,22,26,27,29,30
112	1,3,6,11,13,16,21,19,20,22,26,27,29,31	230	1,3,6,7,5,10,13,16,21,19,20,22,26,27,29,31
113	1,3,6,11,13,16,21,19,20,23,25,26,27,28,30	231	1,3,6,7,5,10,13,16,21,19,20,23,25,26,27,28,30
114	1,3,6,11,13,16,21,19,20,23,25,26,27,28,31	232	1,3,6,7,5,10,13,16,21,19,20,23,25,26,27,28,31
115	1,3,6,11,13,16,21,19,20,23,25,26,27,29,30	233	1,3,6,7,5,10,13,16,21,19,20,23,25,26,27,29,30
116	1,3,6,11,13,16,21,19,20,23,25,26,27,29,31	234	1,3,6,7,5,10,13,16,21,19,20,23,25,26,27,29,31

2.4.2 Identification of the Preferred Transmission Line Route

TVA's proposed preferred route is the route used for the survey of the new line. This route was selected from 1 of the 234 alternative possible routes using the methods previously discussed, and also in coordination with the affected property owners which may involve adjusting the route, where practicable, to meet property owner needs.

Overall, public comments were minimal on the proposed project. Route segments receiving the highest number of public comments were segments 15 through 18 and only received two comments per segment. In general, comments received centered on impacts to timberland, property value, farming operations, and overall general opposition. Representatives from the HSNF did provide comments.

TVA's preferred route was one of the shorter overall route lengths at 16.9 miles. Key positive engineering considerations included the following: ease of entry into the breaker bay at Coffeeville Switching Station, a below average length of route within 20 to 30 percent slope, an above average length of route within 250 feet of access roads and the route ranked 7 in engineering. In the social criteria space, the preferred route had a near average number of negative public comments, ranked among the top 10 percent of lowest total ROW acreage, included only 4 homes within 300 feet of route (average of 6), ranked among the top 15 percent of least number of parcels affected, and included zero commercial/industrial buildings and churches within 300 feet of the route. For environmental considerations, the preferred route had minimal forested wetlands within the ROW, included a below average amount of non-forested wetland within the ROW, a below average number of stream crossings, and ranked in the top 25 percent for least environmental impact. The preferred route would affect 65 property parcels and would require 205 acres of new ROW.

Based on the information evaluated, alternative Route 14 presented the greatest opportunities and fewest constraints of all the alternative routes considered and had an overall ranking of 1. As a result, Route 14 was identified as TVA's preferred route and consists of segments: 1, 3, 6, 11, 12, 15, 18, 20, 23, 25, 26, 27, 28 and 31. A map of the preferred route which depicted the transmission line centerline and ROW on each property was mailed to the affected property owners.

The new line would originate from a pull-off structure at North Oakland Metering Station, which would be re-numbered to standard 161-kV substation numbering. The transmission line would initially extend out west from the substation and then turn south parallel Highway 51 for approximately 0.5 mile before crossing Highway 51. Following, the line would turn east for approximately 0.5 mile where it would cross Highway 32 and continue southeast for approximately 0.75 mile to cross Interstate 55. After crossing Interstate 55, the line would continue southeast for 3.5 miles where it would eventually parallel County Road 211 for 4.5 miles, crossing it twice. The line would continue slightly southeast for 0.7 mile after crossing County Road 226 before continuing further south for 0.7 mile where it would cross County Road 227. The line would continue southeast for 3.7 miles where it would cross Highway 7 before turning south for 0.6 mile. The line would turn east and parallel an existing transmission line for 0.4-mile, cross County Road 436, and extend east/northeast for approximately 1 mile, crossing County Road 212, and entering the Coffeeville 161-kV Switching Station from the south. Approximately 4,150 feet of the transmission line would be located within the HSNF which is property owned by the United States Department of Agriculture (USDA)/ U.S. Forest Service (USFS).

2.4.3 Explanation of Changes to the Proposed Preferred Transmission Line Route

TVA announced the agency's preferred transmission line route as Route 14 in July 2021. Following this announcement, several adjustments were considered as a result of field surveys and additional public comment. The changes, discussed below, were made and the proposed route for survey is shown in Figure 2-3.

- The route was adjusted slightly where it crosses Highway 51. It was adjusted to run south and east closer to Yalobusha County property lines due to an existing expansion of an industrial facility and to allow for future development. For this reason, the line was also adjusted on one property parcel to traverse west to east closer to the property line.
- The route was adjusted on the two other parcels to continue running easterly closer to the property line until approximately 1,200 feet east of County Road 232. This also resulted in a line adjustment on another parcel.
- The route was adjusted south on three parcels to follow closer along County Road 211.
- The route was adjusted and moved north on one parcel to accommodate a grass air strip. This adjustment affected three other parcels.
- The route was adjusted on one parcel due to a better transmission line crossing. The line was adjusted to a more direct route from the line crossing to just south of the Coffeeville Switching Station.
- The route was adjusted onto one parcel due to a design decision not to switch bays at the Coffeeville Switching Station which required a pull-off structure angle.
- The route was slightly shifted due to a point-of-intersection (PI) structure relocation (Figure 2-4). The PI structure was shifted back tangent (Northwest) along County Road 211 to avoid a newly constructed barn that was not detected in aerial imagery prior to field surveys.
- Slight adjustments were made on three large parcels to limit encroachment into agricultural fields.

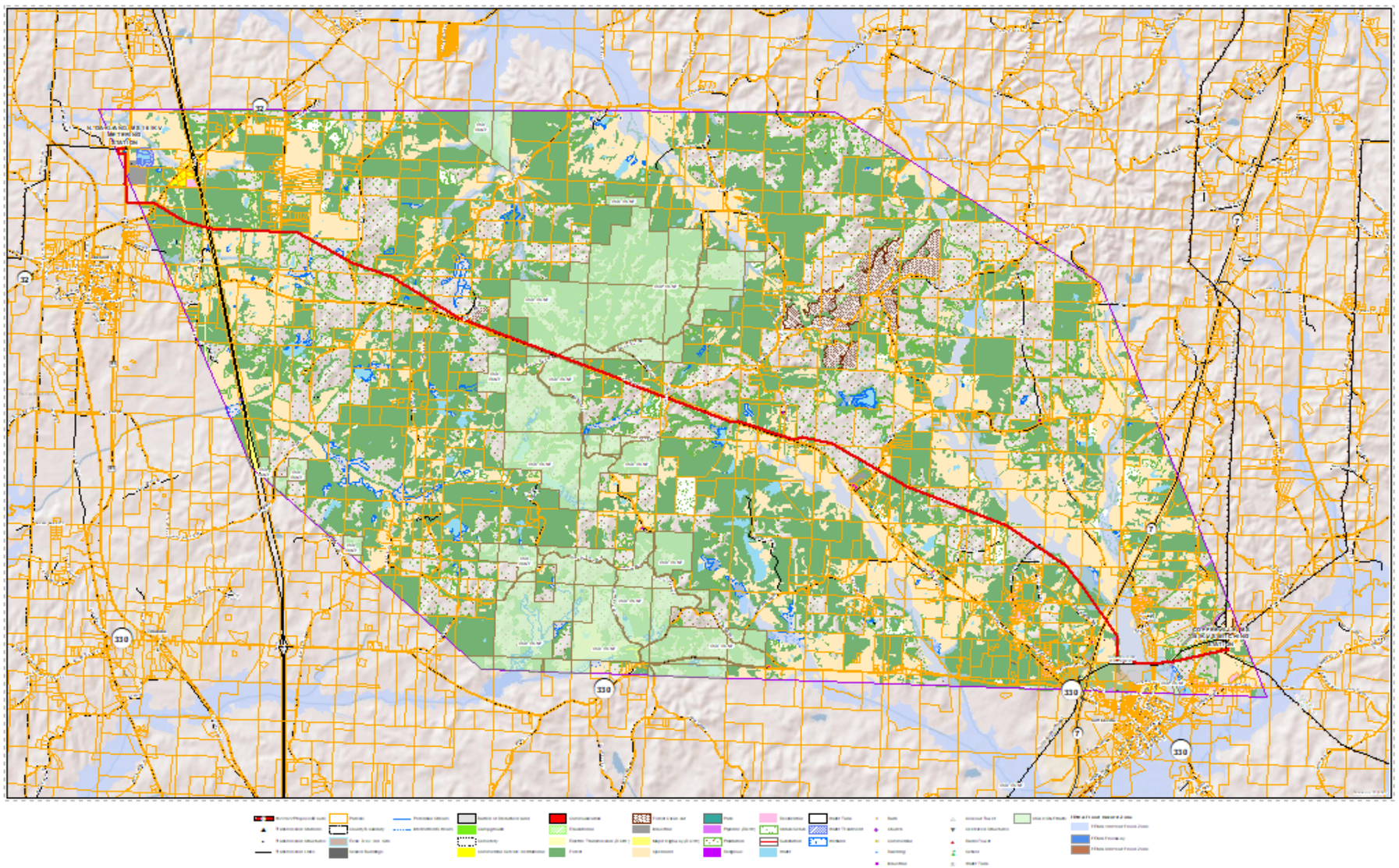

Figure 2-3. Adjusted Proposed Transmission Route in Yalobusha County, Mississippi

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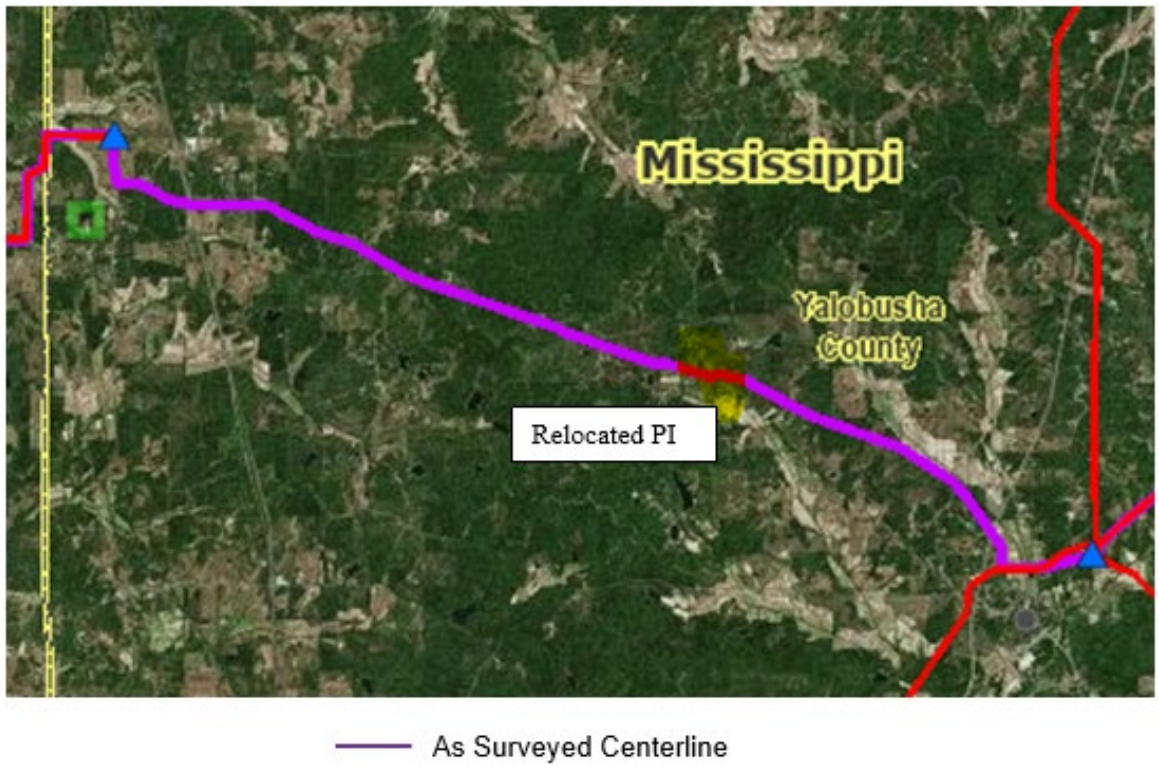

Figure 2-4. As-Surveyed North Oakland-Coffeeville 161-kV Transmission Route

2.5 Comparison of Environmental Effects by Alternative

A summary of the anticipated potential effects of implementing the No Action and the Action Alternative is provided in Table 2-2.

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

Resource Area	Impacts From No Action Alternative.	Impacts From Proposed Action Alternative
Groundwater and Geology	No effects to local groundwater quality or quantity are expected.	Impacts to groundwater quality or quantity are anticipated to be minor.
Surface Water	No changes in local surface water quality are anticipated.	Any impacts to surface waters in the project area are expected to be minor, temporary impacts with the proper implementation of standard BMPs (TVA 2022).
Aquatic Ecology	Aquatic life in local streams would not be affected.	With the implementation of SMZs and BMPs, impacts to aquatic animals resulting from the proposed project would not be significant.

Resource Area	Impacts From No Action Alternative.	Impacts From Proposed Action Alternative
Vegetation	Local vegetation would not be affected at the proposed transmission line ROW. Routine maintenance of existing transmission line vegetation would continue, but overall impacts to vegetation are considered minor.	Site preparation and clearing of approximately 175 acres of trees for the proposed transmission line ROW would have a minor effect on most local vegetation. No uncommon plant communities are known from the vicinity of the project area and no rare plant communities were observed in the project area during the field survey. Implementation of the proposed project would not affect unique or important terrestrial habitat.
Wildlife	Local wildlife would not be affected at the proposed transmission line ROW. Routine maintenance of existing transmission line vegetation would continue, but overall impacts to wildlife are considered minor.	Wildlife inhabiting onsite forest, early successional, and edge habitats within the proposed transmission line ROW would be displaced. Because there are sufficient adjacent local habitats, any effects to wildlife are expected to be insignificant.
Endangered and Threatened Species	No effects to endangered or threatened species or any designated critical habitats are anticipated. Routine maintenance of existing transmission line vegetation would continue, but overall impacts to endangered or threatened species would be avoided.	With appropriate implementation of BMPs and procedures that are designed to avoid and minimize impacts to federally or state-listed species during site preparation, construction, and on-going maintenance activities, and adherence to guidelines in the programmatic biological assessment for bats (TVA 2023b), the proposed TVA action is expected to have only minor effects on federally or state-listed species.
Floodplains	No changes in local floodplain functions are expected.	With the implementation of standard BMPs and non-routine mitigation measures, no significant impact on floodplains would occur. All actions would be consistent with EO 11988.
Wetlands	No changes in local wetland extent or function are expected.	The proposed project would permanently impact 14.06 acres of wetlands within the project area. With appropriate permits, mitigation, and BMPs implemented wetland impacts would be minor on a watershed scale.

Resource Area	Impacts From No Action Alternative.	Impacts From Proposed Action Alternative
Prime Farmland	No effects to soils and prime farmland are expected.	No impacts to prime farmland soils would occur because of the proposed transmission line ROW.
Visual Resources	Aesthetic character of the area is expected to remain virtually unchanged.	Minor visual discord above ambient levels would be produced during construction and maintenance activities. The proposed transmission line would present a minor, long-term visual effect.
Noise and Vibration	No noise or vibration impacts from construction or operation would occur because the proposed transmission line would not be constructed.	Overall, temporary, minor noise above ambient levels would be produced during construction, operation, and maintenance activities.
Archaeological and Historic Resources	No adverse effects to archaeological or historic resources are anticipated.	TVA finds that the proposed undertaking would result in no adverse effects on historic properties.
Recreation, Parks, and Managed Areas	No changes in local recreation opportunities, managed areas, natural areas, or ecologically significant sites are expected.	No significant impacts are anticipated to managed areas, natural areas, or ecologically significant sites from construction or operation of the proposed transmission line.
Socioeconomics	No change in local demographics, socioeconomic conditions, or community services.	Any adverse impacts to low income or minority communities in the project area would be similarly experienced by all people living along the proposed transmission line corridor. However, any adverse impacts would be minor due to the distance between residences and the proposed project area. These impacts are similar to impacts experienced by communities living along TVA's transmission line network across the Valley.
Transportation	No changes to transportation would occur.	Traffic generated during the construction phase is expected to be minor and localized and would be intermittent and short-term in nature.

Resource Area	Impacts From No Action Alternative.	Impacts From Proposed Action Alternative
Transmission Line Upgrades Post-Construction	There would be no transmission line constructed, therefore no impacts.	Public exposure to Electromagnetic fields (EMF) would be minimal, and no significant impacts from EMFs are anticipated. NESC standards are strictly followed when installing, repairing, or upgrading TVA transmission lines or equipment. Therefore, touching a structure supporting a transmission line poses no inherent shock hazard. The proposed structures do not pose any significant physical danger.

2.6 Identification of Mitigation Measures

TVA employs standard practices when constructing, operating, and maintaining transmission lines, structures, and the associated ROW and access roads. These can be found on TVA's Transmission organization's website (TVA 2024b). Some of the more specific routine measures which would be applied to reduce the potential for adverse environmental effects during the construction, operation, and maintenance of the proposed transmission line and access roads are as follows:

- TVA would utilize standard BMPs, as described in Transmission's BMP guidance (TVA 2022), to minimize erosion during construction, operation, and maintenance activities.
- To minimize the introduction and spread of invasive species in the ROW, access roads and adjacent areas, TVA would follow standard operating procedures consistent with EO 13112 as amended by 13751 (Invasive Species) for revegetating with noninvasive plant species as defined in TVA 2022.
- Wetlands would be protected by the implementation of standard BMP's as identified in TVA 2022.
- Compensatory mitigation would be purchased through an approved wetland mitigation bank per the directive of the USACE to ensure no more than minimal impacts to the wetland environment result.
- Ephemeral streams, also called wet-weather conveyances (WWC), that could be affected by the proposed construction would be protected by implementing standard BMPs as identified in TVA 2022.
- Perennial and intermittent streams, both classified as "streams" in this document, would be protected by the implementation of standard stream protective buffers as defined in TVA 2022.

- During vegetation clearing activities, marketable timber would be salvaged where feasible; otherwise, woody debris and other vegetation would be piled, chipped, or taken off site. In some instances, vegetation may be windrowed along the edge of the project site to serve as sediment barriers. Implementation of *TVA ROW Clearing Specifications*, *Environmental Quality Protection Specifications for Transmission Line Construction*, *Transmission Construction Guidelines Near Streams*, and *Environmental Quality Protection Specifications for Transmission Substation or Communications Construction* (TVA 2024b), and in TVA 2022 would provide further guidance for clearing and construction activities.

- During construction of access roads, culverts and other drainage devices, fences, and gates would be installed, as necessary. Culverts installed in any perennial streams would be removed following construction. However, in ephemeral streams/WWCs, the culverts would be left or removed, depending on the wishes of the landowner or any permit conditions that might apply. If desired by the property owner, TVA would restore new temporary access roads to previous conditions.

- Pesticide/herbicide use as part of construction or maintenance activities would comply with the TDEC General Permit for Application of Pesticides, which also requires a pesticide discharge management plan. In areas requiring chemical treatment, only EPA-registered and TVA approved herbicides would be used in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts (Appendix B).

- Integration of BMPs during construction and maintenance to minimize potential impacts to bat foraging habitat as described and in accordance with TVA's Programmatic Consultations on Bats and routine actions (TVA 2023b).

- Improper use of herbicides to control vegetation could result in runoff to streams and subsequent aquatic impacts. Therefore, any pesticide/herbicide use as part of construction or maintenance activities would have to comply with the MDEQ general permit for application of pesticides, which also requires a pesticide discharge management plan. In areas requiring chemical treatment, only EPA-registered and TVA approved herbicides would be used in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts.

The following non-routine measures would be applied during the construction, operation, and maintenance of the proposed transmission line and access roads to reduce the potential for adverse environmental effects.

- Portions of the proposed ROW are located within state-designated source water protection areas for public water supply. Therefore, herbicides with groundwater contamination warnings would not be used during clearing, revegetation, and maintenance activities.

- Construction would adhere to the TVA subclass review criteria for transmission line location in floodplains (TVA 1980).

- Once locations are determined, laydown areas would be analyzed in a separate environmental review.

- Any road improvements for access roads constructed within 100-year floodplains would be done in such a manner that upstream flood elevations would not be increased by more than 1.0 foot (44 Code of Federal Regulations [CFR] § 60.3).

- Due to constraints on the project schedule, TVA may not be able to clear vegetation from October 1*st* to March 14*th* to avoid direct impacts to bat species. Construction may occur during the summer occupancy season from March 15*th* to September 30*th* which could potentially have direct impacts to bat species.

- Because removal of suitable summer roosting habitat would likely occur when bats may be present on the landscape, TVA would contribute funding based on amount of habitat removed towards future conservation and recovery efforts for federally listed bats. Upon activity completion, the funds would be contributed to TVA's Bat Conservation Fund.

- The proposed actions may affect and are likely to adversely affect the federally endangered northern long-eared bat and proposed endangered tricolored bat if individuals are present during tree clearing. However, activities associated with this project were addressed in TVA's programmatic consultation with the U.S. Fish and Wildlife Service on routine actions and federally listed bats in accordance with Endangered Species Act Section 7(a)(2). For those activities with potential to affect bats, TVA committed to implement specific conservation measures. Relevant conservation measures must be reviewed and implemented as part of the approved project. Impacts to populations of other listed species are not expected.

2.7 The Preferred Alternative

The Action Alternative—that TVA constructs the North Oakland to Coffeeville 161-kV Transmission Line is TVA's preferred alternative for this proposed project. TVA would purchase ROW easements and any associated access road easements to accommodate the construction of a new 161-kV transmission line.

The preferred route was one of the shorter overall route lengths at 16.9 miles. Key positive engineering considerations included the following: ease of entry into the breaker bay at Coffeeville Switching Station, a below average length of route within 20-30 percent slope, an above average length of route within 250 feet of access roads and ranked 7 in engineering. In the social criteria space, the preferred route had a near average number of negative public comments, ranked among the top 10 percent of lowest total ROW acreage, included only four homes within 300 feet of route (average of 6), ranked among the top 15 percent of least number of parcels affected, and included zero commercial/industrial buildings and churches within 300 feet of the route. For environmental considerations, the preferred route had minimal forested wetlands within the ROW, included a below average amount of non-forested wetland within the ROW, a below average number of stream crossings, and ranked in the top 25 percent for least environmental impact. The preferred route would affect 65 property parcels and would encompass 205 acres of new ROW.

CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The existing condition of environmental resources that could be affected by the proposed Action Alternative during construction, operation, or maintenance of the proposed 161-kV transmission line is described in this chapter. The descriptions below of the potentially affected environment are based on field surveys conducted between April 2015 and February 2022, on published and unpublished reports, and on personal communications with resource experts. This information establishes the baseline conditions against which TVA decision makers and the public can compare the potential effects of implementing the alternatives under consideration.

The analysis of potential effects to endangered and threatened species and their habitats included records of occurrence within a 3-mile radius for terrestrial animals, a 5-mile radius for plants, and a 10-mile radius for aquatic animals. The analysis of potential effects to aquatic resources included the local watershed but was focused on watercourses within or immediately adjacent to the proposed ROW and associated access roads. The area of potential impact (APE) for architectural resources included all areas within a 0.5-mile radius from the proposed transmission line route, as well as any areas where the project would alter existing topography or vegetation in view of a historic resource. The APE with respect to archaeological resources included the entire ROW width as described in Section 2.2.1.1 for the proposed route and the associated access roads.

Potential effects related to prime farmland, transportation, air quality, global climate change, solid waste, hazardous and nonhazardous wastes, and health and safety were considered. Potential effects on these resources were found to be minimal or absent because of the nature of the action.

3.1 Groundwater and Geology

3.1.1 Affected Environment

The project area is in the Mississippi Alluvial Plain Subdivision of the Coastal Plain Physiographic Province and is situated on the 3,000-foot-thick sediment-filled trough known as the Mississippi Embayment. The Embayment that underlies the Mississippi Valley is characterized by flat to gently rolling floodplain terrain. The sedimentary deposits include layers of gravel, sand, silt, clay, and various blends of these soil types. The Mississippi Embayment is characterized by a compression of rocks to form a V-shape that plunges to the south and runs parallel to the Mississippi River. This syncline formation is filled with sedimentary rock ranging in age from Jurassic to Quaternary. The maximum thickness is found in the southern part of the region and reaches to about 18,000 feet in some areas (USDI 1968). In areas with Quaternary deposits, numerous aquifers can be found, while areas with Jurassic deposits are not known to contain potable water. The predominant aquifers that lie beneath the project area are the Meridian-upper Wilcox Aquifer and the Lower Wilcox Aquifer.

The Meridian-upper Wilcox Aquifer contains fresh water in an approximately 15,000-square-mile area in the northwestern and central regions of Mississippi (USGS 1976). This aquifer is comprised of thick sands that range from 50 feet to around 500 feet. Due to its thick yet permeable sand beds, groundwater yields can reach up to 2,800 gallons per minute. Freshwater can be found at depths of over 2,000 feet. This aquifer is highly affected by recharge from precipitation, topography, and drainage of the aquifer system by nearby streams

(USGS 1989). Water from this aquifer does experience excessive iron and corrosiveness in some areas, likely because the dissolved-solid content can exceed 500 milligrams/liter.

The Lower Wilcox Aquifer is the bottommost layer of aquifer and is characterized by sand and underlain by a thick layer of clay. In the northwestern portion of Mississippi, sand depths can exceed 600 feet (USGS 1988). The sand layer is comprised of fluvial sand, similar to present day Mississippi floodplains (USGS 2008). This aquifer is recharged mainly due to precipitation and downward leakage from aquifers found in the above ground layers. Throughout the Lower Wilcox Aquifer, dissolved-solids concentrations are less than 250 milligrams/liter (USGS 2008).

The Mississippi Embayment is primarily fed by terrestrial recharge from streams and rivers during periods of high-water levels. The groundwater in this area primarily discharges to pumping wells, and the majority of these wells use the water for irrigation of farmland. These irrigation practices account for 87 percent of groundwater use in the alluvial plain and 97 percent in the Mississippi River Valley alluvial aquifer (USGS 2023). Due to the large amount of pumping, there has been a chronic decline in water levels and groundwater storage since the 1940s.

In 2014, the State of Mississippi EO 1341 created the Governor's Delta Sustainable Water Resources Task Force to address declines in water levels (MDEQ 2024a). The Task Force and its work groups are focused on the development and implementation of approaches, strategies, and conservation measures to ensure sustainable ground and surface water resources for current and future generations in the Mississippi Delta.

Public water supply in Yalobusha County in the vicinity of the project area is provided by several different utility companies. These include City of Oakland, Cypress Creek Water Association Inc., East End Water Association Inc., Springhill Water Association Inc., Town of Coffeeville, and Youngs Water & Sewer District Inc. (MPUS 2019). The drinking water from these systems is sourced primarily from the Meridian-Upper Wilcox Aquifer and the Lower Wilcox Aquifer (MSDH 2022). Additionally, Yalobusha County residents and privately owned businesses may rely on private wells for water supply (EPA 2024). The State of Mississippi has developed a Wellhead Protection Program to identify and properly manage potential contaminant sources in Wellhead Protection Areas from which public water system wells capture their water over a specific period of time (MDEQ 2014). There are two public water wells, owned by the City of Coffeeville, within a one-mile radius of the proposed transmission line.

The Safe Drinking Water Act of 1974 established the sole source aquifer protection program that regulates certain activities in areas where the aquifer (water-bearing geologic formations) provides at least half of the drinking water consumed in the overlying area. No sole source aquifers exist in Mississippi (EPA 2023). However, the Mississippi State Department of Health's Bureau of Public Water Supply ensures safe drinking water to 2.8 million citizens of Mississippi by enforcing requirements of the Federal and State Safe Drinking Water Acts (SDWAs) (MSDH 2024).

3.1.2 Environmental Consequences

3.1.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not acquire new ROW to construct the new transmission line or access roads. Therefore, no impacts to groundwater or geologic resources would occur as a result of TVA actions associated with the proposed project.

3.1.2.2 Alternative B – Action Alternative

Under the Action Alternative, construction activities would entail localized ground disturbance and shallow excavation. Depth of excavation would be approximately 10 percent of the pole structure height plus an additional two feet. Because proposed structures would not exceed 140 feet in height, maximum excavation depth would be approximately 16 feet below ground surface. These construction activities would be limited to the transmission line ROW. Potential water quality impacts to shallow groundwater can also occur at the construction site due to releases of contaminants such as petroleum fuels, lubricants, and hydraulic fluids associated with the operation and maintenance of construction equipment. However, the use of appropriate BMPs would prevent and minimize the potential for such releases. These BMPs include the proper maintenance of vehicles, restriction of maintenance and fueling activities to appropriate offsite areas, measures to avoid spills, and immediate management of incidental and accidental releases in accordance with standard practice and regulatory requirements.

If groundwater is encountered during any construction activities, dewatering processes would be used to control groundwater infiltration into the excavation site and all state and federal requirements relating to groundwater protection would be followed. BMPs as described in TVA 2022 would be used to control sediment infiltration from storm water runoff to minimize impacts to groundwater. The proposed construction activities and below ground excavation would be localized and limited to the construction phase of the proposed project; therefore, any impacts to groundwater would be minor.

Potential water quality impacts to shallow groundwater can also occur at the construction site due to releases of contaminants such as petroleum fuels, lubricants, and hydraulic fluids associated with the operation and maintenance of construction equipment. However, the use of appropriate BMPs would prevent and minimize the potential for such releases. These BMPs include the proper maintenance of vehicles, restriction of maintenance and fueling activities to appropriate offsite areas, measures to avoid spills, and immediate management of incidental and accidental releases in accordance with standard practice and regulatory requirements.

No groundwater use would be required for either the construction or operation of the transmission line or access roads, therefore, there would be no impact to groundwater levels or availability.

3.2 Surface Water

3.2.1 Affected Environment

The primary law that affects water quality is the Federal Water Pollution Control Act, commonly known as the CWA. It establishes standards for the quality of surface waters and prohibits the discharge of pollutants from point sources unless a National Pollutant Discharge Elimination System (NPDES) permit is obtained. Several other environmental laws contain provisions aimed at protecting surface water, including the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the Federal Insecticide, Fungicide, and Rodenticide Act.

The proposed North Oakland-Coffeeville Transmission Line project area falls within Tillatoba Creek-Panola Quitman Floodway (0603000209), Bynum Creek-Yocona River (0803020303), and Turkey Creek-Skuna River (0803020503) hydrologic unit code (HUC)-10 watersheds in the Northern Hilly Gulf Coastal Plain and Loess Plains level IV sub-ecoregion of the greater Mississippi Valley Loess Plains and Southeastern Plains level III ecoregion (Chapman et al. 2004).

During a May 2023 field survey, certified hydrologic professionals for TVA observed 124 watercourses including: 30 perennial streams, 23 intermittent streams, 62 WWC/ephemeral streams, and 9 ponds, that cross the proposed transmission line ROW or associated access roads. A listing of stream and pond crossings in the project area, excluding WWC/ephemeral streams, is provided in Appendix C.

Precipitation in the general vicinity of the project area averages about 57.7 inches per year. The wettest month is December with approximately 6.3 inches of precipitation, and the driest month is August, receiving approximately 3.7 inches of precipitation. The annual air temperature ranges from a monthly average low of 48 degrees Fahrenheit to a monthly average high of 73 degrees Fahrenheit (US Climate Data 2024). Stream flow varies with rainfall and available data indicates that runoff from the Skuna River and Tillatoba Creek averages 1.4 and 1.6 cubic feet per second, per square mile of drainage area, respectively. Runoff measurements were obtained from 1940-1949 data for Skuna River and from 1975-1983 data for Tillatoba Creek (USGS 2024).

The MDEQ designates uses specified in water quality standards for each water body within the state. These designations rely on the use and value of water for public water supplies, protection and propagation of aquatic life, recreation in and on the water, and protection of consumers of fish and shellfish. Mississippi waters are classified into public water supply, shellfish harvesting, recreation, fish and wildlife, modified fish and wildlife, drainage waters, and ephemeral (MDEQ 2024b). Table 3-1 provides a listing of streams in the project area with their state designated use classifications.

Table 3-1. Use Classifications for Streams Crossed by the North Oakland-Coffeeville 161 kV Proposed Transmission Line and Associated Access Roads

Stream	Use Classification[1]						
	PWS	SH	REC	FW	MFW	DW	ES
Cypress Creek				X			
Erost Creek				X			

[1] Codes: PWS = Public Water Supply; SH = Shellfish Harvesting; REC = Recreation; FW = Fish and Wildlife; MFW =Modified Fish and Wildlife; DW = Drainage Waters; ES = Ephemeral Stream
Source: Mississippi Department of Environmental Quality 2021

The CWA, under Section 303(d), requires all states to identify all waters in which required pollution controls are not sufficient to attain or maintain applicable water quality standards and to establish priorities for the development of limits based on the severity of the pollution and the sensitivity of the established uses of those waters. In addition, the state assigns a priority for development of Total Maximum Daily Loads (TMDL) based on the severity of the pollution and the sensitivity of the uses, among other factors (EPA 2023). States are required to submit reports to the EPA every two years to help better understand what mitigation efforts should be made for water bodies that are at risk. The term “303(d) list” refers to the list of impaired and threatened streams and water bodies identified by the state. No streams within the project area are listed on the current 303(d) list (MDEQ 2022).

TVA establishes SMZs defined as areas or zones, covered with vegetation on both sides of perennial and intermittent streams and along the margins of bodies of open water, where extra precaution is used in carrying out construction activities to protect stream banks, instream aquatic habitat, and water quality. These zones also function as buffers when herbicides, fertilizers, etc., are applied to adjacent lands (TVA 2022).

3.2.2 Environmental Consequences

3.2.2.1 Alternative A - No Action

Under the No Action Alternative, TVA would not acquire new ROW to construct the proposed transmission line or access roads. Therefore, no impacts to surface water systems would occur as a result of TVA actions associated with the proposed project.

3.2.2.2 Alternative B - Action Alternative

Construction activities associated with the proposed transmission line would involve ground disturbance for the installation of transmission line structures, resulting in the potential for increased erosion and sediment release, which may temporarily affect local surface waters due to stormwater runoff. Soil erosion and sedimentation can contaminate and block small streams and threaten aquatic life. Appropriate BMPs would be followed to ensure the proposed action would minimize erosion and sedimentation impacts and possible introduction of pollutants into surface waters. A general construction storm water permit would be needed if more than one acre is disturbed. This permit also requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would identify specific BMPs to address construction-related activities that would be adopted to minimize storm water impacts. Additionally, applicable State of Mississippi and USACE Section 404 Permits would be obtained for impacts to jurisdictional wetlands, stream channels, or other waters of the United States (WOTUS) within the project area. Section 401 Water Quality Certification would be obtained from the state, as necessary, for stream alterations or crossings located within the project area.

TVA expects to utilize existing access roads to the extent possible and, as such, potential impacts to streams would be minimized through avoidance (if practical). The implementation of erosion and sediment BMPs identified in the SWPPP would be used to reduce potential sediment-laden runoff into adjacent or downgradient streams. However, temporary stream crossings may be required. Temporary stream crossings and other construction activities would comply with appropriate state and federal permit requirements and TVA requirements as described in TVA 2022. Additionally, BMPs as described in the *Mississippi Erosion and Sediment Control Handbook* (MDEQ 2011) would be used to avoid contamination of surface waters in the project area. Proper implementation of these controls would be expected to result in only minor, temporary impacts to surface waters. See Section 3.3 Aquatic Ecology and Appendix C for buffer zone (i.e., SMZ) sizes and additional stream crossing details.

Changes in the perviousness of ground cover may alter the percolation rates of rain through the soil resulting in additional runoff of water and pollutants into storm drains, ditches, and streams. Clearing of vegetation and ground cover and the addition of gravel yards under this alternative would alter the current stormwater flows on the site(s). Any temporary increases in flow would be mitigated through the implementation of stormwater BMPs prior to discharge into the outfall(s) or offsite.

During the construction phase, portable toilets would be provided for the construction workforce as needed. These toilets would be provided by a licensed vendor, would be pumped out regularly, and the sewage would be transported by tanker truck to a publicly owned wastewater treatment works that accepts domestic sewage.

Equipment washing and dust control discharges would be handled in accordance with BMPs described in the SWPPP for water-only cleaning and in the *Mississippi Erosion and Sediment Control Handbook* (MDEQ 2011). TVA routinely includes precautions in the design, construction, and maintenance of its transmission line projects to minimize these potential

impacts. BMPs as described in TVA 2022 include washing equipment in specified areas where water runoff is mitigated to minimize pollution entering surface waters. Proper implementation of these controls is expected to result in only minor temporary impacts to surface waters.

Permanent stream crossings that cannot be avoided are designed to not impede runoff patterns and the natural movement of aquatic fauna. Temporary stream crossings and other construction and maintenance activities would comply with appropriate state permit requirements and TVA requirements as described in TVA 2022.

Improper use of herbicides to control vegetation within transmission line ROW has the potential to result in runoff to streams and impact resident aquatic biota. Therefore, any pesticide/herbicide use as part of construction or maintenance activities would have to comply with the Mississippi Pesticide Law (Miss. Code §69-23-1). This requires that a license be obtained for each location or outlet located within the state from which Restricted Use Pesticides are distributed, sold, or offered for sale (State of Mississippi 1975). In areas requiring chemical treatment, only EPA-registered and TVA approved herbicides would be used in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts. Proper implementation and application of these products would be expected to have no significant impacts to surface waters.

ROW maintenance would employ manual and low-impact methods wherever possible. Maintenance of vegetation within transmission line ROW would also be consistent with TVA's Transmission System Vegetation Management Final PEIS (TVA 2019b) and standard TVA BMPs (TVA 2022). TVA would use BMPs specifically directed toward avoiding or minimizing adverse impacts on SMZs and the waterbodies to minimize erosion and transport of sediments in the streams along the transmission line ROW. TVA guidance for environmental protection and BMPs limit the broadcast application of fertilizers and herbicides within the SMZs, including the spraying of herbicides other than those labeled for aquatic use (TVA 2022).

Construction and maintenance of the proposed transmission line ROW would increase septic output, solid wastes, the potential for sediment, herbicides, and other pollutants to enter waterways. Appropriate BMPs would be followed to minimize impacts associated with soil disturbance and all proposed project activities. Additionally, all construction and operation activities would be conducted in a manner to ensure that waste materials are contained and managed appropriately (e.g., refueling, maintenance activities, and storage of equipment) to ensure that the introduction of pollutants to the receiving waters would be minimized (TVA 2022).

Proposed project activities that result in unavoidable direct impacts to surface water resources would be mitigated as appropriate in conjunction with agency consultation. Additionally, BMPs would be used that would further reduce indirect impacts to surface water. Design, construction, and maintenance of the North Oakland-Coffeeville 161-kV Transmission Line would abide by all federal, state, and local guidelines and all applicable permits; therefore, impacts to surface waters would be minor.

Soil disturbances associated with ROW clearing and site grading for structures, access roads, or other construction, maintenance, and operation activities can potentially result in adverse water quality impacts. Soil erosion and sedimentation can clog small streams and threaten aquatic life. Removal of the tree canopy along stream crossings can increase water temperatures, algal growth, and dissolved oxygen depletion, and cause adverse impacts to aquatic biota. Improper use of herbicides to control vegetation could result in runoff to streams

and subsequent aquatic impacts. Vegetation would be managed as outlined in TVA's Transmission System Vegetation Management PEIS (TVA 2019b) and according to TVA's *Transmission Environmental Protection Procedures Right-of-Way Vegetation Management Guidelines* (Appendix B).

A Construction General Permit for Land Disturbing Activities (MDEQ 2022) would be required for this project and this permit would require development of a project specific Stormwater Pollution Prevention Plan. The Mississippi Handbook for Erosion Control, Sediment Control and Stormwater Management would be referenced to ensure that the appropriate BMPs are used (MDEQ 2011).

TVA routinely includes precautions in the design, construction, and maintenance of its transmission lines projects to minimize these potential impacts. Permanent stream crossings that cannot be avoided would be designed to not impede runoff patterns and the natural movement of aquatic fauna. Temporary stream crossings and other construction and maintenance activities would comply with appropriate state permit requirements and TVA's BMPs (TVA 2022). ROW maintenance would employ manual and low-impact methods wherever possible. In areas requiring chemical treatment, only EPA-registered herbicides would be used in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts (Appendix B). Proper implementation of these controls is expected to result in only minor temporary impacts to surface waters. Design, construction, and maintenance of the transmission line and all associated structures will have to abide by similar federal and state guidelines for BMPs and direct discharges to the "Waters of the U.S." As future actions occurring in the proposed project area would be required to meet all federal, state, and local guidelines, to obtain required permits, and implement protective measures, TVA's proposed construction of the transmission line, when combined with other actions in area, are not expected to result in significant cumulative impacts to surface water.

3.3 Aquatic Ecology

3.3.1 Affected Environment

The proposed North Oakland-Coffeeville transmission line project area falls within Tillatoba Creek-Panola Quitman Floodway (0603000209), Bynum Creek-Yocona River (0803020303), and Turkey Creek-Skuna River (0803020503) HUC-10 watersheds, in the Northern Hilly Gulf Coastal Plain and Loess Plains level IV sub-ecoregion of the greater Mississippi Valley Loess Plains and Southeastern Plains level III ecoregion (Chapman et al. 2004). A May 2023 field survey identified 123 watercourses including: 53 streams, 62 WWC/ephemeral streams, and 8 ponds (Appendix C).

Because transmission line construction and maintenance activities primarily affect riparian conditions and instream habitat, TVA evaluated the existing condition of these factors at each stream crossing along the proposed transmission line route. A listing of perennial and intermittent stream and pond crossings within the proposed ROW and associated access roads, excluding WWC/ephemeral streams, is provided in Appendix C. Additional information regarding watercourses located in the vicinity of the project area can be found in Section 3.2 Surface Water.

The Mississippi Valley Loess Plains and Southeastern Plains ecoregion is a relatively diverse region composed primarily of deep, erosive sandy soils with landforms of irregular plains and rolling hills. Southern mixed hardwood forests, pine plantations and row crop agriculture comprise the majority of landcover with patches up rural, urban, and industrial development (Chapman et al. 2004). Streams encountered during the May 2023 field surveys ranged from low-gradient ephemeral seeps with groundwater connection to deeply eroded headwater features to large, deep coastal plain tributaries to Yalobusha and Tallahatchie rivers. These streams were observed in a mix of heavily forested and agricultural cover. Those in agricultural or near road settings tended to be more deeply incised. Substrates were primarily sand and hardpan with patches of gravel.

Three classes were used to indicate the current condition of streamside vegetation within the proposed project area, as defined below, and accounted for in Table 3-2.

- Forested - Riparian area is mostly vegetated with trees, shrubs, and herbaceous plants. Vegetative disruption from mowing or grazing is minimal or not evident. Riparian width extends more than 60 feet on either side of the stream.

- Partially forested - Although not forested, sparse trees and/or scrub-shrub vegetation is present within a wider band of riparian vegetation (20 to 60 feet). Disturbance of the riparian zone is apparent.

- Non-forested - No trees or only a few trees are present within the riparian zone. Significant clearing has occurred, usually associated with pasture or cropland.

Table 3-2. Riparian Condition of Watercourses Crossed by the Proposed North Oakland-Coffeeville 161-kV Transmission Line and Associated Access Roads

Riparian Condition	Streams Within ROW
Forested	31
Partially forested	17
Non-forested	5
Total	**53**

TVA assigns appropriate SMZs and BMPs based on field observations and other considerations (i.e., State 303(d) listing and presence of endangered or threatened aquatic species). Appropriate application of SMZs and BMPs would minimize the potential for impacts to water quality and in-stream habitat degradation which could limit impacts on aquatic organisms. These guidelines outline site preparation standards with emphasis on soil stabilization practices, structural and sediment controls including runoff management, and general stream protection practices associated with construction activities. TVA would be obliged to adhere to state and federal permit requirements and to commit to any mitigation provisions as a result of adverse modifications made to the project area.

3.3.2 Environmental Consequences

3.3.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed transmission line or access roads. No impacts would occur to aquatic ecology as a result of TVA actions. However, as described in Section 3.1.2.1, potential effects from anticipated changes to the project area are likely to occur over the long-term due to factors such as population growth and land use changes.

3.3.2.2 Alternative B – Action Alternative

Aquatic life could potentially be affected by the proposed Action Alternative. The proposed project includes the short-term construction of new transmission lines and structures within the ROW easement and long-term ROW vegetation management. As such, it is foreseeable that the proposed ROW grading and clearing as well as future vegetation management processes could result in associated stream impacts.

Impacts would either occur directly by the alteration of habitat conditions within the stream or indirectly due to modification of the riparian zone and storm water runoff resulting from construction and maintenance activities along the transmission line corridor and access roads.

Potential impacts due to removal of streamside vegetation within the riparian zone include increased erosion and siltation, loss of instream habitat, and increased stream temperatures. Other potential effects resulting from construction and maintenance include alteration of stream banks and stream bottoms by heavy equipment and by herbicide runoff into streams. Siltation has a detrimental effect on many aquatic animals adapted to riverine environments. Turbidity caused by suspended sediment can negatively impact spawning and feeding success of fish and mussel species (Brim Box and Mossa 1999; Sutherland et al. 2002).

USACE Section 404 Permits would be obtained for any stream alterations located within the project area. The terms and conditions of these permits may require mitigation as a result of the potential impacts from the proposed activities. SMZs and BMPs minimize the potential for impacts to water quality and instream habitat for aquatic organisms (TVA 2022). These guidelines outline site preparation standards with emphasis on soil stabilization practices, structural and sediment controls including runoff management, and general stream protection practices associated with construction activities.

For any alterations to perennial or intermittent streams, TVA would require SMZs to be implemented. Watercourses that convey only surface water during storm events such as ephemeral streams and WWCs that could be affected by the proposed site preparation would be protected by BMPs outlined in TVA (2022) and/or standard permit requirements. These BMPs are designed to minimize disturbance of riparian areas, and subsequent erosion and sedimentation that can be carried to streams. Because appropriate BMPs would be implemented during site preparation and work, impacts to aquatic ecology would be temporary and insignificant as a result of TVA's proposed actions.

Cumulative impact analysis of the aquatic ecology effects considers stream loss at a watershed-level scale and includes current actions or those that would occur within the reasonable and foreseeable future. Since the transmission line conductors would span any watercourse within the ROW, no stream loss is anticipated because of the construction, operation, or maintenance of the proposed transmission lines or access roads.

3.4 Vegetation

3.4.1 Affected Environment

The proposed project would occur in the Bluff Hills, Loess Plains, Northern Hilly Gulf Coastal Plain Level IV ecoregions (Griffith et al. 1998). The Bluff Hills Level IV ecoregion is characterized as having deeper loess and is steeper, more dissected, and generally more forested than neighboring ecoregions, with an affinity for northern plant species. The Loess Plains Level IV ecoregion is characterized by having flat plans with thin loess soil, much of which is agricultural, pine plantation, or reverted to mixed evergreen-deciduous forest. The Northern Hilly Gulf Coastal Plain Level IV ecoregion is characterized by being mostly tree-covered. These irregular plains have a mosaic of cropland, pasture, woodland, and forest land cover with large hills extending down from Kentucky and Tennessee into Mississippi. Land cover is a mixture of cropland, mixed forest, pasture, and some pine plantations and land use is a mixture of rural residential, urban, and industrial.

Field surveys conducted in May 2023 documented plant communities including invasive plants and threatened and endangered plant species in areas where work is proposed to occur. Most areas along the proposed upgrades and new ROW were visited during the surveys. Using the National Vegetation Classification System (Grossman et al. 1998), vegetation types observed during field surveys can be classified as a combination of deciduous forest, evergreen, mixed evergreen, deciduous forest, and herbaceous vegetation. No forested areas in the proposed project area had structural characteristics indicative of old growth forest stands (Leverett 1996). The plant communities observed on-site are common and well represented throughout the region. Vegetation in the proposed transmission line additions and new ROW are characterized by two main types: forest (84 percent) and herbaceous (16 percent).

Evergreen forest accounts for about 45 percent of total forest cover and is the largest component of the proposed project area. Evergreen forest has comparatively very low species diversity and the canopy is dominated by Virginia pine, loblolly pine, white pine, with the occasional shortleaf pine scattered throughout the canopy. The understory was dominated by english ivy, poison ivy, winter creeper, and Japanese honeysuckle.

Deciduous forest, where deciduous trees account for more than 75 percent of total canopy cover, occupies four percent of the proposed project area. This habitat type is found between large swaths of pine plantations and mixed evergreen-deciduous forest and is dominated by American sweetgum, American sycamore, black cherry, black tupelo, Chinese privet, post oak, pignut hickory, red maple, red oak, southern red oak, tulip tree. The understory consisted of American hornbeam, Christmas fern, ebony spleenwort, green ash, green dragon, mayapple, sassafras, sensitive fern, southern lady-fern, summer grape, wild comfrey, wild yam, and winged elm. Most deciduous forests within the proposed project area have trees that average between 6- and 18-inches diameter at breast height. Forested wetlands were found in several locations of the proposed ROW and are described in detail in Section 3.8.

Mixed evergreen-deciduous forest, defined as stands where both evergreen and deciduous species contribute between 25-75 percent of total canopy cover, occurs on approximately 35 percent of the entire proposed project area. In general, these forest types are like the deciduous forests described above but contain a greater percentage of loblolly pine and Virginia pine.

Herbaceous vegetation is characterized by greater than 75 percent cover of forbs and grasses and less than 25 percent cover of other types of vegetation and occurs on about 16 percent of the proposed project area. Most of this habitat type occurs along roadsides, cropland, hayfields, recent clear-cuts, and heavily manipulated pastures. Most of these sites are dominated by plants indicative of early successional habitats including many non-native species. Early successional areas with naturalized vegetation contain herbaceous species like American pokeweed, annual ragweed, broomsedge, bristle thistle, bearded beggarticks, common elephant's-foot, giant ragweed, kudzu, meadow-grass, venus's looking-glass and white clover. Areas of emergent wetlands were present in the proposed project area. See Section 3.8. Wetlands for species indicative of those areas.

EO 13112 directed TVA and other federal agencies to prevent the introduction of invasive species (both plants and animals), control their populations, restore invaded ecosystems and take other related actions. EO 13751 amends EO 13112 and directs actions by federal agencies to continue coordinated federal prevention and control efforts related to invasive species. This order incorporates considerations of human and environmental health, climate change, technological innovation, and other emerging priorities into federal efforts to address invasive species; and strengthens coordinated, cost efficient federal action. Some invasive plants have been introduced accidentally, but most were brought here as ornamentals or for livestock forage. Because these robust plants arrived without their natural predators (insects and diseases) their populations spread quickly across the landscape displacing native species and degrading ecological communities or ecosystem processes (Miller 2010). No federal-noxious weeds were observed, but many non-native invasive plant species were observed throughout the proposed project area. Invasive species present across significant portions of the landscape include amur honeysuckle, callery pear, Chinese privet, Japanese honeysuckle, Japanese stiltgrass, johnson grass, sericea lespedeza, tall fescue, and wild garlic. During field surveys, invasive plants were prevalent in sections of herbaceous vegetation types.

3.4.2 Environmental Consequences

3.4.2.1 Alternative A – No Action

Adoption of the No Action Alternative would not affect plant life within the proposed project area as the transmission line and access roads would not be constructed. However, as described in Section 3.1.2.1, changes to vegetation would likely occur over the long-term due to factors such as population growth and land use changes within the area. Changes to local plant communities resulting from natural ecological processes and human-related disturbance would continue to occur but would not result from TVA project-related actions. All invasive species found within the proposed ROW or along access roads are common throughout the region and implementation of the No Action Alternative would not change this situation. Therefore, there would be no direct, indirect, or cumulative impacts to plant life under the No Action Alternative.

3.4.2.2 Alternative B – Action Alternative

Adoption of the Action Alternative would not significantly affect the vegetation communities of the region. Converting a portion of the forested land to an herbaceous community as a result of transmission line and access road construction, along with the potential for future transmission line upgrades would be long-term in duration, but insignificant in relative impact on the affected plant community. Adoption of this alternative would require clearing approximately 172.2 acres of forested habitat, most of which is predominantly composed of evergreen species. Virtually all forested habitat within the proposed project area would be cleared and converted to herbaceous plant communities that are common and well represented throughout the region. Cumulatively, project-related effects to forest resources would be negligible when compared to the total

amount of forest land occurring in the region. The HSNF comprises most of the forest found in the region (Central Mississippi) and is made up of over 155,000 acres (USDA 2023). Also, project-related work would temporarily affect herbaceous plant communities, but these areas would likely recover to their pre-project condition in less than one year.
Nearly the entire proposed project area currently has a substantial component of invasive terrestrial plants and adoption of the Action Alternative would not significantly affect the extent or abundance of these species at the county, regional, or state level. The use of TVA standard operating procedure of vegetating with noninvasive species (TVA 2022) would serve to minimize the potential introduction and spread of invasive species in the proposed project area.

Implementing the Action Alternative would involve clearing the ROW to accommodate transmission lines, structures, and access roads. Such ground-disturbing activities would directly affect the existing plant communities in these areas. Additionally, vegetation management along the ROW is necessary to prevent tall, woody vegetation from becoming established within the ROW. Therefore, the type of vegetative cover that occurs on the ROW would be directly affected by the proposed action.

3.5 Wildlife

3.5.1 Affected Environment

Habitat assessments for terrestrial animal species were conducted between May 8 and 10, 2023. The project area is primarily forested but also contains pastures, crop fields, and residential/developed areas. Forested areas in the project footprint are primarily evergreen and mixed deciduous/evergreen in composition. The field surveys identified 43 wetlands, nine ponds, and 49 streams. Small herbaceous areas are present between forest fragments and along edges of roads and agricultural fields. Overall, wildlife communities present in the project area are common to the region as habitats are not unique or uncommon.

Forests present within the project footprint are primarily evergreen pine plantations (approximately 92.25 acres, or 45 percent of total landcover) and mixed evergreen-deciduous (approximately 71.75 acres, or 35 percent). Deciduous forests occupy approximately four percent of the proposed project area (8.2 acres). These forests provide habitat for an array of terrestrial animal species. Birds observed in this habitat include blue-gray gnatcatcher, Carolina wren, hairy woodpecker, summer tanager, white-eyed vireo, Kentucky warbler, wood thrush, red-eyed vireo, tufted titmouse, black-and-white warbler, yellow-billed cuckoo, and hooded warbler. These areas also provide foraging and roosting habitat for several species of bat, particularly in areas where the forest understory is partially open. Common bat species likely found within this habitat include big brown bat, eastern red bat, evening bat, and silver-haired bat. Eastern chipmunk, southern flying squirrel, white-footed mouse, gray fox, and raccoon are other common forest mammals in this region. Eastern box turtle and gray tree frog were observed during field surveys. Red cornsnake, green anole, eastern fence lizard, and little brown skink are additional reptiles that can be found in forests in this region (Conant and Collins 1998).

Pastures and agricultural crop fields make up approximately 16 percent of the project footprint (33.3 acres). Early successional habitats containing native species are less common and are present in some fragmented areas between forests and in small parcels along roadsides and field edges. Common inhabitants observed in early successional habitats include indigo bunting, red-tailed hawk, brown-headed cowbird, black vulture, turkey vulture, and eastern cottontail. White-tailed deer, bobcat, coyote, hispid cotton rat, and red fox are mammals typical of fields and cultivated land in this region (Kays and Wilson 2002). Reptiles including eastern

copperhead, eastern hog-nosed snake, speckled kingsnake, and North American racer are also known to occur in this habitat type (Conant and Collins 1998).

Developed areas were present at road crossings and residential areas within the project footprint and are home to a number of common species. Northern cardinal, mourning dove, blue jay, red-bellied woodpecker, and American crow are birds observed along road edges, parks, farms, and yards. Mammals observed or commonly found in this community type include eastern gray squirrel, eastern mole, woodchuck, striped skunk, and Virginia opossum (Kays and Wilson 2002). Roadside ditches provide potential habitat for amphibians including American toad, southern cricket frog, and spring peeper. Reptiles potentially present include common five-lined skink, Dekay's brownsnake and common gartersnake (Conant and Collins 1998).

Forested wetlands, emergent wetlands, riparian areas and ponds occur within the project area (see Sections 3.3 Aquatics and 3.8 Wetlands for more details). Red-shouldered hawk, Acadian flycatcher, Louisiana waterthrush, pileated woodpecker, northern parula, common yellowthroat, and wood duck were observed at wetlands and water bodies during field survey. Golden mouse, southern short-tailed shrew, and muskrat are common mammals in emergent wetland and aquatic communities (Kays and Wilson 2002). Turtles including the pond slider, and spiny softshell, along with the common watersnake, and rough green snake are common reptiles likely present within this habitat (Conant and Collins 1998). Amphibians likely found in wetlands in this area include Mississippi slimy salamander, three-lined salamander, eastern newt, marbled salamander, spotted salamander, green treefrog, Fowler's toad, and southern leopard frog (Conant and Collins 1998).

Review of the TVA Regional Natural Heritage database in November 2022 indicated that no caves have been documented within three miles of the project area. No other unique or important terrestrial habitats were identified within the project area during a field survey. In addition, no aggregations of migratory birds or wading bird colonies have been documented within three miles of the project area, and none were observed during field surveys.

Migratory Birds

No bald eagle, osprey, or heron nests have been previously recorded within three miles of the project area, and none were observed during field surveys of the proposed ROWs in May 2023. Review of the USFWS's Information for Planning and Consultation (IPaC) website in June 2024 resulted in three migratory bird species of conservation concern (bald eagle, painted bunting, and wood thrush) identified as having the potential to occur in the project area. Suitable foraging habitat exists in the proposed ROWs for all these species. Suitable nesting habitat was observed in the proposed ROWs for each of these species.

3.5.2 Environmental Consequences

3.5.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not build approximately 16.9 miles of transmission line or the associated access roads and ROWs. Tree clearing and earth moving would not occur. Trees, soil, and vegetation would remain in their current state. Terrestrial animals and their habitats would not be affected under the No Action Alternative.

3.5.2.2 Alternative B – Action Alternative

Under the proposed Action Alternative, TVA would build approximately 16.9 miles of transmission line, associated access roads, and ROWs. Actions within the proposed new ROW would include removing trees and other vegetation, as well as establishing transmission

infrastructure and associated access roads. Wildlife currently using these habitats would be temporarily displaced by habitat removal or alteration. Some immobile individuals may be lost because of construction, particularly if clearing activities take place during breeding/nesting seasons. Approximately 33.3 acres of early successional, herbaceous habitat (pastures, cultivated fields, and residential areas) are within the project footprint. In these areas, impacts to wildlife habitat would be limited to locations where structure installation would cause ground disturbance. Species adapted to early successional habitat would return after construction has ended and vegetation has returned. Approximately 175.0 acres of forest would be removed and maintained as early successional habitat for the life of the TL. Species that require forested habitat would have to find new food and shelter sources and reestablish territories. However, the actions are not likely to affect populations of species common to the area, as similarly forested and herbaceous habitat exists in the surrounding landscape.

Migratory Birds

Some migratory birds of conservation concern identified by the USFWS could be impacted by the proposed action. Foraging habitat for three species (bald eagle, painted bunting, and wood thrush) exists in the project area. Should mature individuals occur on site, they are expected to flush if disturbed. No direct mortality to adults is anticipated. Suitable nesting areas may be present for any of these species (National Geographic 2002). Bald eagle nests were not present at the time of survey and any new nests would be protected. The proposed actions are in compliance with the National Bald Eagle Management Guidelines (USFWS 2007). Nests, eggs, and juvenile of other species may be destroyed by construction activities; however, it is not expected that populations of these migratory bird species would be impacted.

3.6 Endangered and Threatened Species

3.6.1 Affected Environment

The ESA provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the U.S. or elsewhere. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize federally listed species. The policy of Congress is that federal agencies must seek to conserve endangered and threatened species and use their authorities in furtherance of the ESA's purposes.

The State of Mississippi provides legal protection for species considered threatened, endangered, or deemed in need of management within the state other than those federally listed under the ESA. The legal listing is handled by Mississippi Commission on Wildlife, Fisheries and Parks; however, the Mississippi Heritage Program and TVA both maintain databases of species that are considered threatened, endangered, of special concern, or tracked in Mississippi. Additionally, the USDA Forest Service provided a list of sensitive species for Holly Springs Ranger District. Species listed under the ESA or by the State (see Table 3-3) are discussed in this section.

Table 3-3. Federally and State-listed Species From and/or Within Yalobusha County, Mississippi and other species of conservation concern for the Proposed North Oakland-Coffeeville 161-kV Transmission Line[1]

Common Name	Scientific Name	Federal Status[2]	State Status[2]	State Rank[3]
Aquatic Animals				
Fishes				
Yoknapatawpha Darter[5]	*Etheostoma faulkneri*			S1
Steelcolor Shiner[5]	*Cyprinella whipplei*			S3
Southern Redbelly Dace[5]	*Chrosomus erythrogaster*		LE	S2
Crustaceans				
Shutispear Crayfish[5]	*Procambarus lylei*			S2
Amphibians				
Webster's salamander[5]	*Plethodon websteri*			S2
Terrestrial Plants				
Smoother sweet-cicely	*Osmorhiza longistylis*		SLNS	S3
Whorled sunflower	*Helianthus verticillatus*	END	SLNS	S1
Terrestrial Animals				
Birds				
Bachman's sparrow[7]	*Danaus plexippus*			S3B,S3S4N
Insects				
Monarch butterfly[4]	*Danaus plexippus*	PT		S5
Mammals				
Southeastern myotis[5]	*Myotis grisescens*			S3S4
Northern long-eared bat[6]	*Myotis septentrionalis*	E	THR	S1S2
Tricolored bat[8]	*Perimyotis subflavus*	PE	THR	S3
Louisiana black bear[7]	*Ursus americanus luteolus*			LE(S1)
Rafinesque's big-eared bat[5]	*Corynorhinus rafinesquii*			S3
Reptiles				
Alligator snapping turtle[6]	*Macrochelys temminckii*	PT	THR	S3

[1] Source: Holly Springs National Forest (HSNF) Regional Foresters Sensitive Species List 02/15/18, TVA Regional Natural Heritage database extracted October 2022 and July 2023, and U.S. Fish and Wildlife Service (USFWS) Ecological Conservation Online System (http://ecos.fws.gov/ipac) extracted 6/28/24.

[2] Status Codes: C = Candidate Species; END = Endangered; EXPN = Experimental Population; NMGT = Deemed in Need of Management; NOST = No Status; PE = Proposed Endangered; PT = Proposed Threatened; SPCO = Special Concern; THR = Threatened; TRKD = Tracked; UR = Status Under Review by USFWS

[3] State Ranks: SH = Possibly Extirpated; S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S5 = Secure.

[4] Species proposed for listing under the Endangered Species Act that has been confirmed on HSNF by USDA Forest Service.

[5] Sensitive species that is potentially present on HSNF per USDA Forest Service.

[6] Federally listed or proposed species that has not been documented within three miles of the project area or from Yalobusha County, Mississippi; USFWS has determined this species has the ability to occur in the project area.

[7] Sensitive species that has been confirmed on HSNF by USDA Forest Service.

[8] Species proposed for federal listing that has not been documented within three miles of the project area or from Yalobusha County, Mississippi but has been confirmed on HSNF by USDA Forest Service.

3.6.1.1 Aquatic Animals

A query of the TVA Regional Natural Heritage database and the USFWS's IPaC indicated no federally listed species and one state endangered fish known to occur within the surveyed watersheds (Table 3-3). There are no records of federally listed species for these drainages. Three records (two fish and one crayfish) of non-federally listed species are considered historical or extirpated because the records are greater than 25 years old. Only the state-

endangered southern redbelly dace is considered extant within these watersheds. The southern redbelly dace inhabits small, spring-fed headwater streams and is common throughout much if it's range. The Mississippi population, however, is disjunct and restricted to a small number of spring-fed, higher gradient streams along the Loess bluff formation (Cashner et al. 1979). Habitat degradation from urban development and competition from other native minnows continues to restrict the distribution of southern redbelly dace in this watershed (Slack et al. 1997).

3.6.1.2 Vegetation

Review of the TVA Regional Natural Heritage database indicated that one state and no federally listed plant species have been previously reported within a five-mile vicinity of the proposed project area (Table 3-3). No federally listed plant species have been previously reported from Yalobusha County. No federally or state-listed plants were observed in the proposed project area. No designated critical habitat for plants occurs in the proposed project area.

3.6.1.3 Wildlife

The TVA Regional Natural Heritage database identified no federally or state-listed terrestrial animal records within 3 miles of the project area. The federally listed northern long-eared bat and federally proposed alligator snapping turtle are identified by USFWS to have the potential to occur in Yalobusha County, although no records of their presence are known to date (Table 3-3). Webster's salamander, Rafinesque's big-eared bat, and southeastern myotis are USDA Forest Service designated sensitive species that potentially occur in the area. Bachman's sparrow, Louisiana black bear, and federally proposed for listing tricolored bat and monarch butterfly are sensitive species confirmed in the HSNF. See Appendix G for habitat descriptions of these species.

3.6.2 Environmental Consequences

3.6.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed transmission line or access roads. Changes to the area would nonetheless occur over time, as factors such as population trends, land use and development, quality of air/water/soil, recreational patterns, and cultural, ecological, and educational interests change within the area. The status and conservation of any potentially affected listed species would continue to be determined by the actions of others similar to those described in this Section. Thus, there would be no direct, indirect, or cumulative effects to federally or state-listed endangered or threatened aquatic species and their habitats by TVA project-related actions.

Adoption of the No Action Alternative would not impact federally listed plants, designated critical habitat, or state-listed plant species because no project-related work would occur. Under the No Action Alternative, the proposed upgrades, and construction of the new transmission line and ROW widening would not occur. No federally listed plants or designated critical habitat occurs within the proposed project area. Changes to local plant communities resulting from natural ecological processes and human-related disturbance would continue to occur. These changes may benefit or negatively affect plants present in the proposed project area, but the changes would be unrelated to the proposed project and would not impact endangered and threatened plant species or designated critical habitat.

Under the No Action Alternative, no tree clearing or earth moving would occur. Trees, soil, and vegetation would remain in their current state. Threatened and endangered terrestrial animals and their habitats would not be affected.

3.6.2.2 Alternative B – Action Alternative

3.6.2.2.1 Aquatic Animals

Aquatic life could potentially be impacted by the proposed project action either directly by the alteration of habitat conditions or indirectly due to modification of riparian zones and storm water runoff resulting from construction activities associated with vegetation removal. Potential impacts of streamside vegetation removal within the riparian zone include increased erosion and siltation, reduction or loss of in-stream habitat, and increased stream temperatures. Other potential construction impacts include the disturbance of stream banks and stream bottoms by heavy equipment and runoff of herbicides into streams.

The streams documented within the proposed project area would be protected by standard BMPs and additional protection measures as identified in TVA (2022) or as required by standard permit conditions. While it's possible the state-endangered southern redbelly dace could be found in streams transected by the project area, implementation of BMPs would prevent unnecessary habitat degradation that currently threatens this population. These categories of protection are based on the variety of species and habitats that exist in the streams as well as the state and federal requirements to avoid harming certain species. No federally designated critical habitat is known from the potentially affected 10-digit HUC watersheds of the proposed project area. Therefore, with appropriate implementation of BMPs during construction, operation, and maintenance of the ROW, no impacts to federally or state-listed aquatic species are anticipated to occur as a result of the proposed action.

3.6.2.2.2 Vegetation

Adoption of the Action Alternative would have no effect on federal plant species because no federally listed plant species occur in the proposed project area. No populations of state-listed species were observed during field surveys of the proposed project area. Therefore, no direct, indirect, or cumulative impacts on federally or state-listed endangered and threatened species or their critical habitats are anticipated as a result of implementing the Action Alternative.

3.6.2.2.3 Wildlife

Monarch butterfly eggs and larvae may be directly impacted during construction. ROW vegetation management is ultimately beneficial to this species because it maintains early successional habitat that is essential to their life cycle. Monarchs are currently proposed for listing as threatened under the ESA and are currently not subject to Section 7 consultation under the ESA.

Webster's salamander is potentially present within the project area. Individuals may be directly impacted by construction and some forested riparian habitat would be converted to unsuitable early successional riparian habitat; however, similar forested habitat is abundant in the area. BMPs would be implemented to minimize impacts to water quality therefore, Webster's salamander populations would not be impacted by the proposed actions.

Alligator snapping turtles are not present in the project area due to absence of large water bodies. With the use of BMPs to prevent sedimentation and herbicide inputs to streams, the proposed action is not likely to adversely impact alligator snapping turtles.

Bachman's Sparrows nest on the ground in brushy fields and nests could be impacted if proposed construction occurs during their nesting season. However, ROW management maintains the type of nesting habitat this species uses, and this habitat would otherwise be lost due to forest regeneration. Therefore, proposed actions are expected to benefit populations of Bachman's Sparrow.

Louisiana black bears den in large trees with cavities. Direct impacts could occur to individuals if a den tree were cleared during winter denning season. Creation of early successional habitat adjacent to forests is beneficial to this species because many plants that bears forage on grow in these areas. The proposed action is expected to benefit Louisiana black bear populations.

Suitable summer and winter roosts for southeastern myotis, and Rafinesque's big-eared bats are present throughout the proposed ROW including hollow trees and one dilapidated shed. No caves are present within 3 miles of the project area and no caves or other man-made roosting structures were observed during field survey. Foraging habitat is present in forests and over aquatic habitats and similar forest habitat is available in the areas adjacent to the project area. BMPs would be used to minimize impacts to water quality. Direct impacts to these bats could occur if a maternity roost tree is cleared between May and July but impacts to populations of these species are not expected.

Northern long-eared bat and tricolored bat foraging habitat exists over ponds, streams, and wetlands within the proposed ROW. BMPs would be utilized in SMZs around these bodies of water, thus minimizing impacts to water quality. Additional foraging habitat for both species exists within forested areas near the project area. Some foraging habitat would be removed in association with the project action, however, similarly suitable foraging habitat is plentiful in the surrounding landscape. No caves, cave-like structures, or other winter hibernacula for these species exist in the project area or would be impacted by the proposed action. Summer roosting habitat is present within the proposed ROW and either species may be impacted by tree clearing if they are roosting in them at the time. Loss of a maternity colony could impact the populations of these declining species.

Activities associated with the proposed project action were addressed in TVA's programmatic consultation with the USFWS on routine actions and federally listed bats in accordance with ESA Section 7(a)(2) and completed in April 2018 and updated in May 2023. For those activities with potential to affect bats, TVA committed to implementing specific conservation measures when impacts to federally listed bat species are expected. Relevant conservation measures to this project are identified in the bat strategy form and must be reviewed and implemented as part of the approved project.

3.7 Floodplains

3.7.1 Affected Environment

A floodplain is the relatively level land area along a stream or river that is subjected to periodic flooding. The area subject to a one-percent chance of flooding in any given year is normally called the 100-year floodplain. The area subjected to a 0.2-percent chance of flooding in any given year is normally called the 500-year floodplain. It is necessary to evaluate development in the floodplain to ensure that the project is consistent with the requirements of EO 11988 (Floodplain Management). Under the Action Alternative as shown in Appendix H, the proposed transmission line and several access roads would cross floodplain areas associated with Durden Creek in Yalobusha County, Mississippi.

As a federal agency, TVA adheres to the requirements of EO 11988. The objective of EO 11988 is "…to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative." The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances (U.S. Water Resources Council 1978). The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative. For certain "Critical Actions," the minimum floodplain of concern is the area subject to inundation from a 0.2 percent annual chance (500-year) flood. "Critical Actions" are those for which even a slight chance of flooding would be too great.

3.7.2 Environmental Consequences

3.7.2.1 Alternative A – No Action

Under the No Action Alternative, the proposed project would not proceed. As such, no project related disturbance to floodplains within the proposed project footprint would occur. Therefore, no floodplains would be affected by TVA project-related activities. However, as described in Section 3.1.2.1, potential effects from anticipated changes to the project area are likely to occur over the long-term due to factors such as population growth and land use changes.

3.7.2.2 Alternative B – Action Alternative

The action alternative consists of the construction of the support structures for the transmission lines, access roads, equipment upgrades at existing facilities, and one or more laydown area(s). The support structures for the transmission lines would not be expected to result in any increase in flood hazard from increased flood elevations or from changes in flow-carrying capacity of the streams being crossed. Construction of the transmission line in the floodplain would be consistent with EO 11988 provided the TVA subclass review criteria for transmission line location in floodplains are followed (TVA 1980).

Based upon a review of Yalobusha County, Mississippi FEMA Flood Insurance Rate Map (FIRM) panels, portions of access roads AR108, AR110, AR114, AR129, and the unnamed access road near County Road 436 would be located within 100-year floodplains (FEMA 2021), as shown in Appendix H Figures 8, 9, and 10. Consistent with EO 11988, access roads are considered repetitive actions in the 100-year floodplain that should result in minor impacts (TVA 1981). To minimize adverse impacts, any road improvements would be done in such a manner that upstream flood elevations would not be increased by more than 1.0 foot.

Equipment upgrades would be located within existing structures at existing facilities which are located outside 100-year floodplains, which would be consistent with EO 11988. Laydown areas have not yet been identified and would be analyzed in a separate environmental review once these locations are known.

By implementing the following routine and non-routine mitigation measures, the proposed transmission line, access roads, and equipment upgrades at existing facilities would have no significant impact on floodplains and their natural and beneficial values:

- Standard BMPs would be used during construction activities (TVA 2022).
- Construction would adhere to the TVA subclass review criteria for transmission line location in floodplains (TVA 1980).

- Road improvements would be done in such a manner that upstream flood elevations would not be increased by more than 1.0 foot (44 CFR § 60.3).

- Once locations are determined, laydown areas would be analyzed in a separate environmental review.

3.8 Wetlands

3.8.1 Affected Environment

Wetlands are those areas inundated or saturated by surface or groundwater such that vegetation adapted to saturated soil conditions are prevalent. Examples include bottomland forests, swamps, wet meadows, isolated depressions, and fringe wetlands along the edges of watercourses and impoundments. Wetlands provide many societal benefits such as toxin absorption and sediment retention for improved downstream water quality, storm water impediment and attenuation for flood control, shoreline buffering for erosion protection, and provision of fish and wildlife habitat for commercial, recreational, and conservation purposes. Therefore, a wetland assessment was performed to ascertain wetland presence, condition, and extent to which wetland functions are provided within the proposed project area. Field surveys were conducted in May 2023, to delineate wetland areas potentially affected by the proposed Action Alternative. An additional field survey was conducted in May 2024, to delineate wetlands on the access roads for this proposed Action Alternative.

Activities in wetlands are regulated by state and federal agencies to ensure no net loss of wetland resources. Under CWA §404, activities resulting in the discharge of dredge or fill material to waters of the U.S., including wetlands, must be authorized by the USACE through a Nationwide, Regional, or Individual Permit to ensure no more than minimal impacts to the aquatic environment. Section §401 of the CWA requires state water quality certification for projects in need of USACE approval. In Mississippi, the MDEQ is responsible for issuance of water quality certifications pursuant to Section 401. Lastly, EO 11990 requires federal agencies to avoid construction in wetlands and minimize wetland degradation to the extent practicable. Wetland determinations were performed according to the USACE standards, which require documentation of hydrophytic (wet-site) vegetation, hydric soil, and wetland hydrology (Environmental Laboratory 1987; Lichvar et al. 2016; USACE 2010).

Using a TVA-developed modification of the Ohio Rapid Assessment Method (Mack 2001) specific to the TVA region (TVA Rapid Assessment Method or “TVARAM“) wetlands were evaluated by their functions and classified into three categories: low quality, moderate quality, and superior quality. Low quality wetlands are degraded aquatic resources which may exhibit low species diversity, minimal hydrologic input and connectivity, recent or on-going disturbance regimes, and/or predominance of non-native species. These wetlands provide low functionality and are considered of low value. Moderate quality wetlands provide functions at a greater value due to a lesser degree of degradation and/or due to their habitat, landscape position, or hydrologic input. Moderate quality wetlands are considered healthy water resources of value. Disturbance to hydrology, substrate and/or vegetation may be present to a degree at which valuable functional capacity is sustained and there is reasonable potential for restoration. Superior quality wetlands include those wetlands offering superior functions and values within a watershed or are of regional/statewide concern. Superior quality wetlands may exhibit little, if any, recent disturbance, provide essential and/or large-scale stormwater storage, sediment retention, and toxin absorption, contain mature vegetation communities, and/or offer habitat to rare species. Conditions found in superior quality wetlands often represent restoration goals for wetlands functioning at a lower capacity.

The proposed project traverses a rural landscape, dominated by agricultural fields, forested uplands and bottomlands in Yalobusha County. The project area is located across the Tillatoba Creek-Panola Quitman Floodway (0803020203), Bynum Creek-Yocona River (0803020303) and the Turkey Creek-Skuna River (0803020503) basins. Field surveys to identify wetland extent and quality identified 43 wetlands, totaling 15.85 acres, within the proposed project area (Appendix C). Wetlands W001-W013, W018, W023 and W024 are located in the Tillatoba Creek-Panola Quitman Floodway watershed; W014-W017, W019-W022 are located in the Bynum Creek-Yocona River watershed, and W025-W043 are located in the Turkey Creek-Skuna River watershed. The combination of land-use practices and landscape position dictates the wetland habitat type, wetland functional capacity, and wetland value. The identified wetlands consisted of emergent, scrub-shrub and forested habitat, exhibiting both low, moderate and superior condition, thus providing poor to suitable wetland value to the surrounding landscape (Table 3-4 and 3-5).

Table 3-4. Acreage of Wetlands by Resource Value within the Project Area Footprint and Relative to Total Mapped Wetland Occurrence within the Watershed

Watershed (10-HUC)	NWI Estimated Total Wetland Acres in Watershed*	Delineated Wetland Acreage in Project Area			
		Low Value	Moderate Value	Superior Value	TOTAL
Tillatoba Creek-Panola Quitman Floodway (0803020203)	**9173**	0.12	1.78	0	**1.90**
Bynum Creek-Yocona River (0803020303)	**7112**	0	3.86	0	**3.86**
Turkey Creek-Skuna River (0803020503)	**7961**	0.65	5.93	3.51	**10.09**
Totals		0.77	11.57	3.51	**15.85**

*National Wetland Inventory (USFWS 1982)

Table 3-5. Acreage of Wetlands by Habitat Type Within the Project Area Footprint and Relative to Total Mapped Wetland Occurrence Within the Watershed

Watershed (10-HUC)	NWI Estimated Total Wetland Acres in Watershed	Delineated Total Wetland Acreage in Project Area			
		Emergent	Scrub-Shrub	Forested	TOTAL
Tillatoba Creek-Panola Quitman Floodway (0803020203)	**9173**	0.41	0.18	1.31	**1.90**
Bynum Creek-Yocona River (0803020303)	**7112**	1.33	0.13	2.41	**3.86**
Turkey Creek-Skuna River (0803020503)	**7961**	0.06	0	10.03	**10.09**
Totals		1.80	0.31	13.74	**15.85**

*National Wetland Inventory (USFWS 1982)

Emergent wetlands within the project area totaled 1.80 acres across 12 delineated wetland areas. Emergent wetlands are generally devoid of woody vegetation with predominant cover by non-woody species across areas periodically saturated and/or inundated. Emergent wetlands in this general vicinity are often found where land-use practices or inundation deter growth of woody species. Emergent wetland habitats encountered within the proposed project area included saturated farmed/agriculture fields, recently cleared areas and vegetated swales. All of these wetland areas contained indicators of wetland hydrology influencing soil physiology such that coloration indicative of wetland conditions were evident in the soil profile. Emergent wetlands were dominated by common emergent wetland vegetation including three-way sedge, shallow sedge and soft rush (Appendix E). All emergent wetland habitat encountered scored as low quality or moderate quality using TVARAM, indicating poor to moderate wetland quality, due to small size, surrounding land use, and evidence of disturbance (e.g. mowing, excavation, farming, etc.) (Table 3-5, Appendix J).

Forested/Scrub-shrub wetlands in general have deeper root systems and contain greater biomass (quantity of living matter) per acre than do emergent wetlands, which do not grow as tall. As a result, these wetlands provide higher levels of wetland functions, such as sediment retention, carbon storage, and pollutant retention and transformation (detoxification), storm water storage, and flood attenuation, all of which support better water quality and protection of downstream infrastructure (Ainslie et al. 1999; Scott et al. 1990; Wilder and Roberts 2002). 13.74 acres of forested wetlands were delineated across 28 wetland areas and 0.31 acres of scrub-shrub wetlands were delineated across three wetland areas within the proposed project area. All of these wetland areas contained indicators of wetland hydrology influencing soil physiology such that coloration indicative of wetland conditions were evident in the soil profile. Forested wetlands identified were dominated by common wetland vegetation including sweet gum, loblolly pine, American elm and sycamore (Appendix E). Forested wetland habitat encountered scored as low, moderate and superior quality using TVARAM (Table 3-6, Appendix J). Scrub-shrub wetlands identified were dominated by common wetland vegetation including black willow, slippery elm, and sweet gum (Appendix E). Scrub-shrub wetland habitat encountered scored as moderate quality using TVARAM (Table 3-6, Appendix J).

Table 3-6. Acreage of Low, Moderate, and Superior Resource Value Forested Wetlands by Watershed within the Action Alternative Footprint

Watershed (10-HUC)	NWI Estimated Forested Wetland Acres in Watershed	Delineated Forested Wetland Acreage In Project Area			
		Low Value	Moderate Value	Superior Value	TOTAL
Tillatoba Creek-Panola Quitman Floodway (0803020203)	**7,068**	0	1.30	0	1.30
Bynum Creek-Yocona River (0803020303)	**4,457**	0	2.41	0	2.41
Turkey Creek-Skuna River (0803020503)	**3,664**	0.65	5.87	3.51	10.03
Totals		0.32	9.41	3.51	13.74

*National Wetland Inventory (USFWS 1982)

The Tillatoba Creek-Panola Quitman Floodway contains wetlands W001-W013, W018, W023 and W024 within the project area. Of an estimated total 7,068 forested wetland acres in this watershed, the proposed project area contains 1.30 acres proposed for clearing, or 0.02 percent (Table 3-6). All forested wetlands identified in this watershed scored as moderate quality due to size, hydrological influence, and surrounding land use (Appendix K). Wetland hydrology indicators, such as inundation, saturation, high water table, drainage patterns, and geomorphic position were exhibited within these wetlands. These hydrology parameters influenced the soil profile, and hydric soil coloration was evident. Hydrophytic forested vegetation was dominant and included sweet gum, loblolly pine, American elm and sycamore (Appendix E).

The Bynum Creek-Yocona River contains wetlands W014-W017 and W019-W022 within the project area. Of an estimated total 4,457 forested wetland acres in this watershed, the proposed project area contains 2.41 acres proposed for clearing, or 0.05 percent (Table 3-6). All forested wetlands identified in this watershed scored as moderate quality due to size, hydrological influence, and surrounding land use (Appendix K). Wetland hydrology indicators, such as inundation, saturation, high water table, drainage patterns, and geomorphic position were exhibited within these wetlands. These hydrology parameters influenced the soil profile, and hydric soil coloration was evident. Hydrophytic forested vegetation was dominant and included red maple and green ash (Appendix E).

The Turkey Creek-Skuna River contains wetlands W025-W043 within the project area. Of an estimated total 3,664 forested wetland acres in this watershed, the proposed project area contains 10.03 acres proposed for clearing, or 0.27 percent (Table 3-6). Forested wetlands identified in this watershed scored as low, moderate and superior quality (Appendix K). Wetland hydrology indicators, such as inundation, saturation, high water table, drainage patterns, and geomorphic position were exhibited within these wetlands. These hydrology parameters influenced the soil profile, and hydric soil coloration was evident. Hydrophytic forested vegetation was dominant and included sweet gum, water oak, loblolly pine and sycamore (Appendix E).

3.8.2 Environmental Consequences

3.8.2.1 Alternative A – No Action

Under the No Action Alternative, the proposed project would not proceed. As such, no project related disturbance to wetlands within the proposed project footprint would occur. Therefore, no wetlands would be affected by TVA project-related activities. However, as described in Section 3.2.1.1, potential effects from anticipated changes to the project area are likely to occur over the long-term due to factors such as population growth and land use changes.

3.8.2.2 Alternative B – Action Alternative

Activities in wetlands are regulated by state and federal agencies to ensure no net loss of wetland resources. Under the CWA Section 404, activities resulting in the discharge of dredge, fill, and associated secondary impacts to waters of the U. S., including wetlands, must be authorized by the USACE through a Nationwide, Regional, or Individual Permit. This project is located in the Vicksburg USACE District. CWA Section 401 mandates state water quality certification for projects requiring USACE approval. In Mississippi, the MDEQ certifies CWA Section 404 permits and impacts to intrastate wetland resources through a general or individual aquatic resources alteration permit. Lastly, EO 11990 requires federal agencies to minimize wetland destruction, loss, or degradation, avoid new construction in wetlands wherever there is a practicable alternative.

Efforts were made during project planning and siting to avoid wetlands to the extent practicable. However, because of project and topographic constraints, and because of the goal of minimizing impacts to other resources, no practicable alternative was available that would allow complete avoidance of wetlands. The process for detecting and avoiding wetland resources identified during the office level review, prior to field surveys, is described in Section 2.3.

Under the Action Alternative, the proposed transmission line would be constructed. Of the total 15.85 acres of wetland within the project area, 14.05 acres would be permanently altered by the proposed activities (Appendix E). As described in Section 1.2, adequate clearance between tall vegetation and transmission line conductors would require trees within the proposed ROWs be cleared. Establishing a transmission line corridor would require vegetation clearing within the full extent of the ROW, and future maintenance of low stature vegetation to accommodate clearance and abate interference with overhead wires.

The proposed new North Oakland-Coffeeville 161-kV Transmission Line project area contains a total of 1.80 acres emergent wetland, 0.31 acres of scrub-shrub wetland and 13.74 acres forested wetland. Emergent wetlands located on the proposed new ROW corridors would experience temporary impacts to accommodate access during construction. These wetlands would be maintained long term in their current state and functional capacity, due to their existing height being compatible and consistent with transmission line ROW vegetation management objectives. Of the 13.74 acres of forested wetland area within the proposed project for construction, all 13.74 acres would be cleared and permanently converted to emergent, meadow like wetland habitat for the perpetuity of the transmission line's existence. Woody vegetation would be removed with a feller buncher. This involves a grip and blade attachment on a mechanized tracked or wide tire (low ground pressure) vehicle. The grip holds the tree trunk while the blade cuts below the grips. This method allows for removal of the cut aerial portion of a tree to an upland location for deposition, while leaving <12-inch stumps and the below ground root system entirely intact with minimal soil disturbance.

Wooded wetland conversion to emergent habitat results in reduction in wetland function. Due to the rate of water uptake, extensive root system, and structural integrity of trees and shrubs relative to herbaceous plants, wooded wetlands function at a greater capacity to impede and hold storm water, absorb toxins, retain sediment, and provide the shaded forage and spawning habitat necessary for its aquatic and terrestrial inhabitants to exist. Therefore, conversion of this community type to a habitat devoid of woody vegetation would result in a reduction of existing functional capacity. Wetland fill will occur in the form of transmission structure placement within W040 and W042 totaling 0.009 acre for the project.

Wetland fill associated with structure placement results in total loss of wetland function within the impact area and is subject to USACE/MDEQ jurisdiction, per the directives of the CWA. Likewise, forested wetland conversion to accommodate structure locations and spans is considered a secondary impact under section 404b of the CWA. Therefore, forested wetland loss is subject to the authority of the regulatory agencies to ensure no net loss of wetland functions and values, per the directive of the CWA and the federal no net loss of wetland policy (EPA 1990). The CWA authorizes regulatory oversight for these impacts. The USACE and MDEQ exert this oversight through an established permit process that ensures maintenance of the physical, biological, and chemical integrity of national and state waters, including wetlands, and the objectives of the CWA are upheld. The permitting process involves a demonstration of wetland avoidance, minimization of disturbance, and compensation for loss of wetland functions and values. In compliance with the CWA and EO 11990, TVA has considered all options to

avoid and minimize wetland impacts, resulting in the least wetland disturbance practicable (Section 2.1).

Wetland habitat located in areas proposed for heavy equipment travel could experience minor and temporary impacts during transmission line construction or long-term asset and vegetation management. TVA would minimize wetland disturbance through adherence to wetland BMPs for all work necessary within the delineated wetland boundaries (TVA 2022). This includes the use of low ground pressure vehicles, mats, or other wetland crossings to minimize rutting to less than 12 inches, erosion control techniques to deter indirect impacts through siltation into adjacent wetland area, dry season work, etc. Vehicular traffic would be limited to narrowed access corridors along the ROWs for structure and conductor placement, fiber installation, and long-term maintenance.

With wetland avoidance and minimization techniques in place, TVA would comply with all USACE/MDEQ mitigation requirements to compensate for the proposed loss of wetland resources, functions, and values resulting from this Action Alternative. TVA would obtain the necessary Section 404/401 CWA permits and required compensatory mitigation to ensure the proposed wetland impacts are compensated to the extent deemed appropriate such that wetland functions and values remain at the current capacity within the larger affected watershed. Mitigation required for the project will be purchased through an approved wetland mitigation bank per the directive of the USACE and MDEQ to ensure no more than minimal impacts to the aquatic environment result and the objectives of the CWA anti-degradation policy are upheld.

Cumulative impact analysis of wetland effects takes into account wetland loss and habitat conversion at a watershed scale currently and within the reasonable and foreseeable future. Loss of wetland habitat due to wetland fill would be compensated through wetland mitigation banking, resulting in no cumulative wetland impacts. Loss of wetland functions and values from forested wetland clearing would be compensated for at the discretion of the USACE engineer. Forested wetland conversion for this project would take place across three watersheds. The proposed transmission line would require forested wetland clearing of 1.31, 2.41 and 10.04 acres in these watersheds Tillatoba Creek-Panola Quitman Floodway, Bynum Creek-Yocona River and the Turkey Creek-Skuna River basins respectively. This would equate to 0.02, 0.05 and 0.27 percent of mapped forested wetland within these watersheds.

Similarly, general trends in wetland impacts resulting from development within the watershed would be subject to CWA, USACE, and MDEQ mandates, and these regulatory requirements are in place to ensure wetland impacts do not result in cumulative loss. In this context, the proposed wetland impacts should be kept to a minimum on a cumulative scale due to the avoidance, minimization, and compliance measures in place. Therefore, in compliance and accordance with the CWA and the directives of USACE and MDEQ ensuring no more than minimal adverse effects on the aquatic environment, the proposed Action Alternative's impacts to wetland would be insignificant.

3.9 Aesthetics

3.9.1 Affected Environment

Visual Resources

This assessment provides a review and classification of the visual attributes of existing scenery, along with the anticipated attributes resulting from the proposed action. The classification

criteria used in this analysis are adapted from a scenic management system developed by the USFS and integrated with planning methods used by TVA (USFS 1995). Potential visual impacts to cultural and historic resources are not included in this analysis as they are assessed separately in Section 3.10.

The visual landscape of an area is formed by physical, biological, and man-made features that combine to influence both landscape identifiability and uniqueness. The scenic value of a particular landscape is evaluated based on several factors that include scenic attractiveness, scenic integrity, and visibility. Scenic attractiveness is a measure of scenic quality based on human perceptions of intrinsic beauty as expressed in the forms, colors, textures, and visual composition of each landscape. Scenic attractiveness is expressed as one of the following three categories: distinctive, common, or minimal. Scenic integrity is a measure of scenic importance based on the degree of visual unity and wholeness of the natural landscape character. The scenic integrity of a site is classified as high, moderate, low, or very low. The subjective perceptions of a landscape's aesthetic quality and sense of place are dependent on where and how it is viewed.

Views of a landscape are described in terms of what is seen in the foreground, middleground, and background. In the foreground, defined as an area within 0.5 miles of the observer, details of objects are easily distinguished in the landscape. In the middleground, normally between 0.5 and 4 miles from an observer, objects may be distinguishable, but their details are weak and tend to merge into larger patterns. Details and colors of objects in the background, the distant part of the landscape, are not normally discernable unless they are especially large and standing alone. In this assessment, the background is measured as 4 to 10 miles from the observer. Visual and aesthetic impacts associated with an action may occur as a result of the introduction of a feature that is not consistent with the existing viewshed. The impressions of an area's visual character can have a significant influence on how it is appreciated, protected, and used. Consequently, the visual character of an existing site is an important factor in evaluating potential impacts.

For purposes of this visual assessment, the project area is defined as the area encompassing the proposed ROW between Oakland and Coffeeville. The new 100-foot-wide transmission line ROW corridor would extend approximately 16.9 miles between TVEPA's North Oakland 230/161-kV Metering Station, located at the southwest corner of the intersection of Highway 51 and County Road 23 in Oakland and TVA's Coffeeville 161-kV Switching Station, located on County Road 212, 1.5 miles east of the intersection of County Road 436 near Coffeeville.

The proposed transmission line project area is comprised of gently undulating to moderately rolling terrain. The landscape is characterized by rural development including agricultural fields and pastures, roadways, existing utility corridors, and scattered residences, with areas of dense forest. The foreground is comprised predominantly of agricultural land and forested areas. Several miles of the proposed transmission line corridor follow County Road 211 through HSNF. Thus, the project vicinity consists of a combination of natural elements, such as rolling fields and forested areas, and human development, such as roadway corridors.

The composition and patterns of vegetation are the prominent natural features of the landscape within the project area. Apart from crop fields and pasture, vegetation within the project area consists predominantly of mixed hardwood forests and pine plantations. The forms, colors, and textures of the natural features of the project area are typical of northern Mississippi and are not considered to have distinctive visual quality. Therefore, scenic attractiveness of the project area is considered common, due to the ordinary or common visual quality in the foreground,

middleground, and background (Table 3-7). The scenic integrity is considered moderate due to noticeable human alteration, including agricultural, transportation, and residential uses. The scenic value class of a landscape is determined by combining the levels of scenic attractiveness, scenic integrity, and visibility and can be excellent, good, fair, or poor. Based on the criteria used for this analysis, the overall scenic value class for the project area is good.

Table 3-7. Visual Assessment Ratings for Project Area

	Exiting Landscape	
View Distance	**Scenic Attractiveness**	**Scenic Integrity**
Foreground	Common	Moderate
Middleground	Common	Moderate
Background	Common	Moderate

In a visual impact assessment, sensitive receptors generally include any scenic vistas, scenic highways, residential viewers, and public facilities or recreational areas located in the project's viewshed. The proposed transmission line would be visible to passing motorists from U.S. Highway 51, Interstate 55, MS-7, County Road 211, County Road 212, and various local roads. The closest residential viewers are a small number of single-family residences located along County Road 211, within approximately 300 feet of the proposed transmission line corridor. Other sensitive receptors in the foreground include scattered residences and farmsteads. In addition, as shown in Figure 3-1, there are a number of churches, cemeteries, schools, parks, and recreation areas within the viewshed of the transmission line. The majority of these facilities occur within the middleground of the project area, at a distance between 0.5 and 4 miles. There are four churches, and five cemeteries located within the foreground of the proposed transmission line. In addition, several miles of the proposed transmission line pass through HSNF. Views from within the National Forest would generally be limited to motorists on County Road 211, as there are no trails or other recreational amenities in proximity to the line.

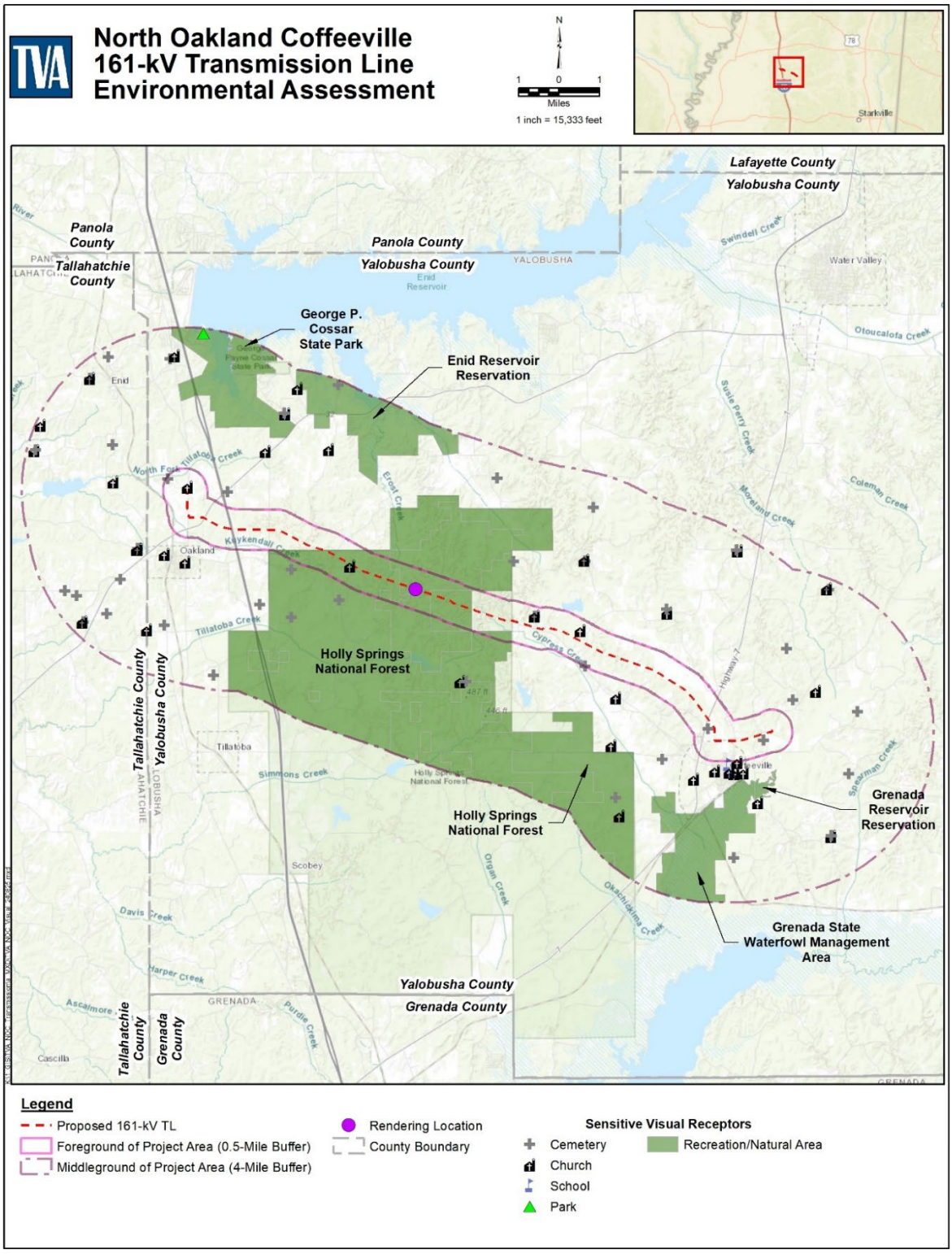

Figure 3-1. Sensitive Visual Receptors within the Foreground and Middleground of the Proposed North Oakland-Coffeeville 161-kV Transmission Line

3.9.2 Environmental Consequences

Visual Resources

The potential impacts to the visual environment from a given action are assessed by evaluating the potential for changes in the scenic value class ratings based upon landscape scenic attractiveness, integrity, and visibility. Sensitivity of viewing points available to the general public, their viewing distances, and visibility of the proposed action are also considered during the analysis. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty and the aesthetic sense of place. The extent and magnitude of visual changes that could result from the proposed alternatives were evaluated based on the process and criteria outlined in the scenic management system as part of the environmental review required under NEPA.

3.9.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 16.9-mile North Oakland-Coffeeville 161-kV Transmission Line extending from TVEPA's North Oakland 230/161-kV Metering Station southeast to TVA's Coffeeville 161-kV Switching Station. Thus, landscape character and integrity would remain in its current state and there would be no impact to visual resources associated with TVA's activities.

3.9.2.2 Alternative B – Action Alternative

Under the Action Alternative, construction of the proposed 161-kV transmission line would result in both short-term and long-term impacts to visual resources. During the approximate 12-month construction period, there would be some visual discord from existing conditions due to 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 2022). Because of their temporary nature, construction-related impacts to local visual resources are expected to be minor.

In addition, there may be some visual discord associated with clearing and installation of access roads required for transmission line construction and maintenance activities. Most of the required access roads would be temporary to support construction of the transmission line. Where possible, these access roads would utilize existing roadways and utility ROW. Sensitive visual receptors located along the access roads would experience some minor visual discord during construction and maintenance activities. These impacts would be greater in areas with new access roads, compared to access established on existing roads and utility ROW. The access roads would mainly be utilized during the short-term construction period and then periodically utilized for maintenance of the transmission line. Given the rural but residential development of the area, construction and utilization of the access roads would have a minor impact on sensitive receptors and scenic quality.

Long-term impacts consist of the visible alterations associated with new transmission structures, overhead wires, ROW clearing, and access road development. The most visible elements of the electric transmission system are the transmission structures and the permanent removal of woody vegetation within the new transmission line ROW which creates a visible corridor. However, the addition of lines on or near existing structures or within existing utility or transportation ROW increases compatibility with the landscape and minimizes visual impacts. Therefore, on the portions of the transmission line near the existing stations and along roadways, where the proposed project would parallel existing ROW, changes to the viewshed

would be minimized, as the project would expand the existing corridor feature rather than create a new visible corridor. The removal of forested areas and the installation of steel, single-pole and H-frame (multi-pole) structures (with a maximum height of approximately 124 feet above ground) and overhead wires a would add discordantly contrasting elements and colors to the environment. Although much of the proposed transmission line would not be visible to the public due to the distance from developed areas and presence of forested buffers, it would be visible in the foreground to a small number of residences, as well as motorists on nearby roadways, including County Road 211 through HSNF. Figures 3-2 and 3-3 provide renderings of the proposed transmission line looking west and east, respectively, along County Road 211 (at the intersection with County Road 243/County Road 61) within HSNF. The location of the renderings in the context of the project area is shown on Figure 3-1.

Figure 3-2. Visual Rendering Looking West along County Road 211 in Holly Springs National Forest in Yalobusha County, Mississippi

Figure 3-3. Visual Rendering Looking East along County Road 211 in Holly Springs National Forest in Yalobusha County, Mississippi

The addition of the transmission line and cleared 100-foot-wide ROW adjacent to County Road 211 would alter portions of the HSNF that remain largely undeveloped and natural in appearance. However, siting the line adjacent to the existing roadway corridor minimizes the visual impact of the vegetation removal, expanding the existing corridor feature rather than creating a new visible corridor. Additionally, since there are no trails or other recreational amenities in this portion of the National Forest, viewers would generally be limited to motorists on County Road 211.

The majority of residents in the project area would only view the transmission line over expanses of pasture or would be obscured by vegetated buffers or outbuildings, making it less obtrusive. A small number of residences along County Road 211 (outside of the National Forest) are located at a distance where they have an unobstructed view of the transmission line. These homes' proximity to the roadway, as well as existing distribution lines, increase the landscape's ability to absorb the visual change. While the proposed transmission line would add some discordant visual elements to the existing landscape, the view of these elements would be limited by the minimal number of residential receptors in the immediate foreground and would be somewhat absorbed into the overall landscape character near existing utility corridors and roadways.

In addition to nearby residents and motorists, sensitive visual receptors, including four churches and five cemeteries, were identified in the foreground of the proposed 161-kV transmission line (Figure 3-1). The Parrish Grove M.B. Church is the closest of these sensitive visual receptors to the transmission line, located adjacent to the western terminus of the line. The presence of the existing TVEPA substation, which is located directly adjacent to the church, prevents significant changes to the viewshed. The transmission line would also pass within approximately 250 feet of the Philadelphia M.B. Church on County Road 211 but would be somewhat shielded from view by a forested buffer. The remaining churches and cemeteries within the foreground are located 500 feet or more from the transmission line ROW and are either shielded from view by dense vegetation or are themselves located in wooded areas such that views of the transmission line would be largely, if not completely obstructed. For visual receptors located at further distances, in the middleground and background, the proposed transmission line would be less visible and obtrusive as it would largely fall into an observer's view where objects are less distinguishable.

The human alterations already in place within the project area, including roadway and utility corridors, currently contribute some visual discord with the natural landscape. These elements contribute to the landscape's ability to absorb negative visual change. Therefore, while the forms, colors, and textures of the landscape that make up the scenic attractiveness would be affected by the construction of the transmission line, it would still remain common or ordinary (Table 3-8). Impacts to scenic integrity are anticipated to be greatest in the foreground along the proposed transmission line. At this distance, scenic integrity would be reduced from moderate to low, as visual alterations associated with the proposed transmission line (transmission structures, lines, and clear-cut ROW corridors that disrupt the tree canopy) would be dominant features on the landscape. However, there would be no change in the ratings for the middleground and background as the alterations associated with the transmission line would not be substantive enough to dominate the view from these distances (Table 3-8). Based on the criteria used for this analysis, the scenic value class for the affected environment after the proposed modifications would be reduced to fair in the foreground along the length of the proposed transmission line but remain classified as good in the middleground. While the Action Alternative would contribute to a minor decrease in visual integrity of the landscape, the existing scenic class would not be reduced by two or more levels, which is the threshold of significance of impact to the visual environment. Therefore, visual impacts resulting from the implementation of the Action Alternative would be minor.

Table 3-8. Visual Assessment Ratings for Project Area Resulting from Action Alternative

	Resulting Landscape	
View Distance	**Scenic Attractiveness**	**Scenic Integrity**
Foreground	Common	Low
Middleground	Common	Moderate
Background	Common	Moderate

3.9.3 Affected Environment

Noise

Noise is unwanted or unwelcome sound usually caused by human activity and added to the natural acoustic setting of a locale. It is further defined as sound that disrupts normal activities or that diminishes the quality of the environment. Community response to noise is dependent on the intensity of the sound source, its duration, the proximity of noise-sensitive land uses, and the time of day the noise occurs (i.e., higher sensitivities would be expected during the quieter overnight periods).

Sound is measured in logarithmic units called decibels (dB). Given that the human ear cannot perceive all pitches or frequencies of sound, noise measurements are typically weighted to correspond to the limits of human hearing. This adjusted unit of measure is known as the A-weighted decibel (dBA) which filters out sound in frequencies above and below human hearing. A noise level change of 3 dBA or less is barely perceptible to average human hearing. However, a 5 dBA change in noise level is clearly noticeable. The noise level associated with a 10 dBA change is perceived as being twice as loud; whereas the noise level associated with a 20 dBA change is four times as loud and would therefore represent a “dramatic change” in loudness.

To account for sound fluctuations, environmental noise is commonly described in terms of the equivalent sound level. The equivalent sound level is the constant noise level that conveys the same noise energy as the actual varying instantaneous sounds over a given period. Fluctuating levels of continuous, background, and/or intermittent noise heard over a specific period are averaged as if they had been a steady sound. The day-night sound level (L_{dn}), expressed in dBA, is the 24-hour average noise level with a 10-dBA correction penalty for the hours between 10 p.m. and 7 a.m. to account for the increased sensitivity of people to noises that occur at night. Typical background day-night noise levels for rural areas are anticipated to range between an L_{dn} of 35 and 50 dB, whereas higher-density residential and urban areas background noise levels range from 43 dB to 72 dB (EPA 1974). Common indoor and outdoor noise levels are listed in Table 3-9.

There are no federal, state, or locally established quantitative noise-level regulations specifying environmental noise limits for the proposed station sites or the surrounding area. However, the EPA noise guideline recommends outdoor noise levels do not exceed L_{dn} of 55 dBA, which is sufficient to protect the public from the effect of broadband environmental noise in typical outdoor and residential areas. These levels are not regulatory goals but are “intentionally conservative to protect the most sensitive portion of the American population” with “an additional margin of safety” (EPA 1974). The U.S. Department of Housing and Urban Development (HUD) considers an L_{dn} of 65 dBA or less to be compatible with residential areas (HUD 1985).

Table 3-9. Common Indoor and Outdoor Noise Levels

Common Outdoor Noises	Sound Pressure Levels (dB)	Common Indoor Noises
	110	Rock Band at 5 m (16.4 ft)
Jet Flyover at 300 m (984.3 ft)		
	100	Inside Subway Train (New York)
Gas Lawn Mower at 1 m (3.3 ft)		
	90	Food Blender at 1 m (3.3 ft)
Diesel Truck at 15 m (49.2 ft)		Garbage Disposal at 1 m (3.3 ft)
	80	Shouting at 1 m (3.3 ft)
Gas Lawn Mower at 30 m (98.4 ft)	70	Vacuum Cleaner at 3 m (9.8 ft)
Commercial Area		Normal Speech at 1 m (3.3 ft)
	60	Large Business Office
	50	Dishwasher Next Room
Quiet Urban Daytime		
	40	Small Theater, Large Conference Room
Quiet Urban Nighttime		Library
Quiet Suburban Nighttime		
	30	Bedroom at Night
Quiet Rural Nighttime		Concert Hall (Background)
	20	Broadcast and Recording Studio
	10	
		Threshold of Hearing
	0	

Source: Federal Highway Administration (FHWA), 2018

3.9.4 Environmental Consequences

Noise

3.9.4.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 161-kV transmission line, access roads, or make associated modifications to the existing transmission system. Therefore, there would be no impacts to noise under this alternative from TVA activities. Changes to the project area and resources in this area may occur over time, independently of TVA's actions, due to factors such as population increases, changes in land use, and the potential for development to occur in the area.

3.9.4.2 Alternative B – Action Alternative

Under the Action Alternative, construction activities would last about 10 months and would generally be limited to daytime hours. During construction, noise would be generated by a variety of equipment including standard pick-up trucks, dump trucks, concrete trucks, feller-bunchers, bulldozers, excavators, graders, pile-drivers, augers, and rollers. Typical noise levels are expected to be 85 dBA or less at 50 feet from the construction equipment, except for pile-drivers which may produce noise levels of up to 95 dBA at 50 feet (Federal Highway Administration [FHWA] 2016). The actual observed noise would likely be lower in the field where vegetation and topography would cause further noise attenuation. Thus, typical construction noise would fall below the recommended EPA outdoor noise guideline of 55 dBA at all sensitive receptors. Additionally, pile driver use would be a short-term and relatively infrequent occurrence that would not contribute to typical background noise levels.

There is also a potential for indirect noise impacts associated with a temporary increase in traffic related to the workforce vehicle traffic, transport of construction equipment, and transport of spoil and borrow material. Roadway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways or more than 100 to 200 feet from lightly traveled roads (FHWA 2011).

Due to the nature of the decibel scale and the attenuating effects of noise with distance, a doubling of traffic volume would result in an approximately 3 dBA increase in noise level, which would not normally be a perceptible noise increase (FHWA 2011).

During construction, operation, and maintenance of the proposed transmission line, equipment could generate noise above ambient levels (Appendix F). As all construction noise would be temporary in nature and limited to daytime hours, noise impacts from construction of the proposed transmission line would be minor.

For similar reasons, noise related to periodic line maintenance is also expected to be insignificant. Transmission lines may produce minor noise during operation under certain atmospheric conditions.

Under certain wet weather conditions high-voltage transmission lines may produce an audible low-volume hissing or crackling noise from corona discharge (the electrical breakdown of air into charged particles). Corona noise is composed of both broadband noise, characterized as a crackling noise, and pure tones, characterized as a humming noise. Under normal conditions, corona-generated noise is not audible, and during rain showers, the corona noise would likely not be readily distinguishable from background noise. During very moist, non-rainy conditions, such as heavy fog, the resulting corona noise may produce a very minor increase in background noise levels in the vicinity of the transmission line, but due to distance, it is not expected to result in perceptible changes in noise level at the closest sensitive receptors. Off the ROW, corona noise is below the level that would interfere with speech.

3.10 Cultural Resources

This section describes an overview of the existing cultural resources within the Project Site and the potential impacts on the cultural resources that would be associated with the Proposed Action and No Action Alternatives. Components of cultural resources that are analyzed include precontact/indigenous and historic archaeological and architectural resources.

3.10.1 Affected Environment

Cultural resources are precontact and historic archaeological sites, districts, buildings, structures, objects, and locations of historic events of importance. Cultural resources listed or determined to be eligible for listing on the National Register of Historic Places (NRHP) maintained by the U.S. National Park Service are considered historic properties. As a federal agency, TVA is required by Section 106 of the NHPA and by NEPA to consider the potential effects of its actions on historic properties (36 CFR Part 800). When a TVA action would adversely affect a historic property (a cultural resource eligible for the NRHP), TVA must consider ways to avoid or minimize the adverse effect in consultation with SHPO, Tribes, and other stakeholders. If avoidance or minimization efforts are not feasible, measures to mitigate the adverse effect must be taken.

To be eligible for listing on the NRHP, the cultural resource needs to meet one of the following criteria:

> *Criterion A*: made a significant contribution to American history; for example, literature, ethnic heritage, health/medicine, and transportation.
>
> *Criterion B*: related to the life of significant persons; examples of NRHP properties nominated under *Criterion B* include George Washington's Mt. Vernon estate.
>
> *Criterion C*: embodied distinctive characteristics of a type, period, or method of construction including works of a master or buildings that possess high artistic value.
>
> *Criterion D*: yielded important information about history or prehistory. This category is typically the most relevant criterion for archaeological resources.

To determine an undertaking's possible effects on historic properties, a four-step review process is conducted.

These steps include:

> 1. Initiation (defining the undertaking and the APE and identifying the parties to be consulted in the process).
>
> 2. Identification of historic properties within the APE.
>
> 3. Assessment of effects to historic properties.
>
> 4. Resolution of adverse effects by avoidance, minimization, or mitigation.

As the lead NEPA agency, TVA must consult with the appropriate SHPO, and Tribes that have an interest in the Project, and any other party with a vested interest in the Project.

TVA recommends that the APE for the current Project includes the following:

> The approximate 16.9miles, 100-feet-wide of planned ROW occupying about 194 acres and six miles (about 19.72 acres) of planned access routes.
>
> All areas in which the project would be visible within a half-mile radius of the proposed transmission line.

3.10.1.1 Archaeological Resources

TVA contracted with TRC Environmental, Inc., to conduct a cultural resources survey of the 16.9-mile-long transmission line corridor and access routes to be used during construction (Davis and Karpynec 2023). TRC identified one archaeological site (22YA1009, a twentieth century artifact scatter). TVA determined the site is not eligible for the NRHP due to lack of integrity and significant research potential. Subsequent to the cultural resources survey for the transmission line ROW, TRC conducted an archaeological survey for the identified access routes. No cultural resources were identified as a result of this survey.

3.10.1.2 Architectural Resources

The survey investigated six previously recorded architectural resources that were identified during the background research of Mississippi Department of Archives and History (MDAH) architectural records. TRC's survey found architectural resources 161-COF-0001, 161-COF-0072, and 161-COF-0088 to be extant, but located outside the Project APE (Table 3-10). Previously recorded architectural resources 161-COF-0089, 161-COF-5002, and 161-COF-5012 were found to have been destroyed since their initial recordation (Table 3-11). TRC identified 29 extant architectural resources (HS-1 through HS-29) within the APE. TRC recommended all 29 architectural resources as ineligible for NRHP listing based on lack of integrity and/or lack of association with historic event(s)/persons and architectural distinction, and a finding of no historic properties affected is recommended (Table 3-12).

Table 3-10. Previously Recorded Architectural Resources

MDAH Survey #/Name	Date/Style	NRHP Recommendation
161-COF-0001/H.S. Boswell House	Ca. 1902, 1-story, wood-frame pyramidal-roof house	Unassessed
161-COF-0072	Ca. 1904, 1-story, wood-frame pyramidal-roof house	Unassessed
161-COF-0088/Arbalee	Ca. 1855, 2-story Greek Revival house	Unassessed

Table 3-11. Previously Recorded Architectural Resources Destroyed

MDAH Survey #	Date/Style	NRHP Recommendation
161-COF-0089	Ca. 1900, 1-story, wood-frame house	Not Eligible
161-COF-5002	Date not provided, log house	Not Eligible
161-COF-5012/Goshen Methodist Church	Date and style not provided	Not Eligible

Table 3-12. Newly Recorded Architectural Resources Survey Results

TRC Survey ID #	Date/Style	MDAH Status	NRHP Recommendation
HS-1	Ca. 1970 front-gabled church	Unassessed	Not Eligible
HS-2	Ca. 1970 Ranch house	Unassessed	Not Eligible
HS-3	Ca. 1970 Minimal Traditional house	Unassessed	Not Eligible
HS-4	Ca. 1970 Ranch house	Unassessed	Not Eligible
HS-5	Ca. 1965 Ranch house	Unassessed	Not Eligible
HS-6	Ca. 1970 front-gabled church	Unassessed	Not Eligible

TRC Survey ID #	Date/Style	MDAH Status	NRHP Recommendation
HS-7	Ca. 1940 front-gabled house	Unassessed	Not Eligible
HS-8	Ca. 1920 hipped-roof house	Unassessed	Not Eligible
HS-9	Ca. 1970 Minimal Traditional house	Unassessed	Not Eligible
HS-10	Ca. 1910 gable-front-and-wing house	Unassessed	Not Eligible
HS-11	Ca. 1900 hipped-roof house	Unassessed	Not Eligible
HS-12	Ca., 1960 Ranch house	Unassessed	Not Eligible
HS-13	Ca. 1970 Ranch house	Unassessed	Not Eligible
HS-14	Ca. 1970 front-gabled church	Unassessed	Not Eligible
HS-15	Ca. 1973 Contemporary house	Unassessed	Not Eligible
HS-16	Ca. 1973 Ranch house	Unassessed	Not Eligible
HS-17	Ca. 1950 massed-plan, side-gabled house	Unassessed	Not Eligible
HS-18	Ca. 1950 gable-front house	Unassessed	Not Eligible
HS-19	Ca. 1950 side-gabled house	Unassessed	Not Eligible
HS-20	Ca. 1900 pyramidal-roof house	Unassessed	Not Eligible
HS-21	Ca. 1965 Ranch house	Unassessed	Not Eligible
HS-22	Ca. 1945 Minimal Traditional house	Unassessed	Not Eligible
HS-23	Ca. 1965 Ranch house	Unassessed	Not Eligible
HS-24	Ca. 1955 warehouse	Unassessed	Not Eligible
HS-25	Ca. 1965 Ranch house	Unassessed	Not Eligible
HS-26	Ca. 1965 school	Unassessed	Not Eligible
HS-27	Ca. 1940 gable-front building	Unassessed	Not Eligible
HS-28	Ca. 1960 concrete block commercial	Unassessed	Not Eligible
HS-29	Ca. 1960 side-gabled commercial	Unassessed	Not Eligible

3.10.2 Environmental Consequences

3.10.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the transmission lines or access roads. Changes to the area would nonetheless occur over time, as factors such as population trends, land use, quality of air/water/soil, recreational patterns, and cultural, ecological, and educational interests change within the area. These changes would be gradual and most likely would not be noticed by the general population. Ground disturbing agricultural practices at the project site would continue to potentially impact intact cultural resources at the surface or within the first 8 to 10 inches of soil. Therefore, no significant impacts to cultural resources would be anticipated as the Project Area would not be developed as a transmission line, associated ROW, and access routes.

3.10.2.2 Alternative B – Action Alternative

The Proposed Action would not impact any listed or eligible NRHP-listed archaeological or architectural sites.

TVA consulted with the Mississippi SHPO, and Tribes with respect to the findings of the cultural resources survey. In a letter dated December 5, 2023 (for the transmission line ROW) and August 22, 2024 (for the access roads) the Mississippi SHPO concurred with TVA's findings that the proposed undertaking would result in no effect to historic properties (Appendix A). Of the

Tribes who were consulted, TVA received a response from the Eastern Shawnee Tribe with no concerns. TVA is in consultation regarding the results of the access route addendum survey.

Should previously undiscovered cultural resources be identified during Project Site construction or operations, a TVA archaeologist and consulting parties will be consulted before any further action is taken.

3.11 Recreation, Parks, and Managed Areas

3.11.1 Affected Environment

Managed areas include lands held in public ownership that are managed by an entity (e.g., TVA, U.S. Department of Agriculture, USFS, State of Tennessee) to protect and maintain certain ecological and/or recreational features. Natural areas include ecologically significant sites; federal, state, or local park lands; national or state forests; wilderness areas; scenic areas; wildlife management areas; recreational areas; greenways; trails; Nationwide Rivers Inventory streams; and wild and scenic rivers. Ecologically significant sites are either tracts of privately owned land that are recognized by resource biologists as having significant environmental resources or identified tracts on TVA lands that are ecologically significant but not specifically managed by TVA's Natural Areas program.

A review of the TVA Regional Natural Heritage database identified five managed and natural areas within three miles of the proposed project area (Table 3-13). The HSNF parcel is located within the project study area.

Table 3-13. Managed and Natural Areas Within 3 Miles of the Proposed Project Area

Natural Area	Acres	County	State	Distance and Direction From Proposed Project Area (Miles)
Holly Springs National Forest	529,411	Multiple	MS	Overlap
Enid Reservoir Reservation	45,156.63	Multiple	MS	1.7 Miles North
Grenada State Waterfowl Management Area	57,817.67	Multiple	MS	0.9 Miles South
Grenada Reservoir Reservation	88,984.33	Multiple	MS	0.9 Miles South
Conservation Easement – Ducks Unlimited	1,786.11	Yalobusha (MS)	MS	0.1 Miles southwest

Source: TVA Regional Natural Heritage database queried November 2021

There are five managed or natural areas that occur within 3 miles of the project area. The HSNF is managed by the US National Forest Service and overlaps with the project area. A Ducks Unlimited Conservation Easement occurs within 0.1 miles from the project area. The remaining natural areas are greater than 0.5 miles from the project area.

3.11.2 Environmental Consequences

3.11.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not build the 161-kV transmission line or associated access roads. There would be no change in management of or access to managed and natural areas in the project area or general vicinity. Under the No Action Alternative, existing patterns of occasional dispersed outdoor recreation activities such as hunting would be expected to continue. However, as described in Section 3.1.2.1, potential effects from anticipated changes

to the project area are likely to occur over the long-term due to factors such as population growth and land use changes.

3.11.2.2 Alternative B – Action Alternative

Under the proposed Action Alternative, construction, operation, and maintenance of the proposed transmission line, would result in minor direct impacts to the area of the HSNF in which the transmission line is being installed and maintained. Impacts to this area would include clearing of trees and vegetation and thereafter routine maintenance of the ROW. The Conservation Easement parcel that is adjacent to the project area, is across County Road 211 and would not be directly impacted. Any potential impacts to this area would be temporary and insignificant. These insignificant impacts would include construction noise and visual intrusions that would be minimized using standard BMPs (TVA 2022).

3.12 Socioeconomics

3.12.1 Affected Environment

As detailed in Section 3.1.2.1, impacts associated with the proposed 16.9-mile transmission line project consist of temporary disturbances during construction (i.e., noise, traffic, and fugitive dust) as well as long-term visual and property value impacts, all of which are limited to communities in the immediate vicinity of the project footprint. There would be no emissions or releases of air pollutants or hazardous materials that would impact human health or welfare in the surrounding area. Thus, the study area for socioeconomic analysis is limited to the eight census block groups located in a one-mile radius of the centerline of the new transmission line (see Figure 3-4). As the study area spans Yalobusha County and a portion of eastern Tallahatchie County, these counties and the state of Mississippi are included as appropriate secondary geographic areas of reference. Comparisons at multiple spatial scales provide a more detailed characterization of populations that may be affected by the proposed actions. Demographic and economic characteristics of populations within the study area were assessed using U.S. Census Bureau (USCB) data, including 2020 Decennial Census counts (USCB 2020) for total population and racial characteristics and 2017-2021 American Community Survey (ACS) 5-year estimates (USCB 2021) for the remaining datasets.

3.12.1.1 Demographic and Economic Conditions

Demographic and economic characteristics of the eight block groups that make up the study area and of the secondary reference geographies are summarized in Table 3-14. The study area has a resident population of 8,307 and is characterized by agricultural and low-density residential development. Between 2010 and 2020, the study area population decreased by approximately 1.8 percent, comparable to the decline in Yalobusha County (-1.6 percent) and the State of Mississippi (-0.2 percent). Tallahatchie County experienced a more dramatic decline in population (-17.3 percent) over the same period.

Table 3-14. Demographic and Socioeconomic Characteristics of Study Area and Secondary Reference Geographies

	Study Area (8 Census Block Groups within 1 mile of Proposed Transmission Line)	Yalobusha County, Mississippi	Tallahatchie County, Mississippi	State of Mississippi
Population[1,2,3]				
Population, 2020	8,307	12,481	12,715	2,961,279
Population, 2010	8,460	12,678	15,378	2,967,297
Percent Change 2010-2020	-1.8%	-1.6%	-17.3%	-0.2%
Persons under 18 years, 2021	20.6%	22.3%	19.7%	23.8%
Persons 65 years and over, 2021	18.2%	20.4%	15.3%	15.9%
Racial Characteristics[1]				
Not Hispanic or Latino				
White alone, 2020[(a)]	61.8%	58.7%	37.2%	55.4%
Black or African American, 2020[(a)]	34.3%	37.0%	58.1%	36.4%
American Indian and Alaska Native, 2020[(a)]	0.2%	0.2%	0.0%	0.5%
Asian, 2020[(a)]	0.1%	0.2%	1.1%	1.1%
Native Hawaiian and Other Pacific Islander, 2020[(a)]	0.0%	0.0%	0.0%	0.0%
Some Other Race alone, 2020[(a)]	0.0%	0.1%	0.0%	0.2%
Two or More Races, 2020	2.1%	2.5%	1.2%	2.8%
Hispanic or Latino, 2020	1.3%	1.3%	3.3%	3.6%
Income and Employment[3]				
Per capita income, 2021	$ 22,813	$ 23,211	$ 19,390	$ 26,807
Persons below poverty level, 2021	22.5%	21.9%	29.1%	19.4%
Persons below low-income threshold, 2021[(b)]	44.6%	48.4%	55.8%	40.9%
Civilian Labor Force, 2021	3,525	5,543	5,351	1,331,967
Percent Employed, 2021	93.8%	95.3%	86.8%	93.2%
Percent Unemployed, 2021	6.2%	4.7%	13.2%	6.8%

Sources: 1. U.S. Census Bureau (USCB) 2010, 2. USCB 2020, 3. USCB 2021

(a) Includes persons reporting only one race; (b) Low-income threshold is defined as two times the poverty level

Approximately 62 percent of the population within the study area is white, with Black or African Americans making up the largest minority group (34 percent). There are also small percentages who are Hispanic or Latino, American Indian, Alaska Native, and Asian, or who identify as some other race or two or more races. The study area has an aggregate minority percentage of 38.1 percent, with percentages for individual block groups ranging from 15.1 to 72.4 percent of the population. Three out of the eight block groups meet the criterion for consideration as minority population groups. Minority percentages in the study area are generally comparable to those of Yalobusha County and the State of Mississippi, which are 41.3 percent and 44.6 percent of the total minority population (i.e., all non-white and Hispanic or Latino racial groups combined), respectively. There is a larger proportion of Black or African American residents (58 percent) and a total minority population of 62.8 percent in Tallahatchie County (Table 3-14). The average per capita income in the study area is $22,813, which is comparable to that of Yalobusha County ($23,211) and somewhat lower than the State of Mississippi ($26,807). Correspondingly, the percentage of the study area population falling below the poverty level (22.5 percent) is similar to Yalobusha County (21.9 percent) and marginally higher than the state (19.4 percent). Tallahatchie County has a lower per capita income and a higher percentage of the population below the poverty level than the other reference geographies (Table 3-14). The nationwide poverty level is determined annually by the USCB and varies by the size of family and number of related children under 18 years of age. The 2022 USCB Poverty Threshold for an individual under the age of 65 is an annual income of $15,225, and for a family of four with two children it is an annual household income of $29,678 (USCB 2023). For the purposes of this assessment, low-income individuals are those whose annual household income is less than two times the poverty level.

The percentage of the population of Mississippi living below the low-income threshold is 40.9 percent. The percentage of low-income residents in Tallahatchie County and Yalobusha County are higher than the state, at 55.8 percent and 48.4 percent of the population, respectively. Approximately 44.6 percent of people living within the study area are considered low-income, with percentages for individual block groups ranging from 28.0 to 68.5 percent of the population. Two out the eight block groups meet the criterion for consideration as low-income population groups. Figure 3-4 identifies these block groups determined to meet the criterion for consideration as minority and/or low-income populations. According to EPA, the effects of income on baseline health and other aspects of susceptibility are not limited to those below the poverty thresholds. For example, populations having an income level from one to two times the poverty level also have worse health overall than those with higher incomes (Centers for Disease Control and Prevention 2013).

The civilian labor force within the study area is 3,525, with an unemployment rate of 6.2 percent. This unemployment rate is slightly higher than that of Yalobusha County (4.7 percent) but notably lower than that of Tallahatchie County (13.2 percent) (Table 3-14).

3.12.1.2 Community Facilities and Services

Community facilities and services include public and publicly funded facilities such as police protection and other emergency services (ambulance/fire protection), schools, hospitals and other health care facilities, libraries, day care centers, churches, and community centers. To identify facilities and emergency services that could be potentially impacted by proposed project activities, the study is identified as the service area of various providers, where applicable, or the area within a 1-mile radius of the transmission line corridor. Based on a review of aerial imagery and online information including the U.S. Geological Survey (USGS) Geographic Names Information System database (USGS 2023), community facilities and services available withing a 1-mile radius of the proposed transmission line segments include two schools, ten

churches, nine cemeteries, a post office, the Oakland Town Hall and Police Department, and the Coffeeville Town Hall and Police Department. The project area is also served by the Oakland Volunteer Fire Department, the Coffeeville Volunteer Fire Department, and the Yalobusha County Emergency Management Department.

3.12.2 Environmental Consequences

3.12.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 16.9-mile 161-kV North Oakland-Coffeeville Transmission Line extending from TVEPA's North Oakland 230/161-kV Metering Station southeast to TVA's Coffeeville 161-kV Switching Station. Therefore, there would be no change in local demographics, socioeconomic conditions, or community services in association with the proposed action.

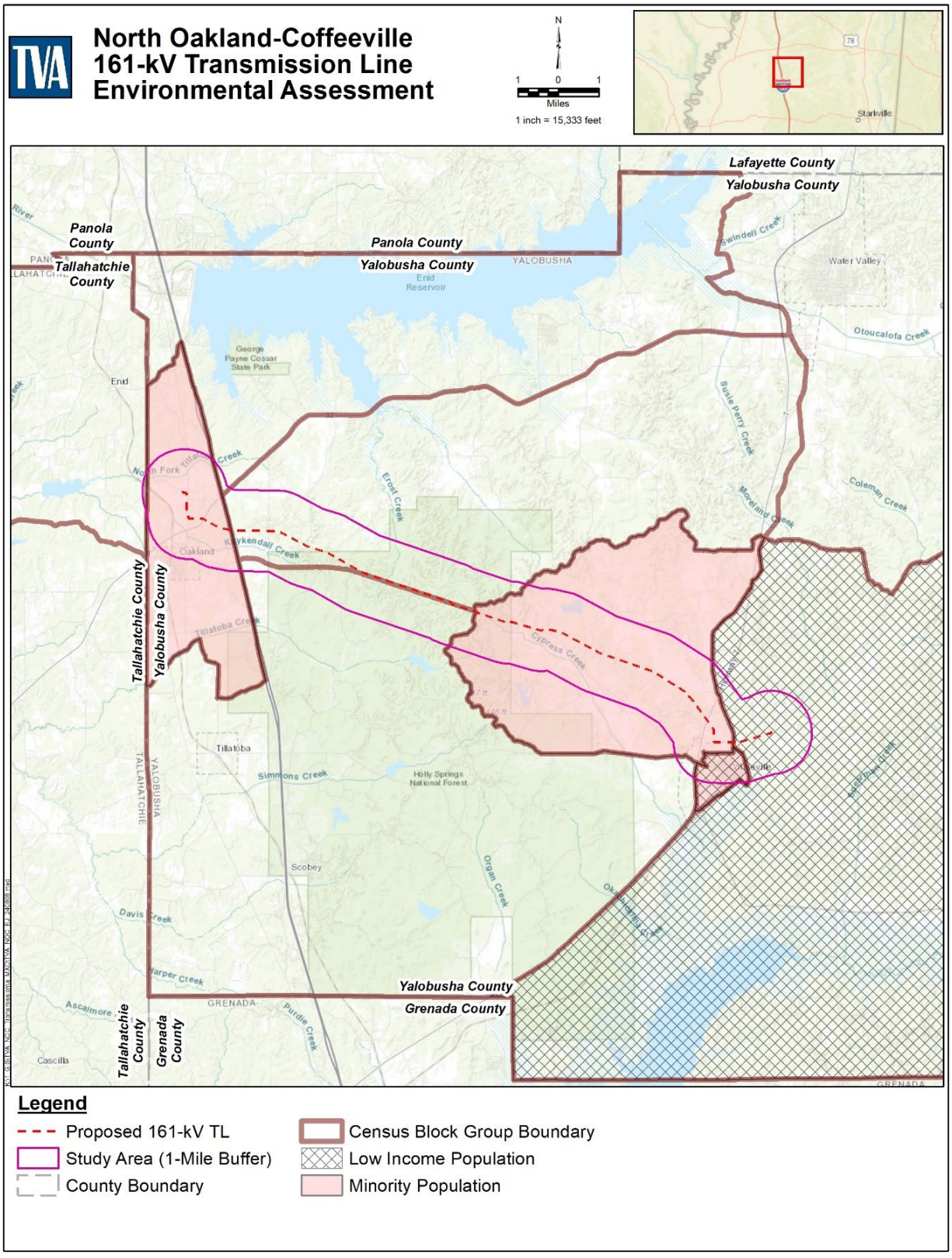

Figure 3-4. Low-Income and Minority Populations Within the Study Area

3.12.2.2 Alternative B – Action Alternative

3.12.2.2.1 Demographic and Economic Impacts

Under the Action Alternative, the proposed transmission line construction activities would occur over approximately 12 months and would entail the use of mobile crews comprised of contractors and/or full-time TVA staff. The construction workforce would average between 20 and 25 workers per day. At times there could be as many as 35 workers per day and as few as 10 to 15 workers per day. It is anticipated that most of these workers would be drawn from the labor force that currently resides in the region; however, some specialty workers and laborers not available within the area may be needed to support construction activities. Following construction, works crews would be present in the study area for occasional operation and maintenance activities. In both cases, given the relatively small workforce and that the majority of workers needed would likely be drawn from the existing labor force, impacts to demographics and local employment would be minor.

Potential economic impacts associated with the proposed project relate to direct and indirect effects of property acquisition, construction, and operations. Under the Action Alternative, TVA would acquire approximately 205 acres across 67 parcels for the development of the transmission line ROW. These easements would give TVA the right to construct, operate, and maintain the transmission system across the property owner's land. TVA expects to utilize new and/or existing access roads to access the ROW. Access roads would typically be located on privately-owned land for which TVA would acquire easement rights. In each case, landowners would be compensated for the value of such rights or properties. Additionally, there are no known displacements required for development of the ROW easements and access roads. Given the relatively minor acquisitions, the direct local economic effect from the purchase of additional property or ROW easements would be minor relative to the total regional economy. Construction and maintenance activities would also result in minor but beneficial impacts to the local economy through the purchases of materials and supplies, potential procurement of contract workers or additional services, and expenditure of the wages earned by the transient workforce in the local communities.

There is also the potential for a decrease in property value for those parcels in the vicinity of transmission lines. However, most of the new construction would take place in agricultural or forested areas; residential properties have been avoided to the greatest extent possible. As most homes in the area are located a considerable distance from the proposed transmission line ROW and/or are separated from these structures by a vegetated buffer, any effects to local property values would be minor.

The construction and operation of the 16.9-mile 161-kV transmission line could result in temporary impacts to nearby residents such as increased traffic, noise, fugitive dust, and air emissions during the construction period, and long-term visual impacts and potential for decreased property values. These project-related impacts would be similarly experienced by all people living along the proposed transmission line corridor. Low income and minority communities would technically bear a greater impact of the proposed project as those communities represent the majority of the 16.9-mile corridor.

As detailed in Section 1.5, TVA took steps to ensure that all communities including low-income and minority communities in the study area were meaningfully engaged. All property owners potentially affected by, or near to, any of the route alternative segments were notified via letter and invited to participate in a virtual open house. Additional property owners were sent letters at the discretion of the siting engineer due to proximity or visual impact. Ads were also placed

in local newspapers to notify other interested members of the public of the proposed project and open house. TVA considered the public input received during the open house in the alternative route segment evaluation and development of the preferred route.

In addition, the implementation of the Action Alternative would ensure that the study area has a continuous, reliable source of electric power for its future load growth. This benefit would be realized by all populations in the project area, including low income and minority communities. Unless action is taken, the increasing power loads caused by commercial and residential growth in the area would result in overloaded transformers and other electrical equipment damage or failure. The proposed action would provide a more reliable source of electric power in the Batesville, Charleston, Coffeeville, and Oakland, Mississippi areas, improve operational and maintenance flexibility, and support load growth and economic development, resulting in long-term indirect economic benefits to the area.

3.12.2.2.2 Community Facilities and Services

Direct impacts to community facilities occur when a community facility is displaced or access to the facility is altered. Neither the construction or operation of the proposed 16.9-mile 161-kV transmission line would result in the displacement of community facilities or impede access to any facilities. Therefore, there would be no direct impacts to community facilities or services under the Action Alternative.

Indirect impacts occur when a proposed action or project results in a population increase that would generate greater demands for services and/or affect the delivery of such services. As the transmission line construction and maintenance would not result in notable impacts to local demographics, increased demands for services such as schools, churches, and healthcare facilities are not anticipated. In the event of an emergency along the transmission line ROW, local law enforcement, fire, and/or EMS response would likely be required. The towns of Oakland and Coffeeville both operate police departments and volunteer fire departments and Yalobusha County has an Emergency Management Department, all of which could respond in the event of an emergency. As the adjacent communities provide a network of emergency services, and emergencies along the transmission line are anticipated to be a rare occurrence, implementation of the Action Alternative would not have a notable impact on the demand for emergency services in the area.

3.13 Long-term and Cumulative Impacts

The presence of the transmission line would present long-term visual effects to the mostly rural character of the local area. However, because the route of the proposed lines would traverse mostly rural areas with few residences and would involve only a few road crossings, the transmission line would not prominently alter the local landscape. Likewise, the establishment of easements for the proposed ROW with local landowners would pose a long-term encumbrance on the affected properties. Various agricultural land uses could be practiced within the ROW, but any timber production within the ROW would be foregone for the life of the transmission line.

The availability of a reliable power supply is an important factor in improving the transmission system in the local area, which over time could make the area more attractive to additional commercial and residential development. Cumulative impacts of the construction, maintenance, and operation of the proposed transmission line have been examined to the extent practicable in resource sections above. Thus, residential and commercial growth of this mainly rural area would be a minor, long-term, and cumulative consequence of the proposed transmission system improvements.

3.13.1 Postconstruction Effects

3.13.1.1 Electric and Magnetic Fields

Transmission lines, like all other types of electrical wiring, generate both electric and magnetic fields (i.e., EMFs). The voltage on the conductors of a transmission line generates an electric field that occupies the space between the conductors and other conducting objects such as the ground, transmission line structures, or vegetation. A magnetic field is generated by the current (i.e., the movement of electrons) in the conductors. The strength of the magnetic field depends on the current, the design of the line, and the distance from the line.

The fields from a transmission line are reduced by mutual interference of the electrons that flow around and along the conductors and between the conductors. The result is even greater dissipation of the low energy. Most of this energy is dissipated on the ROW, and the residual very low amount is reduced to background levels near the ROW or energized equipment.

Magnetic fields can induce currents in conducting objects. Electric fields can create static charges in ungrounded, conducting materials. The strength of the induced current or charge under a transmission line varies with: (1) the strength of the electric or magnetic field, (2) the size and shape of the conducting object, and (3) whether the conducting object is grounded. Induced currents and charges can cause shocks under certain conditions by making contact with objects in an electric or magnetic field.

The proposed transmission line has been designed to minimize the potential for such shocks. This is done, in part, by maintaining sufficient clearance between the conductors and objects on the ground. Stationary conducting objects, such as metal fences, pipelines, and highway guardrails that are near enough to the transmission line to develop a charge (typically these would be objects located within the ROW) would be grounded by TVA to prevent them from being a source of shocks.

Under certain weather conditions, high-voltage transmission lines, such as the proposed 161-kV line, may produce an audible low-volume hissing or crackling noise (Appendix F). This noise is generated by the corona resulting from the dissipation of energy and heat as high voltage is applied to a small area. Under normal conditions, corona-generated noise is not audible. The noise may be audible under some wet conditions, but the resulting noise level away from the ROW would be well below the levels that can produce interference with speech. Corona is not associated with any adverse health effects in humans or livestock.

Other public interests and concerns have included potential interference with AM radio reception, television reception, satellite television, and implanted medical devices. Interference with radio or television reception is typically due to unusual failures of power line insulators or poor alignment of the radio or television antenna and the signal source. Both conditions are readily correctable.

Implanted medical devices historically had a potential for power equipment strong-field interference when they came within the influence of low-frequency, high-energy workplace exposure. However, older devices and designs (i.e., those beyond five to 10 years old) have been replaced with different designs and different shielding that prevent potential for interference from external field sources up to and including the most powerful magnetic resonance imaging medical scanners. Unlike high-energy radio frequency devices that can still interfere with implanted medical devices, low-frequency, and low-energy powered electric or

magnetic devices no longer potentially interfere (Journal of the American Medical Association 2007).

Research has been done on the effects of EMFs on animal and plant behavior, growth, breeding, development, reproduction, and production. Research has been conducted in the laboratory and under environmental conditions, and no adverse effects or effects on health or the above considerations have been reported for the low-energy power frequency fields (World Health Organization (WHO) 2007a). Effects associated with ungrounded, metallic objects' static charge accumulation and with discharges in dairy facilities have been found when the connections from a distribution line meter have not been properly installed on the consumer's side of a distribution circuit.

There is some public concern as to the potential for adverse health effects that may be related to long-term exposure to EMF. A few studies of this topic have raised questions about cancer and reproductive effects on the basis of biological responses observed in cells or in animals or on associations between surrogate measures of power line fields and certain types of cancer. Research has been ongoing for several decades.

The consensus of scientific panels reviewing this research is that the evidence does not support a cause-and-effect relationship between EMFs and any adverse health outcomes (e.g., American Medical Association 1994; National Research Council 1997; National Institute of Environmental Health Sciences 2002). Some research continues on the statistical association between magnetic field exposure and a rare form of childhood leukemia known as acute lymphocytic leukemia. A recent review of this topic by the WHO (International Association for Research on Cancer 2002) concluded that this association is very weak, and there is inadequate evidence to support any other type of excess cancer risk associated with exposure to EMFs.

TVA follows medical and health research related to EMFs, along with media coverage and reports that may not have been peer reviewed by scientists or medical personnel. No controlled laboratory research has demonstrated a cause-and-effect relationship between low-frequency electric or magnetic fields and health effects or adverse health effects even when using field strengths many times higher than those generated by power transmission lines. Statistical studies of overall populations and increased use of low-frequency electric power have found no associations (WHO 2007b).

Neither medical specialists nor physicists have been able to form a testable concept of how these low-frequency, low-energy power fields could cause health effects in the human body where natural processes produce much higher fields. To date, there is no agreement in the scientific or medical research communities as to what, if any, electric or magnetic field parameters might be associated with a potential health effect in a human or animal. There are no scientifically or medically defined safe or unsafe field strengths for low-frequency, low-energy power substation or line fields.

The current and continuing scientific and medical communities' position regarding the research and any potential for health effects from low-frequency power equipment or line fields is that there are no reproducible or conclusive data demonstrating an effect or an adverse health effect from such fields (WHO 2007c). In the U.S., national organizations of scientists and medical personnel have recommended no further research on the potential for adverse health effects from such fields (American Medical Association 1994; U.S. Department of Energy 1996; National Institute of Environmental Health Sciences 1998).

Although no federal standards exist for maximum EMF field strengths for transmission lines, two states (New York and Florida) do have such regulations. Florida's regulation is the more restrictive of the two with field levels being limited to 150 milligauss at the edge of the ROW for lines of 230-kV and less. The expected magnetic field strengths at the edge of the proposed ROW would fall well within these standards. Consequently, the construction and operation of the proposed transmission line connectors are not anticipated to cause any significant impacts related to EMF.

Under this alternative, EMFs would be produced along the length of the proposed transmission line. The strength of the fields within and near the ROW varies with the electric load on the line and with the terrain. Nevertheless, EMF strength attenuates rapidly with distance from the line and is usually equal to local ambient levels at the edge of the ROW. Thus, public exposure to EMFs would be minimal, and no significant impacts from EMFs are anticipated.

3.13.1.2 Lightning Strike Hazard

TVA transmission lines are built with overhead ground wires that lead a lightning strike into the ground for dissipation. Thus, a safety zone is created under the ground wires at the top of structures and along the line, for at least the width of the ROW. The NESC is strictly followed when installing, repairing, or upgrading TVA lines or equipment. Transmission line structures are well grounded, and the conductors are insulated from the structure. Therefore, touching a structure supporting a transmission line poses no inherent shock hazard.

3.13.1.3 Transmission Structure Stability

TVA transmission lines are designed to meet standards specified by the NESC. TVA designs their transmission lines such that a risk analysis of seismic hazards specifically for transmission line construction is not necessary. NESC states that as long as the design meets the wind and ice loading conditions that would create the most effect on the line, the transmission line would provide sufficient capacity to withstand seismic loading.

Pole structures similar to those shown in Figure 2-1 would be used if a 161-kV transmission line is needed. These structures have demonstrated a good safety record. They are not prone to rot or crack like wooden poles, nor are they subject to substantial storm damage due to their low cross-section in the wind.

Laced-steel tower structures similar to those shown in Figure 2-2 would be used if a 500-kV transmission line is needed. These tower structures are the result of detailed engineering design and have been used by TVA for over 70 years with an exceptional safety record. Many structures of this type have been in service for more than 60 years with little maintenance necessary other than painting or minor repair of some of the steel members.

Additionally, all TVA transmission structures are examined visually at least once a year. Thus, the proposed structures do not pose any significant physical danger. For this reason, TVA does not typically construct barricades or fences around structures.

3.13.2 Other Impacts

No major impacts related to air quality or solid waste are expected to result from the relatively short-term activities of construction. Appendices B and C contain procedures for addressing these issues. Transmission line structures are well grounded, and the conductors are insulated from the ground. Therefore, touching a structure supporting a transmission line poses no inherent shock hazard. Additionally, TVA transmission lines are built with overhead ground wires that would lead a lightning strike into the ground for dissipation. Thus, a safety zone is

created under the ground wires at the top of structures and along a line, for at least the width of the ROW. The NESC is strictly followed when installing, repairing, or upgrading TVA lines or equipment.

3.14 Unavoidable Adverse Environmental Impacts

The following unavoidable effects would result from implementing the proposed actions as described under the Action Alternative in Section 2.1.2.

- Clearing associated with construction of the proposed transmission line could result in a small amount of localized siltation.
- Incompatible vegetation would not be permitted to grow within the transmission line ROW or to a determined height adjacent to the ROW that would endanger the transmission line. In areas where the ROW would traverse forested areas, this would cause a change in the visual character of the immediate area and would segment some forested areas.
- Clearing and construction would result in the disruption and/or loss of some plant and wildlife, and the permanent loss of about 172.2 acres of forested habitat.
- Any burning of cleared material would result in some short-term air pollution.
- ROW construction would involve tree clearing and conversion of 14.05 acres of forested wetland to emergent or scrub-shrub wetland habitat.
- The proposed transmission line would result in minor, long-term visual effects on the landscape in the immediate local area.

3.15 Relationship of Local Short-Term Uses and Long-Term Productivity

Land within the ROW of the proposed transmission line would be committed to use for electrical system needs for the foreseeable future. Some of the acreage needed to construct the transmission line would be converted from their current use of pasture, agriculture, and as forested land to use as a ROW. The proposed ROW would support the 161-kV transmission line (see Figure 1-1), with use of existing access roads outside the ROW. Agricultural uses of the ROW could and would likely continue. However, periodic clearing of the ROW would preclude forest management within the ROW for the operational life of the transmission line. These losses of long-term productivity with respect to timber production and as wildlife habitat are minor both locally and regionally.

3.16 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those uses of resources that cannot be reversed. An example is the mining and use of an ore, which once mined, cannot be replaced. Irretrievable commitments of resources are those that may occur over a period of time but that may be recovered. For example, filling a wetland area for a parking lot would irretrievably commit the property for as long as the parking lot remains.

The materials used for construction of the proposed transmission line would be committed for the life of the line. Some materials, such as ceramic insulators and concrete foundations, may be irrevocably committed, but the metals used in equipment, conductors, and supporting steel structures could be recycled. The useful life of steel-pole transmission structures or laced-steel towers is expected to be at least 60 years. Thus, recyclable materials would be irretrievably committed until they are eventually recycled.

The ROW used for the transmission line would constitute an irretrievable commitment of onsite resources, such as wildlife habitat, forest resources, and forested wetlands in that the approximate previous land use and land cover could be returned upon retirement of these facilities. In the interim, compatible uses of the ROW could continue.

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Appendix A – Coordination & Consultation Correspondence

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TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

November 7, 2023

Mr. Barry White
Director Mississippi Department of Archives and History
Historic Preservation Division
Post Office Box 571
Jackson, Mississippi 39205-0521

Dear Mr. White:

TENNESSEE VALLEY AUTHORITY (TVA) NORTH OAKLAND-COFFEEVILLE 161 KILOVOLT (kV) NEW BUILD TRANSMISSION LINE (TL), YALOBUSHA COUNTY, MISSISSIPPI (34.07959, -89.90938 TO 34.07725 -89.90420) (TVA TRACKING NUMBER – CRMS 43085715915) (MDAH Project Log #01-001-23)

In September 2022, TVA initiated consultation with your office regarding the proposal to build approximately 16.9 miles of a new single-circuit 161 kV TL. The new TL would extend from Tallahatchie Valley Electric Power Association's (TVEPA's) North Oakland 230/161-kV substation, located at the southwest corner of the intersection of Highway 51 and County Road 23 in Oakland, to TVA's Coffeeville 161-kV Substation located on County Road 212, 1.5 miles east of the intersection of County Road 426 near Coffeeville. As stated in our previous letter, a portion of the TL is within the boundaries of United States Forest Service land. Pursuant to 36 CFR § 800.2(a)(2), the USFS designated TVA as lead federal agency. TVA determined the project's area of potential effects (APE) to include the area of proposed ground disturbance, where physical effects could occur, including the approximately 16.9 mile by 100-foot-wide right of way (ROW), as well as areas within a 0.5-mile radius of the undertaking, where visual effects to above-ground (or, historic architectural) resources could occur. In a letter dated January 31, 2022, your office concurred with TVA's APE determination and methodology.

Access routes will be identified following environmental reviews of the TL corridor and survey results will be provided in a separate report. In addition, a portion of the TL ROW could not be surveyed due to lack of access. TVA has subsequently secured access and this portion of the ROW will be surveyed with the access routes.

TVA contracted with TRC Companies to conduct a Phase I cultural resources survey associated with the North Oakland-Coffeeville Transmission Line project. For your review, the resulting report titled *Tennessee Valley Authority's North Oakland-Coffeeville 161-kV Transmission Line Project, Yalobusha County, Mississippi* can be downloaded.

Archaeological Resources

TRC identified one archaeological site (22YA1009, a twentieth century artifact scatter). TRC recommends this site not eligible for the National Register of Historic Places (NRHP) because it lacks integrity and significant research potential beyond the findings of the Phase I survey.

Architectural Resources

TRC identified 29 architectural resources (HS-1 through HS-29) within the APE. TRC recommends all 29 architectural resources as ineligible for NRHP listing based on lack of integrity and/or lack of association with historic event(s)/persons and architectural distinction, and a finding of no historic properties affected is recommended.

TVA has read the enclosed report and agrees with the recommendations of the authors. TVA finds the undertaking as proposed would have no effect to 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 800.4(d)(1) we are notifying you of TVA's finding of no historic properties affected; providing the documentation specified in § 800.11(d); and inviting you to review the finding. Also, we are seeking your agreement with TVA's eligibility determinations and finding that the undertaking as currently planned will have no effects on historic properties.

If you have any questions or comments, please contact Michaelyn Harle by email, mharle@tva.gov.

Sincerely,

James W. Osborne, Jr.
Manager
Cultural Compliance

MSH:ERB
Enclosures

MDAH
MISSISSIPPI DEPARTMENT OF
ARCHIVES & HISTORY

P.O. Box 571
Jackson, MS 39205-0571
601-576-6850
mdah.ms.gov

August 22, 2024

Dr. Michaelyn Harle
Tennessee Valley Authority
400 W Summit Hill Drive
Knoxville, Tennessee 37902

RE: Addendum, Phase I Archaeological Survey, Tennessee Valley Authority's North Oakland-Coffeeville 161-kV Transmission Line Access Routes, (TVA) MDAH Project Log #07-142-24 (01-001-23), Yalobusha County

Dear Dr. Harle:

We have reviewed the June 2024, addendum, by Sean Norris, with TRC Environmental Corporation, received on July 23, 2024, for the above referenced project in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800.

After review, MDAH concurs that no historic properties will be affected by the proposed undertaking, and no further work is needed. However, before MDAH can accept the addendum report, please submit a revised draft that included Appendices A and B, as the copy provided for review did not include that information.

We look forward to receiving the revised report. Please provide Mr. Norris with a copy of this letter. If you have any questions, please contact us at (601) 576-6940.

Sincerely,

Amy D. Myers
Review and Compliance Officer

FOR: Katie Blount
State Historic Preservation Officer

MDAH
MISSISSIPPI DEPARTMENT OF ARCHIVES & HISTORY

P.O. Box 571
Jackson, MS 39205-0571
601-576-6850
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December 5, 2023

Dr. Michaelyn Harle
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902

RE: CRS TVA's North Oakland-Coffeeville 161-kV Transmission Line,
(TVA) MDAH Project Log #11-012-23, Report #23-0373, Yalobusha County

Dear Dr. Harle:

We have reviewed the September, 2023, cultural resources survey, by Sean Norris, Principal Investigator, with TRC Environmental Corporation, received on November 7, 2023, for the above referenced undertaking, pursuant to our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800.

After review, we concur that site 22Ya1009 is ineligible for listing in the NRHP. As such, we have no reservations with the undertaking.

There remains the possibility that unrecorded cultural resources may be encountered during the project. Should this occur, we would appreciate your contacting this office immediately in order that we may offer appropriate comments under 36 CFR 800.13.

Please provide a copy of this letter to Mr. Norris. If you need further information, please contact us at (601) 576-6940.

Sincerely,

Hal Bell

Hal Bell
Review and Compliance

FOR: Katie Blount
State Historic Preservation Officer

Appendix B – Transmission Environmental Protection Procedures Right-Of-Way Vegetation Management Guidelines (Rev. (9) February 2022)

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Transmission Environmental Protection Procedures
Right-Of-Way Vegetation Management Guidelines

1.0 Overview

A. The Tennessee Valley Authority (TVA) must manage the vegetation on its rights-of-way and easements to ensure emergency maintenance access and routine access to structures, switches, conductors, and communications equipment. In addition, TVA must maintain adequate clearance, as specified by the National Electrical Safety Code, between conductors and tall growing vegetation and other objects. This requirement applies to vegetation within the right-of-way (ROW) as well as to trees located off the right-of-way.

B. Each year TVA assesses the conditions of the vegetation on and along its rights-of-way. This is accomplished by aerial inspections, ground inspections, periodic field inspections, aerial photography, LiDAR data and information from TVA personnel, property owners andthe general public. TVA utilizes this data to evaluate vegetation clearances and identifies vegetation on and off ROW that does or could potentially pose a risk to reliability.

C. TVA transmission foresters develop a vegetation re-clearing plan that is specific to each line segment and is based on terrain conditions, species mix, growth, and density.

2.0 Right-of-Way Management Methods

A. TVA takes an Integrated Vegetation Management (IVM) approach that is based on a carefully planned, multi-dimensional strategy developed in consultation with forestry and habitat experts. Integrated vegetation management aims to improve safety and prevent power outages by creating healthy and self-sustaining ecosystems in ROWs while ensuring compliance with regulatory standards (NERC 2006). These ecosystems foster beneficial, attractive and low-maintenance habitat while discouraging tall, woody species and other, more benign forms of vegetation can thrive. Integrated vegetation management encourages early successional native habitats that pose less threat to power reliability yet offer safe havens for desirable plants and animals.By combining selective use of herbicides with physical removal, integrated vegetation management can more thoroughly eradicate unsuitable vegetation and allow more compatible species to fill in, making it more difficult for tall-growing trees to re-establish.

TVA executes its transmission vegetation maintenance on a 3-year cycle based on data that is acquired by various inspection methods. LiDAR, ground inspection andaerial inspection data are utilized to evaluate the next year's scheduled work to determine the annual vegetation maintenance work scope. LiDAR technology provides a detailed vegetation threat analysis that can be used to assess risk as well as prioritize vegetation management work plans. This detailed analysis supports TVA's efforts to target incompatible species as well as promote the growth of compatible vegetation. This precision management approach is effective in reducing overall environmental impact by limiting work to specific areas of incompatibility.

B. TVA uses a variety of herbicides specific to the species present with a variety of possible application techniques. The method most often implemented is selective application from the ground with backpack sprayers or vehicle-mounted sprayers. However, other techniques and methods, such as those described in section 3.0, may be utilized when circumstances dictate. Any herbicides used are applied in accordance with applicable state and federal laws and regulations. Only herbicides registered with the United States Environmental Protection Agency (USEPA) are used.

C. In very steep terrain, in sensitive environmental areas, in extensive wetlands, at stream banks, and in sensitive property owner land use areas, hand clearing may be utilized. Hand clearing is recognized as one of the most hazardous occupations documented by the Occupational Health and Safety Administration.

D. TVA does not encourage tree re-clearing by individual property owners because of the high hazard potential of hand clearing, possible interruptions of the line, and electrical safety considerations for untrained personnel that might do the work.

E. Mechanical mowers not only cut the tall saplings and seedlings on the right-of-way, it also shatters the stump and the supporting near-surface root crown. The tendency of resistant species to re-sprout from the root crown and shattered stumps can produce a multi-stem dense stand in the immediate area. Repeated use of mowers on short cycle re-clearing with many original stumps re-growing in the above manner can create a single species thicket or monoculture. With the original large root system and multiple stems, the resistant species can produce re-growth at the rate of 5-10 feet in a year. In years with high rainfall, the growth can reach 12-15 feet in a single year. These dense, monoculture stands can become nearly impenetrable for even large tractors. Such stands have low diversity, little wildlife food or nesting potential, and become a property owner concern. Selective herbicide application may be used to control monoculture stands.

3.0 Herbicide Program

A. TVA has worked with universities (such as Mississippi State University, University of Tennessee, Purdue University and others), chemical manufacturers, other utilities, U.S. Department of Transportation, U.S. Fish and Wildlife Service (USFWS), and U.S. Forest Service (USFS) personnel to explore options for vegetation control. The results have provided strong recommendations to use species-specific, low volume herbicide applications in more situations. Research, demonstrations, and other right-of-way programs show a definite improvement of rights-of-way treated with selective low-volume applications of new herbicides using a variety of application techniques and timing. Table 1 below identifies herbicides currently used on TVA rights-of-way.Table 2 identifies pre-emergent herbicides currently being used on bare ground areas on TVA rights-of-way and in substations. Table 3 identifies TGRs that may be used on tall trees that have special circumstances that require trimming on a regular cycle, e.g., restrictions on complete removal. The rates of application utilized are those listed on the U.S. Environmental Protection Agency (USEPA) approved label and consistent with utility standard practice throughout the Southeast.

Table 1 - Herbicides Currently Used on TVA Rights-of-Way

Trade Name	Active Ingredient	Label Signal Word
Accord/Accord XRT II	Glyphosate/Liquid	Caution
Arsenal	Imazapyr/Liquid/Granule	Caution
Chopper	Imazapyr/RTU	Caution
Clearstand	Imazapyr/Metsulfuron Methyl/Liquid	Caution
Escort	Metsulfuron Methyl/Dry Flowable	Caution
Garlon 4 Ultra	Triclopyr/Liquid	Caution
Habitat	Imazapyr/Liquid	Caution
Krenite S	Fosamine Ammonium	Caution
Milestone VM	Aminopyralid/Liquid	Caution
Pathfinder II	Triclopyr/RTU	Caution
Polaris	Imazapyr/Liquid	Caution
Rodeo	Glyphosate/Liquid	Caution
Roundup	Glyphosate/Liquid	Caution
Roundup Pro	Glyphosate	Caution
Stalker	Imazapyr/Liquid	Caution
Streamline	Aminocyclopyrachlor/ Metsulfuron Methyl/Liquid	Caution
Transline	Clopyralid/Liquid	Caution
Viewpoint	Imazapyr/Aminocyclopyrachlor/ Metsulfuron Methyl/Liquid	Caution

Table 2 - Pre-Emergent Herbicides Currently Used for Bare Ground Areas TVA Rights-of-Way

Trade Name	Active Ingredients	Label Signal Word
Arsenal 5G	Imazapyr/Granule	Caution
Sahara	Diuron/Imazapyr	Caution
SpraKil SK-26	Tebuthiuron/Diuron/Granules	Caution
SpraKil S-5	Tebuthiuron/Granules	Caution
Topsite	Diuron/Imazapyr	Caution

Table 3 - Tree Growth Regulators (TGRs) Currently Used on TVA Rights-of-Way

Trade Name	Active Ingredients	Label Signal Word
Profile 2SC	TGR-paclobutrazol	Caution
TGR	Flurprimidol	Caution

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B. The herbicides listed in Table 1 and 2 and TGRs listed in Table 3 have been evaluated in extensive studies in support of registration applications and label requirements. Many have been reviewed in the USFS vegetation management environmental impact statements (EISs), and those evaluations are incorporated here by reference (USFS 1989a, 1989b, 2002a, and 2002b). Electronic copies can be accessed at https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search. The result of these reviews has been a consistent finding of limited environmental impact beyond that of control of the target vegetation. All the listed herbicides have been found to be of low environmental toxicity when applied by trained applicators that are following the label and registration procedures, including prescribed measures, such as buffer zones, to protect threatened and endangered species.

C. Low volume herbicide applications are recommended since research demonstrates much wider plant diversity after such applications. There is better ground erosion protection and more wildlife food plants and cover plants develop. In most situations, there is increased development of wild flowering plants, pollinator plants and shrubs. In conjunction with herbicides, the diversity and density of low-growing plants provide control of tall-growing species through competition.

D. Herbicides are used in place of rotary mowing to avoid damage to nesting and tunneling wildlife. This method retains ground cover year around with a better mix of food species and associated high- protein insect populations for birds in the right seasons. Most also report less damage to soils (even when compared with rubber-tired equipment).

E. Best Management Practices (BMPs) governing application of herbicides are contained within *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities* (TVA 2017) which is incorporated by reference. Herbicides can be liquid, granular, or powder and can be applied aerially or by ground equipment and may be selectively applied or broadcast, depending on the site requirements, species present, and condition of the vegetation.Water quality considerations include measures taken to keep herbicides from reaching streams whether by direct application or through runoff of or flooding by surface water. "Applicators" must be trained, licensed, and follow manufacturers' label instructions, USEPA guidelines, and respective state regulations and laws.

F. When herbicides are used, their potential adverse impacts are considered in selecting the compound,formulation, and application method. Herbicides that are designated "Restricted Use" by USEPA require application by or under the supervision of applicators certified by the respective state control board. Applications are done either by TVA or by contractors in accordance with the following guidelines identified in the TVA BMP manual (TVA 2017):

1. The sites to be treated are selected and application directed by the appropriate TVA official.
2. A pre-flight walking or flying inspection is made within 72 hours prior to applying herbicides aerially. This inspection ensures that no land use changes have occurred, that sensitive areas are clearly identified to the pilot, and that buffer zones are maintained.
3. Aerial application of liquid herbicides will normally not be made when surface wind speeds exceed 5 miles per hour, in areas of fog, or during periods of temperature inversion.

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4. Pellet application will normally not be made when the surface wind speeds exceed 10 miles per hour or on frozen or water saturated soils.
5. Herbicide application should follow manufacturers' label specifications.
6. Application during unstable, unpredictable, or changing weather patterns is avoided. Equipment and techniques are used that are designed to ensure maximum control of the spray swath with minimum drift.
7. 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 any label requirements. The use of aerial or broadcast application of herbicides is not allowed within a streamside management zone (SMZ) adjacent to perennial streams, ponds, and other water sources containing sensitive aquatic resources. Hand application of aquatic use herbicides are used only selectively for use within SMZs containing sensitive aquatic resources.
8. For aerial applications, buffers and filter strips (200 feet minimum width) are maintained next to agricultural crops, gardens, farm animals, orchards, apiaries, horticultural crops, and other valuable vegetation.
9. Herbicides are not applied in the following areas or times: (a) in city, state, and national parks or forests or other special areas without written permission and/or required permits; (b) off the right-of-way; and (c) during rainy periods or during the 48-hour interval prior to rainfall predicted with a 20 percent or greater probability by local forecasters when soil active herbicides are used.

G. TVA currently uses primarily low volume applications of foliar and basal applications, e.g., Accord (Glyphosate), Arsenal (Imazapyr), Clearstand (Imazapyr/ Metsulfuron Methyl), Milestone VM (Aminopyralid) and Streamline (Aminocyclopyrachlor / Metsulfuron Methyl).

4.0 Benefits

A. Proper maintenance—including vegetation management—of the ROW and its supporting facilities is crucialto ensuring the reliable transmission of affordable electrical power. Unmanaged and poorly maintained vegetation can cause electricity outages, wildfires, soil erosion, and water quality issues. Utility companies that adopt long-term IVM approaches often benefit from significant vegetation management cost savings, which can be reflected in customer rates.

B. ROW also provides important wildlife habitats. As wildlife habitats in the United States are lost to development, these ROWs become increasingly important. The IVM approach can create natural, diverse, and sustaining ecosystems, such as a meadow transition habitat. A variety of wildlife species (including threatened and endangered species) consider these habitats home, such as butterflies, songbirds, small mammals, and deer. These habitats also encourage the growth of native plant species and can increase plant diversity.

C. Invasive and exotic species are often a problem on the ROW, and, consequently, the surrounding land. IVM techniques (such as selective herbicide application) can minimize this problem, while ensuring native and endangered species are not affected.

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5.0 References

Integrated Vegetation Management (IVM) on Rights-of-Way Fact Sheet. (2012, May) Retrieved from http://www.epa.gov/pestwise/htmlpublications/row_fact_sheet.html

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———. 2002b. Vegetation Management in the Coastal Plain/Piedmont Final Environmental Impact Statement Supplement. Southern Region Management Bulletin R8-MB-98A, October 2002. Atlanta, Ga.: USDA Forest Service.

Appendix C – Stream Crossings Along the Proposed Transmission Line and Access Roads

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Appendix C - Aquatic Resources within the Proposed North Oakland–Coffeeville 161-kV Transmission Line Project in Yalobusha County, Mississippi

Stream ID	Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
Asz002	S001	Intermittent	Category A (50,50)	Unnamed trib to Kuykendall Creek	2’ x 1’ stream. Sand gravel substrate	R4	34.07405405	-89.90886232
Asz003	S002	Perennial	Category A (50,50)	Unnamed trib to Kuykendall Creek	3’ x 2’ perennial stream. Fish present	R3	34.07134954	-89.90837392
Asz004	S003	Intermittent	Category A (50,50)	Unnamed trib to Kuykendall Creek	1’ x 1’ stream	R4	34.07103999	-89.90800091
Asz010	S004	Intermittent	Category A (50,50)	Unnamed trib to Kuykendall Creek	2’ x 1’ intermittent stream	R4	34.06608349	-89.89565847
Asz015	S005	Intermittent	Category A (50,50)	Unnamed trib to Kuykendall Creek	2’ x 1’ culverted stream.	R4	34.06458582	-89.87365841
Asc003	S006	Perennial	Category A (50,50)	Unnamed trib to Kuykendall Creek	10x20 stream. Fish present. No flow. Pools. Gravel bed.	R3	34.0630153	-89.86581662
Asc008	S007	Intermittent	Category A (50,50)	Unnamed trib to Erost Creek	5x3 bed and bank. Relic flood plain and benches. Wrack lines. Water in channel in pools.	R4	34.05724503	-89.85034778
Asc008b	S007	Perennial	Category A (50,50)	Unnamed trib to Erost Creek	Picks up flow and becomes perennial.	R3	34.05732431	-89.84842586

Stream ID	Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
Asc014	S008	Intermittent	Category A (50,50)	Unnamed trib to Erost Creek	3x2 intermittent feature w sand substrate. Water in pools but no flow. Dense cover. Strong bed and bank. No veg in channel.	R4	34.0500561	-89.83428325
Asz020	S009	Perennial	Category A (50,50)	Erost Creek	4’ x 1’ stream. Silt substrate.	R3	34.04653652	-89.82279717
Asz022	S010	Perennial	Category A (50,50)	Unnamed trib to Erost Creek	3’ x 1’ stream. Silt substrate and bed rock	R3	34.04553721	-89.81876722
Asz026	S011	Intermittent	Category A (50,50)	Unnamed trib to Erost Creek	2’ x 1’ stream. Silt substrate	R4	34.04383377	-89.81260723
Asz027	S012	Intermittent	Category A (50,50)	Unnamed trib to Erost Creek	1’ x 1’ intermittent	R4	34.04371707	-89.81242487
Asz029	S013	Perennial	Category A (50,50)	Unnamed trib to Tilltoba Creek	3’ x 1’ stream. Silt substrate	R3	34.04177686	-89.80573789
Asz030	S014	Intermittent	Category A (50,50)	Unnamed trib to Tilltoba Creek	1’ x 1’ intermittent	R4	34.04163924	-89.80551546
Asz033	S015	Intermittent	Category A (50,50)	Unnamed trib to Tilltoba Creek	1’ x 1’ intermittent	R4	34.03963105	-89.79800115
Asz034	S016	Perennial	Category A (50,50)	Unnamed trib to Tilltoba Creek	8’ x 2’ stream. Fish present	R3	34.03953013	-89.79785513

Stream ID	Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
Asz037	S017	Intermittent	Category A (50,50)	Unnamed trib to Tilltoba Creek		R4	34.03713776	-89.79126073
Asz043	S018	Perennial	Category A (50,50)	Cypress Creek	5’ x 1’ stream. Perennial. Sand and gravel substrate.	R3	34.03413457	-89.78004609
Asz044	S019	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	4’ x 1’ stream. Sand and gravel substrate	R3	34.03306163	-89.77715829
Asz045	S020	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	3’ x 1’ stream. Sand and gravel substrate	R3	34.03306864	-89.77690553
Asz047	S021	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	3’ x 1’ stream. Sand and gravel substrate	R3	34.0316589	-89.77207086
Asz048	S022	Intermittent	Category A (50,50)	Unnamed trib to Cypress Creek	1’ x 1’ stream	R4	34.03129445	-89.76859624
Asz050	S023	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	6’ x 3’ stream. Fish present	R3	34.03082365	-89.7658885
Asz053	S024	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	5’ x 2’ stream. Fish present	R3	34.03027022	-89.76363898
Asc016	S025	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	5x5 unnamed trib to cypress creek. sand and gravel substrate. Flow in channel. Fish present	R3	34.02892935	-89.75825754

Stream ID	Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
Asc018	S026	Intermittent	Category A (50,50)	Unnamed trib to Cypress Creek	2x2 ephemeral section. Unnamed trib to cypress creek.	R4	34.02850666	-89.7572436
Asc017	S026	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	3x2. Sand and gravel substrate. Fish present. Trib to asc16	R3	34.02875326	-89.75802187
Asc017b	S026	Intermittent	Category A (50,50)	Unnamed trib to Cypress Creek	Intermittent section of asc17	R4	34.02868671	-89.75781593
Asc021	S027	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	2x2 unnamed trib to Cypress Creek. Sand and gravel substrate. Flow in channel. Algae. Strong bed and bank. Subsurface flow going into channel.	R3	34.02856594	-89.75143154
Asc022	S028	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	5x3. Gravel and sand substrate Water in channel. Flow.	R3	34.02808561	-89.7494174
Asc023	S029	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	10x10. Gravel substrate. Flow. Spring influence.	R3	34.02700756	-89.7456585
Asc027	S030	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	3x2 Gravel and sand substrate. Flow in channel. Braids out in valley.	R3	34.02408028	-89.73922132
Asc029	S031	Perennial	Category A (50,50)	Unnamed trib to Cypress Creek	10x5 Sand substrate. Flow in channel	R3	34.02192222	-89.73456355

Stream ID	Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
Asc033	S032	Intermittent	Category A (50,50)	Unnamed trib to Cypress Creek	10x30 deeply eroded feature with ground water connection.	R4	34.0195103	-89.7293962
Asc031	S032	Intermittent	Category A (50,50)	Unnamed trib to Cypress Creek	2x2 Strong Bed and bank natural valley. Water in channel. Amphibians	R4	34.02067239	-89.73205769
Asc032	S033	Intermittent	Category A (50,50)	Unnamed trib to Cypress Creek	2x2 Strong Bed and bank natural valley. Water in channel. Frequent grade controls and wrack lines	R4	34.02056798	-89.73179943
Asc035	S034	Perennial	Category A (50,50)	Unnamed Trib to Durden Creek	2x10 Flow. Relic floodplain. Strong bed and bank.	R3	34.01646296	-89.71779248
Asc037	S035	Perennial	Category A (50,50)	Unnamed Trib to Durden Creek	3x10 Algae, flow strong bed and bank and sorting. Sandy silt substrate. Upstream terminus is an underground spring	R3	34.0152688	-89.71391835
Asc038	S036	Perennial	Category A (50,50)	Unnamed Trib to Durden Creek	10x10. Mud and bedrock substrate. Deep pools	R3	34.01361634	-89.70811926
Asc039	S037	Intermittent	Category A (50,50)	Unnamed Trib to Durden Creek	3x10 Sand substrate. Strong bed and bank. Wrack lines. Relic flood plain. Crayfish and algae.	R4	34.01292984	-89.70667808

Stream ID	Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
Asc040	S038	Perennial	Category A (50,50)	Unnamed Trib to Durden Creek	10x5 Sand substrate. Strong bed and bank. Wrack lines. Relic flood plain. Crayfish and algae. Emergent aquatic veg.	R3	34.00954294	-89.70019695
Asz073	S039	Perennial	Category A (50,50)	Unnamed Trib to Durden Creek	5’ x 1’ perennial stream	R3	34.00493236	-89.69270594
Asz072	S040	Intermittent	Category A (50,50)	Unnamed Trib to Durden Creek	1’ x 1’ intermittent stream	R4	34.00410818	-89.69209119
Asz071	S041	Perennial	Category A (50,50)	Unnamed trib to Durden Creek	5’ x 1’ perennial stream	R3	33.99723629	-89.68592919
Asz067	S042	Intermittent	Category A (50,50)	Unnamed Trib to Durden Creek	2’ x 1’ stream/ag field drain	R4	33.98772344	-89.6765028
Asz066	S043	Perennial	Category A (50,50)	Unnamed Trib to Durden Creek	25’ x 5’. Durden Creek.	R3	33.98788463	-89.67455301
Asz066	S044	Perennial	Category A (50,50)	Unnamed Trib to Durden Creek	2’ x 2’ stream. Fish present	R3	33.98772344	-89.67366633
Asz063	S045	Intermittent	Category A (50,50)	Unnamed Trib to Durden Creek	2’ x 1’ stream. Drains from pond	R4	33.98906807	-89.66631817

Stream ID	Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
Asz064	S046	Intermittent	Category A (50,50)	Unnamed Trib to Durden Creek	2’ x 1’ stream.	R4	33.98867032	-89.66612426
Asz059	S047	Perennial	Category A (50,50)	Unnamed trib to Durden Creek	4’ x 1’ stream. Fish present	R3	33.99033217	-89.66095183
Asz058	S048	Intermittent	Category A (50,50)	Unnamed Trib to Durden Creek	2’ x 1’ intermittent stream.	R4	33.99074473	-89.65919685
Asz057	S049	Perennial	Category A (50,50)	Unnamed trib to Moreland Creek	5’ x 2’ stream. Fish present	R3	33.99125429	-89.65715708
Asc011	P001	Pond	Category A (50,50)		Large forested pond.	POW	34.05232273	-89.83903912
Asc015	P002	Pond	Category A (50,50)		Small forested pond in ROW	POW	34.04973055	-89.8337004
Asz039	P003	Pond	Category A (50,50)		Pond	POW	34.03602609	-89.78844473
Asz049	P004	Pond	Category A (50,50)		Pond	POW	34.03086874	-89.76614109
Asz055	P005	Pond	Category A (50,50)		Pond	POW	34.02969175	-89.76061913
Asc024	P006	Pond	Category A (50,50)		Forested pond in row	POW	34.0263357	-89.74435862
Asz070	P007	Pond	Category A (50,50)		Pond	POW	33.99306919	-89.68192959
Asz062	P008	Pond	Category A (50,50)		Pond	POW	33.98965747	-89.66522597
Asc024	P006	Pond	Category A (50,50)		Forested pond in row	POW	34.0263357	-89.74435862

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Appendix D – Bat Strategy Project Screening Form

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

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

Project Name: North Oakland-Coffeeville 161kV TL **Date:** Nov 3, 2022

Contact(s): Jessica Lyon **CEC#:** **Project ID:** 490086

Project Location (City, County, State): Coffeeville, MS, Yalobusha County

Project Description:

TVA to build 16.9-miles new single-circuit 161-kV transmission line from Tallahatchie Valley Electric Power Association's (EPA's) North Oakland 230/161-kV Station to TVA's Coffeeville, MS 161-kV Station. The line would be built using single-pole, steel structures centered on new 100-foot-wide right of way.

SECTION 1: PROJECT INFORMATION – ACTION AND ACTIVITIES

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

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

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

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

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

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

TABLE 2. Activities not likely to adversely affect bats with implementation of conservation measures. Conservation measures and completion of bat strategy project review form REQUIRED; review of bat records in proximity to project NOT required.		
■ 18. Erosion control, minor	☐ 57. Water intake - non-industrial	☐ 79. Swimming pools/associated equipment
☐ 24. Tree planting	☐ 58. Wastewater outfalls	☐ 81. Water intakes – industrial
☐ 30. Dredging and excavation; recessed harbor areas	☐ 59. Marine fueling facilities	☐ 84. On-site/off-site public utility relocation or construction or extension
☐ 39. Berm development	☐ 60. Commercial water-use facilities (e.g., marinas)	☐ 85. Playground equipment - land-based
☐ 40. Closed loop heat exchangers (heat pumps)	☐ 61. Septic fields	☐ 87. Aboveground storage tanks
☐ 45. Stream monitoring equipment - placement and use	☐ 66. Private, residential docks, piers, boathouses	☐ 88. Underground storage tanks
☐ 46. Floating boat slips within approved harbor limits	☐ 67. Siting of temporary office trailers	☐ 90. Pond closure
■ 48. Laydown areas	☐ 68. Financing for speculative building construction	☐ 93. Standard License
☐ 50. Minor land based structures	☐ 72. Ferry landings/service operations	☐ 94. Special Use License
☐ 51. Signage installation	☐ 74. Recreational vehicle campsites	☐ 95. Recreation License
☐ 53. Mooring buoys or posts	☐ 75. Utility lines/light poles	☐ 96. Land Use Permit
■ 56. Culverts	☐ 76. Concrete sidewalks	

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

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

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

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

a) Will project involve continuous noise (i.e., ≥ 24 hrs) that is greater than 75 decibels measured on the A scale (e.g., loud machinery)?
- (●) **NO** (NV2 does not apply)
- ( ) **YES** (NV2 applies, subject to records review)

b) Will project involve entry into/survey of cave?
- (●) **NO** (HP1/HP2 do not apply)
- ( ) **YES** (HP1/HP2 applies, subject to review of bat records)

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

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

d) Will the project involve vegetation piling/burning?
- (●) **NO** (SSPC4/ SHF7/SHF8 do not apply)
- ( ) **YES** (SSPC4/SHF7/SHF8 applies, subject to review of bat records)

e) If **tree removal (activity 33 or 34)**, estimated amount: [126] (●) **ac** ( ) **trees** ( ) **N/A**

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

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

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

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

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

( ) **YES** (●) **NO** (Go to Step 13)

Info below completed by:
- ☐ **Heritage Reviewer** (name) [ ] Date [ ]
- ☐ **OSAR Reviewer** (name) [ ] Date [ ]
- ■ **Terrestrial Zoologist** (name) [Jesse Troxler] Date [Oct 31, 2022]

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

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

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

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

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

Bat Habitat Inspection Sheet completed? (●) **NO** ( ) **YES**

Amount of SUITABLE habitat to be removed/burned (may differ from STEP 4e): [70.9] (●) **ac** ( ) **trees)*** ( ) **N/A**

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

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

No records known. USDA FS Regional Foresters Sensitive Species List includes tricolored bat as confirmed on Holly Springs NF.

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

STEP 7) Project will involve:

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

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

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

STEP 10) Project ◉ **WILL** ○ **WILL NOT** require use of Incidental Take in the amount of 70.9 ○ **acres or** ○ **trees** proposed to be used during the ■ **WINTER** ■ **VOLANT SEASON** ○ **NON-VOLANT SEASON** ○ **N/A**

STEP 11) Available Incidental Take (prior to accounting for this project) as of Aug 4, 2023

TVA Action	Total 20-year	Winter	Volant Season	Non-Volant Season
8 Expand or Construct New Electric Transmission Assets	7,513.98	4,819.18	1,415.72	1,279.1

STEP 12) Amount contributed to TVA's Bat Conservation Fund upon activity completion: $ 35,450 OR ○ **N/A**

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

SECTION 3: REQUIRED CONSERVATION MEASURES

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

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

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

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

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

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

Manual Override

Name: Jesse Troxler

Check if Applies to Project	Activities Subject To Conservation Measure	Conservation Measure Description
		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.
		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.
		TR4* – Removal of suitable summer roosting habitat within potential habitat for Indiana bat or northern long-eared bat will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
		TR9 - If removal of suitable summer roosting habitat occurs when bats are present on the landscape, a funding contribution (based on amount of habitat removed) towards future conservation and recovery efforts for federally listed bats would be carried out. Project can consider seasonal bat presence/absence surveys (mist netting or emergence counts) that allow for positive detections without resulting in increased constraints in cost and project schedule. This will enable TVA to contribute to increased knowledge of bat presence on the landscape while carrying out TVA's broad mission and responsibilities.

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

	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: 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: • Plan clearing, grading, and construction to minimize area and duration of soil exposure. • Maintain existing vegetation wherever and whenever possible. • Minimize disturbance of natural contours and drains. • As much as practicable, operate on dry soils when they are least susceptible to structural damage and erosion. • 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. • Divert runoff away from disturbed areas. • Provide for dispersal of surface flow that carries sediment into undisturbed surface zones with high infiltration capacity and ground cover conditions. • Prepare drainage ways and outlets to handle concentrated/increased runoff. • Minimize length and steepness of slopes. Interrupt long slopes frequently. • Keep runoff velocities low and/or check flows. • Trap sediment on-site. • Inspect/maintain control measures regularly & after significant rain. • Re-vegetate and mulch disturbed areas as soon as practical. o Specific guidelines regarding sensitive resources and buffer zones: • Extra precaution (wider buffers) within SMZs is taken to protect stream banks and water quality for streams, springs, sinkholes, and surrounding habitat. • 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. • 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).
	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.
	L1 – Direct temporary lighting away from suitable habitat during the active season.
	L2 – Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution when installing new or replacing existing permanent lights by angling lights downward or via other light minimization measures (e.g., dimming, directed lighting, motion-sensitive lighting).

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

Hide All Unchecked Conservation Measures

◉ HIDE

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

○ UNHIDE

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

◉ HIDE

○ UNHIDE

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

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

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

Jessica Lyon (name) is (or will be made) aware of the requirements below.

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

For Use by Terrestrial Zoologist Only

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

☐ For projects that require use of Take and/or contribution to TVA's Bat Conservation Fund, Terrestrial Zoologist acknowledges that Project Lead/Contact has been informed that project will result in use of Incidental Take 70.9 ○ ac ○ trees and that use of Take will require $ 35,450 contribution to TVA's Conservation Fund upon completion of activity (amount entered should be $0 if cleared in winter).

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

Appendix E – Wetlands Information

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Wetland Areas Located within Proposed North Oakland-Coffeeville 161-kV Transmission Line Right-of-Ways

Wetland Identifier	Wetland Type[1]	TVARAM[2] Functional Capacity (score)	Wetland Acreage within the Project Area
W001	PEM	Low (14)	0.00
W002	PEM	Low (14)	0.00
W003	PEM	Low (19)	0.02
W004	PEM	Low (27)	0.10
W005	PEM	Moderate (32)	0.00
W006	PFO	Moderate (41)	0.38
W007	PEM	Moderate (35)	0.00
W008	PEM	Moderate (35)	0.00
W009	PFO	Moderate (55)	0.41
W010	PFO	Moderate (53)	0.00
W011	PFO	Moderate (37.5)	0.08
W012	PFO	Moderate (40)	0.23
W013	PFO	Moderate (44)	0.22
W014	PFO	Moderate (50)	1.34
W015	PEM	Moderate (36)	0.42
W016	PFO	Moderate (41.5)	0.26
W017	PSS	Moderate (42)	0.04
W018	PSS	Moderate (47)	0.18
W019	PSS	Moderate (47)	0.09
W020	PFO	Moderate (54)	0.58
W021	PEM	Moderate (53)	0.91
W022	PFO	Moderate (51)	0.23
W023	PEM	Moderate (43)	0.16
W024	PEM	Moderate (53)	0.13
W025	PFO	Superior (67)	0.41
W026	PFO	Moderate (33)	0.00
W027	PFO	Moderate (41)	0.02
W028	PFO	Moderate (34)	0.01
W029	PFO	Moderate (43)	0.05
W030	PFO	Moderate (43)	0.75
W031	PFO	Moderate (42)	0.39
W032	PRO	Moderate (47)	0.35
W033	PFO	Moderate (48)	0.42

Wetland Identifier	Wetland Type[1]	TVARAM[2] Functional Capacity (score)	Wetland Acreage within the Project Area
W034	PFO	Moderate (43)	0.25
W035	PFO	Low (17)	0.32
W036	PFO	Moderate (41)	0.25
W037	PEM/PFO	Low (29)	0.34
W038	PEM/PFO	Moderate (34)	0.18
W039	PFO	Moderate (59)	0.52
W040	PFO	Superior (82)	3.10
W041	PEM	Moderate (48)	0.06
W042	PFO	Moderate (54)	2.09
W043	PFO	Moderate (57)	0.58
		Total Acres	**15.85**

[1]Classification codes as defined in Cowardin et al. (1979): SS=Scrub Shrub; EM=Emergent; FO=Forested; P=Palustrine.

[2]TVARAM = TVA Rapid Assessment Method that categorizes wetland quality by their functional capacity

Action Alternative Wetlands Impacts on the North Oakland-Coffeeville 161-KV TL Project

Wetland Identifier	Impact Type	Acreage of Scrub-Shrub/Forested Wetland Clearing	Acreage of Emergent Wetland Impacts in Access Road	Acreage of Wetland Fill for Structure Installation
W001	Avoid	-	0.00	-
W002	Avoid	-	0.00	-
W003	Avoid	-	0.00	-
W004	Temporary Access	-	0.02	-
W005	Avoid	-	0.00	-
W006	Clearing for TL Construction	0.38	-	-
W007	Avoid	-	0.00	-
W008	Avoid	-	0.00	-
W009	Clearing for TL Construction	0.41	-	-
W010	Clearing for TL Construction	0.00	-	-
W011	Clearing for TL Construction	0.08	-	-
W012	Clearing for TL Construction	0.23	-	-
W013	Clearing for TL Construction	0.22	-	-
W014	Clearing for TL Construction	1.34	-	-
W015	Avoid	-	0.00	-
W016	Clearing for TL Construction	0.26	-	-
W017	Clearing for TL Construction	0.04	-	-
W018	Clearing for TL Construction	0.18	-	-
W019	Clearing for TL Construction	0.09	-	-
W020	Clearing for TL Construction	0.58	-	-
W021	Temporary Access	-	0.38	-
W022	Clearing for TL Construction	0.23	-	-
W023	Avoid	-	0.00	-
W024	Temporary Access	-	0.07	-

Wetland Identifier	Impact Type	Acreage of Scrub-Shrub/Forested Wetland Clearing	Acreage of Emergent Wetland Impacts in Access Road	Acreage of Wetland Fill for Structure Installation
W025	Clearing for TL Construction	0.41	-	-
W026	Clearing for TL Construction	0.001	-	-
W027	Clearing for TL Construction	0.02	-	-
W028	Clearing for TL Construction	0.01	-	-
W029	Clearing for TL Construction	0.05	-	-
W030	Clearing for TL Construction	0.75	-	-
W031	Clearing for TL Construction	0.39	-	-
W032	Clearing for TL Construction	0.35	-	-
W033	Clearing for TL Construction	0.42	-	-
W034	Clearing for TL Construction	0.25	-	-
W035	Clearing for TL Construction	0.32	-	-
W036	Clearing for TL Construction	0.25	-	-
W037	Clearing for TL Construction	0.34	-	-
W038	Clearing for TL Construction	0.18	-	-
W039	Clearing for TL Construction	0.52	-	-
W040	Clearing for TL Construction, STR Installation	3.10	-	0.003
W041	Temporary Access	-	0.04	-
W042	Clearing for TL Construction, STR Installation	2.09	-	0.006
W043	Clearing for TL Construction	0.58	-	-
	Total Acres	**14.06**	**0.51**	**0.009**

Appendix F – Noise During Transmission Line and Substation Construction and Operation

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Appendix F - Noise During Transmission Line

At high levels, noise can cause hearing loss; at moderate levels, noise can interfere with communication, disrupt sleep, and cause stress; and at low levels, noise can cause annoyance. Noise is measured in decibels (dB), a logarithmic unit, so an increase of 3 dB is just noticeable, and an increase of 10 dB is perceived as a doubling of sound level. Because not all noise frequencies are perceptible to the human ear, A-weighted decibels (dBA), which filter out sound in frequencies above and below human hearing, are typically used in noise assessments.

Both the U.S. Environmental Protection Agency (USEPA) and the Department of Housing and Urban Development (HUD) have established noise guidelines. USEPA guidelines are based on an equivalent day/night average sound level (DNL), which is a 24-hour average sound level with 10 dB added to hours between 10 p.m. and 7 a.m., since people are more sensitive to nighttime noise. USEPA recommends a guideline of DNL less than 55 dBA to protect the health and well-being of the public with an adequate margin of safety. HUD guidelines use an upper limit DNL of 65 dBA for acceptable residential development and an upper limit DNL of 75 dBA for acceptable commercial development. TVA generally uses the USEPA guideline of 55 dBA DNL at the nearest residence and 65 dBA at the property line in industrial areas to assess the noise impact of a project. In addition, TVA considers the Federal Interagency Committee on Noise (FICON) 1992 recommendation that a 3-dB increase indicates possible impact, requiring further analysis when the existing DNL is 65 dBA or less.

Annoyance from noise is highly subjective. The FICON used population surveys to correlate annoyance and noise exposure (FICON 1992). Table F-1 gives estimates of the percentage of typical residential populations that would be highly annoyed from a range of background noise and the average community reaction description that would be expected.

Table F-1. Estimated Annoyance from Background Noise (FICON 1992)

Day/Night Level (dBA)	Percent Highly Annoyed	Average Community Reaction
75 and above	37	Very severe
70	25	Severe
65	15	Significant
60	9	Moderate
55 and below	4	Slight

For comparative purposes, typical background DNLs for rural areas range from about 40 dBA in undeveloped areas to 48 dBA in mixed residential/agricultural areas (Cowan 1993). Noise levels are typically higher in higher-density residential and urban areas. Background noise levels greater than 65 dBA can interfere with normal conversations, requiring people to speak in a raised voice to carry on a normal conversation.

Construction Noise

Construction noise impacts would vary with the number and specific types of equipment on the job, the construction methods, the scheduling of the work, and the distance to sensitive noise receptors such as houses. Typical construction activities for a transmission line are described in Section 2.2. Maximum noise levels generated by the various pieces of construction equipment typically range from about 70 to 85 dBA at 50 feet (Bolt et al. 1971). An exception would be the use of track drills for building roads and installing foundations in rocky areas; track drills have a typical maximum noise level of 98 dBA at 50 feet. Use of track drills is not expected to be widespread.

Project-related construction noise levels would likely exceed background noise levels by more than 10 dBA at distances from within 500 feet in developed areas to over 1,000 feet in rural areas with little development. These distances are without the use of track drills; drilling activities could increase the distances by an additional 500 feet. A 10-dBA increase would be perceived as a large increase over the existing noise level and could result in annoyance to adjacent residents. The residential noise level guideline of 55 dBA could also be temporarily exceeded for residences near construction activities.

Construction activities would be limited to daylight hours. Because of the sequence of construction activities, construction noise at a given point along the transmission line connections would be limited to a few periods of a few days each. Construction of the substation would take longer, although it would still be limited in duration. The temporary nature of construction would reduce the duration of noise impacts on nearby residents.

Operational Noise

Transmission lines can produce noise from corona discharge, which is the electrical breakdown of air into charged particles. Corona noise is composed of both broadband noise, characterized as a crackling noise, and pure tones, characterized as a humming noise. Corona noise is greater with increased voltage and is also affected by weather. It occurs during all types of weather when air ionizes near irregularities, such as nicks, scrapes, dirt, and insects on the conductors. During dry weather, the noise level is low and often indistinguishable off the ROW from background noise. In wet conditions, water drops collecting on the conductors can cause louder corona discharges.

For 500-kV transmission lines, this corona noise when present, is usually about 40-55 dBA. The maximum recorded corona noise has been 60-61 dBA (TVA unpublished data). During rain showers, the corona noise would likely not be readily distinguishable from background noise. During very moist, non-rainy conditions, such as heavy fog, the resulting small increase in the background noise levels is not expected to result in annoyance to adjacent residents. The substation would also produce similar levels of noise from corona discharge, although it is not expected to cause annoyance to nearby residents.

Transformers at the substation would generally operate in self-cooled mode; although a few days a year during extreme temperatures, transformers would operate in fan-cooled mode. When fans are used, they would generate approximately 85 dB at 3 feet. This is not expected to be audible over background noise at nearby residences.

Periodic maintenance activities, particularly vegetation management, would produce noise comparable to that of some phases of transmission line construction. This noise, particularly from bush-hogging or helicopter operation, would be loud enough to cause some annoyance. It would, however, be of very short duration and very infrequent occurrence.

Literature Cited

Bolt, Beranek, and Newman Inc. 1971. Noise From Construction Equipment and Operations, Building Equipment, and Home Appliances. U.S. Environmental Protection Agency Report NTID300.1. Protection Agency Report NTID300.1.

Cowan, J. P. 1993. Handbook of Environmental Acoustics. Wiley, New York.

Federal Interagency Committee on Noise (FICON). 1992. Federal Agency Review of Selected Airport Noise Analysis Issues. Fort Walton Beach, Fla.: Spectrum Sciences and Software Inc.

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Appendix G – Habitat Requirements of Federally and State-Listed Terrestrial Animal Species Known from Areas Crossed by the Proposed Transmission Line

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Monarch butterflies are a highly migratory species, with eastern United States populations overwintering in Mexico. Summer breeding habitat in the US requires milkweed plant species, on which adults exclusively lay eggs for larvae to develop and feed on. Adults will drink nectar from other blooming wildflowers when milkweeds are not in bloom. Monarch butterflies have been confirmed to be present on Holly Springs Ranger District (Appendix K). Suitable early successional habitat is present in the proposed ROW. Monarch butterflies are proposed for federal listing as threatened.

Webster's salamanders are found under logs, bark, and leaf litter in hardwood forests bordering feeder streams or steep, moist forests with rock outcrops. Hardwood forests occupy approximately four percent of habitat in the proposed ROW (8.3 acres) and some of these areas contain streams. This species is listed as potentially present within the Holly Springs Ranger District (Appendix K).

Alligator snapping turtles are proposed as threatened by USFWS. This highly aquatic reptile emerges from water only for nesting, and rarely for basking. This species is restricted to river and stream drainages which flow into the Gulf of Mexico. These turtles are found in floodplain swamps and oxbow lakes associated with large rivers but do not occur in isolated wetlands and ponds. Most nesting occurs May-July. USFWS has determined that alligator snapping turtles may occur in Yalobusha County, Mississippi but no suitable habitat was observed in the proposed project area during field surveys.

Bachman's sparrows inhabit dry, open woods, especially pines. This state-listed species used to thrive in longleaf pine forests found all over the southeastern U.S. Due to conversion of this type of forest for timber harvest and development, as well as fire suppression, much of the habitat for this species is gone. With the loss of longleaf pine forests, the species has also adapted to use brushy, open fields which are present in the proposed project area. Bachman's sparrows have been confirmed to be present within the Holly Springs Ranger District (Appendix K).

Louisiana black bears are a subspecies primarily associated with forested wetlands; however, they utilize a variety of other habitat types, including scrub-shrub, marsh, spoil banks, and upland forests. They normally den from December through April and preferred den sites include large, hollow trees (36 inches or more in diameter at breast height) with sufficiently sized openings that allow access to interior cavities. Due to recovery, the Louisiana black bear was officially removed from the list of endangered and threatened species in 2016; critical habitat designation for this subspecies has also been withdrawn. Because the Louisiana black bear is no longer protected under the ESA, consultation with the USFWS is not required for this subspecies. Suitable habitat is abundant in the project area and this subspecies has been confirmed to be present within the Holly Springs Ranger District (Appendix K).

Southeastern myotis in Mississippi generally uses buildings, structures, and large hollow bottomland hardwood trees for spring/summer roosts. By winter in this region, these bats roost in small groups in outdoor sites, often over water, such as bridges, culverts, storm sewers, boat houses, and in hollow trees. This species forages in riparian floodplain forests and wooded wetlands that are adjacent to permanent open water, including lakes, ponds, and slow-moving streams. Suitable roosting and foraging habitat is present in small quantities within the project area and southeastern myotis are potentially present within the Holly Springs Ranger District (Appendix K).

Rafinesque's big-eared bats roost in hollow trees, abandoned buildings, under bridges, or in culverts near wooded areas in summer. Males are usually solitary during summer, roosting in buildings or hollow trees. This species is believed to be non-migratory, hibernating near their summer foraging grounds. Hibernacula in Mississippi are typically hollow trees or dilapidated buildings. One dilapidated shed was present during field surveys, but no bat sign was present. Rafinesque's big-eared bats forage in mature forest in both upland and lowland areas, and along permanent water bodies, especially rivers. Suitable roosting and foraging habitat is abundant within the project area. This species is potentially present within the Holly Springs Ranger District (Appendix K).

Tricolored bats roost in trees among clumps of live and dead leaves, in tree cavities, caves, mines, buildings, bridges, and rock crevices in summer. In the winter they roost in caves, mines, or other cave-like structures including box culverts and dams. They forage in forested areas and over water. This species is known throughout the TVA region but has seen dramatic population declines in recent years due to the introduction of a novel fungus that causes white-nose syndrome. USFWS has proposed this species for listing as endangered. One dilapidated shed was observed in the proposed ROW but no bat sign was present. No other structures were present. Suitable forest habitat is abundant within the project area and tricolored bats have been confirmed present within the Holly Springs Ranger District (Appendix K). Assessment of the project area for presence of summer roosting habitat for the tricolored bat followed USFWS survey guidelines (USFWS 2023) and resulted in the identification of approximately 130.7 suitable acres. Tricolored bats are proposed for federal listing as endangered.

The northern long-eared bat predominantly overwinters in large hibernacula, such as caves and abandoned mines. During the fall and spring, this federally endangered species utilizes entrances of caves and surrounding forested areas for swarming and staging. There are no documented caves within 3 miles of the project area, and none were observed during field surveys. In the summer, northern long-eared bats roost individually or in colonies beneath exfoliating bark or in crevices of both live and dead trees greater than 3 inches in diameter. This species is also known to roost in abandoned buildings and under bridges. Northern long-eared bats emerge at dusk to forage below the canopy of mature forests on hillsides and roads, and occasionally over forest clearings and along riparian areas. All of these habitat types are abundant within the proposed project area. Assessment of the project area for presence of summer roosting habitat for the northern long-eared bat followed USFWS survey guidelines (USFWS 2023) and resulted in the identification of 35 suitable forested areas, totaling 71.9 acres. USFWS has determined that northern long-eared bats may occur in Yalobusha County, Mississippi although no records are known.

Literature Cited

U.S. Fish and Wildlife Service. 2023. Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines. U.S. Fish and Wildlife Service, Region 3, Bloomington, MN.

Appendix H – Floodplains

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North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains

NOakland-Coffeeville_ASCL
NOakland-Coffeeville_AccessRoads
FIRM Panels

Flood Hazard Boundaries
Limit Lines
NP
SFHA / Flood Zone Boundary
Flowage Easement Boundary

Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
Area with Risk Due to Levee
River Miles
States
Counties

0 0.13 0.25 0.5 Miles

N

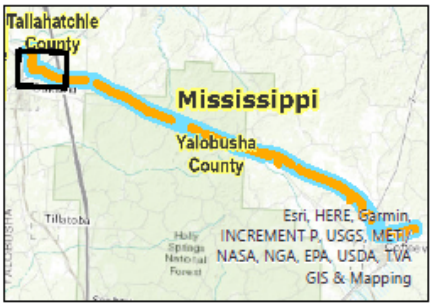


Figure 1 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains

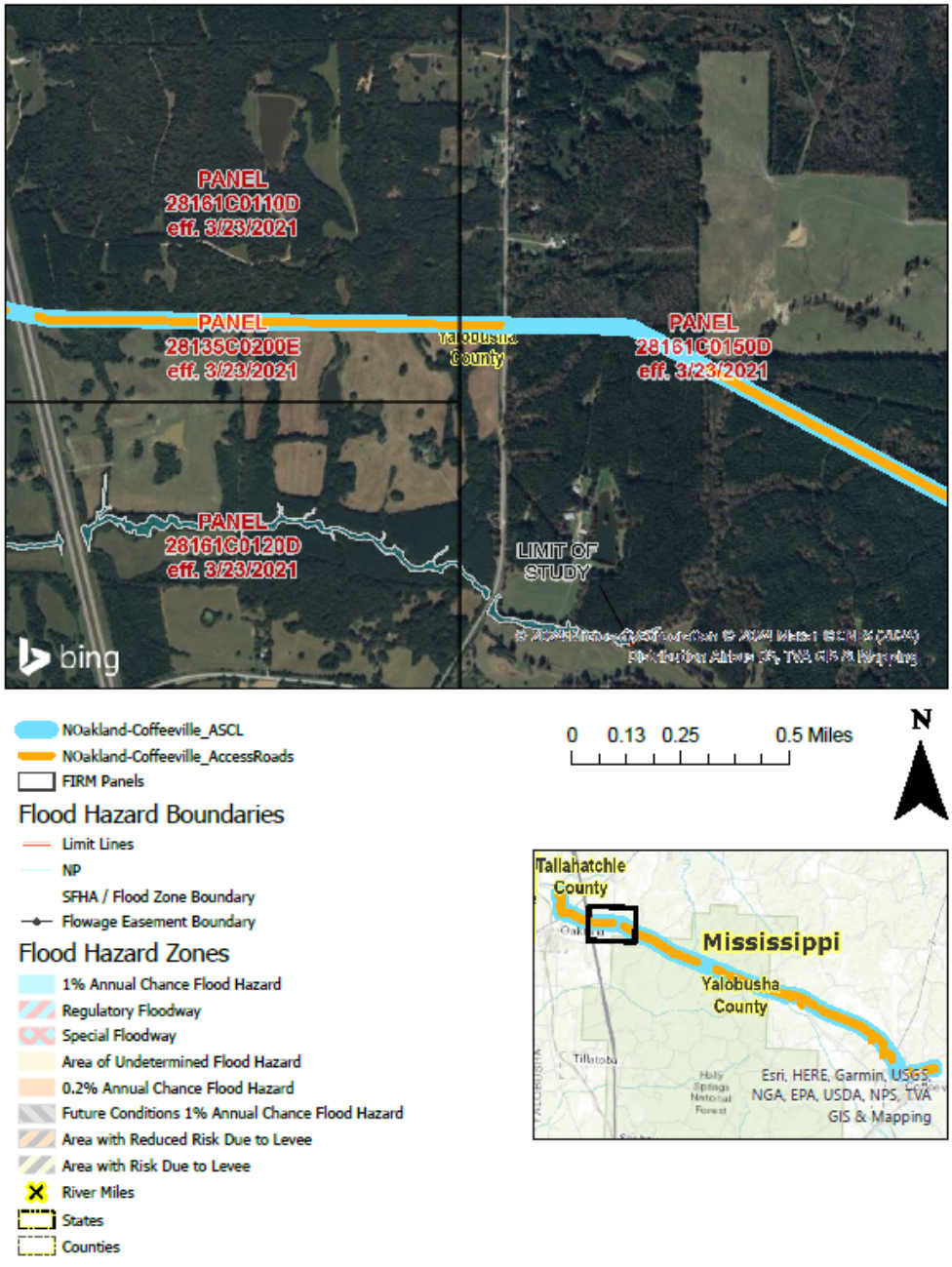
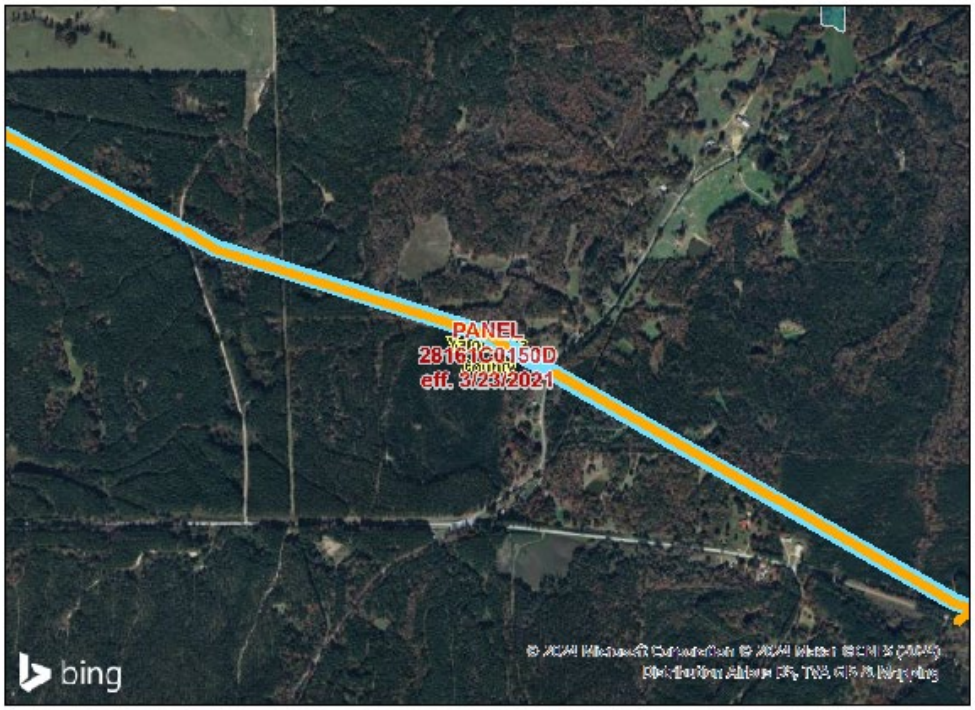


Figure 2 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains



NOakland-Coffeeville_ASCL
NOakland-Coffeeville_AccessRoads
FIRM Panels

Flood Hazard Boundaries
Limit Lines
NP
SFHA / Flood Zone Boundary
Flowage Easement Boundary

Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
Area with Risk Due to Levee
River Miles
States
Counties

0 0.13 0.25 0.5 Miles

N

Figure 3 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

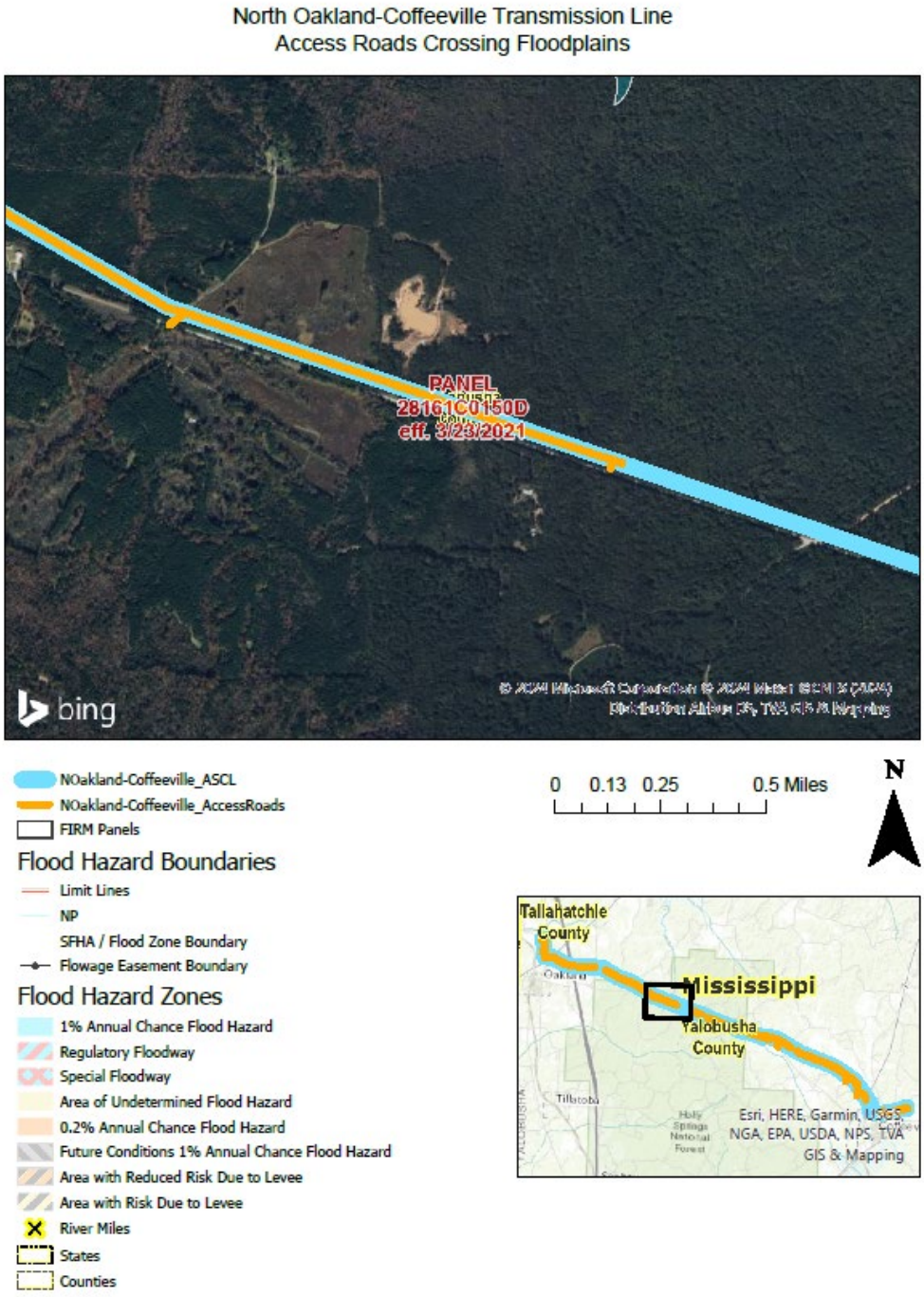
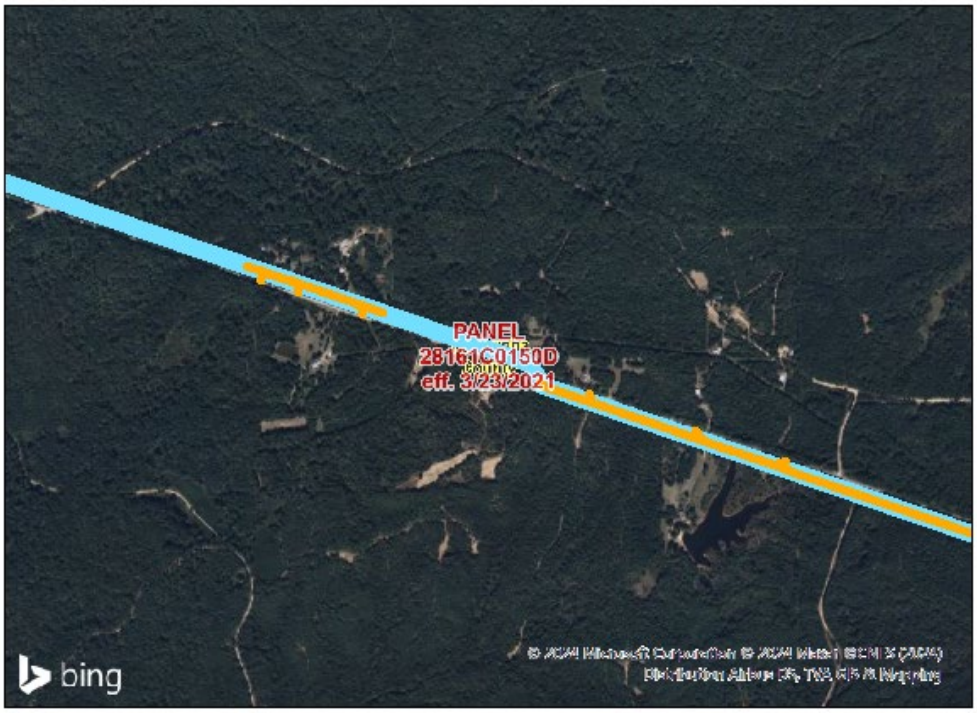


Figure 4 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains



NOakland-Coffeeville_ASCL
NOakland-Coffeeville_AccessRoads
FIRM Panels

Flood Hazard Boundaries
Limit Lines
NP
SFHA / Flood Zone Boundary
Flowage Easement Boundary

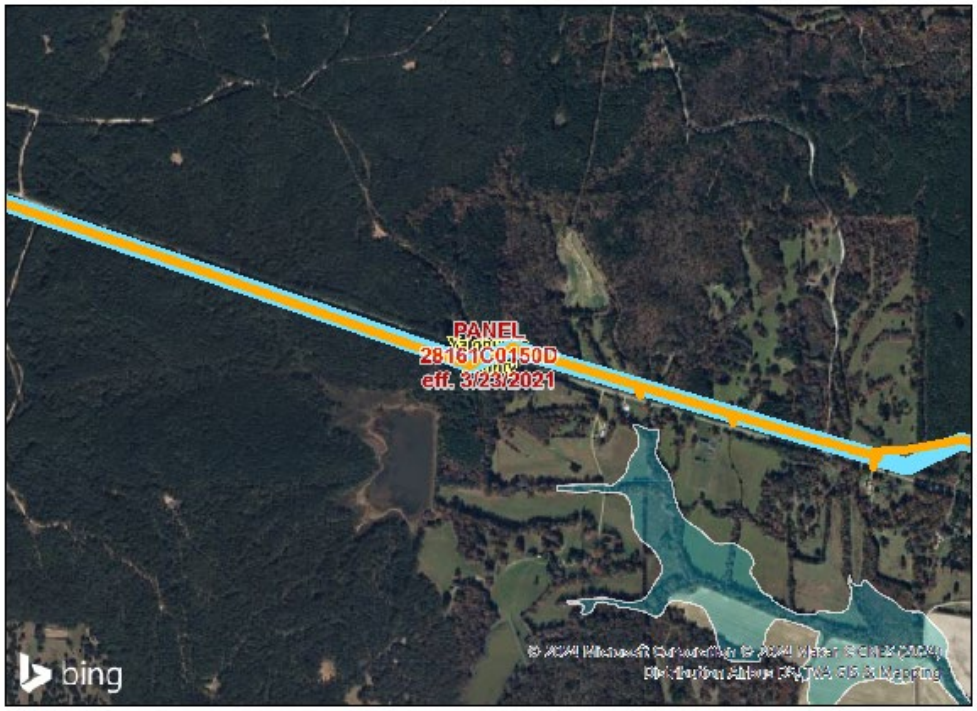
Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
Area with Risk Due to Levee
River Miles
States
Counties

0 0.13 0.25 0.5 Miles

N

Figure 5 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains



NOakland-Coffeeville_ASCL
NOakland-Coffeeville_AccessRoads
FIRM Panels

Flood Hazard Boundaries
Limit Lines
NP
SFHA / Flood Zone Boundary
Flowage Easement Boundary

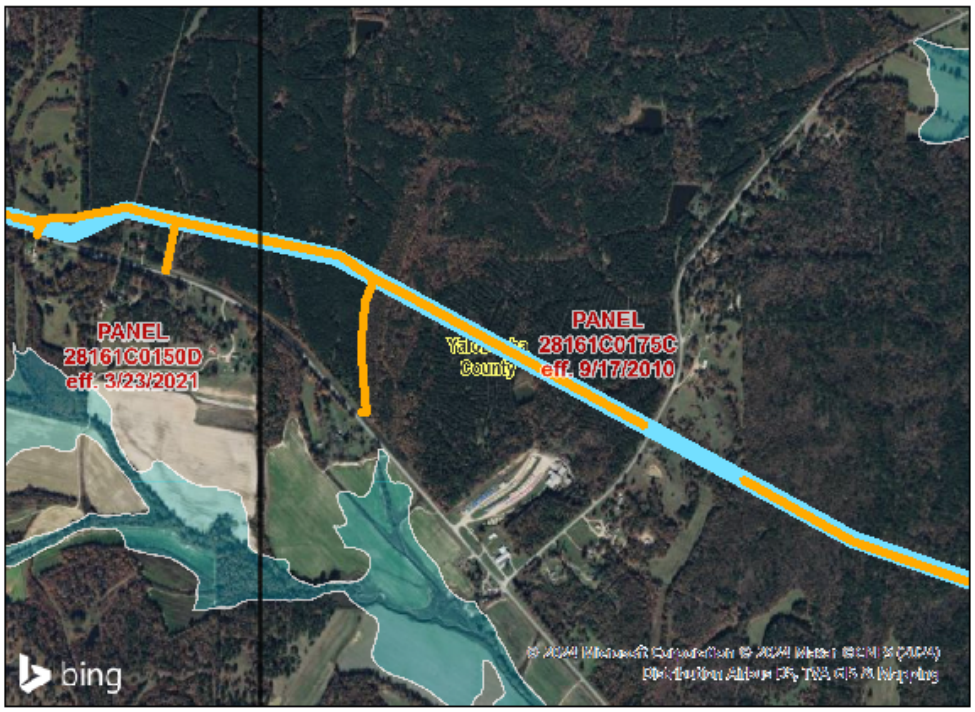
Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
Area with Risk Due to Levee
River Miles
States
Counties

0 0.13 0.25 0.5 Miles

N

Figure 6 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains



NOakland-Coffeeville_ASCL
NOakland-Coffeeville_AccessRoads
FIRM Panels

Flood Hazard Boundaries
Limit Lines
NP
SFHA / Flood Zone Boundary
Flowage Easement Boundary

Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
Area with Risk Due to Levee
River Miles
States
Counties

0 0.13 0.25 0.5 Miles

N

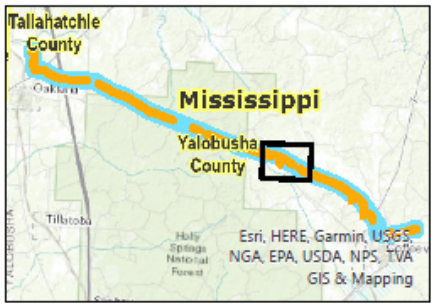
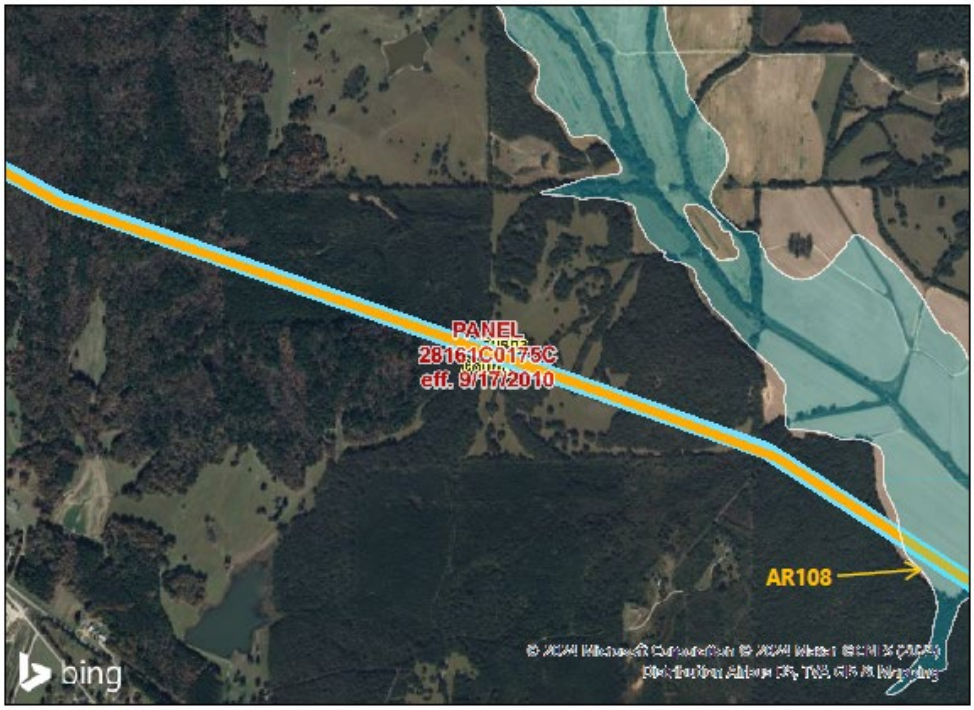


Figure 7 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains



NOakland-Coffeeville_ASCL
NOakland-Coffeeville_AccessRoads
FIRM Panels

Flood Hazard Boundaries
Limit Lines
NP
SFHA / Flood Zone Boundary
Flowage Easement Boundary

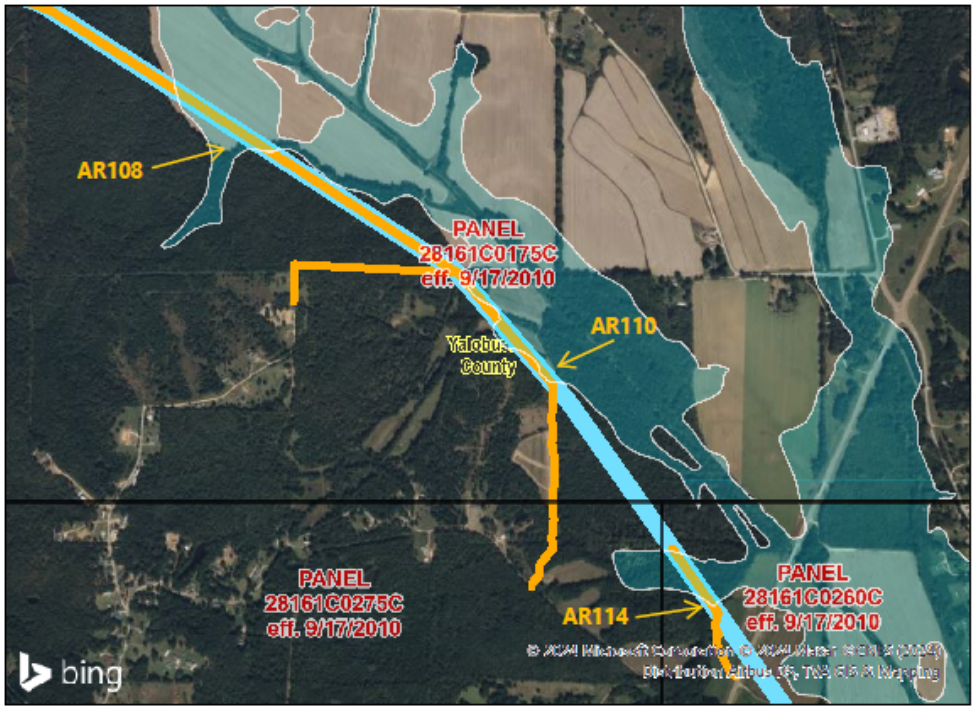
Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
Area with Risk Due to Levee
River Miles
States
Counties

0 0.13 0.25 0.5 Miles

N

Figure 8 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

North Oakland-Coffeeville Transmission Line
Access Roads Crossing Floodplains



NOakland-Coffeeville_ASCL
NOakland-Coffeeville_AccessRoads
FIRM Panels

Flood Hazard Boundaries
Limit Lines
NP
SFHA / Flood Zone Boundary
Flowage Easement Boundary

Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
Area with Risk Due to Levee
River Miles
States
Counties

0 0.13 0.25 0.5 Miles

N

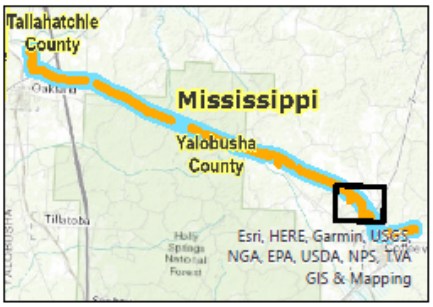


Figure 9 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

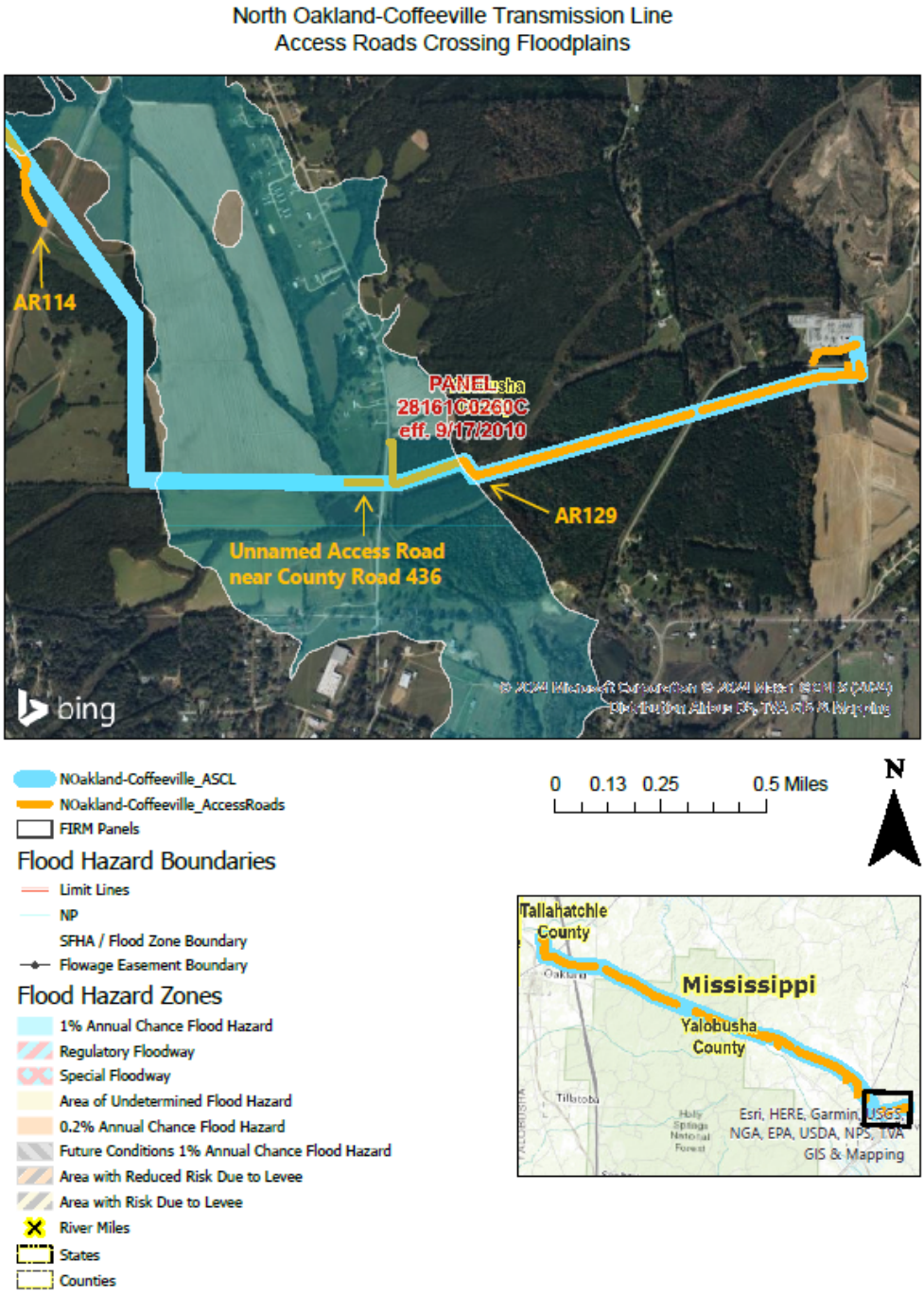


Figure 10 of 10: The As Surveyed Centerline, Access Roads, and FEMA Floodplains

Appendix I – U.S. District Court for the Eastern District of Tennessee, Sherwood v. TVA, No. 3:12-CV-156-TAV-HBG

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TENNESSEE

DONNA W. SHERWOOD, et al.,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	No.: 3:12-CV-156-TAV-HBG
	)	
TENNESSEE VALLEY AUTHORITY,	)	
	)	
Defendant.	)	

INJUNCTION ORDER

For the reasons discussed in the Memorandum Opinion and Order entered contemporaneously with this Injunction Order, and for good cause being shown, it is hereby ordered, adjudged, and decreed as follows:

IT IS ORDERED that TVA is **ENJOINED** from further implementing the transmission line right-of-way vegetation management practice that has come to be known in this litigation as the "15-foot rule" until TVA has prepared and published an environmental impact statement pursuant to the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321–4370m12. TVA shall submit a request for dissolution of the injunction after completion of the procedural steps necessary to comply with NEPA. Plaintiffs will then have the opportunity to state their position with respect to the dissolution of the injunction.

IT IS FURTHER ORDERED that the terms of this injunction will remain in effect until the Court grants TVA's request for dissolution of the injunction.

IT IS FURTHER ORDERED that TVA will maintain buffer zones on the edges of its rights-of-way as described in TVA's 1997 and 2008 Line Maintenance Manuals:

a. When re-clearing 500-kV transmission lines on ROWs that are 200 feet wide, TVA will re-clear 150 feet, that is, 75 feet from centerline to outside edges, leaving a 25-foot buffer zone on each side.

b. On the more recently purchased 500-kV transmission line ROWs where 175 feet is all that is purchased, TVA will re-clear 150 feet, that is, 75 feet from centerline to outside edges, leaving a 12.5-foot buffer zone on each side.

c. When re-clearing 161-kV transmission lines, the structure type and height will determine the width.

i. On multiple-pole structures and single- and double-circuit steel tower lines where TVA has 150 feet of easement, TVA will re-clear 100 feet, that is, 50 feet from centerline to outside edges, leaving a 25-foot buffer zone on each side. Where TVA only has 100 feet of ROW, the entire 100 feet is re-cleared.

ii. On lines that utilize single-pole structures where TVA has an easement of 75 feet, the entire 75 feet will be re-cleared.

iii. On 69-kV transmission lines, re-clearing will be accomplished.

d. On easements with multiple transmission lines, the "centerline to outside edges" will apply to the transmission line nearest the outside boundary.

TVA will leave the existing trees in the wire zone so long as they do not pose an immediate hazard to the transmission lines.

TVA may remove or trim any trees in the wire zone of the right-of-way, or in the buffer zones of the right-of-way, or any danger tree outside the right-of-way, in accordance with its contract rights, that it deems to present an immediate hazard to its transmission lines.

In using the term "re-clearing" in this Order the Court is simply utilizing the terminology that TVA has used in its Line Maintenance Manuals and is making no determination as to whether TVA either has or has not cleared the right-of-way previously.

IT IS FURTHER ORDERED that where TVA has previously allowed a given landowner to trim his or her own trees, TVA shall continue to do so, except that TVA will have the right to immediately remove or trim any tree that it deems to present an immediate hazard to its transmission lines.

The Court accepts TVA's representations that it has budgeted $15 million for its yearly vegetation management and $14 million for vegetation management during Fiscal Year 2018 through 2020. TVA shall report its quarterly and cumulative annual spending levels to plaintiffs when those figures are reasonably available through its accounting department.

IT IS FURTHER ORDERED that TVA shall post a copy of this Order and any subsequent substantive Order in a prominent location on its website to inform the public and in particular the landowners on the right-of-way that TVA has been enjoined from further implementing the 15-foot rule, and to inform the public and landowners as to the practices that TVA is being ordered to follow pursuant to this Order.

IT IS FURTHER ORDERED that TVA is required to pay plaintiffs' reasonable attorney's fees and costs in this litigation related to the NEPA and mootness issues pursuant to the Equal Access to Justice Act ("EAJA") with reasonableness to be determined by the Court in accordance with the EAJA if the parties cannot agree on the amount.

TVA will inform the Court within **thirty (30) days** after entry of this Order of the measures taken to inform TVA employees and contractors involved in transmission line right-of-way vegetation management of the terms of this injunction.

If a party seeks to modify any provision of the injunction, the parties must first meet and confer, in order to attempt to reach agreement before applying to the Court.

The Court retains continuing jurisdiction to enforce this Order through contempt or otherwise, to clarify the injunction should the need arise, to determine whether the injunction should be dissolved, and for such other proceedings as may be appropriate.

IT IS SO ORDERED.

s/ Thomas A. Varlan
CHIEF UNITED STATES DISTRICT JUDGE

Appendix J – TVARAM Wetland Assessment

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Appendix K – Holly Springs Ranger District - Sensitive Species List

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		**Holly Springs Ranger District**		Confirmed	C		**Project Name:**							
2		**Sensitive Species List**		Potential	P									
3				Sources:	Regional Foresters Sensitive Species List 02/15/18									
4					Mississippi Natural Heritage Program - Biological and Conservation Database and Forest ESE									
5														
6	GROUP	SCINAME	COMNAME	PRESENCE										
7	Amphibian	Plethodon websteri	Webster's salamander	P										
8	Bird	Aimophila aestivalis	Bachman's sparrow	C										
9	Fish	Etheostoma raneyi	Yazoo darter	C										
10	Fish	Noturus gladiator	Piebald madtom	C										
11	Insect	Danaus plexippus	Monarch Butterfly	C										
12	Mammal	Corynorhinus rafinesquii	Rafinesque's big-eared bat	P										
13	Mammal	Myotis austroriparius	Southeastern Myotis	P										
14	Mammal	Perimyotis subflavus	Tricolored bat	C										
15	Mammal	Ursus americanus luteolus	Louisiana Black Bear	C										
16	Mussel	Anodontoides radiatus	Rayed creekshell	C										
17	Vascular Plant	Carex decomposita	Cypress-knee sedge	C										
18	Vascular Plant	Carex impressinervia	Ravine sedge	P										
19	Vascular Plant	Desmodium ochroleucum	Cream tick-trefoil	P										
20	Vascular Plant	Juglans cinerea	Butternut	P										
21	Vascular Plant	Marshallia trinervia	Broadleaf Barbara's buttons	P										
22	Vascular Plant	Schisandra glabra	Bay starvine	C										