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Megasite 2012-36

### MEMPHIS REGIONAL MEGASITE POWER SUPPLY -500-KV SUBSTATION & ASSOCIATED TRANSMISSION LINES

### **DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT**

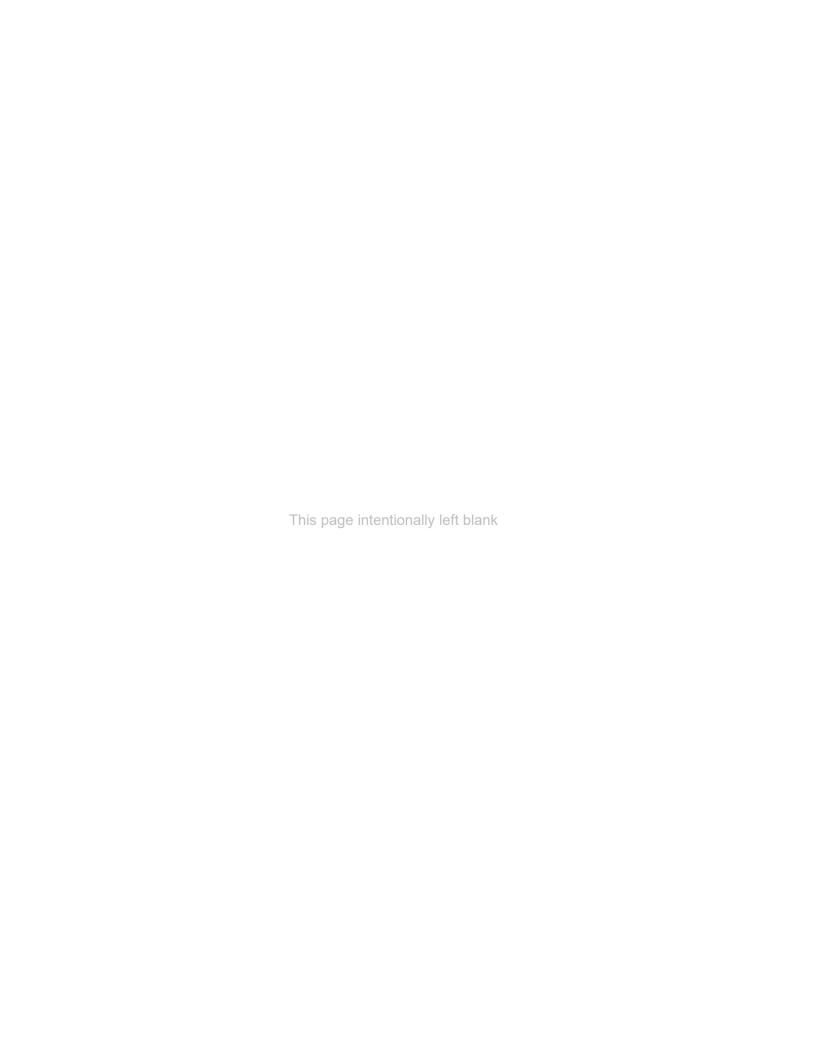
**Fayette and Haywood Counties, Tennessee** 

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April 2022

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## Acronyms, Abbreviations, and Glossary of Terms Used

Acre A unit measure of land area equal to 43,560 square feet

A dirt, gravel, or paved road that is either temporary or permanent, and

access road is used to access the right-of-way and transmission line structures for

construction, maintenance, or decommissioning activities

**ACHP** Advisory Council on Historic Preservation

APE Area of potential effect

Best management practice or accepted construction practice designed

to reduce environmental effects

A section of conductors (three conductors per circuit) capable of

carrying electricity to various points

**conductors** Cables that carry electrical current

CE Categorical Exclusion

**CWA** Clean Water Act

**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

**FHWA** Federal Highway Administration

FIRM Flood Insurance Rate Map

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

groundwater Water located beneath the ground surface in the soil pore spaces or in

the pores and crevices of rock formations

**HUC** Hydrologic Unit Code

feller-buncher

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

I- Interstate

hydric soil

The United States Fish and Wildlife Services' "Information for Planning

IPaC and Conservation" database tool that allows users to identify managed

resources quickly and easily.

**kV** Symbol for kilovolt (1 kV equals 1,000 volts)

That portion of the entire electric power in a network consumed within a

given area; also synonymous with "demand" in a given area

**LPC** Local power company

MW Mega-watt is a unit of power equal to one million watts, especially as a

measure of the output of a power station.

NEPA National Environmental Policy Act

NESC National Electric Safety Code

NHPA National Historic Preservation Act

NRCS Natural Resources Conservation Service

**NSCR** Non-site Cultural Resources

NRHP National Register of Historic Places

outage An interruption of the electric power supply to a user
 riparian Row Right-of-way, a corridor containing a transmission line

**runoff**That portion of total precipitation that eventually enters a stream or river

SHPO State Historic Preservation Officer
SMZ Streamside management zone

**SR** State Route

**STEMC** Southwest Tennessee Electric Membership Corporation

**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

water collecting on the ground or in a stream, river, lake, or wetland; it

is naturally lost through evaporation and seepage into the groundwater

**TDEC**A device used to complete or break an electrical connection
Tennessee Department of Environment and Conservation

**TDOT** Tennessee Department of Transportation

**threatened species** A species likely to become endangered within the foreseeable future

**TNBWG** Tennessee Bat Working Group

Tennessee Rapid Assessment Method developed to rapidly determine

the condition of a wetland in the field based solely on hydrogeomorphic

TRAM classification meant to be a "snapshot" of current condition based on

on-site and external influences and variables relative to a reference standard. Information on the condition of the wetland is then used to evaluate a proposed impact justification and assess mitigation needs.

**TVA** Tennessee Valley Authority

US United States Highway

**USACE** United States Army Corps of Engineers

USCB United States Census Bureau
USFS United States Forest Service

**USFWS** United States Fish and Wildlife Service

**USGS** United States Geological Survey

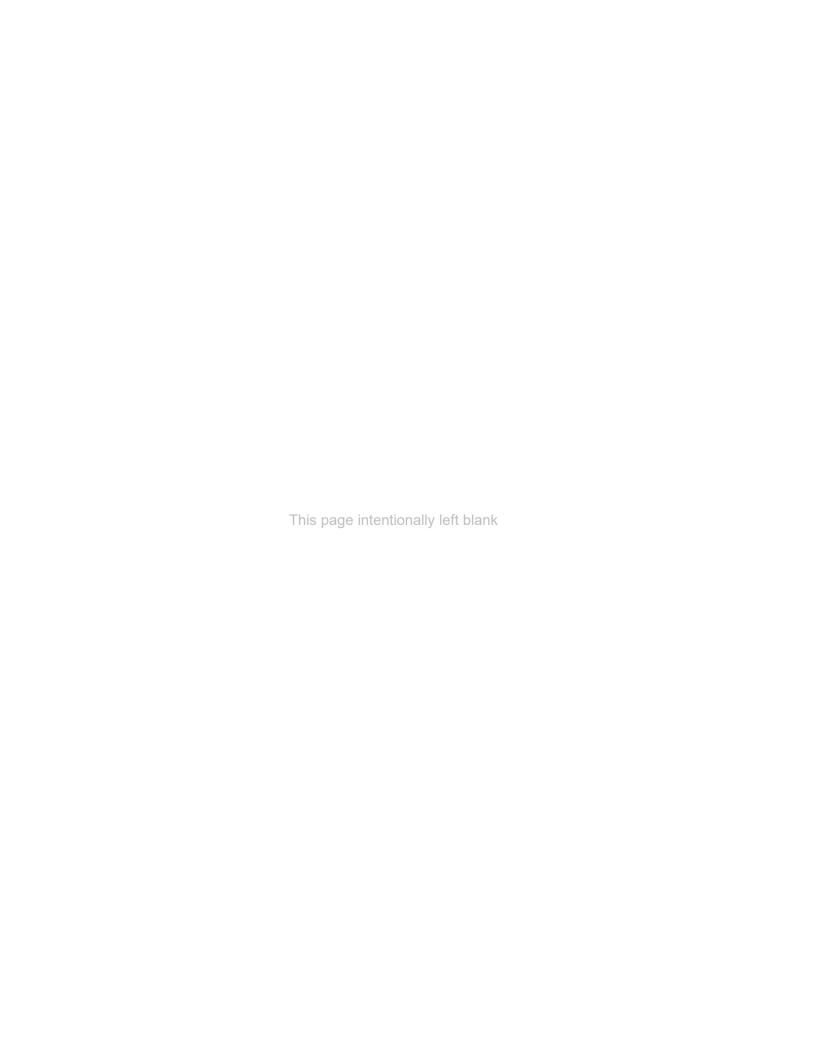
A marsh, swamp, or other area of land where the soil near the surface

wetland is saturated or covered with water, especially one that forms a habitat

for wildlife

WRP Wetlands Reserve Program

**WWC** Wet-weather Conveyance. See definition for ephemeral stream.



#### CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Proposed Action – Provide Power Supply to Ford's BlueOval City
An integral part of Tennessee Valley Authority's (TVA) mission is to provide power to local
power companies (LPC) serving the 10 million people in parts of Tennessee and six
surrounding states and to promote economic development within the TVA service area.
TVA provides financial assistance in the form of incentives (credits and grants) to help bring
to market new/improved sites and facilities within the TVA power service area and position
communities to compete successfully for new jobs and capital investment.

The Ford Motor Company (Ford) plans to locate an electric vehicle and battery plant manufacturing facility ("BlueOval City") on roughly 1,800 acres of the 3,600 BlueOval City Campus on the Memphis Regional Megasite ("Megasite"). The 4,100-acre Megasite property owned by the State of Tennessee (State) is in the Stanton, Tennessee area of Fayette and Haywood counties between Memphis and Jackson (Figure 1-1).

In 2016, at the request of the State, TVA completed the Memphis Regional Megasite Power Supply Environmental Assessment (EA) and Finding of No Significant Impact (the "2016 EA"), which is incorporated here by reference (TVA 2016). The EA analyzed potential transmission line routes capable of supporting a 161-kilovolt (-kV) transmission line and/or a 500-kV transmission line that would be constructed to provide power to the Megasite once a tenant(s) had been identified.

To support the new BlueOval City facility, Southwest Tennessee Electric Membership Corporation (STEMC), an LPC and distributor of TVA power, plans to construct the BlueOval City 161-kV Substation on the Megasite property. As previously described in the completed 2016 EA, TVA proposes to provide power to the Megasite area, including STEMC's new substation, with the construction, operation, and maintenance of approximately 6.5-miles of 161-kV double-circuit transmission line and approximately 3.4-miles of double-circuit 500-kV transmission line (TVA 2016). TVA purchased about 158 acres of right-of-way (ROW) easements for the purpose of constructing these two future transmission lines following the completion of the 2016 EA and Finding of No Significant Impact (FONSI) (Figure 1-1; Appendix A). No construction was undertaken at that time in the absence of concrete plans for the Megasite.

In addition to the proposed construction of the two transmission lines, TVA proposes the construction of a new 500-kV substation on an approximate 67-acre parcel (Figure 1-1 and 1-2). TVA would also construct two new 161-kV single-circuit transmission lines on the Megasite parcel providing the BlueOval City Delivery Point between the new STEMC and TVA substations (Figure 1-2).

Other proposed TVA actions include the following:

- TVA would install a new fiber path on the new 500-kV transmission line from the Haywood-Cordova 500-kV transmission line to both the STEMC and TVA new substations.
- TVA would provide necessary relay protection and the standard metering package for STEMC to install in their new substation.

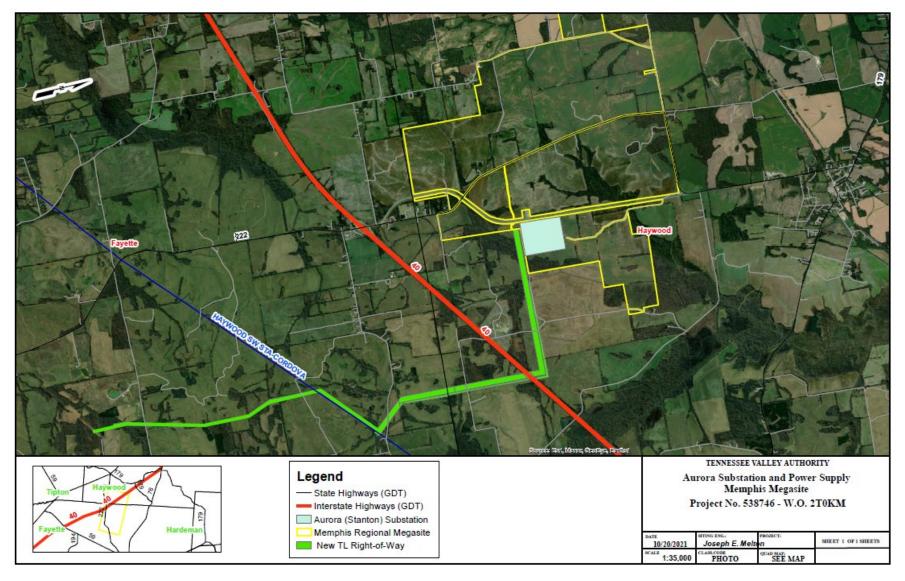


Figure 1-1. Map of TVA's Proposed Megasite Power Supply Consisting of a New Substation and Transmission Lines in Fayette and Haywood Counties, Tennessee

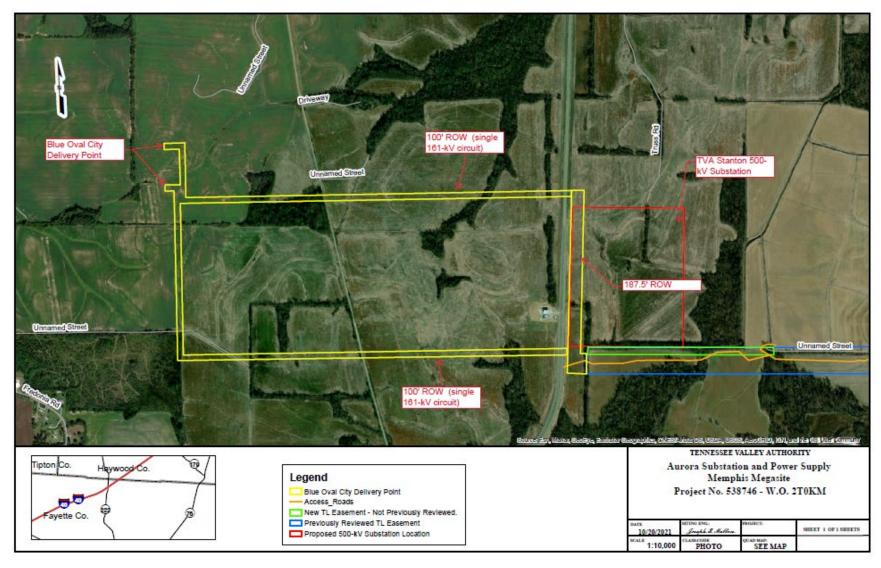


Figure 1-2. TVA's Proposed 500-kV Substation and Transmission Line Connections in Haywood County, Tennessee

- Communication equipment upgrades and relay protection would be added at both the existing Cordova 161-kV and South Jackson 161-kV substations.
- The TVA map board displays would be updated to reflect the new transmission assets.

In addition to providing a power supply to the Megasite and the BlueOval City facility, TVA is considering economic incentives to support Ford's capital investment of \$5.6 billion and the creation of about 6,000 new jobs in the west Tennessee area. TVA offers economic incentives to support economic development projects in the TVA region. Awards could be in the form of a grant to the company and/or credits to the company's power bill and are dependent on the customer meeting certain metrics which include capital investment, job creation or retention, and wages, and power demand and usage. A final award decision is dependent on the company commencing commercial operations.

TVA's proposed grant here would be less than one percent of Ford's anticipated capital investment in the project. Based on the relatively limited nature of the proposed grant as compared to the total anticipated investment by Ford, and the contingency on Ford's ability to meet the terms and conditions of the proposed grant, any environmental impacts associated with the grant would be speculative and will not be discussed further in this SEA. A credit could be awarded on a pay-for-performance basis. This credit is typically a financial transaction that does not alter the environmental status quo and would be contingent on Ford's ability to meet the terms and conditions of the program. Because there are no impacts to the environment associated with this type of financial transaction, this potential economic development incentive will not be discussed further in this SEA.

In addition, TVA may bear the costs associated with the buildout of the TVA transmission line and substation contingent on the customer's completion of the project and execution of a power contract. The impacts of this action are coextensive with TVA's construction, operation, and maintenance of the transmission lines and substation, which are analyzed in detail in this SEA.

#### 1.1 Need for the Proposed Action

The State bought the Megasite property in 2003 and has spent more than \$174 million over the past decade to develop the 4,100-acre site. The Megasite property is zoned for industrial use and has been marketed by the State to major corporations with the intent of promoting jobs, developing property, and creating a tax base for the State. Infrastructure advantages of the Megasite location include easy access to the CSX Railroad, United States Highway (US) 70/79, and State Routes (SR) 179 and 222. Additionally, Interstate (I) 40 lies about 5 miles southeast of the site converging with SRs 179 and 222 at Exits 47 and 42, respectively. The Megasite certified status, along with state ownership of the property, offers a variety of industrial development advantages to other prospective parcels.

The State partnered with TVA to plan for a power supply that could serve the Megasite. After analyzing the potential power supply needs for the Megasite and potential transmission line routes, TVA completed the 2016 EA that identified corridors for either a 161-kV transmission line or 500-kV transmission line. TVA then purchased ROW easements in anticipation of the future need to construct a power supply for the Megasite.

In July/August 2021, Ford announced its decision to locate BlueOval City on the Megasite property. This development is expected to promote around 6,000 new jobs in the Memphis regional area and provide for a capital investment of \$5.6 billion.

In October 2021, Tennessee lawmakers approved an \$884 million incentive package aimed at clearing the way for Ford's \$5.6 billion investment into an electric vehicle and battery factory in west Tennessee. Tennessee bills were passed to establish an authority overseeing the development at the Megasite, dole out \$500 million in incentives to Ford and spend \$384 million on infrastructure projects, workforce development, authority expenses and other services.

TVA plans its transmission system according to industry-wide standards provided by the North American Electric Reliability Corporation. The standards state that the TVA transmission system must be able to survive single-failure events while continuing to serve customer loads with adequate voltage and no overloaded facilities, and while maintaining adequate line clearances as required by the National Electric Safety Code (NESC). The 2016 EA determined the current electric supply available in the vicinity of the Megasite is not capable of supporting a large industrial load. Plans by Ford to locate BlueOval City on the Megasite and to start production as early as 2025 will therefore require an upgrade to the existing electric supply. To meet this foreseeable power demand, TVA would need to construct a new 500-kV substation and both the 161-kV and 500-kV transmission lines. This additional power supply to the project area would ensure a continuous, reliable source of electric power in Fayette and Haywood counties and the surrounding areas. While TVA would build the transmission lines and substation to supply power to the Megasite, TVA has no property interest within the boundaries of the Megasite nor any other Federal control or jurisdiction over that area.

#### 1.2 Decisions to be Made

The primary decisions before TVA are whether to provide a power supply to the Megasite to support Ford's new BlueOval City, and whether to provide economic incentives to Ford as part of their decision to site BlueOval City at the Megasite. If the proposed power supply is to be built, other secondary decisions are involved. These include:

- Determination of the National Environmental Policy Act (NEPA) adequacy on the previous proposal for the proposed project's transmission line routes (TVA 2016).
- Optimal power supply needs for BlueOval Supply and the surrounding area.
- Timing of the proposed improvements.
- Most suitable location for the proposed 500-kV substation.
- Determination of any necessary mitigation and/or monitoring to meet TVA standards and to minimize the potential for damage to environmental resources.

Considerations involved in the building of the proposed substation and transmission lines are listed below. A detailed description of the alternatives is provided in Section 2.1.

#### 1.3 Related Environmental Reviews or Documentation

In 2006, TVA entered a contract with McCallum-Sweeney's Consulting for services involving the evaluation and certification of sites suitable for industrial development in the TVA power service area. This TVA action was covered under Categorical Exclusions (CEs) 5.2.2, 5.2.4, and 5.2.27. The certification of sites provides a prospective industry to understand, on the front end of choosing a site, the potential benefits or risks associated with a site.

In 2016, TVA completed the Memphis Regional Megasite Power Supply EA (TVA 2016). The EA evaluated transmission line routes capable of supporting both a 6.5-mile 161-kV transmission line and a 3.4-mile 500-kV transmission line to support the Megasite. TVA purchased 158 acres of ROW easements with the intent to construct either a 161-kV or a 500-kV double-circuit "loop1" transmission line once an industrial tenant had been identified. This document supplements TVA's 2016 EA.

In 2019, TVA completed the 2019 Integrated Resource Plan (IRP) and the associated environmental impact statement (EIS) (TVA 2019). These documents provide direction on how TVA can best deliver clean, reliable, and affordable energy in the Valley over the next 20 years, 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.

#### 1.4 Public, Agency, and Tribal Participation

Following the completion of the 2016 EA and FONSI, TVA purchased the ROW easements from property owners for the future construction, operation, and maintenance of transmission lines. During the NEPA analysis of the project as currently proposed, TVA again contacted property owners of these easements to request access for new environmental surveys along the TVA ROWs.

A copy of this draft supplemental EA is being sent to local, state, and federal agencies and individuals who indicated an interest in the proposed project. TVA notified interested federally recognized Native American Tribes, elected officials, and other stakeholders that the draft supplemental EA was available for review and comment for a 30-day period. An electronic version of the document has been posted on the TVA website where comments can be submitted electronically. TVA will carefully review any comments received on the draft supplemental EA and address them, as appropriate, in the final supplemental EA. Public notices were locally published to solicit comments from other agencies, the public, and any interested organizations.

The following federal and state officials were contacted by TVA, as well as federally recognized Native American tribes, concerning the proposed project.

- Absentee Shawnee Tribe of Indians of Oklahoma
- Cherokee Nation
- Chickasaw Nation
- Choctaw Nation of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Jena Band of Choctaw Indians
- Kialegee Tribal Town
- Muscogee (Creek) Nation
- Osage Nation

A transmission line connection m

<sup>&</sup>lt;sup>1</sup> A transmission line connection made by "looping" or routing the line through the substation or switching station by building two circuits to the station from two tap points in an existing line and removing the line between the two tap points. A loop normally would connect into two new breakers at the station.

- Quapaw Nation
- Shawnee Tribe
- Tennessee Department of Environment and Conservation (TDEC)
- Tennessee State Historic Preservation Officer (SHPO)
- Thlopthlocco Tribal Town
- United Keetoowah Band of Cherokee Indians in Oklahoma
- United States Army Corps of Engineers (USACE)

As described in the 2016 EA, TVA also contacted the following federal and state officials, as well as federally recognized Native American tribes, concerning the proposed transmission line project.

- Chickasaw Nation
- TDEC
- Tennessee SHPO
- United Keetoowah Band of Cherokee Indians in Oklahoma
- USACE
- United States Fish and Wildlife Service (USFWS)

Additionally, during the scoping of the transmission line routes TVA asked 94 property owners who could potentially be affected by any of the originally proposed transmission line route alternatives or had property near the route alternatives for comments. TVA invited these property owners, along with 30 public officials to attend a project open house. TVA used local news outlets and notices placed in the local newspapers to notify other interested members of the public of the open house. The TVA open house held April 24, 2014, was attended by 72 people.

The primary concerns expressed by the public were the effects of the proposed transmission line on farmland in the area (including impacts to existing and planned pivot irrigation systems), and on property values, and the need for the transmission line as well as the increased urbanization of the area possibly caused by the Megasite. Owners also voiced concerns relative to health issues and impacts of the proposed transmission line on visual quality and natural, historical, and cultural resources.

A 30-day public review and comment period was provided following the open house, during which TVA accepted public comments on the project including alternative transmission line routes. The transmission line ROWs would support the construction, operation, and maintenance of either a 161-kV or 500-kV transmission line. During the comment period, numerous landowners contacted TVA to express their concerns, most of which were like those voiced at the open house.

In response to information received at the open house, comments submitted during the comment period and a resolution sent to TVA from the Fayette County Commission, TVA eliminated certain segments and adjusted the other proposed segments. Following the Siting analysis, TVA announced a preferred transmission line route to the public in October 2014 and letters were sent to affected property owners.

Following the announcement of the preferred route, TVA made additional adjustments to the preferred routes. These adjustments were a result of information obtained from field surveys conducted for the NEPA assessment or at the request of affected property owners. TVA provided an additional 24 days for public comments on the draft EA which assessed the environmental impacts of the preferred transmission line routes. TVA received comments from two individuals which were addressed in the final EA (TVA 2016).

#### 1.5 Issues to be Addressed

TVA reviewed the proposed project for potential environmental impacts related to the construction, operation, and maintenance of the proposed substation, transmission lines and access roads.

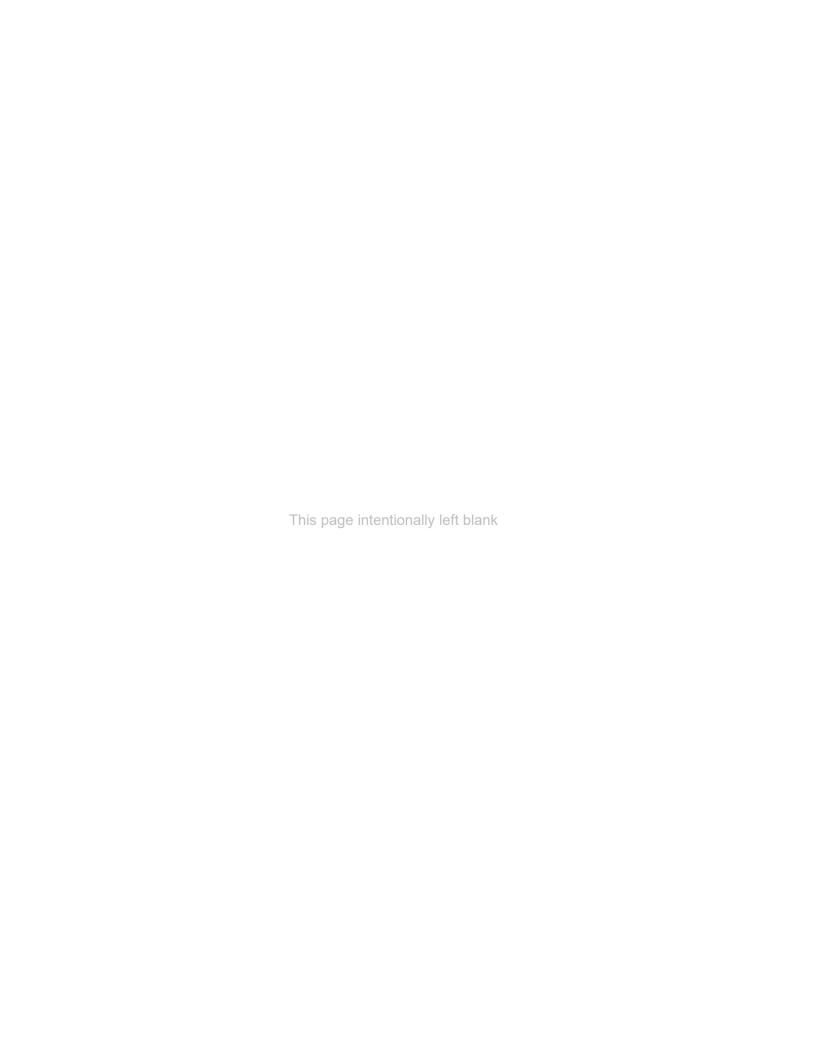
- Water quality (surface waters and groundwater)
- Aquatic ecology
- Vegetation
- Wildlife
- Endangered and threatened species and their critical habitats
- Floodplains
- Wetlands
- Prime farmland
- Aesthetic resources (including visual, noise, and odors)
- Archaeological and historic resources
- Recreation, parks, and managed areas
- Socioeconomics and environmental justice
- Transportation

Potential effects related to 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.

TVA's action would satisfy the requirements of Executive Order (EO) 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), EO 12372 (Intergovernmental Review), EO 12898 (Environmental Justice), EO 12977 (Interagency Security Committee), EO 13112 as amended by 13751 (Invasive Species), and applicable laws including the National Historic Preservation Act (NHPA), the Endangered Species Act (ESA) as amended, the Farmland Protection Policy Act, the Clean Air Act, and the Clean Water Act (CWA). Necessary permits and licenses are discussed below. Correspondence received from other agencies related to this review and coordination is contained in Appendix B.

#### 1.6 Necessary Permits or Licenses

Prior to construction, a permit would be required from TDEC for the discharge of construction site storm water associated with the construction of the substation and transmission lines. TVA would prepare the required erosion and sedimentation control plans and coordinate them with the appropriate state and local authorities. A permit may also be required for burning trees and other combustible materials removed during construction of the proposed transmission line. A Section 401 Water Quality Certification or an Aquatic Resource Alteration Permit 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 Tennessee Department of Transportation (TDOT) for crossing state highways or federal interstates during transmission line construction.



# CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

As described in Chapter 1, TVA proposes to provide a power supply to the Megasite in Haywood County, Tennessee. A description of the proposed Action Alternative is provided below in Section 2.1.2. Additional background information about construction, operation, and maintenance of a substation is also provided. The construction, operation, and maintenance of a transmission line has been previously described in the 2016 EA.

This chapter has five major sections:

- 1. A description of alternatives;
- 2. A description of the substation siting process and a comparison of the alternative substation sites;
- 3. A comparison of anticipated environmental effects by alternative;
- 4. Identification of mitigation measures; and
- 5. Identification of the Preferred Alternative.

#### 2.1 Alternatives

Two alternatives (i.e., the No Action Alternative and the Action Alternative) are addressed in this draft supplemental EA. Under the No Action Alternative, TVA would not implement the proposed action. Under the Action Alternative, TVA would provide Ford with both infrastructure and economic incentives to locate in TVA's power service area at the Megasite.

## 2.1.1 The No Action Alternative - TVA Does Not Provide Incentives or a Power Supply for BlueOval City and the Megasite

Under the No Action Alternative, TVA would not incentivize Ford or provide a power supply to serve the Megasite in Haywood County. Electing to take no action on the incentives or the power supply would be contrary to TVA's statutory mission to support economic development across the Valley and TVA power service area. Under this alternative, Ford may decide not to locate BlueOval City on the Megasite property. As a result, the State may or may not identify a tenant that could provide the benefits to the local and state economy that BlueOval City could provide.

Should Ford or another tenant decide to locate at the Megasite regardless of TVA-provided incentives, then it is possible the appropriate power supply could potentially be provided by other sources. The LPC, the State, or the tenant could take action to purchase property and build transmission lines between the Megasite and a TVA power source, and then request a connection point from TVA. However, should the transmission service needed to power the Megasite for BlueOval City be constructed by other sources, the potential environmental effects of implementing the No Action Alternative would likely be comparable to those of the Action Alternative described below. Likewise, the LPC could construct the 500-kV substation needed to convert the power supply to a useable voltage for BlueOval City. However, TVA expects some variability of the significance of impacts as the effects of the construction process by other sources would be dependent upon various factors, such as route chosen, precautionary measures taken, and construction methods used.

Considering TVA's statutory obligation to support economic development and to provide reliable electric service while minimizing environmental effects, TVA does not consider the No Action Alternative a reasonable alternative. However, the potential environmental effects of adopting the No Action Alternative are considered in the NEPA analysis to provide a baseline for comparison with respect to the potential effects of implementing the proposed action.

## 2.1.2 Action Alternative – Provide Incentives and a Power Supply for BlueOval City and the Stanton, Tennessee Megasite

Under the Action Alternative, TVA would provide a unique range of economic incentives to attract Ford to the TVA region that would benefit Ford's planned BlueOval City from start-up to long-term success. In partnership with the State, TVA would provide Ford with an economic development incentive package formulated to promote job creation and retention and capital investment in the TVA region. TVA Valley Incentive Programs consider both economic and power-system metrics to create a profile of prospective company's value to the region, and that, in turn, determines appropriate funding levels.

Further, TVA proposes to provide an infrastructure incentive for Ford's planned BlueOval City by constructing, operating, and maintaining a new 500-kV substation, a 161-kV transmission line, and a 500-kV transmission line (Figure 2-1). TVA would also perform various modifications to TVA's existing transmission system to support TVA's new 500-kV substation and STEMC's new 161-kV substation.

TVA's proposed 500-kV substation site would encompass approximately 67 acres, for the construction of the substation and transmission line connections. To provide power to TVA's and STEMC's new substations, TVA, as described in the 2016 EA, would construct both an approximate 6.5 mile 161-kV double-circuit transmission line and an approximate 3.4-mile double-circuit 500-kV transmission line (TVA 2016). Following the completion of the 2016 EA, TVA purchased approximately 158 acres of transmission line ROW easements that would be utilized for the new transmission lines needed to provide power to the Megasite. The proposed 161-kV transmission line would connect to the Yum Yum-South Jackson 161-kV Transmission Line (previously referred to as the Cordova-South Jackson 161-kV Transmission Line), located in Fayette County, Tennessee (Figure 2-1). The proposed 500-kV transmission line would connect to the Haywood-Cordova 500-kV Transmission Line, also located in Fayette County (Figure 2-1). These transmission line routes (Appendix A) as well as TVA's construction, operation, and maintenance methods have previously been described in the 2016 EA.

The new 500-kV transmission line is proposed to terminate at TVA's proposed new 500-kV substation. The 161-kV transmission line would continue further north along a 187.5-footwide ROW along the east side of SR 222. After crossing over to the west side of SR 222, the proposed routes would encompass two separate 100-foot-wide ROW easements located within the Megasite property and ending at STEMC's planned BlueOval City 161-kV Substation. A new fiber path would be installed on the new transmission lines from the Haywood-Cordova 500-kV transmission line to the new TVA and STEMC substations.



### AURORA 500-kV SUBSTATION AND TRANSMISSION LINE SITE MAP



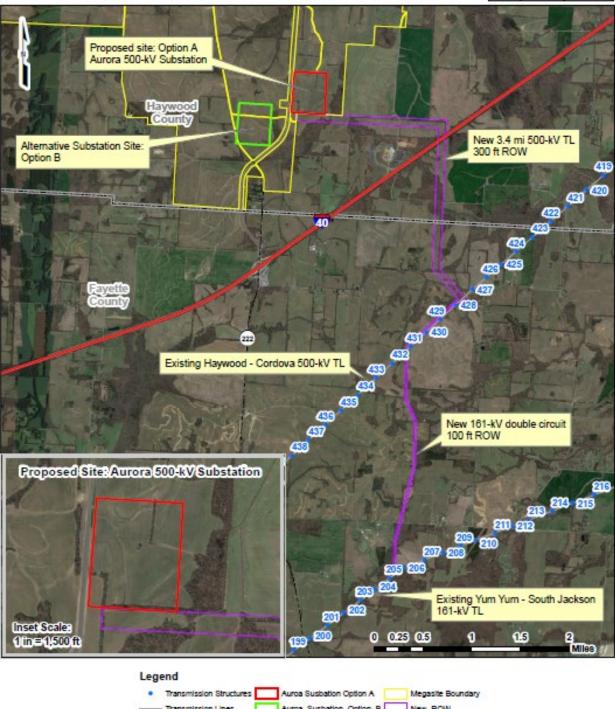


Figure 2-1. TVA's Proposed Substation and Transmission Lines in Fayette and Haywood Counties, Tennessee

Additionally, to facilitate the operation of the new transmission lines and substations, TVA would provide STEMC necessary relay protection and the standard metering package to install in their planned substation. Communication upgrades and relay protection would be required at the existing TVA Cordova 161-kV and South Jackson 161-kV substations. The TVA map board displays at TVA's System Operations Center and Regional Operations Center would be updated to reflect the new transmission assets. The scheduled in-service date for this project would be fall of 2023 or as soon as possible after that date.

Implementation of the Action Alternative would enable TVA to meet the State's requested timeline for delivering a power supply to the Megasite by taking advantage of using the previously purchased ROW easements which provide TVA with the rights to construct, operate, and maintain a new transmission line. Likewise, as discussed in Section 1.1, implementing the Action Alternative would allow BlueOval City to become operational in Ford's planned timeframe. Additionally, the new substation and power supply would ensure a continuous, reliable source of electric power to the Megasite as well as in Fayette and Haywood counties and the surrounding areas.

Overall, the proposed economic development incentives would account for less than one percent of the overall project cost. Based on the relatively limited nature of the proposed grant as compared to the total anticipated investment by Ford, and the contingency on Ford's ability to meet the terms and conditions of the proposed grant, any environmental impacts associated with the grant would be speculative and will not be discussed further in this SEA. Likewise, there are no impacts to the environment associated with a pay-for-performance basis credit-type of financial transaction, this potential economic development incentive will not be discussed further in this SEA.

#### 2.1.2.1 Development of Alternative Substation Sites

TVA did not identify a proposed substation site in the 2016 EA because it was not known whether a 161-kV or a 500-kV substation would be needed to supply power to the Megasite. This could not be determined until the Megasite tenants had been identified along with their power needs. Once Ford was identified by the State as a Megasite tenant, it was determined that a 500-kV substation would be needed. To accommodate the overall project needs to provide a power source, which includes meeting Ford's plan for an aggressive in-service date, TVA and the State determined that the proposed 500-kV substation would need to be located on the State-owned Megasite property. Two alternative sites were considered subject to the constraints and limitations of siting a substation and of locations available on the Megasite.

Both alternative substation sites are located adjacent to SR 222 with Option A on the east side and Option B on the west side. The locations of both sites (within vicinity of SR 222) offered a suitable public road system for transporting new substation equipment. The overall terrain for both sites consisted of flat terrain, mainly composed of farmland. Forested land is sparse in these areas because of the predominating agriculture, with deciduous forest remnants mostly near the streams. The only development within proximity to either site consisted of a recently developed EMS center.

Although both sites were feasible options, Option B was rejected because it did not fit within the overall Megasite master plan for BlueOval City. Ford's design for the manufacturing facility had plans for this part of the Megasite. Also, after further discussion with TDEC, it was determined that the Option B substation location would be located north and within very close proximity of a portion of state-owned property designated as a stream mitigation bank. This proximity could potentially conflict with this designated use. For these reasons, Option B for the substation site was eliminated from further consideration.

#### 2.1.2.2 Establishment and Application of Substation Siting Criteria

TVA uses a set of evaluation criteria that represent opportunities and constraints for development of substation sites. These criteria include factors such as existing land use, ownership patterns, environmental features, cultural resources, and visual quality. Cost is also an important factor, with engineering and construction considerations, materials, and acquisition costs being the most important elements. Application of these constraints is flexible, and TVA can, and does, deviate from them. Identifying feasible substation sites involves weighing and balancing these criteria and adjusting them as specific conditions dictate.

#### 2.1.2.3 Substation Criteria

The substation criteria used in evaluating the two potential sites included engineering and construction feasibility, environmental effects, land use compatibility and availability, and feasibility of transmission line connections.

- Engineering and Construction Criteria consider the suitability of the size of the
  site for grading, fencing, and security needs. Evidence that the site is not in a 100year floodplain is required. These criteria also require that locations be near public
  roads to minimize construction of a lengthy access road, can develop a safe
  driveway connection with good sight distance in each direction, and permit the ease
  of delivery of extremely large electrical equipment. Good site drainage, soils
  suitable for grading and foundation construction, minimal tree clearing needs, and
  availability of off-site electrical service and communications sources are also
  considered.
- Environmental Criteria include the presence of streams and wetlands or rare species and/or their habitat, including locations outside the property boundary of the site that would be crossed by future transmission line corridors. Other factors include the presence of historic structures or sites on or adjacent to the site; presence or proximity of the site to prime farmland; and aquatic features crossing or adjacent to the site.
- Land Use Compatibility Criteria consist of the number of individual property tracts that make up the site, current land use practice of the tract(s), number of houses on or near the site, and the level of visual impact to surrounding area homes and the traveling public.
- Transmission Line Connections Criteria involve transmission line siting criteria
  including engineering and construction feasibility, environmental effects, and land
  use compatibility. This involves avoidance of features and areas that are generally
  incompatible with transmission lines, while identifying other areas with more
  compatible land uses, thereby creating lesser impacts.

#### 2.1.2.4 Substation Construction

TVA would clear vegetation on the site, remove the topsoil, and grade the property in accordance with TVA's *Site Clearing and Grading Specifications* (TVA 2022). Equipment used during clearing would include chain saws, skidders, bulldozers, tractors, and/or low ground-pressure feller-bunchers. However, because the site is an open pasture, essentially no marketable timber occurs on the parcel. As necessary, any woody debris and other vegetation would likely be piled and burned, chipped, or taken off site. Prior to burning, TVA would obtain any necessary permits. 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* (TVA 2022), and *Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities* (TVA 2022; TVA 2017a) provide further guidance for clearing and construction activities.

The proposed substation site is located on minimal sloping terrain designated as a previous agricultural field and would be leveled through a cut and fill process to help achieve a design elevation. The areas of the site that are too high (sloped) will be "cut" down to a level elevation, and other areas that are too low require "fill" to raise the elevation. Any additional fill required would be obtained from an approved/permitted borrow area.

Once the substation site has been graded, excess soil (i.e., "spoil") would be removed in preparation for foundations. Temporary spoil storage is proposed to be located onsite. Silt fences, site drainage structures, and any necessary detention pond(s) would be installed during construction. Total disturbance, including grading, onsite spoil storage, and any necessary detention basins would be approximately 67 acres. The substation yard would be covered with crushed stone and enclosed with chain link fencing. A new gravel access road, approximately 100-feet-long, would be constructed from SR 222 to the substation. Once completed, the substation and associated access road is expected to occupy approximately 72 acres.

Following clearing and construction, disturbed areas on the property, excluding the substation, would be restored to the extent practicable to pre-construction conditions, utilizing appropriate seed mixtures as described in TVA 2017a. Erosion controls would remain in place site-wide until the plant communities become fully established.

As described in TVA's *Substation Lighting Guidelines* (TVA 2022), the substation would be fully shielded or would have internal low-glare optics, such that no light is emitted from the fixtures at angles above the horizontal plane. TVA's *Environmental Quality Protection Procedures for Transmission Substation or Communications Construction* (TVA 2022) would be utilized during the construction of the substation.

#### 2.1.3 Alternatives Considered but Eliminated from Further Discussion

During the development of TVA's proposed action, other alternatives were considered. However, upon further study, TVA determined that these alternative considerations were not feasible for the reasons provided below.

## 2.1.3.1 Construct Approximately 18 miles of Double-Circuit 161-KV Transmission Line from Covington 161-kV Substation

Under this Alternative, TVA would construct 18 miles of new double-circuit 161-kV transmission line along a 100-foot-wide ROW from the Covington 161-kV Substation to the proposed 500-kV substation. Additionally, this alternative would require the expansion of the Covington Substation switchyard and the installation of additional 161-kV breakers at the proposed 500-kV substation.

Implementation of this alternative would accommodate the needed reliability and operational flexibility to support the project need. However, the State's requested timeline for meeting the required power supply demand to support Ford's BlueOval City could not feasibly be met using this option. Additionally, providing a power supply via an 18-mile transmission line would result in a significant increase in route length (two to four times longer than proposed routes) and thereby have greater land use impacts, as well as the potential for greater environmental impacts. Furthermore, this alternative would have far higher costs resulting from design and construction of the increased length of transmission line and additional purchase costs of transmission line ROW easement. For these reasons, this alternative was eliminated from further consideration.

## 2.1.3.2 Construct Approximately 3.4 Miles of Double Circuit 500-kV Transmission Line Independent of 161-kV Transmission Line

Under this Alternative, TVA would construct 3.4 miles of new double-circuit 500-kV transmission line on a separate ROW than the ROW proposed for the 161-kV transmission line. This additional transmission line would start at a point along the Haywood-Cordova 500-kV transmission line and terminate at the proposed 500-kV substation.

This option would require an outage at the proposed 500-kV substation for switching from 161-kV to 500-kV load. This option would also result in a less reliable power supply than the preferred alternative. As with the other eliminated transmission line power supply option, this option would require the purchase of additional ROW easements. Thus, besides additional costs, this option would result in greater land use impacts and a potential for increased environmental impacts. For these reasons, this alternative was eliminated from further consideration.

### 2.2 Comparison of Environmental Effects by Alternative

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

Table 2-1. Odililiary and Companson of Alternatives by Resource Area						
Resource Area	Impacts From No Action Alternative.	n Impacts From Proposed Action Alternative				
Groundwater and Geology	- 1					
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 2017a).				
Aquatic Ecology	Aquatic life in local streams would not be affected.	With the implementation of streamside management zones (SMZ) and BMPs, impacts to aquatic animals resulting from the proposed project would not be significant.				
Vegetation	Local vegetation would not be affected at the proposed substation site and transmission line ROWs. Routine	Site preparation and clearing of approximately 85 acres of trees for the proposed substation site and transmission line ROWs would have a minor effect on most local vegetation.				
	maintenance of existing transmission line vegetation would continue, but overall impacts to vegetation are considered minor.	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 substation site and transmission line ROWs. 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 substation site and transmission line ROWs 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 statelisted species during site preparation, construction, and on-going maintenance activities, and adherence to guidelines in the programmatic biological assessment for bats (TVA 2017b), the proposed TVA action is expected to have only minor effects on federally or state-listed species.				

Resource Area	Impacts From No Action Alternative.	Impacts From Proposed Action Alternative
Floodplains	No changes in local floodplain functions are expected.	With the implementation of standard BMPs and 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 5.29 acres of wetlands within the project footprint. With appropriate permits, mitigation, and BMPs implemented wetland impacts would be minor on a watershed scale.
Prime Farmland	No effects to soils and prime farmland are expected.	The loss of 26.3 acres of prime farmland within the proposed substation footprint would be minor. No impacts to prime farmland soils would occur because of the proposed transmission line ROWs
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 substation and transmission lines 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 substation and transmission lines would not be constructed.	Overall, temporary, minor noise above ambient levels would be produced during construction, operation, and maintenance activities, and noise impacts from the operation of the proposed substation would be minor.
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 propertic TVA has initiated consultation with the Tenness SHPO and federally recognized Indian tribes.
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 substation or transmission lines.

Resource Area	Impacts From No Action Alternative.	Impacts From Proposed Action Alternative
Socioeconomics and Environmental Justice	No change in local demographics, socioeconomic conditions, community services, or environmental justice populations. Economic benefits associated with the proposed Megasite development would be realized by all affected communities, including minority and low-income populations, in part countering any minor adverse effects. Potential for power reliability issues as an inadequate power supply would be realized in the surrounding area due to the needs of the Megasite.	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 or near the substation site. 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 (EJ and non-EJ communities) living along TVA's transmission line network across the Valley. Economic benefits associated with the proposed Megasite development would be realized by these affected communities, including minority and lowincome populations, in part countering any minor adverse effects. Likewise, increased power reliability benefits resulting from an additional power source in the project area would be realized by the local communities, including minority and low-income populations. Thus, overall, any adverse impacts would be minor and would be largely offset by beneficial economic impacts.
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.
Substation Transmission Line Upgrades Post- Construction	There would be no substation constructed or transmission line upgrades, therefore no impacts.	Public exposure to Electromagnetic fields (EMF) would be minimal, and no significant impacts from EMFs are anticipated. A fenced enclosure would surround the proposed substation and only authorized personnel would be permitted. National Electric Safety Code standards are strictly followed when installing, repairing, or upgrading TVA substation, 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.

#### 2.3 Identification of Mitigation Measures

TVA employs standard practices when constructing, operating, and maintaining substations, transmission lines, structures, and the associated ROW and access roads. These can be found on TVA's transmission website (TVA 2022). 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 substation and associated transmission line, and access roads are as follows:

- TVA would utilize standard BMPs, as described in Transmission's BMP guidance (TVA 2017a), 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 the BMP guidance (TVA 2017a).
- Wetlands would be protected by the implementation of standard BMP's as identified in Transmission's BMP guidance (TVA 2017a)
- 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 Transmission's BMP guidance (TVA 2017a).
- Perennial and intermittent streams, both classified as "streams" in this document, would be protected by the implementation of standard stream protection (Category A) as defined in Transmission's BMP guidance (TVA 2017a).
- During vegetation clearing activities, 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 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 2022), and Transmission's BMP guidance (TVA 2017a) 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 U.S. Environmental Protection Agency (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.
- Construction would adhere to the TVA subclass review criteria for transmission line location in floodplains (TVA 1981).
- 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 CFR § 60.3).

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

 Integration of BMPs during construction and maintenance to minimize potential impacts to bat foraging habitat as described and in accordance with TVA's Programmatic Consultation on Bats and routine actions (TVA 2017b).

#### 2.4 The Preferred Alternative

Alternative B—Provide Incentives and a Power Supply for BlueOval City and the Stanton, Tennessee Megasite—is TVA's preferred alternative for this proposed project.

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# 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 500-kV substation and approximately 9.9 miles of new transmission lines is described in this chapter. The descriptions below of the potentially affected environment are based on field surveys conducted between April and May 2015, 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 effect (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, as well as the proposed substation site.

Potential effects related to 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

As previously described in TVA 2016, the project area is located within the Mississippi embayment aquifer² system (U.S. Geological Survey [USGS] 1998). The Mississippi aquifer region contains six aquifers and two confining units. The project area is located within the Upper Claiborne aquifer and Middle Claiborne aquifers. The Upper Claiborne aquifer consists of interbedded fine sand, silt, clay, and some lignite, resulting in small supplies of ground water. The Middle Claiborne aquifer consists of the upper part of the Memphis Sand and includes sands of the Tallahatta Formation with few clay confining layers³. This results in an extremely well-connected hydraulic unit which allows large quantities of groundwater to be withdrawn from the aquifer (Lloyd and Lyke 1995).

Recharge for the middle Claiborne aquifer primarily occurs from precipitation falling directly on surface outcrops of the aquifer units and downward migration of water from overlaying aquifers. Discharge from this aquifer is to streams in aquifer outcrop areas or to the Mississippi River Valley aquifer (Lloyd and Lyke 1995).

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<sup>&</sup>lt;sup>2</sup> An aquifer is an underground layer of material that contains groundwater and is capable of yielding water.

<sup>&</sup>lt;sup>3</sup> A *confining layer* is a relatively impermeable layer of underground material that tends to isolate or "confine" the aquifer beneath it.

Public water supply in Haywood County is sourced from groundwater and provided by Brownsville Water Department serving a population of 13,601, Haywood County Utility District serving a population of 1,370, and Stanton Water System serving a population of 673 (EPA 2021). Additionally, Haywood County residents may rely on private wells for water supply. The State has developed a Wellhead Protection Program to protect public water systems from contaminated groundwater by designating official wellhead protection areas to monitor groundwater (TDEC 2021a). There are 60 public water wells within a 2-mile radius of the proposed site; 42 of the wells are registered as residential usage, six are registered for irrigation usage, four are registered as commercial or industrial usage, one is registered for heat pump usage, and the remaining seven are unclassified or registered as other (TDEC 2021b).

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 Tennessee (EPA 2021).

#### 3.1.2 Environmental Consequences

#### 3.1.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not supply power to serve the Megasite with the construction of the proposed 500-kV substation or transmission lines. Therefore, there would be no impacts to groundwater resources resulting from TVA's proposed Action Alternative.

Under the No Action Alternative, urbanization and environmental changes within the area would still occur, and activities occurring because of the State's Megasite would likely continue. Ford has committed to construction of the BlueOval City facility on the Megasite; however, delays in providing a power supply to the site would impact their anticipated schedule for being operational. The amount of such economic impact resulting from TVA not providing a power supply cannot be quantified accurately due to the speculative nature of future conditions.

Under the No Action Alternative, no ROW would be cleared to accommodate the proposed transmission lines. No changes in current land uses along the existing or proposed ROW are anticipated within the foreseeable future under the No Action Alternative. Thus, implementation of this alternative is not expected to directly cause any effects to current land uses or to prime farmlands. 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. However, these changes are not expected to be the result of implementing the No Action Alternative.

Because the proposed construction, operation, and maintenance of the proposed new facilities would not occur under the No Action Alternative, no direct effects those environmental resources listed in Chapter 3, including groundwater, are anticipated.

If TVA chooses not to undertake the proposed Action Alternative, the State could find another way to ensure power is supplied to the site. Should the State independently or in conjunction with STEMC choose an option to build and provide transmission service by constructing a new substation and the transmission lines, the potential environmental effects of implementing the No Action Alternative would likely be comparable to those of the Action Alternative described in this chapter. Likewise, the potential impacts of a substation and transmission lines constructed by anyone else would likely be similar. The potential impacts would be dependent upon various factors, such as the location and routes chosen, and the construction methods used.

#### 3.1.2.2 Alternative B

Under the Action Alternative, construction activities would entail localized ground disturbance and shallow excavation, up to approximately 15 feet, which would be limited to the substation footprint and transmission line ROWs. 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. TVA standard BMPs would be used to control sediment infiltration from storm water runoff to minimize impacts to groundwater (TVA 2017a). 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 substation or transmission lines, therefore, there would be no impact to groundwater levels or availability.

#### 3.2 Surface Water

#### 3.2.1 Affected Environment

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA) is the primary law that affects surface water quality. 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 permit is obtained.

Several other environmental laws contain provisions aimed at protecting surface water, including Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act and the Federal Insecticide, Fungicide, and Rodenticide Act.

Streams in the vicinity of the proposed transmission line ROWs have been previously described in TVA 2016 as draining to an Unnamed Tributary of Little Laurel Canal in the Loosahatchie River watershed and to an Unnamed Tributary of Big Muddy Creek in the Hatchie River watershed. Based on survey efforts conducted within the proposed substation site, there are no surface water features present within the site boundaries. The project area is within the Mississippi River Basin and drains to an Unnamed Tributary to Big Muddy Creek in the Lower Hatchie River watershed (TDEC 2021c). Outside of the project area, the Big Muddy Creek has been channelized in the past (TVA 2016), however the Hatchie River has remained mostly undammed and unchanneled (TDEC 2021c). All the streams in the proposed project vicinity are classified by the State for Fish and Aquatic Life, Recreation, Livestock Watering and Wildlife, and Irrigation (see Table 3-1).

Table 3-1. Uses for Streams in the Vicinity of the Proposed 500-kV Substation

Stream	Use Classification <sup>1</sup>								
	DOM	IWS	FAL	REC	LWW	IRR	NAV	TS	NRTS
Mississippi River	Х	Х	Х	Х	Х	Х	Х		
Big Muddy Creek Canal			Χ	Χ	Χ	Χ			
Unnamed Tributary			Χ	Χ	Χ	Χ			

Source: Tennessee Department of Environment and Conservation 2019

The CWA under section 303(d) requires all states to submit their list of impaired and threatened waters, waters where all required pollution controls are not sufficient to attain or maintain water quality standards and to establish total maximum daily loads based on the severity of the pollution and sensitivity of the water uses. The list of impaired and threatened water is submitted to the EPA and is developed into a "303(d) list." The Big Muddy Creek Canal and Unnamed Tributary to the Big Muddy Creek Canal are both listed on Tennessee's 2020 303(d) list as impaired due to total phosphorus, *E. Coli*, sedimentation or siltation, and physical substrate habitat alterations from municipal point source discharges, channelization, crop production (non-irrigated), and from unknown sources (Table 3-2).

Table 3-2. TDEC 303(d) Listed Streams in the Vicinity of the Proposed Substation

Stream	303(d) Impaired Stream					
Stream	Use Support	Cause	Source			
Hatchie River						
Big Muddy	Impaired	Physical Substrate Habitat	Municipal Point Source			
Creek Canal		Alternations, Total	Discharges, Channelization, Crop			
		Phosphorus, E. Coli, and	Production (non-irrigated), Source			
		Sedimentation/Siltation	Unknown			
Unnamed	Impaired	Physical Substrate Habitat	Channelization, Crop Production			
Tributary		Alternations and Total	(non-irrigated), and Municipal			
		Phosphorus	point Source Discharges			

Source: Tennessee Department of Environment and Conservation 2020

#### 3.2.2 Environmental Consequences

#### 3.2.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 500-kV substation or associated transmission lines. Potential effects are anticipated to be like those described in Section 3.1.2.1. Therefore, there would be no impacts to surface waters.

#### 3.2.2.2 Alternative B

Under the Action Alternative, there would be no direct impacts to surface water features within the substation project site as none are present. Construction activities would involve ground disturbance resulting in the potential for increased erosion and sediment release, which may temporarily affect local surface water via stormwater runoff. Likewise, as previously described in the original EA (TVA 2016), 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.

<sup>&</sup>lt;sup>2</sup> Codes: DOM = Domestic Water Supply, ISW = Industrial Water Supply, FAL = Fish and Aquatic Life, TS = Trout Stream, NRTS = Naturally Reproducing Trout Stream, REC = Recreation, LWW = Livestock Watering and Wildlife, and IRR = Irrigation

A General Permit for Storm Water Discharges Associated with Construction Activities (TDEC 2021d) would be required for this project and this permit would require development of a project specific Stormwater Pollution Prevention Plan. The Tennessee Erosion and Sediment Control Handbook would be referenced to ensure that the appropriate BMPs are used (TDEC 2012).

With an increased onsite workforce, it would be necessary to plan to provide additional restroom facilities. During the construction phase, temporary toilet facilities would be provided by a licensed vendor and sanitary wastewater would be disposed at an approved facility.

Impervious buildings and infrastructure prevent rain from percolating through the soil, which results in additional runoff of water and pollutants into storm drains, ditches, and streams. Clearing of vegetation and ground cover and the addition of impervious pavement under this alternative would alter the current stormwater flows on the site. This flow would be properly treated through implementation of the proper stormwater BMPs (TVA 2017a).

Design and construction of the proposed 500-kV substation would abide by all federal, state, and local guidelines and all applicable permits and requirements for protective measures to surface water including the implementation of BMPs. Therefore, there would be no impacts to surface waters.

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 2017a). ROW maintenance would employ manual and low-impact methods wherever possible. In areas requiring chemical treatment, only USEPA-registered herbicides would be used in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts. Proper implementation of these controls is expected to result in only minor temporary impacts to surface waters. Design, construction, and maintenance of the Megasite 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 anticipated actions occurring in the proposed project area will be meeting permit requirements and following BMPs, no significant cumulative impacts are anticipated.

# 3.3 Aquatic Ecology

# 3.3.1 Affected Environment

To support the planned BlueOval City, TVA proposes to build an approximately 6.5-mile 161-kV transmission line, an approximately 3.4-mile 500-kV transmission line, and a 500-kV substation.

No surface water features were present within the proposed substation site boundaries. Because transmission line construction and maintenance activities mainly affect riparian conditions and instream habitat, TVA evaluated the condition of both at each stream crossing within the project footprint. Riparian conditions were evaluated during 2015 and 2021 field surveys. Hydrologic determinations were conducted using a Tennessee Department of Environmental Control Hydrologic Determination Field Data Sheet. A listing of stream crossings in the project area, including ephemeral/WWCs, as well as observed stream conditions found during the 2021 field survey, is provided in Appendix C. Additional information regarding watercourses in the vicinity of the project area can be found in Section 3.2 Surface Water.

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

- 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 3-3. Riparian Condition of Streams Crossed by the Proposed Transmission Lines for the Memphis Regional Megasite and Associated Access Roads

Riparian Condition	Streams Within ROW	Total
Forested	8	8
Partially forested	0	0
Non-forested	0	0
Total	8	8

TVA then assigns appropriate streamside management zones (SMZs) and BMPs based on these evaluations and other considerations (i.e., State 303(d) listing and presence of endangered or threatened aquatic species). Appropriate application of the BMPs minimizes the potential for impacts to water quality and in-stream habitat for aquatic organisms.

Hydrological determinations were conducted by a Tennessee Qualified Hydrologic Professional to determine its jurisdictional status. Linear watercourses were classified as stream or ephemeral/WWC. Streams according to the 2020 TDEC Division of Water Pollution Guidance for Making Hydrologic Determinations are "a surface water that is not a wet-weather conveyance [Rule 0400-4-3-.04(20)]. A wet-weather conveyance is a "man-made or natural watercourses, including natural watercourses that have been modified by channelization: that flow only in direct response to precipitation runoff in their immediate locality: whose channels are at all times above the ground water table: that are not suitable for drinking water supplies: and in which hydrological and biological analysis indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months [Rule 1200—3.04(25)].

# 3.3.2 Environmental Consequences

# 3.3.2.1 Alternative A – No Action

Under the No Action Alternative, the substation, transmission lines and associated access roads would not be built. Thus, no changes to aquatic resources within these areas would result from TVA's actions. However, as described in Section 3.1.2.1, changes to aquatic life would likely occur over the long-term due to factors such as population growth and land use changes within the area.

# 3.3.2.2 Alternative B – Action Alternative

Aquatic life could be affected by the proposed Action Alternative. 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 of the substation, transmission lines, and associated 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 many fish and mussel species (Sutherland et al. 2002; Brim Box and Mossa 1999).

Watercourses that convey only surface water during storm events (such as ephemeral streams/WWCs) and that could be affected by the construction, operation, or maintenance of the proposed substation, transmission line routes, and access roads would be protected by standard BMPs as identified by TVA (2017a). These BMPs are designed in part to minimize disturbance of riparian areas, and subsequent erosion and sedimentation that can be carried to streams. TVA also provides additional categories of protection to watercourses and SMZs 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 (Appendix C; TVA 2017a). The width of the SMZs is determined by the type of watercourse, primary use of the water resource, topography, or other physical barriers (TVA 2017a).

The watercourses identified in Appendix C within the proposed ROWs or crossed by proposed access roads, or within the substation boundary would be protected by Standard Stream Protection (Category A) SMZ as defined in TVA (2017a). This standard (basic) level of protection for streams and the habitats around them is to minimize the amount and length of disturbance to the water bodies without causing adverse impacts on the construction work.

Because appropriate BMPs and SMZs would be implemented during construction, operation, and maintenance of the proposed project, any direct, indirect, or cumulative impacts to aquatic animals resulting from the proposed action would not be significant.

# 3.4 Vegetation

3.4.1 Affected Environment

The proposed upgrades to the TVA transmission system would occur in the Loess Plains IV ecoregion. The Loess Plains are gently rolling, irregular plains, between 250 to 500 feet in elevation, with loess<sup>4</sup> up to 50 feet thick. Oak-hickory and southern floodplain forests are the most common natural communities found in this ecoregion, but most forest land has been converted to an agricultural land use. Bottomland forest and cypress-gum swamp habitats remain in wetlands associated with larger order streams (Griffith et al. 1998).

<sup>&</sup>lt;sup>4</sup> Loess is a fine-grained yellowish-brown deposit of soil left by the wind which can provide the basis for productive farming.

The most recent field surveys of the study area were conducted in November and December of 2021, but most of the proposed transmission line ROW was also surveyed in 2015 for the 2016 EA. These efforts were focused on documenting plant communities, infestations of invasive plants, and to search for possible threatened and endangered plant species within the proposed transmission line corridors and substation sites. Using the National Vegetation Classification System (Grossman et al. 1998), vegetation types found in the project area can be classified as a combination of herbaceous vegetation and deciduous forest. Each vegetation type covers about half of the proposed project area.

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. Cultivated agricultural fields, pastures, maintained power line ROWs, or disturbed sites in various stages of residential development account for the vast majority herbaceous vegetation in the project area. Most of these areas are dominated by plants indicative of early successional habitats including many non-native species. Common species in the most disturbed areas include the row crops, corn, cotton, soybeans, and winter wheat along with beefsteak plant, Bermudagrass, broomsedge, beaked corn salad, clover, dallisgrass, hairy buttercup, Japanese honeysuckle, Jonson grass, meadow brome, Philadelphia fleabane, slender yellow sorrel, and wild garlic. Several small emergent wetlands support a higher proportion of native species including climbing dogbane, Devil's darning needles, giant goldenrod, prickly bog sedge, squarrose sedge, and rushes.

All forested areas within the proposed substation site and along the proposed transmission line ROW and associated access roads are deciduous in composition and total approximately 85 acres. Deciduous forest is characterized by trees with overlapping crowns where deciduous species account for more than 75 percent of the canopy cover. These forest stands are dominated by a variety of tree species including American elm, boxelder, black cherry, cherrybark oak, green ash, honey locust, mockernut hickory, Osage orange, red maple, slippery elm, shagbark hickory, southern red oak, sugarberry, sugar maple, sweetgum, water oak, white ash, white oak, willow oak and winged elm. The understory consists of Chinese privet, common elderberry, devil's walking stick, possum haw, and red buckeye. Herbaceous plants observed included bulbous bitter cress, eastern woodland sedge, green dragon, largeseed forget-me-not, longleaf wood oats. Japanese stiltgrass, mayapple, trumpet creeper, and Virginia creeper. Small, forested wetlands were found in several locations of the proposed ROW; American elm, green ash, slippery elm, and sweetgum were the dominant overstory species on these sites. See wetland Section 3.8 for details of individual wetlands delineated during field surveys. All forested areas encountered within the project footprint are fragmented and surrounded by agricultural and otherwise developed land. No forested areas have structural characteristics indicative of old growth forest (Leverett 1996), and most stands have trees that average between 12- and 24-inches diameter at breast height.

EO 13112 (Invasive Species) 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.

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 and ecosystem processes (Miller 2010). According to Morse et al. (2004), invasive non-native species are the second leading threat to imperiled native species.

Most of the project area has been extensively altered in the past resulting in the introduction and spread of invasive non-native plants. No federal-noxious weeds were observed during the most recent field surveys, but many non-native invasive plant species were observed throughout the project area. Common invasive plant species occurring along the proposed substation site and transmission line ROW include Chinese privet, Japanese honeysuckle, Japanese stilt grass, Johnson grass, multiflora rose, sericea lespedeza, and tree-of-heaven. These species occur widely across the landscape and have the potential to adversely impact the native plant communities because of their potential to spread rapidly and displace native vegetation. All are considered a threat in Tennessee (Tennessee Invasive Plant Council 2021).

# 3.4.2 Environmental Consequences

#### 3.4.2.1 Alternative A – No Action

Adoption of the No Action Alternative would not affect plant life in the proposed substation site or transmission line ROW, because no project-related work would occur. 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 substation site, ROW or along access roads are common throughout the region and implementation of the No Action Alternative would not change this situation.

#### 3.4.2.2 Alternative B

Implementing the Action Alternative would involve clearing the proposed substation site and ROWs to accommodate structures and transmission lines as well as development of access roads. Such ground-disturbing activities would directly affect the existing plant communities.

Adoption of the Action Alternative would have minor effects on the terrestrial life, including vegetation of the region. The conversion of pasture and forested land for the proposed substation and transmission line ROW would constitute a long-term change in vegetative cover. However, the overall effect with respect to local vegetation would be minor to the terrestrial ecology of the region. Implementation of this alternative would require clearing approximately 85 acres of forest for the proposed substation site and transmission line ROW. However, these forested communities are common and well-represented throughout the region. Forest stands potentially impacted by the proposed action are currently small and heavily fragmented and do not contain plant communities with measurable conservation value. Though agriculture and development in west Tennessee has resulted in conversion of much forest to other land uses. substantial amounts of forest remain. As of 2012, there were over 1,400,000 acres of forest land in Fayette, Haywood, and the surrounding Tennessee and Mississippi counties (U.S. Forest Service [USFS] 2015). Project-related effects to forest resources would be negligible when compared to the total amount of forested land occurring in the region. Transmission line construction, operation, and maintenance would temporarily affect herbaceous plant communities in the proposed project area, but with the implementation of TVA standard BMPs (TVA 2017a) these areas would likely recover to their pre-project condition in about one year.

Most of the proposed substation site, transmission line ROW and associated access roads have a large component of invasive terrestrial plants. Thus, 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 BMPs to revegetate with noninvasive species (TVA 2017a) would serve to minimize the potential introduction and spread of invasive species within the proposed substation site and transmission line ROW.

Adoption of the Action Alternative would facilitate construction of the proposed substation and would likely facilitate the construction and operation of the Megasite and other related developments, but the associated cumulative impacts would be unlikely to significantly affect the terrestrial ecology of the region. Large State-owned land tracts would be the likely location of most Megasite development. Current and historical aerial photography indicates that most of these State-owned parcels consist of previously cleared, heavily disturbed agricultural land that does not contain natural vegetation (EnSafe 2015). Areas with naturalized vegetation on the Megasite have not been surveyed for plant species richness or diversity, but repeated clearing of forested areas and row crop agriculture prevents establishment of plant communities with conservation value and promotes non-native plants. While development of the Megasite would further disturb the site, the parcels likely currently contain substantial cover of non-native plant species and adoption of the Action Alternative would not change this situation.

### 3.5 Wildlife

# 3.5.1 Affected Environment

Habitat assessments for terrestrial animal species were conducted along the proposed transmission line ROW in 2015 and again on November 30 and December 1, 2021. The proposed substation site and transmission line connections to STEMC's BlueOval City substation were also surveyed during the 2021 field review. The proposed ROWs are routed predominantly through agricultural fields or pasture with fragmented patches of forest (TVA 2016). Further, the 2021 field review found that some forest growth has occurred since the 2015 field work was completed. This resulted in a revised approximation of 85 acres of forest that would be cleared for the proposed project. Nearly all of the forested areas are deciduous in composition except for two field edges containing evergreens. Small areas of forested and emergent wetlands (6.29 acres), a pond (2.3 acres) and eight "streams" occur in the project footprint. The proposed substation site is predominantly agricultural fields or pasture with a few scattered trees. Small herbaceous areas are present in existing ROWs, nested 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.

Common species found within habitat found along the proposed ROW has been previously described in the 2016 EA. Species found in habitat at the proposed substation site would likely be similar. Review of the TVA Regional Natural Heritage database in October 2019 indicated that no caves have been documented within 3 miles of the project area and no caves were identified during the 2021 field review. No other unique or important terrestrial habitats were identified within the project area. 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.

Potential for the proposed Action to affect migratory birds was considered. Four osprey nests have been recorded on transmission structures within 3 miles of the project area, but none were observed during 2021 field review. The closest is about 0.25 miles away. Review of the USFWS's Information for Planning and Consultation database (IPAC) in November 2021 identified fourteen migratory bird species of conservation concern as having the potential to occur in Fayette or Haywood counties (American kestrel, bald eagle, cerulean warbler, eastern whip-poor-will, golden eagle, Kentucky warbler, LeConte's sparrow, lesser yellowlegs, prairie warbler, prothonotary warbler, red-headed woodpecker, rusty blackbird, short-billed dowitcher, and wood thrush). Suitable foraging habitat exists in the action area for American kestrel, cerulean warbler, eastern whip-poor-will, Kentucky warbler, prairie warbler, red-headed woodpecker, rusty blackbird, and wood thrush. Suitable nesting habitat for American kestrel, eastern whip-poor-will, prairie warbler, red-headed woodpecker, and wood thrush was observed in the project footprint.

# 3.5.2 Environmental Consequences

#### 3.5.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not build a 500-kV substation or approximately 9.9 miles of transmission line. 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. 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.

#### 3.5.2.2 Alternative B – Action Alternative

Under the Action Alternative, TVA would build approximately 9.9 miles of transmission line and a 500-kV substation. Actions would include removing trees and other vegetation within the proposed ROW and substation site, establishing transmission infrastructure, and associated access roads. Wildlife currently using these habitats would be 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. Construction-associated disturbances and habitat removal would disperse mobile wildlife into surrounding areas to find new food and shelter sources and to 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.

Some migratory birds of conservation concern identified by the USFWS could be impacted by the proposed actions. Foraging habitat exists in the project area for American kestrel, cerulean warbler, eastern whip-poor-will, Kentucky warbler, prairie warbler, red-headed woodpecker, rusty blackbird, and wood thrush. Should individuals occur on site, they are expected to flush if disturbed. No direct mortality to adults is anticipated because of construction. Suitable nesting areas may be present for American kestrel, eastern whip-poor-will, prairie warbler, red-headed woodpecker, and wood thrush. Nests and juveniles of these species may be impacted by construction activities; however, it is not expected that populations of these migratory bird species would be impacted.

# 3.6 Endangered and Threatened Species

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 Act 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 Act's purposes.

The State of Tennessee 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 TDEC; however, the Tennessee Heritage Program and TVA both maintain databases of species that are considered threatened, endangered, or special concern, or tracked in Tennessee. Species listed under the ESA or by the State are discussed in this section.

Table 3-4. Federally and State-listed Species from and/or within Fayette and Haywood Counties, Tennessee<sup>1</sup>

Odunties, Termessee					
Common Name	Scientific Name	Federal Status <sup>2</sup>	State Status <sup>2</sup>	State Rank <sup>3</sup>	
Aquatic Animals					
Fishes <sup>4</sup>					
Blue Sucker	Cycleptus elongatus		THR	S2	
Naked Sand Darter	Ammocrypta beani		NMGT	S2	
Northern Madtom	Noturus stigmosus		NMGT	S3	
Piebald Madtom	Noturus gladiator		NMGT	S3	
Scaly Sand Darter	Ammocrypta vivax		NMGT	S2	
Mussels <sup>4</sup>					
Fatmucket	Lampsilis siliquoidea		NOST	S2	
Sheepnose	Plethobasus cyphyus	END	TRKD	S2S3	
Southern Rainbow	Villosa vibex		TRKD	S2	
Tapered Pondhorn	Uniomerus declivis			S2	
Crustaceans <sup>4</sup>					
Hatchie Burrowing Crayfish	Creaserinus hortoni		END	S1	
Terrestrial Plants					
Prairie False-foxglove	Agalinis heterophylla		END	S1	
Sedge	Carex reniformis		SPCO	S1	
Terrestrial Animals					
Birds					
Osprey	Pandion haliaetus			S3	
Insects					
Monarch butterfly <sup>5</sup>	Danaus plexippus	С		S4	
Mammals					
Indiana bat <sup>6</sup>	Myotis sodalis	END	END	S1	
Northern long-eared bat <sup>6</sup>	Myotis septentrionalis	THR	NMGT	S1S2	

<sup>&</sup>lt;sup>1</sup> Sources: TVA Regional Natural Heritage database (accessed April, May, and June 2015, November 2021, and February 2022); TNBWG 2015a and 2015b (accessed June 2015 and 2022); USFWS 2015a, 2015b, and 2015c (accessed June 2013, October 2021, and February 2022).

<sup>&</sup>lt;sup>2</sup> Status Codes: C = Candidate Species; END = Endangered; NMGT = In Need of Management; NOST = No Status; SPCO = Special Concern; THR = Threatened; TRKD = Tracked

<sup>&</sup>lt;sup>3</sup> State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure

<sup>&</sup>lt;sup>4</sup> The Big Muddy Creek and Lower Loosahatchie River Watersheds were considered.

<sup>&</sup>lt;sup>5</sup> Historically this species has not been tracked by state or federal heritage programs.

<sup>&</sup>lt;sup>6</sup> Federally listed species that the USFWS has determined that have the potential to exist state-wide, though no records are currently known from Fayette or Haywood counties, Tennessee.

#### 3.6.1 Affected Environment

# 3.6.1.1 Aquatic Animals

A query of the TVA Regional Natural Heritage database indicated nine state-listed aquatic species are known to occur within ten-digit hydrologic unit code (HUC) Big Muddy Creek (0801020804) and Lower Loosahatchie River (0801020904) watersheds (Table 3-4).

A review of the TVA Regional Natural Heritage database and available information on the distribution of sensitive aquatic species indicated one federally listed species within the Big Muddy Creek and Lower Loosahatchie River watersheds and/or Fayette and Haywood counties. The federally listed endangered sheepnose mussel has been collected in the Hatchie River within Haywood County (Butler 2002). A query of the USFWS's IPAC identified no federally listed aquatic species within the project area. Furthermore, no designated critical habitat for aquatic species occurs within the Hatchie River watershed in Fayette or Haywood counties.

Because the globally rare, state-endangered Hatchie burrowing crayfish had the potential to be in the vicinity of the proposed substation site, a field survey was conducted in March 2022 to determine whether it was present. The Hatchie burrowing crayfish is considered a primary burrower species that lives in semi-terrestrial habitats sometimes far removed from permanent water bodies. Primary burrowers tend to remain in their burrows continuously and live in areas without permanent water except during breeding when they must migrate to a nearby water source (Hogger 1988). First, the proposed substation property was assessed to locate areas containing burrows. Once colonies were located, sampling was conducted by excavating burrows. The only species of burrowing crayfish collected was the common, widespread Digger crayfish (Creaserinus fodiens), which can be easily confused with the more rare, narrowly distributed Hatchie burrowing crayfish. Due to their observed morphological similarity, examination of reproductive structures is the only way to distinguish between the two species. All individuals were examined using a dissecting microscope to confirm identification. Voucher specimens of both species from other localities were also used for comparison during identification. It should also be noted that neither species has been collected from the same location, further indicating that the Hatchie burrowing crayfish is most likely absent from the project area.

Also, eight other state-listed species (five fishes, three mussels) are known from within Fayette and Haywood counties (Table 3-5). However, these species occur in the Hatchie and Wolf Rivers and are located outside of the potentially affected watersheds of the proposed ROW. Thus, none of the federally or state-listed species listed in Table 3-4 are anticipated to occur in or near the project vicinity.

# 3.6.1.2 Vegetation

A review of the TVA Regional Natural Heritage database indicated that no federally listed plant species and two state-listed plant species have been previously reported within a 5-mile vicinity of the proposed substation, ROW, and associated access roads (Table 3-4). No federally listed plant species or designated critical habitat has been reported from Fayette and Haywood counties. No federally or state-listed plants were observed in the during field surveys.

#### 3.6.1.3 Wildlife

A review of terrestrial animal species in the TVA Regional Natural Heritage database in November 2021 indicated one state-listed species (osprey) and no federally listed species have documented presence within 3 miles of the proposed project footprint (Table 3-4). No federally listed species are known from Fayette or Haywood counties. The USFWS has determined that

the federally listed Indiana bat, northern long-eared bat, and a candidate for federal listing, the monarch butterfly have the potential to occur in these counties. Thus, habitat suitability and potential impacts to each of these species will be addressed (Table 3-4).

## **Species Accounts**

Monarch butterflies are a highly migratory species, with eastern U.S. populations overwintering in Mexico. Summer breeding habitat in the U.S. 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. No records of the monarch butterfly are known from Fayette or Haywood counties, but the USFWS has determined that this species can occur within the project area. Limited suitable habitat is present in the project footprint. This species is currently listed under the ESA as a candidate species and is not subject to Section 7 consultation under the ESA.

Ospreys, listed by the State as vulnerable, can be found near lakes and rivers. Ospreys establish nests near water, constructing large stick nests in trees or on artificial structures such as utility poles and navigation markers. They will occasionally build nests on rocks or even flat ground. No large water bodies were observed in or near the project footprint, however a pond and two perennial streams may provide foraging habitat. Ospreys have been recorded on transmission structures within 0.25 miles of the project footprint.

The Indiana bat hibernates in caves during winter and inhabits forested areas around these caves for swarming (mating) in the fall and staging in the spring, prior to migration to summer habitat. During summer, Indiana bats roost under exfoliating bark, and within cracks and crevices of trees, typically located in mature forests with an open understory and a nearby source of water. Indiana bats are known to change roost trees frequently throughout the season, yet still maintain site fidelity, returning to the same summer roosting areas in subsequent years (Pruitt and TeWinkel 2007; Kurta et al. 2002). The USFWS has determined that this species has the potential to occur statewide in Tennessee; however, no records are known from Fayette and Haywood counties (USFWS 2015a; Tennessee Bat Working Group [TNBWG] 2022a).

The northern long-eared bat predominantly overwinters in large hibernacula such as caves, abandoned mines, and cave-like structures. During the fall and spring, they utilize cave entrances and the surrounding forested areas for swarming and staging. In summer, northern long-eared bats roost individually or in colonies beneath exfoliating bark or in crevices of both live and dead trees. Roost selection by northern long-eared bat is similar to Indiana bat; however, it is thought that northern long-eared bats are more opportunistic in roost site selection. This species also roosts 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 (USFWS 2014). The USFWS has determined this species has the potential to occur statewide in Tennessee; however, no records are known from Fayette and Haywood counties (USFWS 2014, 2015b, TNBWG 2022b).

No known caves or suitable winter roosting structures for either Indiana bat or northern longeared bat exist in the project footprint. No suitable winter roosting structures are known within 3 miles of the project footprint. Based on the 2020 Range-Wide Indiana Bat Survey Guidelines (USFWS 2020), TVA has determined that approximately 70 acres of suitable summer roosting habitat for Indiana bat and northern long-eared bat exists within 24 forest fragments in the project footprint. Habitat quality ranged from moderate to high based on the presence of snags and live trees with exfoliating bark, cracks, and crevices in the proposed project area. Suitable summer roosting areas were comprised of both forested wetland and mature deciduous hardwood stands. Additional foraging habitat and sources of drinking water occur over a pond, streams, and wetlands within the proposed project area.

# 3.6.2 Environmental Consequences

# 3.6.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed substation, transmission lines 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 Section 3.1.2.1. Thus, there would be no direct, indirect, or cumulative effects to federal 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 or state-listed plants species because no individual plants or habitat capable of supporting listed species occurs within the proposed substation site, transmission line ROWs or along the associated access roads. Changes to local plant communities resulting from natural ecological processes and human-related disturbance would continue to occur, but the changes would be unrelated to the proposed project and would not impact endangered and threatened 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

As indicated in Section 3.2.2.2 Surface Water, adverse water quality impacts can potentially result from the implementation of the proposed project, which could have direct and indirect impacts to aquatic biota within watercourses in the project area.

However, as described in Section 3.2.2.2 Surface Water and 3.3.2.2 Aquatic Ecology, watercourses that could be affected by the proposed project would be protected by standard BMPs and additional protection measures as identified in TVA (2017a). These BMPs are designed in part to minimize disturbance of riparian areas, and subsequent erosion and sedimentation that can be carried to streams.

One federally listed aquatic species (sheepnose mussel) is known from Haywood County. There are no federally listed aquatic species known from Fayette County and no designated critical habitat for aquatic species within Fayette or Haywood counties or the potentially affected watersheds of the proposed substation. transmission line ROW, or access roads.

Because appropriate BMPs and SMZs would be implemented during construction, operation, and maintenance of the proposed substation transmission line route, and access roads, no direct, indirect, or cumulative impacts to state-listed aquatic species are anticipated to occur.

# 3.6.2.2.2 Vegetation

Adoption and implementation of the Action Alternative would not affect federally listed plant species or designated critical habitat, because neither occurs within the proposed substation site, the transmission line ROWs, or along the associated access roads. Two state-listed plant species have been previously reported from within 5 miles of the proposed transmission line ROW and associated access roads, but no listed species were observed during field surveys of that area. Therefore, adoption of the Action Alternative would have no direct or indirect, impacts on federally or state-listed plant species.

Adoption of the Action Alternative would likely facilitate the construction and operation of the Megasite and other related developments, but the associated cumulative impacts would be unlikely to impact federally or state-listed plant species. No federally listed plant species have been previously reported from Fayette or Haywood counties where the proposed substation, ROW or access roads would be located. The heavily disturbed nature of the vast majority of the Megasite project area also precludes the presence of listed plant species. However, aerial photography suggests that small portions of the Megasite project area contains naturalized vegetation that could theoretically contain state-listed plant species. While development of the Megasite area could affect areas with naturalized vegetation, it is unlikely that state-listed plants would be present because historical aerial photography suggests that nearly the entire Megasite project area has been cleared for agriculture at some point in the past (EnSafe 2015).

#### 3.6.2.2.3 Wildlife

Under the Action Alternative, TVA would build approximately 9.9 miles of transmission line and a 500-kV substation. Actions would include removing trees and other vegetation within the proposed transmission line ROW and substation site, establishing transmission infrastructure, and associated access roads.

Early successional areas within the proposed ROW are dominated by row crops. Suitable habitat for monarch butterflies may be present in pastures, along roadsides, field edges, and areas where existing ROWs intersect forest fragments. Impacts to eggs and larvae may occur during construction, however, approximately 85 acres of forest would be converted to early successional habitat, some of which would be suitable habitat for this species. Overall, project actions are expected to be beneficial to monarch butterfly populations.

No osprey nests were present in the project area at the time of field survey. Two perennial streams and one small pond may provide foraging habitat for this species. BMPs would be implemented to protect water quality and hydrology, thus project actions are not expected to significantly impact ospreys.

Indiana bat and northern long-eared bat have the potential to utilize the project area. Foraging habitat is present in forest fragments and over aquatic habitats. BMPs would be used to protect water quality and hydrology and similar suitable forested habitat is abundant in the area. Approximately 70 acres of suitable roosting habitat would be cleared as part of the proposed project.

Several activities associated with the proposed project 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) (TVA 2017b). This consultation was completed in April 2018. For those activities with potential to affect bats, TVA committed to implementing specific conservation measures. These activities and associated conservation measures are identified on page 5 of the TVA Bat Strategy Project Screening Form (Appendix D) and need to be

reviewed/implemented as part of the proposed project. With the use of BMPs and identified conservation measures, proposed actions would not significantly impact Indiana bat or northern long-eared bat.

# 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).

The proposed project consists of building an approximate 6.5 mile 161-kV transmission line, an approximate 3.4 mile 500-kV transmission line, and a 500-kV substation. The ROW for the transmission lines has been previously described in the 2016 EA. New temporary access roads would also be constructed to access ROW.

Once the proposed transmission lines enter the Megasite property, the 500-kV transmission line would terminate into the proposed TVA 500-kV substation and the proposed 161-kV transmission line would extend along new 187.5-foot-wide ROW along the east side of SR 222. After crossing over to the west side of SR 222, the proposed routes would encompass two separate 100-foot-wide easements into STEMC's planned new 161-kV substation.

Additionally, optical ground wire (OPGW) would be installed on the new transmission lines from the Haywood-Cordova 500-kV Transmission Line (approximate connection at splice box on Structure 427) to the site of the proposed TVA 500-kV substation.

# 3.7.2 Environmental Consequences

#### 3.7.2.1 Alternative A

Under the No Action Alternative, TVA would not construct the proposed 500-kV substation or associated transmission lines. Potential effects are anticipated to be like those described in Section 3.1.2.1. Therefore, there would be no impacts to floodplains.

#### 3.7.2.2 Alternative B

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.

As described in the 2016 EA (TVA 2016), transmission line ROWs cross the 100-year floodplains of several unmapped streams in Fayette and Haywood counties. Consistent with EO 11988, overhead transmission lines and related support structures are considered repetitive actions in the 100-year floodplain that should result in minor impacts. The conducting wires of the transmission line would be located well above the 100-year flood elevation.

The construction of 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 in the floodplain would be consistent with EO 11988 provided the TVA subclass review criteria for transmission line location in floodplains are followed (TVA 1981).

The proposed location of TVA's 500-kV substation would be located outside of 100-year floodplains and would be consistent with EO 11988. A cumulative impact of the Delivery Point would be construction of the BlueOval City substation by STEMC. STEMC's BlueOval City substation would be outside of 100-year floodplains, which would be consistent with EO 11988.

Based upon a review of Fayette and Haywood County Flood Insurance Rate Maps (FIRMs) and USGS 1:24,000 topographic maps, portions of some access roads would be within 100-year floodplains. 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.

The applicable FIRM panels for the project area are as follows:

- Fayette County Map Panel number 47047C0070C effective 11/5/2008
- Fayette County Map Panel number 47047C0185C effective 11/5/2008
- Fayette County Map Panel number 47047C0205C effective 11/5/2008
- Fayette County Map Panel number 47047C0090C effective 11/5/2008
- Haywood County Map Panel number 47075C0340D effective 4/16/2008
- Haywood County Map Panel number 47075C0320D effective 4/16/2008

By implementing the following routine mitigation measures, the proposed transmission line and access roads would have no significant impact on floodplains and their natural and beneficial values:

- Standard BMPs would be used during construction activities (TVA 2017a).
- Construction would adhere to the TVA subclass review criteria for transmission line location in floodplains (TVA 1981).
- 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).

# 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 wetland 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, wetland assessments were performed to ascertain wetland presence, condition, and extent to which wetland functions are provided within the proposed project area. Field surveys were conducted in April 2015 and again in November and December 2021 to delineate wetland

areas potentially affected by the proposed Action Alternative. The environmental review footprint in 2015 and 2021 included the proposed 6.5 miles of 161-kV transmission line and 3.4 miles of 500-kV transmission line. In 2021, the proposed 500-kV substation and 161-kV transmission line connections to STEMC's BlueOval City 161-kV Substation were included in the surveyed area.

In both 2015 and 2021, 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). Wetland type and location did vary somewhat between the two surveys. This is not considered to be out of the ordinary since conditions can change over time. Wetlands that were mapped in the 2015 survey (TVA 2016) but not in 2021, lacked one or often more of the three USACE required components to the USACE wetland definition: hydrology, hydric soil, and hydrophytic vegetation (USACE 2010).

Using the Tennessee Rapid Assessment Method (TRAM), wetlands were evaluated by their functions and classified into three categories: (Table 3-5) (TDEC 2015).

- 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 than low quality
  wetlands due to less 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 a reasonable
  potential for restoration.
- Exceptional resource value wetlands offer high functions and values within a watershed
  or are of regional/statewide concern. These wetlands may exhibit little to no recent
  disturbance, provide substantial large scale stormwater storage, sediment retention, and
  toxin absorption, contain mature vegetation communities, or offer habitat to rare species.
  Conditions in these superior quality wetlands often represent restoration goals for
  wetlands functioning at a lower capacity.

Table 3-5. Wetlands located within Proposed Memphis Regional Megasite Power Supply Project within Fayette and Haywood Counties, Tennessee

Wetland Identifier	Wetland Type <sup>1</sup>	TRAM <sup>2</sup> Functional Capacity (score)	Wetland Acreage within the Footprint
W001	PEM1E	Low (21)	0.01
W002	PFO1E	Low (29)	0.10
W003	PEM1Ef	Low (15)	0.02
W004	PEM1Ef	Low (15)	0.11
W005	PFO1E	Low (33)	0.11
W006	PFO1E	Low (40)	0.03
W007	PEM1E	Low (14)	0.01
W008	PFO1E	Low (27)	0.15

Wetland Identifier	Wetland Type <sup>1</sup>	TRAM <sup>2</sup> Functional Capacity (score)	Wetland Acreage within the Footprint
W009	PFO1E	Low (35)	0.23
W010	PFO1E	Low (37)	0.28
W011	PFO1E	Low (34)	2.44
W012	PFO1E	Low (36)	0.59
W013	PEM1E	Low (19)	0.18
W014	PFO1E	Low (32)	0.14
W015	PFO1E	Low (37)	1.31
W016	PEM1E	Low (14)	0.19
W017	PEM1E	Low (14)	0.22
W018	PEM1E	Low (25)	0.03
W019	PEM1E	Low (25)	0.11
W020	PEM1Hx	Low (27)	0.03
Total Acres			6.29

<sup>&</sup>lt;sup>1</sup>Classification codes as defined in Cowardin et al. (1979): E = Seasonally flooded/saturated; EM1=Emergent, persistent vegetation; FO1=Forested, broadleaf deciduous vegetation; P=Palustrine; f= farmed.

The proposed project traverses a rural landscape, dominated by agricultural fields, forested uplands and bottomlands through Haywood and Fayette counties. The project area is located across the Big Muddy Creek and Lower Loosahatchie River watersheds. The proposed project footprint was field surveyed to identify actual wetland extent and quality. In a 2021 field survey, 20 wetland complexes, totaling 6.29 acres, were identified within the proposed 6.5 miles of 161-kV transmission line, 3.4 miles of the 500-kV transmission line, and the 500-kV substation site (Table 3-5; Appendix E). W001-W015 and W020 are in the Big Muddy Creek Watershed; W016-W019 are in the Lower Loosahatchie River Watershed. The combination of land-use practices and landscape position dictates the wetland habitat type, wetland functional capacity, and wetland value by USACE definition (Cowardin et al. 1979; USACE 2010).

- Trees/Forest stratum are considered: Woody plants, excluding woody vines, approximately 20 feet or more in height and 3 inches or larger in diameter at breast height (DBH).
- Shrub stratum are considered: Woody plants, excluding woody vines approximately 3 to 20 feet in height.
- Herb/emergent stratum are considered: All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 feet in height.

The identified wetlands consisted of emergent and forested habitat, all exhibiting low condition, thus providing poor wetland value to the surrounding landscape (Table 3-6 and 3-7). No scrubshrub wetland habitat was identified in the 2021 delineation; scrub-shrub habitat identified in the 2015 delineation has likely converted to forested stratum in the past 6 years.

<sup>&</sup>lt;sup>2</sup>TRAM = Tennessee Rapid Assessment Method that categorizes wetland quality by their functional capacity

Table 3-6. Acreage of Wetlands Representing Low, Moderate, or Exceptional Resource Value Within the Proposed Memphis Regional Megasite Power Supply Project Footprint and Relative to the Total Mapped Wetland Occurrence Within the Watersheds

Watershed	NWI Estimated Total Wetland	Delineate	d Wetland A	creage in Proje	ect Area
(10-HUC)	Acres in Watershed <sup>1</sup>	Low Value	Moderate Value	Exceptional Resource Value	TOTAL
Big Muddy Creek (0801020804)	13,334	5.74	0	0	5.74
Lower Loosahatchie River (0801020904)	17,811	0.55	0	0	0.55

<sup>&</sup>lt;sup>1</sup>National Wetlands Inventory (U.S. Fish and Wildlife Service 1982)

Table 3-7. Acreage of Wetlands by Habitat Type Within the Proposed Memphis Regional Megasite Power Supply Project Footprint and Relative to the Total Mapped Wetland Occurrence Within the Watersheds

Watershed	NWI Estimated Total Wetland	Deline	eated Total We Proposed	_	je in
(10-HUC)	Acres in Watershed	Emergent	Scrub- Shrub	Forested	TOTAL
Big Muddy Creek (0801020804)	13,334	0.36	0	5.38	5.74
Lower Loosahatchie River (0801020904)	17,811	0.55	0	0	0.55

Emergent wetlands within the project footprint totaled 0.91 acres across 10 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 woody species growth. Emergent wetlands encountered included saturated farmed corn/cotton fields (W003, W004), vegetated swales (W001, W007, W013, W018, W019), mowed depressional features (W016, W017), and agricultural linear features (W020). These wetland areas contained indicators of wetland hydrology influencing soil physiology such that coloration indicative of wetland conditions was evident in the soil profile. Emergent wetlands were dominated by common emergent wetland vegetation including redtop panic grass, bushy bluestem, and seed box (Appendix E). All emergent wetland habitat encountered scored as low-quality using TRAM, indicating poor wetland quality, due to small size, surrounding land use, and evidence of disturbance (e.g. mowing, excavation, farming, etc.) (Table 3-5; Table 3-7).

Forested wetlands in general have deeper root systems and contain greater biomass (quantity of living matter) per acre than do emergent and scrub-shrub wetlands, which do not grow as tall. As a result, forested 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). A total of 5.38 acres of forested wetland were delineated across 10 wetland areas within the proposed project footprint (W002, W005, W006, W008, W009, W010, W011, W012, W014,

W015). These wetland areas contained indicators of wetland hydrology influencing soil physiology such that coloration indicative of wetland conditions was evident in the soil profile. All forested wetlands identified were dominated by common wetland vegetation including black willow, willow oak, and sycamore (Appendix E). All forested wetland habitat encountered scored as low-quality using TRAM, indicating less than desired wetland quality, due to small size and surrounding land use (Table 3-5; Table 3-8).

Table 3-8. Acreage of Low, Moderate, and Exceptional Resource Value Forested Wetlands by Watershed Within the Proposed Memphis Regional Megasite Power Supply Project Footprint

Watershed	Vatershed  NWI Estimated In Proposed Project Area			ge	
(10-HUC)	Forested Wetland Acres in Watershed	Low Value	Moderate Value	Exceptional Resource Value	TOTAL
Big Muddy Creek (0801020804)	13,334	5.38	0	0	5.38
Lower Loosahatchie River (0801020904)	17,811	0	0	0	0

The Big Muddy Creek watershed (0801020804) contains forested wetlands W002, W005, W006, W008, W009, W010, W011, W012, W014, and W015 within the proposed 6.5 miles of 161-kV transmission line ROW, 3.4 miles of the 500-kV transmission line ROW, and the 500-kV substation site. W002 (0.10 forested acres) is located on the proposed 500-kV substation property but would not be cleared. Of an estimated total 13,334 forested wetland acres in this watershed, the proposed project footprint contains 5.28 forested wetland acres proposed for clearing and conversion to emergent/shrub-scrub, or 0.04 percent (Table 3-8). All forested wetland identified on this project scored as low quality due to small size, hydrological influence, and surrounding land use (Table 3-5). 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 black willow, willow oak, 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 3.1.2.1 Surface Water, 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

Activities in wetlands are regulated by state and federal agencies to ensure no net loss of wetland resources. Under 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 in the Memphis District USACE. CWA Section 401 mandates state water quality certification for projects requiring USACE approval. In Tennessee, TDEC certifies CWA Section 404 permits and impacts to intrastate wetland resources through a general or individual aquatic resources

alteration permit. In Tennessee, this permit is required for any alteration to the physical, chemical, or biological properties of any waters of the state, including wetlands, pursuant to the Tennessee Water Quality Control Act (§69-3-108, 0400-40-07). TDEC's permit process ensures compliance with Tennessee's anti-degradation policy as well (§69-3-108, 0400-40-04). Lastly, EO 11990 requires federal agencies to minimize wetland destruction, loss, or degradation, avoid new construction in wetlands wherever there is a practicable alternative, while carrying out agency responsibilities.

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.

Under the Action Alternative, the proposed transmission lines would be constructed as described in the 2016 EA. As described in Section 2.2.2.2 of the 2016 EA, adequate clearance between tall vegetation and transmission line conductors would require trees within the proposed ROWs be cleared (TVA 2016). Establishing transmission line corridors 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 project footprint contains a total of 0.91 acres emergent wetland and 5.38 acres of forested wetland (Table 3-9). 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 5.38 acres of forested wetland within the proposed construction area, 5.28 acres would be cleared and permanently converted to emergent, meadow-like wetland habitat for the perpetuity of the transmission lines existence (Table 3-9). 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. Woody vegetation would be cut less than 12 inches from ground level leaving the stumps and the below ground root system entirely intact to minimize soil disturbance. W011, W015, and W019 would be impacted by structure placement accumulating to 0.02 acres of wetland fill.

Table 3-9. Impacts to Forested Wetlands Within the Proposed Memphis Regional Megasite Power Supply Project Footprint

Wetland Identifier	Impact Type	Acreage of Forested Wetland Clearing (FO)
W001	Temporary, minimal, or avoid	
W002	Will not be cleared on substation site	Not to be cleared
W003	Temporary, minimal, or avoid	
W004	Temporary, minimal, or avoid	
W005	Clearing for transmission line construction	0.11
W006	Clearing for transmission line construction	0.03
W007	Temporary, minimal, or avoid	
W008	Clearing for transmission line construction	0.15
W009	Clearing for transmission line construction	0.23
W010	Clearing for transmission line construction	0.28

Wetland Identifier	Impact Type	Acreage of Forested Wetland Clearing (FO)
W011	Clearing for transmission line construction; Structure placement	2.44 + Structure fill
W012	Clearing for transmission line construction	0.59
W013	Temporary, minimal, or avoid	
W014	Clearing for transmission line construction	0.14
W015	Clearing for transmission line construction; Structure placement	1.31 + Structure fill
W016	Temporary, minimal, or avoid	
W017	Temporary, minimal, or avoid	
W018	Temporary, minimal, or avoid	
W019	Temporary; Structure placement	Structure fill
W020	Temporary, minimal, or avoid	
	TOTAL ACRES	5.28 Acres Clearing 0.02 Acres Structure Fill

Woody (forested and scrub-shrub) 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 breeding 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.

Forested wetland conversion to accommodate structure locations and transmission line 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).

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 standard wetland BMPs for all work necessary within the delineated wetland boundaries (TVA 2017a). 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 wetland minimization techniques in place, TVA would comply with all USACE/TDEC mitigation requirements to compensate for the proposed loss of wetland resources, functions, and values resulting from the proposed Action Alternative. TVA would obtain the necessary Section 404/401 CWA permits and required compensatory mitigation to ensure the proposed wetland impacts are mitigated to the extent deemed appropriate such that wetland functions and values remain at the current capacity within the larger affected watershed. Required compensatory mitigation would be purchased through an approved wetland mitigation bank per the directive of the USACE and TDEC to ensure no more than minimal impacts to the wetland environment result and the objectives of the CWA and Tennessee's anti-degradation policy are upheld.

Cumulative impact analysis of wetland effects considers 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 one watershed. Proposed forested wetland clearing would include 5.28 acres in this watershed (Big Muddy Creek - 0801020804), comprising about 0.04 percent of mapped forested wetland within this watershed.

Similarly, general trends in wetland impacts resulting from development within the watershed would be subject to CWA, USACE, and TDEC 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 TDEC, TVA would ensure wetland impacts are minimized and the proposed impacts on wetlands would be minimal.

### 3.9 Prime Farmland

#### 3.9.1 Affected Environment

The 1981 Farmland Protection Policy Act and its implementing regulations (7 Code of Federal Regulations [CFR] Part 658) recognizes the importance of prime farmland and the role federal agencies can have in converting it to nonagricultural uses. The act requires all federal agencies to evaluate impacts to prime and unique farmland prior to permanently converting to land use incompatible with agriculture.

Prime farmland soils have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. These characteristics allow prime farmland soils to produce the highest yields with minimal expenditure of energy and economic resources. In general, prime farmlands have an adequate and dependable water supply, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. Prime farmland soils are permeable to water and air, not excessively erodible or saturated for extended periods, and are protected from frequent flooding.

The acreage of prime farmland soils within the proposed substation site and within a 5-mile radius are summarized in Table 3-10. There are five soil types, comprising of 26.3 acres within the substation site that are classified as prime farmland soils (U.S. Department of Agriculture, Natural Resources Conservation Service 2021).

Table 3-10. Acres of Prime Farmland Soils Within the Proposed 500-kV Substation Site

Soil Type	Substation Site (acres)	5-mile Radius (acres)
All prime farmland soils	26.3	25,916.9
Not prime farmland	53.5	24,111.9
Unknown	10.1	2,417.0
Total	89.9	55,145.6

As shown in Table 3-10, prime farmland is not a unique feature in the project vicinity, as approximately 47 percent of soils in a 5-mile radius are considered prime farmland soils. Overall, prime farmland soils within the proposed substation site comprise approximately 0.1 percent of the total prime farmland soils found within a 5-mile radius.

No prime farmland areas within ROW easements would be taken out of production.

# 3.9.2 Environmental Consequences

#### 3.9.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 500-kV substation in Haywood County. TVA would also not construct new transmission lines in Fayette and Haywood counties nor make associated modifications to the existing transmission system. Therefore, there would be no impacts to prime farmland resources under this alternative. However, as described in Section 3.1.2.1, potential effects from anticipated changes to the project area are likely to occur due to factors such as the Megasite development, population growth, and land use changes.

#### 3.9.2.2 Alternative B

Based on the NRCS soil mapping, there are approximately 26.3 acres of prime farmland soils within the substation footprint and thus have the potential to be permanently converted for utility uses. TVA initiated coordination with the NRCS through submittal of the AD 1006 Farmland Conversion Impact Rating Form. The NRCS uses a land evaluation and site assessment system to establish a farmland conversion impact rating score. This score is used as an indicator to determine if adverse impacts to farmland exceed the recommended allowable level. The higher the numerical score assigned, the more protection the farmland would receive. Project sites receiving a total score of less than 160 need not be given further consideration for protection and no additional sites need to be evaluated. The proposed substation site received a score of 142. The completed AD 1006 Form is provided in Appendix F.

Approximately 25,917 acres (47 percent) of the area within 5 miles have soils classified as prime farmland. The minor loss of onsite soils with prime farmland characteristics due to the development of the proposed substation is minor when compared to the amount of land designated as prime farmland within the surrounding region. Therefore, impacts to prime farmland soils associated with the development of the proposed substation would be minor and would not impact regional agriculture or crop production. The approximate 158 acres of ROW easements would not be excluded from farming. Therefore, no impacts to prime farmland soils would occur because of the proposed transmission line ROWs.

## 3.10 Aesthetics

#### 3.10.1 Affected Environment

#### 3.10.1.1 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 3.11 Archaeological and Historic Resources.

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 the landscape are described in terms of what is seen in the foreground, middleground, and background distances. In the foreground, an area within 0.5 mile of the observer, details of objects are easily distinguished. In the middleground, from 0.5 mile to 4 miles from the observer, objects may be distinguishable, but their details are weak and tend to merge into larger patterns. In the distant part of the landscape, the background, details, and colors of objects are not normally discernible unless they are especially large, standing alone, or have a substantial color contrast. 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 because of the introduction of a feature that is not consistent with the existing viewshed. Consequently, the visual character of an existing site is an important factor in evaluating potential visual impacts.

The proposed substation project area is in Haywood County and is comprised of level to gently rolling terrain. The landscape is characterized by rural development including agricultural fields and pastures, roadways, existing utility corridors, and scattered residences, with pockets of dense forest. The proposed substation site itself is currently an open agricultural field with small pockets of trees and vegetation along drainage ditches. The foreground is comprised of additional agricultural land and fragmented forested areas, with SR 222 located to the west of the site. Thus, the project vicinity consists of a combination of natural elements, such as rolling fields and forested areas, with human development, such as transportation corridors.

The composition and patterns of vegetation are the prominent natural features of the landscape within the substation project area. Apart from crop fields and pasture, vegetation within the project area consists of a variety of brush and trees, which are predominantly deciduous. The forms, colors, and textures of the natural features of the project area are typical of southwestern Tennessee 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 3-11). 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 3-11. Visual Assessment Ratings for Project Area

	Exiting Land	dscape
View Distance	Scenic Attractiveness	Scenic Integrity
Foreground	Common	Moderate
Middleground	Common Modera	
Background	Common Modera	

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 substation would be visible to passing motorists from SR 222, located west adjacent of the site. The closest residences are located off SR 222, on Stanton-Somerville Road, approximately 0.8 mile to the southwest of the proposed substation site. In addition, as shown in Figure 3-1, there is one school and several churches and cemeteries within the viewshed of the proposed substation, also within the middleground of the project area, at distances between 0.5 and 4 miles. There are no sensitive visual receptors that occur in the foreground (within 0.5 mile) of the project area.

#### 3.10.1.2 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 3-12.

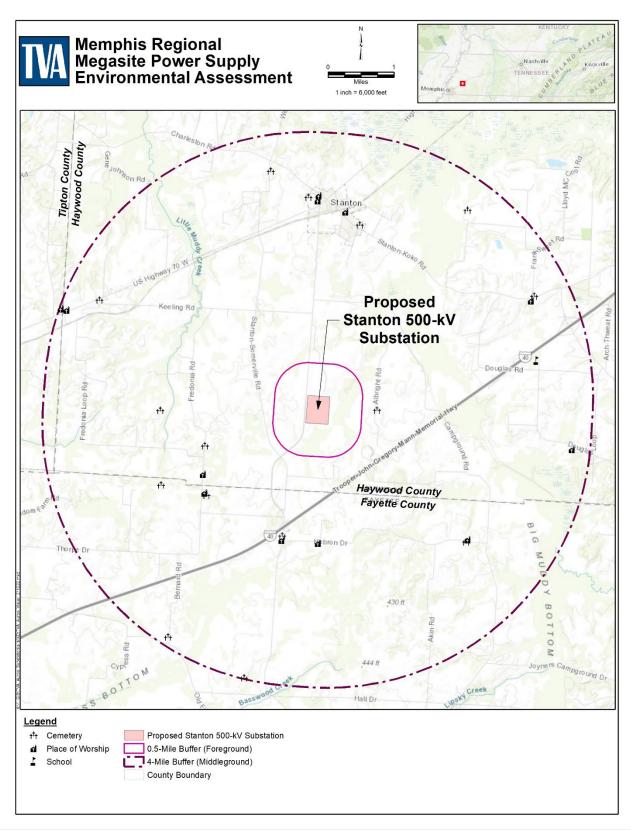


Figure 3-1. Sensitive Visual Receptors within the Foreground and Middleground of the Proposed 500-kV Substation

While this visual impact assessment is based on current conditions, planned future development of the Megasite, including the construction and operation of BlueOval City, would introduce large-scale commercial development to the area. Plans for BlueOval City consist of the development of approximately 1,720-acres of the Megasite and would include numerous manufacturing plant buildings and warehouses, as well as supporting infrastructure. Thus, the visual characteristics of the existing landscape have the potential to change dramatically, lowering both the scenic attractiveness and scenic integrity of the existing landscape.

There are no federal, state, or locally established quantitative noise-level regulations specifying environmental noise limits for the proposed substation site 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 3-12. Common Indoor and Outdoor Noise Levels

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

Source: Federal Highway Administration (FHWA), 2018

The proposed substation site is in a rural area approximately 2.5 miles south of the town of Stanton. The area is sparsely populated, consisting primarily of agricultural fields and pockets of forested land. I-40 is located approximately 0.9 miles southeast of the proposed project site, while SR 222 runs west adjacent of the site. Thus, ambient noise is characterized by traffic noise along these nearby roadways, as well as periodic agricultural activities. There are currently no other major sources of noise in the vicinity. However, planned future development of the Megasite, including the construction and operation of BlueOval City, would introduce large-scale manufacturing activities to the area, in addition to an influx of traffic and human activity associated with the workforce. Thus, background noise levels are anticipated to increase accordingly.

Sensitive noise receptors include residences or other developed sites where frequent human use occurs, such as churches, parks, and schools. The closest residential receptors to the proposed substation site are located approximately 0.8 miles to the southwest, on Stanton-Somerville Road, east of SR 222. The only other frequently populated area within 1 mile of the proposed substation site is a rest area located off I-40, approximately 0.6 miles to the southeast of the project site. The rest area includes a welcome center, restrooms, and outdoor picnic tables. No other sensitive noise receptors or developed recreation areas were identified within 1 mile of the proposed substation site.

# 3.10.2 Environmental Consequences

#### 3.10.2.1 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 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.

#### 3.10.2.1.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 500-kV substation, transmission lines or make associated modifications to the existing transmission system. 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. However, as described in Section 3.1.2.1, potential effects from anticipated changes to the project area are likely to occur due to factors such as the Megasite development, population growth, and land use changes.

#### 3.10.2.1.2 Alternative B

Under the Action Alternative, construction of the proposed 500-kV substation would result in both short-term and long-term impacts to visual resources. During the approximately 10-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 using TVA's standard BMPs (TVA 2017a). Because of their temporary nature, construction-related impacts to local visual resources are expected to be minor.

Long-term impacts consist of the visible alterations associated with the proposed substation. which would include a transformer bank, 161-kV and 500-kV bays, and overhead wires linking to the transmission line connections. A switch house and maintenance building would also be included. Substation structures, the tallest of which would be approximately 115 feet tall, would add discordantly contrasting elements and colors to the environment. However, due to the lack of sensitive visual receptors in the foreground, direct views of the proposed substation would generally be limited to users of SR 222 as they pass west of the site. These observers would be transient motorists who would typically only be exposed to these features for short periods of time. At middleground and background distances, the proposed substation would be less visible due to intervening vegetation, and less obtrusive as it would largely fall into an observer's view where objects are less distinguishable. Views of the substation from the closest sensitive receptor, a small private/family cemetery located approximately 0.7 mile to the east, and from the closest residences, approximately 0.8 mile to the southwest, would be minimally obtrusive due to distance and intervening forested areas. Similarly, other sensitive receptors in the middleground (Figure 3-1) would have minimal, if any, view of the substation due to distance and intervening structures and vegetation.

In addition, necessary security lighting of the proposed substation would generate some additional local light during nighttime hours, which would cause a slight loss of dark sky conditions in the local area. Such lighting is designed to cast light downward and to minimize emissions above the horizontal plane. As described in TVA's Substation Lighting Guidelines, TVA routinely designs substation lighting to accommodate the concerns of nearby residents. Although illumination from the proposed substation would contribute to the loss of dark sky conditions, this effect would be localized and minor (TVA 2022).

The human alterations already in place within the project area, such as the SR 222 corridor, 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 proposed substation, it would remain common or ordinary (Table 3-13). Impacts to scenic integrity are anticipated to be greatest in the foreground of the substation. At this distance, scenic integrity would be reduced from moderate to low, as visual alterations associated with the substation structures and overhead lines 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 substation would not be substantive enough to dominate the view from these distances (Table 3-13). 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 but remain classified as good in the middleground and background. While implementation of Alternative B 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 proposed substation would be minor.

Table 3-13. 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		

# 3.10.2.2 Noise

#### 3.10.2.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 500-kV substation. TVA would also not construct the proposed transmission lines or make associated modifications to the existing transmission system. Therefore, there would be no impacts to noise under this alternative from TVA activities. However, as described in Section 3.1.2.1, potential effects from anticipated changes to the project area are likely to occur due to factors such as the Megasite development, population growth, and land use changes.

# 3.10.2.2.2 Alternative B

Under the Action Alternative, substation construction activities would last for approximately ten 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 from this equipment 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 (FHWA 2016).

As noted above, the closest sensitive noise receptors to the proposed substation boundary are residences located approximately 0.8 miles to the southwest and an I-40 rest area approximately 0.6 miles to the southeast. Based on straight line noise attenuation, noise emissions from most construction equipment (85 dBA or less at 50 feet) would attenuate to 46.7 dBA or less at the closest residence and 48.4 dBA or less at the I-40 rest area. Additionally, 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. During periodic construction activities involving the use of pile drivers, maximum noise levels could reach approximately 56.7 dBA at the closest residence and 58.4 dBA at the I-40 rest area, slightly higher than EPA's recommended L<sub>dn</sub> guidelines for residential areas, but less than the HUD's recommendation of 65 dBA. Additionally, pile driver use would be a short-term and relatively infrequent occurrence that would not contribute to typical background noise levels. As all construction noise would be temporary in nature and limited to daytime hours, noise impacts from construction of the proposed substation would be minor.

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 peak construction, TVA estimates that 80 to 100 vehicles would access the substation site per day, including approximately 35 workforce vehicles. It is assumed that borrow and spoil material would be moved from within the Megasite boundaries, limiting off-site transport. As noted in Section 3.14 (Transportation), site access would be provided by SR 222, via I-40. Current average daily traffic volumes on SR 222 and I-40 are 1,036 and 26,610 vehicles, respectively (TDOT 2021). The addition of up to 100 vehicles, or 200 trips per day, along SR 222 would not result in a doubling of the traffic volume along this road, and residences are generally located more than 500 feet from the roadway. Therefore, the increase in current

noise levels associated with substation construction traffic is estimated to be less than 3 dBA and as such, noise impacts along the roadway would be minor.

Overall, given the temporary and intermittent nature of construction activities and the distance from the proposed substation site to the nearest sensitive receptors, noise impacts associated with substation construction would be minor.

### **Operational Noise**

Under certain wet weather conditions, substations, and 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 substation, but due to distance, it is not expected to result in perceptible changes in noise level at the closest sensitive receptors.

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 noise levels of approximately 85 dBA at 3 feet, attenuating to levels of approximately 24 dBA at the nearest sensitive receptor. As this falls within typical background day-night noise levels for rural areas, the fan noise would not generally be audible over background noise at the closest sensitive receptors.

The substation would produce a loud impulse noise when a breaker is tripped due to excessive current, high voltage, low voltage, low frequency, or other less common problems. When such problems occur, the circuit breaker opens to disconnect part of the system, and the flow of current is interrupted. The noise from the breaker is expected to last 1/20 of a second and range from 96 to 105 dBA at 50 feet. Although breaker noise would be quite loud, it is only expected to occur approximately 18 times each year. Breaker noise may be audible to nearby residents. However, because of the infrequent occurrence, impacts from breaker noise would be minor. Overall, noise impacts from the operation of the proposed substation would be minor, as the occasional corona discharge and fan cooling would not result in notable changes to background noise levels at nearby receptors, and audible breaker noise would be infrequent and short-lived.

# 3.11 Archaeological and Historic Resources

#### 3.11.1 Affected Environment

Federal agencies are required by Section 106 of the NHPA and by NEPA to consider the possible effects of their proposed actions (or undertakings) on historic properties. The term "historic property" includes any historic or prehistoric site, district, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the U.S. National Park Service. "Undertaking" means any project, activity, or program that has the potential to have an effect on a historic property and that is under the direct or indirect jurisdiction of a federal agency or is licensed or assisted by a federal agency. To determine an undertaking's possible effects on historic properties, a four-step review process is conducted. These steps are:

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

During the Section 106 process, the agency must consult with the appropriate SHPO, federally recognized Native American tribes that have an interest in the undertaking, and any other party with a vested interest in the undertaking.

For the proposed project, TVA recommends that the APE for the current undertaking includes the following:

- The portions of the transmission line access routes not included in TVA's 2016 EA.
- The approximate 6.5 miles of planned 161-kV double-circuit transmission line and the approximate 3.4 miles of double-circuit 500-kV transmission line occupying about 158 acres of TVA ROW as previously described in TVA's 2016 EA.
- The approximate 67 acres for the 500-kV substation and associated transmission line connections.
- All areas in which the project would be visible within a half-mile radius of the proposed transmission lines and substation listed above.

In 2022, TVA completed a Phase I cultural resources survey of the APE not previously surveyed in 2015 to identify any historic properties that may be impacted by the undertaking (Dadiego et al. 2015; De Gregory et al. 2022). The investigation included an archaeological survey within the project footprint and a survey for historic above ground (architectural) resources within areas in which the project would be visible within a half-mile radius of the proposed transmission lines and substation listed above.

The 2022 survey identified 12 archaeological resources within the project boundary (De Gregory et al. 2022). The survey revisited previously recorded archaeological sites 40HD124 and 40HD132 and two non-site cultural resources (NSCR) designated as NSCR 2 (previous designation 40HD K-06) and NSCR 3 (previous designation 40HD J-06). The survey also identified one historic archaeological site (40HD180), an earthen anomaly, three isolated finds (Isolated Finds 1-3), and three new NSCRs (NSCR 1, 4, and 5).

# 3.11.2 Environmental Consequences

## 3.11.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed substation, transmission lines 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. However, it would be gradual and most likely would not be noticed by the general population. Activities occurring because of the State's Megasite and Ford's BlueOval City would likely continue.

Under the No Action Alternative, no ROW would be cleared to accommodate the proposed transmission line. No changes in current land uses along the existing or proposed ROW are

anticipated within the foreseeable future under the No Action Alternative. Thus, implementation of this alternative is not expected to directly cause any effects to current land uses. 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 resulting from jobs and businesses created by opportunities from the Megasite development. However, these changes are not expected to be the result of implementing the No Action Alternative.

If TVA chooses not to undertake the proposed Action Alternative, the state could find another way to ensure power is supplied to the Megasite. Should the State or LPC independently provide transmission service by constructing a new transmission line and substation, the potential environmental effects of implementing the No Action Alternative would likely be comparable to those of the Action Alternative described in this chapter. The State's designated location for the 500-kV substation would likely remain the same, and therefore would have similar impacts. Likewise, the potential impacts of the 161-kV and 500-kV transmission lines constructed by anyone else would likely be similar. The potential impacts would be dependent upon various factors, such as the routes chosen, and the construction methods used.

#### 3.11.2.2 Alternative B - Action Alternative

TVA determined the following archaeological resources to be ineligible for the NRHP: NSCRs 1, 2, 3, 4, and 5 and Isolated Finds 1, 2, and 3. TVA determined that the eligibility of previously recorded sites 40HD124 and 40HD132 be considered unknown since they have not been fully delineated. However, TVA found no integrity of archaeological deposits within the project footprint. TVA would avoid ground disturbance within 100 feet of the earthen anomaly which is of unknown origin.

TVA also determined the eligibility of 40HD180 to be unknown since the site has not been fully delineated. Construction of TVA's proposed 500-kV substation and transmission line structures would not extend into 40HD180's site boundary, and therefore, the 40HD180 would be avoided. TVA finds that the undertaking would have no adverse effect to archaeological resources.

The historic architectural survey identified no previously recorded historic architectural resources or newly identified resources within the 0.5-mile view of the proposed transmission lines and substation. TVA did evaluate the historical significance and integrity of the Haywood-Cordova Transmission Line (L6119) since the proposed 500-kV transmission line would connect to it and would be constructed on adjacent ROW for 3.4 miles. The Haywood-Cordova Transmission Line segment (L6119-2), constructed in 1965, was recorded as HD-IP-00001/FY-IP-00001/SY-IP-00001 to reflect its pathway as a linear resource through Haywood, Fayette, and Shelby counties. TVA determined HD-IP-00001/FY-IP-00001/SY-IP-00001 to be ineligible for the NRHP listing under Criteria A, B, and C and recommends that the undertaking would have no effect to above-ground historic properties.

Therefore, TVA finds that the undertaking i.e., implementing the Action Alternative, would have no adverse effect to historic properties.

TVA initiated consultation with the Tennessee SHPO and federally recognized Indian tribes concerning these findings and determinations, pursuant to 36 CFR § 800.4 (Appendix B). Consultation is ongoing, and TVA is in correspondence with the Advisory Council on Historic Preservation and the Tennessee SHPO (Appendix B).

# 3.12 Recreation, Parks, and Managed Areas

#### 3.12.1 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 two managed and natural areas within 3 miles of the proposed project area (Table 3-14). The Wetlands Reserve Program (WRP) parcel is located within the project study area and 1.4 miles north from the proposed project footprint. The WRP was a USDA NRCS voluntary program for landowners to offer opportunities to protect, conserve, and enhance wetlands on their property. Sanders Woods is a privately-owned natural area located 2.5 miles southwest from the proposed project footprint. This area is a conservation site identified to contain a vulnerable community biodiversity significance (at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors).

Table 3-14. Managed and Natural Areas within 3 Miles of the Proposed Project Area

Natural Area	Acres	Distance and Direction From Proposed Project Area (Miles)
Wetland Reserve Program	81.79	1.4 miles north
Sanders Woods	35.49	2.5 miles southwest

Source: TVA Regional Natural Heritage database queried November 2021

There are no developed parks or outdoor recreation areas within or near the boundaries of this project and associated access roads. However, some dispersed recreational activities such as hunting does currently occur in some locations within or near the project area.

# 3.12.2 Environmental Consequences

#### 3.12.2.1 Alternative A - No Action

Under the No Action Alternative, TVA would not build an approximate 6.5-mile 161-kV transmission line, an approximate 3.4-mile 500-kV transmission line, or a 500-kV substation to support Ford's BlueOval City facility planned for the Megasite. There would be no change in management of or access to managed and natural areas in the project area and vicinity.

Under the No Action Alternative, existing patterns of occasional dispersed outdoor recreation activities such as hunting would be expected to continue.

# 3.12.2.2 Alternative B - Action Alternative

Under the proposed Action Alternative, construction, operation, and maintenance of the proposed transmission lines and substation, would not result in direct impacts on any managed or natural areas. Indirect impacts could occur on the two managed and natural areas within 3 miles of the project area. These indirect impacts would include construction noise and visual intrusions which would be minimized using standard BMPs (TVA 2017a) and coordination of construction traffic with local authorities.

The WRP and Sanders Woods natural areas are a sufficient distance such that there would be no direct or long-term impacts to these areas resulting from the proposed project. Because there are no developed parks or recreation areas in the vicinity of the project, no impacts on developed recreation facilities are expected. Project related actions could cause some shifts in nearby dispersed recreational activity, but any impacts should be minor and temporary.

# 3.13 Socioeconomics and Environmental Justice

#### 3.13.1 Affected Environment

The proposed 500-kV substation is in southwestern Haywood County. Additionally, approximately 6.5 miles of planned double-circuit 161-kV transmission line and approximately 3.4 miles of double-circuit 500-kV transmission line would extend from the proposed 500-kV substation east and then south into northern Fayette County, to TVA's existing Haywood-Cordova 500-kV Transmission Line. As detailed in Section 3.13.2.2, impacts associated with the proposed 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. After considering these potential impacts, TVA chose to delineate the area potentially affected by these temporary disturbances and minor long term impacts as the three census blocks encompassing the proposed substation and new transmission line segments (see Figure 3-2). As the study area spans Fayette and Haywood counties, these two counties and the state of Tennessee 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, including any environmental justice populations (e.g., minority and low-income). Demographic and economic characteristics of populations within the study area were assessed using the most recent U.S. Census Bureau (USCB) data available, including 2020 Decennial Census counts (USCB 2021a) for total population and racial characteristics, and 2015-2019 American Community Survey 5-year estimates (USCB 2021b) for the remaining datasets.

# 3.13.1.1 Demographic and Economic Conditions

Demographic and economic characteristics of the block groups that make up the study area and the secondary reference geographies are summarized in Table 3-15.

The proposed substation location is Block Group 2, Census Tract 9305, with a resident population of 911. The block group consists of predominantly agricultural and rural residential development, with population centers limited to the small town of Stanton, located approximately 2.5 miles north of the proposed substation site. Since 2010, the block group population has declined by approximately 8 percent, similar to the population decline in Haywood County of approximately 5 percent but in notable contrast to the growth rate of almost 9 percent experienced at the state level. Most of the population (approximately 59 percent) of Block Group 2, Census Tract 9305 is Black or African American, while approximately 38 percent identify as white. There are also small numbers who are Hispanic or Latino, American Indian and Alaska Native, Asian, or who identify as two or more races. Minority percentages in the block group are generally comparable to those of Haywood County, which also has a Black or African American population over 50 percent. The percentage of Black or African American residents is notably higher than that of the state of Tennessee, while other minority group percentages are lower than state levels (Table 3-15). The per capita income in Block Group 2, Census Tract 9305 is \$22,893, which is slightly higher than that of Haywood County (\$21,839) but lower than that of the state of Tennessee (\$29,859) (Table 3-15).

 Table 3-15.
 Demographic and Socioeconomic Characteristics

	Block Group 2, Census Tract 9305 (Encompasses Proposed Substation)	Block Group 3, Census Tract 9305	Block Group 2, Census Tract 608	Haywood County, Tennessee	Fayette County, Tennessee	State of Tennessee
Population <sup>1,2,3</sup>						
Population, 2020	911	588	909	17,864	41,990	6,910,840
Population, 2010	988	560	697	18,787	38,413	6,346,105
Percent Change 2010-2020	-7.8%	5.0%	30.4%	-4.9%	9.3%	8.9%
Persons under 18 years, 2019	17.4%	11.5%	33.5%	22.7%	19.6%	22.4%
Persons 65 years and over, 2019	16.3%	22.8%	16.7%	17.9%	20.7%	16.0%
Racial Characteristics <sup>1</sup>						
Not Hispanic or Latino						
White alone, 2020 (a)	37.9%	37.8%	48.0%	42.3%	65.6%	70.9%
Black or African American, 2020 (a)	58.8%	57.0%	44.4%	50.3%	26.3%	15.7%
American Indian and Alaska Native, 2020 (a)	0.3%	0.2%	0.3%	0.2%	0.1%	0.2%
Asian, 2020 (a)	0.2%	0.2%	0.1%	0.1%	0.6%	1.9%
Native Hawaiian and Other Pacific Islander, 2020 (a)	0.0%	0.0%	0.4%	0.0%	0.0%	0.1%
Some Other Race alone, 2020 (a)	0.0%	0.2%	0.7%	0.3%	0.4%	0.3%
Two or More Races, 2020	1.6%	1.4%	2.4%	2.0%	3.5%	3.9%
Hispanic or Latino, 2020	1.1%	3.4%	3.6%	4.7%	3.4%	6.9%
Income and Employment <sup>3</sup>						
Per capita income, 2019	\$ 22,893	\$ 15,240	\$ 25,328	\$ 21,839	\$ 33,383	\$ 29,859
Persons below poverty level, 2019	26.0%	15.9%	36.0%	18.8%	13.5%	15.2%
Persons below low-income threshold, 2019 (b)	49.0%	55.7%	41.0%	47.0%	30.2%	34.9%
Civilian Labor Force, 2019	362	311	371	7,861	18,816	3,282,671
Percent Employed, 2019	93.9%	66.2%	91.4%	93.2%	93.7%	94.7%
Percent Unemployed, 2019	6.1%	33.8%	8.6%	6.8%	6.3%	5.3%

<sup>(</sup>a) Includes persons reporting only one race.

Sources: <sup>1</sup>USCB 2021a; <sup>2</sup>USCB 2011; <sup>1</sup>USCB 2021b

<sup>(</sup>b) Low-income threshold is defined as two times the poverty level

The percentage of the block group population falling below the poverty level (26 percent) is higher than both the county and the state (approximately 19 percent and 15 percent, respectively). The civilian labor force within the block group encompassing the substation site is 362, with the unemployment rate at 6.1 percent. This unemployment rate is slightly lower than the unemployment rate of Haywood County (6.8 percent), but higher than the unemployment rate in the state of Tennessee (5.3 percent) (Table 3-15).

The block groups that make up the study area encompassing the proposed 161-kV and 500-kV transmission lines include Block Group 2. Census Tract 9305. discussed above, as well as Block Group 3, Census Tract 9305 in Haywood County and Block Group 2, Census Tract 608 in Fayette County. The study area block groups have a combined resident population of 2,245 and consist of agricultural and rural residential development. Population trends since 2010 vary widely by block group, ranging from an 8 percent decline to 30 percent growth. Considered as a whole, the transmission line study area population has grown at a rate of approximately 7 percent, slightly below the growth rate of the state. Approximately 53 percent of the population within the study area is Black or African American, with whites making up approximately 42 percent. There are also small percentages who are Hispanic or Latino, American Indian and Alaska Native, Asian. Native Hawaiian and Other Pacific Islander, or who identify as some other race or two or more races. Minority percentages in the study area are generally comparable to those of Haywood County, which also has a Black or African American population over 50 percent. The percentage of Black or African American residents is notably higher than that of Favette County and the state of Tennessee, while other minority group percentages are comparable to or lower than those of the comparison geographies (Table 3-15). The per capita income in the block groups that make up the study area ranges from \$15,240 to \$25,328, which is on the low end of the spectrum in relation to the comparison geographies (Table 3-15). Correspondingly, the percentage of the study area population falling below the poverty level (26 percent) is higher relative to both the surrounding counties and the state. The civilian labor force within the block groups that comprise the transmission line ROW study area (see Figure 3-2) is 1,044, with the unemployment rate at 15.2 percent. This unemployment rate is higher than the unemployment rate of Fayette and Haywood counties (6.3 percent and 6.8 percent, respectively) and in the state of Tennessee (5.3 percent) (Table 3-15).

# 3.13.1.2 Community Facilities and Services

Community facilities and services include public or 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 area is identified as the service area of various providers, where applicable, or the area within a 5-mile radius of the proposed project.

Based on a review of aerial imagery and online information including the USGS Geographic Names Information System database (USGS 2021), community facilities and services available within a 5-mile radius of the proposed 500-kV substation and proposed transmission line segments include approximately 25 churches, 22 cemeteries, five schools and childcare centers, a medical clinic, and a post office.

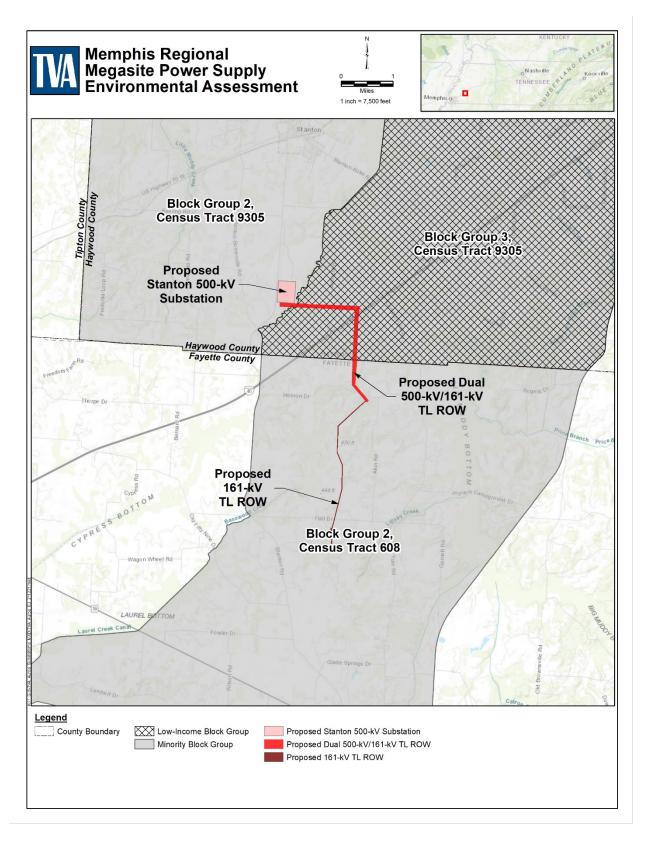


Figure 3-2. Environmental Justice Populations Within the Study Area

The project area is also served by the Brownsville - Haywood County Fire Department and the North Fayette County Volunteer Fire Department. A new Brownsville - Haywood County Emergency Medical Services (EMS) and Fire Station was recently constructed near the proposed substation, on the west side of SR 222, to serve the Megasite. The only other community facility nearby (within 0.5 miles) the proposed project is Cole Cemetery, a small private/family cemetery located approximately 0.25 mile north of the duel 500-kV/161-kV segment of the proposed transmission line.

#### 3.13.1.3 Environmental Justice

TVA's activities reflect the TVA commitment to carrying out a statutory mission that benefits all the people of the Valley, including environmental justice and disadvantaged communities. Consistent with TVA's mission to serve the people of the Valley, TVA directs substantial resources to provide opportunities for disadvantaged communities within the TVA region to benefit from a variety of programs. Environmental justice has been defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies (EPA 2018) and seeks to ensure that minority and low-income populations do not bear disproportionately high and adverse human health or environmental effects from federal programs, policies, and activities. On February 11, 1994, President Clinton signed EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. EO 12898 mandates some federal-executive agencies to consider environmental justice as part of the NEPA process. In addition, on January 27, 2021, President Biden issued EO 14008 Tackling the Climate Crisis at Home and Abroad. Amongst other objectives, the EO calls for the federal government to make the climate crisis and environmental justice essential elements of domestic policy by developing programs, policies, and activities to address current and historic injustices, and by investing and building a clean energy economy that spurs economic opportunity for disadvantaged communities. NEPA guidance for addressing environmental justice is provided by the CEQ Environmental Justice Guidance (CEQ 1997). The CEQ defines minority as any race and ethnicity, as classified by the USCB, that is: Black or African American; American Indian or Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; some other race (not mentioned above); two or more races; or a race whose ethnicity is Hispanic or Latino (CEQ 1997).

Identification of EJ and disadvantaged populations requires analysis of individual race and ethnicity classifications, regional income and demographics, and comparisons of all minority populations in the region. Minority populations exist if either of the following conditions is met:

- The minority population of the impacted area exceeds 50 percent of the total population.
- The ratio of minority population is meaningfully greater (i.e., greater than or equal to 20 percent) than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997).

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 2020 USCB Poverty Threshold for an individual under the age of 65 is an annual income of \$13,465, and for a family of four it is an annual household income of \$26,695 (USCB 2021c). For the purposes of this assessment, low-income individuals are those whose annual household income is less

than two times the poverty level. More encompassing than the base poverty level, this low-income threshold, also used by the EPA in their delineation of low-income populations, is an appropriate measure for environmental justice consideration because current poverty thresholds are often too low to adequately capture the populations adversely affected by low-income levels, especially in high-cost areas (EPA 2019). 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 2011). A low-income environmental justice population exists if either of the following two conditions is met:

- The low-income population exceeds 50 percent of the total population.
- The ratio of low-income population significantly exceeds (i.e., by greater than or equal to 20 percent) that of the general population or other appropriate geographic areas of analysis.

Based on a review of the EPA's EJSCREEN (Environmental Justice Mapping and Screening) tool, the proposed project is in an area with high concentrations of environmental justice populations; minority populations make up a significant percentage of the total population. Therefore, TVA conducted a more detailed evaluation using 2020 USCB Decennial Census data and 2015-2019 American Community Survey data to identify specific block groups within the study area that exceed environmental justice thresholds. Figure 3-2 identifies the block groups within the study area that meet the specified criteria as environmental justice minority and/or low-income populations.

Total minority populations (i.e., all non-white and Hispanic or Latino racial groups combined) comprise approximately 29 percent of the population of Tennessee but 34 percent of the population in Fayette County and 58 percent in Haywood County. The study area, which encompasses both the proposed substation and the 500-kV and 161-kV transmission lines, has a total minority percentage of 58.3 percent, with percentages for individual block groups ranging from 52.0 to 62.2 percent of the population. As all three of the block groups within the study area have minority populations that exceed 50 percent of the total population, they all meet the criterion for consideration as minority population groups.

The percentage of the population of Tennessee living below the low-income threshold is approximately 35 percent. The percentage of low-income residents in Fayette County is slightly lower than the state, at approximately 30 percent of the population, while Haywood County is notably higher at approximately 47 percent. Approximately 49 percent of people living within the study area are considered low-income, with percentages for individual block groups ranging from 41.0 to 55.7 percent of the population. One of the study area block groups, Block Group 3, Census Tract 9305, has a low-income population that exceeds 50 percent of the total population or significantly exceeds the minority percentage of any of the reference geographies. Figure 3-2 identifies the block group determined to meet the criterion for consideration as a low-income population group subject to environmental justice considerations.

#### 3.13.2 Environmental Consequences

#### 3.13.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not construct the proposed 500-kV substation. TVA would also not construct the proposed transmission lines or make associated modifications to the existing transmission system. Therefore, there would be no change in local demographics, socioeconomic conditions, or community services, and there would be no impacts to environmental justice populations in association with the proposed action. However, as described in Section 3.1.2.1, potential effects from anticipated changes to the project area are likely to occur due to factors such as the Megasite development, population growth, and land use changes.

#### 3.13.2.2 Alternative B - Action Alternative

### 3.13.2.2.1 Demographic and Economic Impacts

Under the Action Alternative, proposed substation and transmission line construction activities would occur over approximately 10 months and would entail the use of mobile crews comprised of contractors and/or full-time TVA staff. The construction workforce would total between 10 and 35 workers at a given time, and 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, work crews would be present in the study area for occasional operation and maintenance activities. In both cases, given the relatively small workforce and that most 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 Alternative B, TVA would acquire approximately 67 acres from the State for the purposes of the substation construction. Following the completion of the 2016 EA, TVA purchased approximately 158 acres of ROW easements from 14 landowners in anticipation of the future need for a new power supply to serve the Megasite. These easements give TVA the right to construct, operate, and maintain the transmission system across the property owner's land. In each case, landowners were compensated for the value of such rights. Given the relatively minor acquisitions, the direct local economic effect from the purchase of ROW easements was considered 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.

In addition, the implementation of Alternative B would provide needed power to the future load associated with the Megasite and STEMC's planned BlueOval City 161-kV Substation. The current electric supply available in the vicinity of BlueOval City is not capable of supporting a large industrial load. The proposed alternative would allow TVA to meet the foreseeable power demand for BlueOval City to locate on the Megasite and would ensure a continuous, reliable source of electric power in Fayette and Haywood counties, resulting in long-term indirect economic benefits to the area.

There is also the potential for a decrease in property value for those parcels in the vicinity of transmission lines and related facilities such as substations. 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 substation and transmission line ROW and/or are separated from these structures by a vegetated buffer, any effects to local property values would be minor. Additionally, the proposed transmission line was routed to avoid impacting pivot irrigation systems, allowing most agricultural practices to continue within the ROW areas. Thus, overall effects to local property values would be minor.

#### 3.13.2.2.2 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 substation nor the associated transmission lines 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 Alternative B.

Indirect impacts occur when an action results in a population increase that would generate greater demands for services and/or affect the delivery of such services. As 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 at the proposed substation or along the ROW, local law enforcement, fire, and/or EMS response would likely be required. A Brownsville - Haywood County EMS and Fire Station was recently constructed across SR 222 from the proposed substation, which could respond in the event of an emergency. Emergencies at the substation and along the new transmission line are anticipated to be a rare occurrence, implementation of the Alternative B would not have a notable impact on the demand for emergency services in the area.

#### 3.13.2.2.3 Environmental Justice

As indicated in Figure 3-2, all three block groups within the study area meet the criteria for consideration as environmental justice populations under EO 12898. Under Alternative B, the construction and operation of the proposed substation and transmission lines could result in impacts to nearby residents in these environmental justice communities, including temporary impacts such as increased traffic, noise, fugitive dust, and air emissions during the construction period, as well as long-term visual impacts and the potential for decreased property values. However, these impacts would be minor due to the considerable distance between most residences and the proposed substation. In addition, as described in Section 1.4., transmission line ROW impacts have been further minimized through community and landowner involvement in the selection of the proposed transmission line route (TVA 2016).

Furthermore, the proposed substation and transmission lines would not result in any substantial long-term emissions or releases of air pollutants, noise, or hazardous materials that would have a direct impact on human health or welfare. Implementation of the proposed project would also support the development of the Megasite, which is anticipated to bring many jobs and revenue to the area, benefiting the economy of local communities.

As shown in Table 3-15 and Figure 3-2, the proposed project is in areas where environmental justice populations exceed 50 percent of the total population or significantly exceed the minority percentage of any of the reference geographies (Fayette and Haywood counties, and the State). While any adverse impacts would be similarly experienced by all people living along the proposed transmission line corridor, environmental justice populations would bear a higher impact since the entire 9.9-mile corridor and the area where TVA would construct its substation are considered EJ (low income or minority) communities based on current guidance. However, any adverse impacts those same people in the area would experience would be minor. Moreover, these impacts are similar to impacts experienced by communities (EJ and non-EJ communities) living along TVA's transmission line network across the Valley.

Further, indirect economic benefits associated with the proposed Megasite development would be realized by these affected communities, including minority and low-income populations, in part countering any minor adverse effects. Likewise, increased power reliability benefits resulting from an additional power source in the project area would be realized by the local communities, including minority and low-income populations. Thus, overall, any adverse impacts would be minor and would be largely offset by beneficial economic impacts.

## 3.14 Transportation

#### 3.14.1 Affected Environment

The proposed 500-kV substation site is in Haywood County, in southwestern Tennessee. The primary transportation infrastructure in the vicinity of the proposed project consists of a network of local roadways and state highways that feed into I-40, an interstate highway that provides a connection to the major cities of Memphis, to the southwest, and Jackson, to the northeast. Primary access from I-40 to the proposed substation site and the greater Megasite is provided by SR 222, which borders the proposed substation site to the west. SR 222 extends north from I-40 to the Megasite, continuing to the town of Stanton. South of I-40, SR 222 connects to the town of Somerville.

Table 3-16 presents the 2020/2021 Average Annual Daily Traffic (AADT) measured in vehicles per day and functional roadway classification for the routes servicing the proposed substation site. Roadway functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide and is dependent upon factors related to access and mobility, roadway characteristics (number of lanes, shoulders), and setting (rural vs. urban). The road network in the vicinity of the proposed substation is currently rural in nature and the intersections are generally unsignalized. North of I-40, traffic on SR 222 is primarily generated by users accessing a small number of rural residences, agricultural operations, or the town of Stanton which also provides connections to SR 179 and US 79. Planned future development of the Megasite, including the construction and operation of BlueOval City, would result in a large influx of traffic associated with construction, workforce commuting, and transport of manufacturing materials and products. Thus, daily traffic on the routes servicing the project site is anticipated to increase accordingly.

Table 3-16. Average Annual Daily Traffic and Functional Classification of Roadways in Proximity to the Proposed Substation Site

Roadway Segment	Setting	Functional Classification <sup>1</sup>	AADT (vehicles/day) <sup>2</sup>	Number of Lanes
I-40	Rural	Interstate	26,610	4
SR 222	Rural	Major Collector	1,036	2 to 4

<sup>&</sup>lt;sup>1</sup>Tennessee Department of Transportation (TDOT) 2018.

I-40 is a divided four-lane, limited access interstate highway located approximately one mile south of the proposed substation site. The interstate is generally oriented northeast-southwest and provides a connection to the city of Memphis, as well as Brownsville and Jackson, Tennessee. While a small percentage of project-related traffic could come from local roads to the north, it is assumed that vehicles would typically access the site from I-40.

SR 222 is a north-south free-flow arterial collector roadway connecting to I-40 at Exit 42. This interchange was upgraded in 2016, widening and realigning a portion of SR 222 to better accommodate future traffic anticipated with the development of the Megasite. SR 222 was upgraded to a four-lane roadway from the I-40 interchange north into the Megasite. It merges to two lanes near the northern end of the proposed substation site. Several low-volume local roads feed into SR 222 in the vicinity of the project site, including Thorpe Drive, Stanton-Somerville Road, Truss Road, and Camp Ground Road. These intersections are two-way stop-controlled intersections or T-junctions, with traffic on the minor roads yielding to free-flow traffic on SR 222.

In addition to the roadway network, the project area is also served by the CSX Railroad, which borders the Megasite to the northwest.

#### 3.14.2 Environmental Consequences

### 3.14.2.1 Alternative A - No Action

Under the No Action Alternative, TVA would not construct the proposed 500-kV substation. TVA would also not construct the proposed transmission lines or make associated modifications to the existing transmission system. Therefore, there would be no change in traffic levels or other impacts to the transportation network associated with the proposed project. However, as described in Section 3.1.2.1, potential effects from anticipated changes to the project area are likely to occur due to factors such as the Megasite development, population growth, and land use changes.

## 3.14.2.2 Alternative B - Action Alternative

Traffic generated by the construction of the proposed substation site would consist of the construction workforce, the transport of construction equipment, and transport of spoil material offsite and borrow material onsite. The workforce needed to support the construction activities proposed under this alternative ranges from 10 to 35 workers per day over the approximately 10-month construction period. This workforce would result in a traffic increase of up to 70 vehicles per day (35 vehicles entering the site in the morning and 35 vehicles leaving the site at the end of the workday). Construction-related vehicles,

<sup>&</sup>lt;sup>2</sup>TDOT 2021

including dump trucks, concrete trucks, feller-bunchers, bulldozers, excavators, graders, pile-drivers, augers, rollers, and dozers, would be driven to the construction area or delivered on flatbed trailers, primarily during the mobilization and demobilization stages of the project. Additionally, borrow would be brought onto the site and spoil material would be removed from the site via over-the-road dump trucks, as necessary. However, it is assumed that borrow and spoil material would be moved from within the Megasite boundaries, therefore limiting off-site transport. In total, during peak construction, TVA estimates that 80 to 100 vehicles would access the substation site per day, resulting in up to 200 total trips (to and from the site).

SR 222, located on the west side of the proposed substation site, would provide direct roadway access to the site. As shown in Table 3-17, the increase in traffic volume associated with proposed substation construction would increase the traffic count on SR 222 by approximately 20 percent and would be negligible (less than one percent) on I-40. SR 222 is currently operating far below its capacity, based on recent widening upgrades and low traffic volumes. Thus, a 20 percent increase in daily traffic would have a minimal impact and would not affect traffic flow. In addition, there are wide shoulders and two-lanes in each direction along most of the substation boundary, allowing for traffic to pass and remain free-flowing while trucks or other vehicles turn into the site.

Table 3-17. Construction Traffic Impacts to Roadways in the Vicinity of the Proposed Substation

Impacted Roadway Segment	Primary Project Use	2020/2021 AADT <sup>1</sup>	Projected AADT <sup>2</sup>	% Traffic Increase	Impact Assessment
I-40	Workforce Commute, Construction Vehicle Transport	26,610	26,810	0.8%	Minor
SR 222	Workforce Commute, Construction Vehicle Transport, Spoil and Borrow Transport	1,036	1,236	19.3%	Minor

<sup>&</sup>lt;sup>1</sup>Tennessee Department of Transportation 2021

Due to the relatively low number of construction vehicles and high capacity of the travel routes, the increase in AADT associated with substation construction would not adversely affect traffic conditions on the surrounding roadway network. Transportation impacts would be localized and minor, lasting only through the approximately 10-month construction period. Following construction, ongoing operations and periodic maintenance activities would generate only occasional vehicle trips that would be minimal and would not have an impact on the surrounding traffic network.

<sup>&</sup>lt;sup>2</sup>Assumes maximum of 100 vehicles, or 200 total trips, per day.

# CHAPTER 4 – REASONABLY FORESEEABLE ENVIRONMENTAL TRENDS AND PLANNED ACTIONS

## 4.1 Reasonably Foreseeable and Planned Actions

Ford's planned \$5.6 billion mega campus in Stanton is anticipated to create approximately 6,000 new jobs in addition to more than 18,000 construction workers and support staff to build it.

A study by the University of Memphis reveals mega sites generally lead to an economic boost and population growth (University of Memphis 2017). All counties in west Tennessee stand to gain from the Memphis Regional Megasite development. Each county's share of the benefits will depend upon its proximity to the site, its population base, its available labor force, and its ability to support and absorb the growth that will be generated by the massive development. Additional commercial and retail development will be generated as a direct and indirect outcome of the Megasite. Population growth and infrastructure projects will be stimulated because of the opportunities associated with the project. Additional economic development opportunities will be generated because of retaining current employers and attracting new employers to west Tennessee.

According to Ford, the 3,600-acre campus covering nearly 6 square miles will encompass vehicle assembly, battery production and a supplier park in a vertically integrated system that delivers cost efficiency while minimizing the carbon footprint of the manufacturing process. The mega campus has been designed to add more sustainability solutions, including the potential to use local renewable energy sources such as geothermal, solar and wind power (Ford 2021).

Despite its size, the assembly plant at BlueOval City is designed to have as minimal an impact as possible on the surrounding environment – and even to generate positive impacts. The assembly plant's goal is to have a regenerative impact on the local environment through biomimicry in design of the facility. From the start of production in 2025, Ford's goal is for the assembly plant to be carbon neutral (Ford 2021).

Through an on-site wastewater treatment plant, the assembly plant aspires to make zero freshwater withdrawals for assembly processes by incorporating water reuse and recycling systems. Zero-waste-to-landfill processes will capture materials and production scrap at an on-site materials collection center to sort and route materials for recycling or processing either at the plant or at off-site facilities once the plant is operational (Ford 2021).

As part of their effort to be carbon neutral, Ford is also considering the addition of gas turbines at BlueOval City for the purpose utilizing the steam being produced as a byproduct of some of the manufacturing processes to generate power.

Other reasonably foreseeable Actions in support of the development of the Megasite include the USACE, Memphis District consideration of an application for a Section 404 permit associated with BlueOval City. The permit application includes the construction of the manufacturing plant and facilities, along with accompanying roadways, railroads, parking lots, and stormwater detention/retention infrastructure. Additionally, the FHWA, in coordination with TDOT, proposes to construct a new interchange along I-40 as well as roadway extension improvements to SR 194 to serve imminent industrial development at the BlueOval City project site, and a roadway extension of SR 194 northward, from its current terminus at SR 59 in Fayette County to a new terminus at SR 1 (US 70) in Tipton County.

## 4.2 Effects of Reasonably Foreseeable Actions

Reasonably foreseeable actions include the construction of the Megasite, associated infrastructure, and potential urbanization of the area due to increased employment in the vicinity. These actions are anticipated to occur in the vicinity of the proposed 500-kV substation and transmission lines.

Any future construction and operation that would overlap with operation of the Substation, such as the Megasite, would be required to meet all federal, state, and local protective measures to surface water. Therefore, TVA's proposed substation and associated transmission lines when combined with all other foreseeable actions in the vicinity, is not expected to result in a cumulative impact to surface water.

Construction activities associated with other reasonably foreseeable future actions have the potential to release constituents that may impact groundwater. However, these activities would be conducted in accordance with any applicable environmental and safety regulations, minimizing the potential for a release of contaminants. Therefore, the construction and operation of the proposed substation would not result in any cumulative effects to groundwater.

Fayette and Haywood counties participate in and administer the National Flood Insurance Program, and any activities proposed within the 100-year floodplain must comply with their floodplain ordinances and regulations. As a matter of the building- or construction-permit process, reasonably foreseeable actions that would involve activity within the 100-year floodplain would adhere to the appropriate local floodplain ordinances and regulations. In such reasonably foreseeable future development, impacts to 100-year floodplains would thereby be minimized.

Construction of the Megasite would result in impacts to prime farmland soils, however it is assumed that project would undergo relevant consultation with federal, state, and local authorities. Given the amount of prime farmland soil within the surrounding region, cumulative impacts to prime farmland due to TVA's proposed substation when combined with all other foreseeable actions in the vicinity would be minor.

Development and operation of BlueOval City would take place concurrently with the proposed action. The addition of a large-scale manufacturing complex would have a significant impact on the visual environment in the vicinity of the substation, reducing both the scenic attractiveness and scenic integrity of the landscape. However, due to the rural nature of the area, impacts would be limited to a relatively small number of residences and other sensitive visual receptors. Additionally, the development would be aesthetically compatible with the current zoning of the Megasite for industrial use. As the visual impacts of the proposed 500-kV substation itself would be minimal from the closest residences and sensitive receptors and would be visually subordinate in relation to the adjacent BlueOval City facilities, substation-related impacts would not meaningfully contribute to a cumulative visual impact.

Onsite activities and increased traffic associated with the development of this large manufacturing complex, which would generate more than 18,000 construction jobs and about 6,000 new permanent jobs, would result in a significant increase in background noise levels at the Megasite. While there are few residences and other sensitive noise receptors in the vicinity, those that are near the boundary of BlueOval City or heavily trafficked roadways may experience significant increases in noise associated with Megasite development and operation. However, as noise increases associated with the construction and operation of the proposed substation would generally attenuate to levels below recommended residential noise levels and would be negligible in relation to the noise increases associated with other future actions, substation-related impacts would not meaningfully contribute to a cumulative noise impact.

The anticipated construction jobs and permanent jobs generated in the region by the development of this large-scale manufacturing complex will also provide for a capital investment of \$5.6 billion. This, in turn, would also result in secondary impacts from expenditure of the wages earned by the workforce and the additional demand on local goods and services. Thus, the development and operation of BlueOval City would have significant beneficial impacts on local, county, and state economies. Development of BlueOval City at the Megasite would also lead to increased traffic, noise, visual impacts, and air emissions for residents near the Megasite, including environmental justice populations. However, due to the rural setting, the number of nearby residential properties is low. Because of the small scale of the proposed substation and transmission line project in relation to the greater Megasite development, neither the physical nor economic impacts of substation and transmission line construction/operation would meaningfully contribute to cumulative socioeconomic or environmental justice impacts.

Traffic-related impacts associated with the proposed substation would be limited to the 10-month construction period, which is anticipated to be complete before BlueOval City begins production in 2025. Substation construction would, however, likely overlap with site preparation and construction activities at the Megasite, which would generate higher traffic volumes on SR 222. As SR 222 was recently upgraded with the specific intent of accommodating Megasite development, it is anticipated that the roadway capacity would be sufficient to avoid significant congestion or delays. Substation construction would temporarily contribute to cumulative traffic impacts associated with the development of the Megasite, but these impacts would be short-term and minor. Due to the distance from the proposed TVA substation and transmission lines, no traffic-related impacts are anticipated as a result of proposed FHWA construction of a new I-40 interchange or roadway extension improvements to SR 194.

#### 4.3 Postconstruction Effects

#### 4.3.1 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 contacting 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 and 500-kV lines, may produce an audible low-volume hissing or crackling noise (Appendix G). 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 based on 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.

### 4.3.2 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.

#### 4.3.3 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 would be used for the 161-kV transmission lines. 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 would be used for the 500-kV transmission line. 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.

## 4.4 Unavoidable Adverse Environmental Impacts

Unavoidable adverse impacts are the effects of the proposed action on natural and human resources that would remain after mitigation measures or BMPs have been applied. Mitigation measures and BMPs are typically implemented in accordance with various environmental laws and regulations aimed at minimizing and compensating for unavoidable adverse environmental impacts.

Construction and operation of the proposed 500-kV substation and 9.9-miles of new transmission line ROWs would occur on land currently undeveloped that supports forested and herbaceous vegetation. Clearing and grading of the substation site and the new transmission line ROWs would result in an unavoidable alteration of habitats. These habitat alterations would result in related long-term impacts to localized species composition and wildlife habitat for the lands immediately affected. However, due to the abundant habitat of similar quality within the vicinity of the project site, the overall impact to vegetation and wildlife is considered minor.

The construction of the proposed transmission line would also result in unavoidable adverse effects to wetland resources including the conversion of 5.28 acres of forested wetland to emergent/shrub-scrub wetland habitat. These impacts would be mitigated through adherence to CWA permit requirements and implementation of applicable compensatory mitigation measures identified through the permitting process. Temporary impacts to water quality from runoff during construction, as well as vegetation maintenance along the transmission line, could impact nearby receiving water bodies but would be reduced with application of appropriate BMPs.

In the context of the availability of regional resources that are like those unavoidably adversely affected by the project, coupled with the application of appropriate BMPs and adherence to permit requirements, unavoidable adverse effects would be minor. 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 lines could result in a small amount of localized siltation.
- Trees 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
  or structures. Where the ROW would traverse forested areas, this would cause a
  change in the visual character of the immediate area.
- Clearing and construction would result in the disruption and/or loss of some plant and wildlife, and the permanent loss of about 85 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 5.38 acres of forested wetland to emergent or scrub-shrub wetland habitat.
- The proposed substation and transmission lines would result in minor, long-term visual effects on the landscape in the immediate local area.

## 4.5 Relationship of Local Short-Term Uses and Long-Term Productivity

This supplemental EA focuses on the analyses of environmental impact and resulting conclusions associated with the environmental impacts of construction and operation of the proposed substation facility, construction, operation, and maintenance of new transmission lines, and the access roads. These activities are considered short-term uses of the environment for purposes of this section. In contrast, the long-term productivity is that which occur beyond the conclusion of decommissioning the substation site and associated transmission lines. In conjunction with this analysis, it is assumed that all site facilities, infrastructure, and associated roadways would be removed and restored as part of decommissioning. This section includes an evaluation of the extent that the short-term uses preclude any options for future long-term use of the associated project areas.

Most environmental impacts during construction activities would be relatively short-term and would be addressed by BMPs and mitigation measures. Site preparation coupled with noise from construction activities, may displace some wildlife and alter existing vegetation. Construction and operational phase activities would have a limited, yet favorable short-term impact on the local economy through the creation of construction jobs and associated revenue.

Construction of the 500-kV substation would cause some short-term deterioration in existing air quality during construction. These impacts would be mitigated through implementation of measures to reduce emissions from construction phase equipment and fugitive dust. Long-term impacts to air quality would be minor because operation of the substation would not emit pollutants into the atmosphere. Therefore, no effects on the maintenance and enhancement of long-term productivity related to air quality would occur because of construction and operation of the substation. The short-duration construction project-generated traffic would result in some decrease in convenience to users of roads adjacent to the site to accommodate construction traffic. In terms of the long-term operation of the transportation system, no disturbance is expected after completion of construction activities and long-term productivity should not be affected.

The proposed 500-kV substation would be constructed on an approximately 67-acre site adjacent to the Haywood County Megasite.

The minor loss of prime farmland within the substation footprint (26.3 acres) is negligible when compared to the amount of land designated as prime farmland within the surrounding region.

Additionally, TVA proposes transmission system modifications to substations, structures, transmission lines (including the addition of OPGW), access roads and TVA's Operation Centers. As these facilities are existing, effects would be minor. Therefore, no significant cumulative impacts are expected because of implementing the proposed action.

The project area consists of a variety of fragmented and contiguous forested habitat, wetlands, stream crossings, early successional habitat (i.e., pasture and agricultural), and residential or otherwise disturbed areas. The principal change in short-term use of the project area would be the loss of vegetation within the areas impacted for construction and operation of the substation. Because the vicinity of the project area includes similar vegetation and habitat types and land uses (including prime farmland), the short-term disturbance to support operations is not expected to significantly alter long-term productivity of wildlife, agriculture, or other natural resources.

Construction of the substation facility, new transmission lines, and access roads would reduce the productivity of the land for other purposes while the facility is in operation. However, after decommissioning the lands could be reused and made available for other uses.

Land within the ROW of the proposed transmission lines would be committed to use for electrical system needs for the foreseeable future. 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 be especially prominent in 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.

Some of this approximately 158 acres (as described in the 2016 EA) would be converted from current uses of pasture, agriculture, and as forested land to use as a ROW. The proposed ROW would support either the 161-kV or the 500-kV (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.

The availability of a reliable power supply is one factor in improving the overall infrastructure in the local area, which over time could make the area more attractive to additional commercial and residential development. However, the extent and degree of such development in the Megasite area depends on a variety of factors and cannot be predicted accurately. Cumulative impacts of the construction, maintenance, and operation of the proposed transmission lines, substation, and the Megasite development 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.

#### 4.6 Irreversible and Irretrievable Commitments of Resources

This section describes the expected irreversible and irretrievable environmental resource commitments used to support construction and operation of the new substation and transmission lines. A resource commitment is considered irreversible when impacts from its use would limit future use options and the change cannot be reversed, reclaimed, or repaired. Irreversible commitments generally occur to nonrenewable resources such as minerals or cultural resources and to those resources that are renewable only over long timespans, such as soil productivity. A resource commitment is considered irretrievable when the use or consumption of the resource is neither renewable nor recoverable for use by future generations until reclamation is successfully applied. Irretrievable commitments generally apply to the loss of production, harvest, or natural resources and are not necessarily irreversible. For example, filling a wetland area for a parking lot would irretrievably commit the property for as long as the parking lot remains.

The land used for the proposed substation and associated connections is not irreversibly committed because once TVA ceases operations at the location and the facility is decommissioned, the land supporting the substation could be returned to other commercial or noncommercial uses. 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 for the transmission line could continue.

Resources required by construction activities, including labor, fossil fuels and construction materials, would be irretrievably lost. Nonrenewable fossil fuels would be irretrievably lost using gasoline and diesel-powered equipment during construction. The materials used for the construction of the proposed site would be committed for the life of the facility. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Some substation materials may be irrevocably committed; however, some metal components and structures could be recycled.

The materials used for construction of the proposed transmission lines 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.

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Education:

Project Role:

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Project Role: Recreation

Experience: 40 years in Recreation Planning and Management

# CHAPTER 6 – SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT RECIPIENTS

## 6.1 Federal Agencies

United States Army Corps of Engineers Memphis, Tennessee

Advisory Council on Historic Preservation Washington D.C.

## 6.2 Federally Recognized Tribes

Absentee Shawnee Tribe of Indians of Oklahoma

Cherokee Nation

**Chickasaw Nation** 

Choctaw Nation of Oklahoma

Eastern Shawnee Tribe of Oklahoma

Jena Band of Choctaw Indians

Kialegee Tribal Town

Muscogee (Creek) Nation

Osage Nation

**Quapaw Nation** 

Shawnee Tribe

Thlopthlocco Tribal Town

United Keetoowah Band of Cherokee Indians in Oklahoma

# 6.3 State Agencies

State of Tennessee

Department of Environment and Conservation

Nashville. Tennessee

**Tennessee Historical Commission** 

Nashville, Tennessee

# **6.4 Individuals and Organizations**

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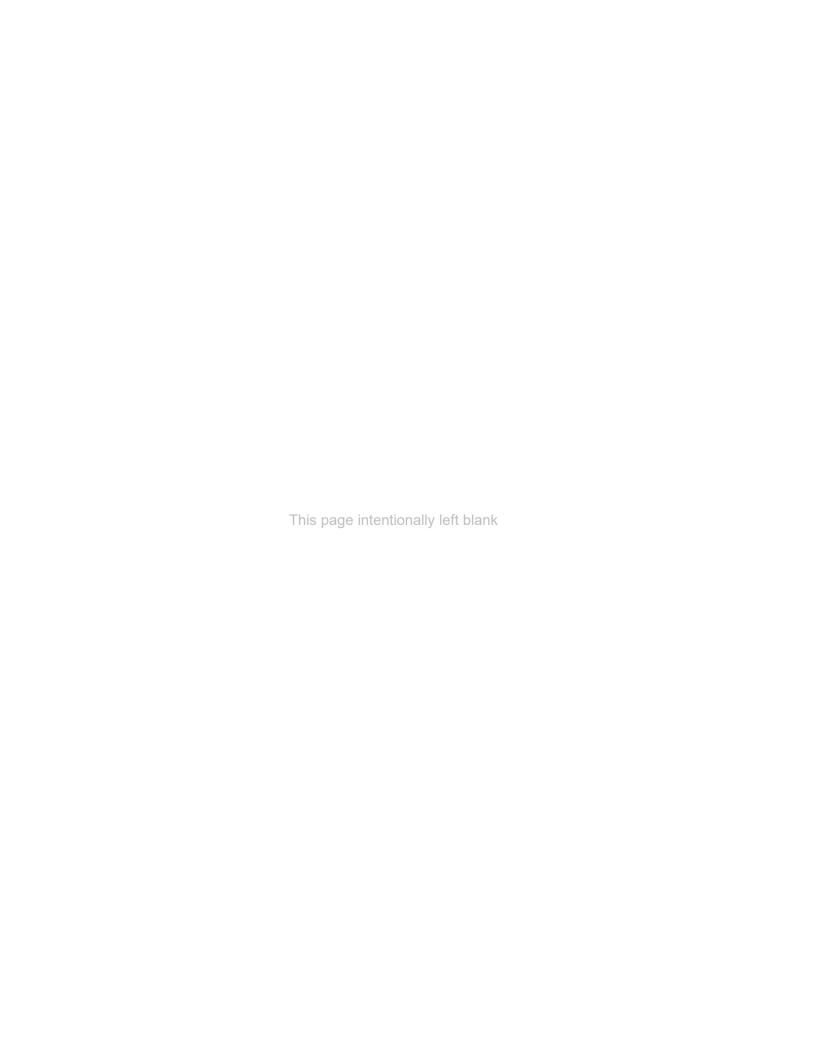
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Memphis, Tennessee

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## **CHAPTER 7 – LITERATURE CITED**

- Ainslie, W.B., R.D. Smith, B.A. Pruitt, T.H. Roberts, E.J. Sparks, L. West, G.L. Godshalk, and M.V. Miller. 1999. A regional guidebook for assessing the functions of low gradient, riverine wetlands in western Kentucky. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi, USA. Technical Report WRP-DE-17.
- American Medical Association. 1994. *Effects of Electric and Magnetic Fields*. Chicago, Illinois: AMA, Council on Scientific Affairs (December 1994).
- Brim Box, J. and J. Mossa. 1999. Sediment, Land Use, and Freshwater Mussels: Prospects and Problems. Journal of the North American Benthological Society 18(1):99-117.
- Bolt, Beranek, and Newman Inc. 1971. Noise from Construction Equipment and Operation, Building Equipment, and Home Appliances. U.S. Environmental Protection Agency Report NTID300.1.
- Butler, R.S. 2002. Status Assessment Report for the sheepnose, Plethobause cyphyus, occurring in the Mississippi River system (U.S. Fish & Wildlife Service Regions 3, 4, & 5). Unpublished Report by the Ohio River Valley Ecosystem Team Mollusk Subgroup, 88 pp.
- Centers for Disease Control and Prevention. 2011. CDC Health Disparities and Inequalities Report United States, 2011. MMWR, January 14, 2011; Vol. 60 (Suppl). Retrieved from <a href="http://www.cdc.gov/mmwr/pdf/other/su6001.pdf">http://www.cdc.gov/mmwr/pdf/other/su6001.pdf</a> (accessed December 2021).
- Council on Environmental Quality. 1997. Environmental Justice Guidance under the National Environmental Policy Act, Executive Office of the President, Washington, D.C. Retrieved from: <a href="https://www.epa.gov/sites/production/files/2015-02/documents/ejguidance\_nepa\_ceq1297.pdf">https://www.epa.gov/sites/production/files/2015-02/documents/ejguidance\_nepa\_ceq1297.pdf</a> (accessed December 2021).
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetland and Deepwater Habitats of the United States. Washington, D.C.: U.S. Fish and Wildlife Publication FWS/OBS-79/31.
- Dadiego, D., J. R. de Gregory, M. Weaver, T. Karpynec, T. Rael, K. Wright, E. Crook, and K. Cowart. 2015. A Phase I Cultural Resources Survey of Tennessee Valley Authority's Memphis Regional Megasite Transmission Line Project in Fayette and Haywood Counties, Tennessee. Draft report prepared by Tennessee Valley Archaeological Research, Huntsville, Alabama. Submitted to Tennessee Valley Authority, Knoxville, Tennessee.
- De Gregory, Heidi, Jillian Rael, Heather Bass, Shanda Davidson, Brittney Carnell, Katie N. Weis, and Hunter B. Johnson. 2022. A Phase I Cultural Resources Survey for the Tennessee Valley Authority's Project Aurora in Shelby, Haywood, and Fayette Counties, Tennessee. Report on file at the Tennessee Valley Authority Cultural Resources Library, Knoxville, Tennessee.

- EnSafe. 2015. Memphis Regional Megasite Phase I Environmental Site Assessment Report. SBC Project Number: SBC529/000-02-2010-16.
- Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Vicksburg, Mississippi: U.S. Army Corps of Engineers Waterways Experiment Station. Technical Report Y-87-1.
- Environmental Protection Agency. 1990. Memorandum of Agreement between Department of the Army and the Environmental Protection Agency Concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines. Retrieved from: <a href="https://www.epa.gov/sites/production/files/2019-05/documents/1990">https://www.epa.gov/sites/production/files/2019-05/documents/1990</a> army-epa mitigation moa.pdf (accessed February 2022).
- Etnier, D. A., and W. C. Starnes. 1993. *The Fishes of Tennessee*. University of Tennessee Press. Knoxville, Tennessee.
- Federal Highway Administration. 2011. Highway Traffic Noise: Analysis and Abatement Guidance. FHWA-HEP-10-025. December 2011.
- -----. 2016. Construction Noise Handbook. Retrieved from <a href="http://www.fhwa.dot.gov/environment/noise/construction\_noise/handbook/handbook\_noise/handbook/handbook\_noise/handbook\_noise/handbook/handbook\_noise/ha
- -----. 2018. Techniques for Reviewing Noise Analyses and Associated Noise Reports. Final Report. FHWA-HEP-18-067. June 2018. Retrieved from <a href="https://www.fhwa.dot.gov/Environment/noise/resources/reviewing\_noise\_analysis/">https://www.fhwa.dot.gov/Environment/noise/resources/reviewing\_noise\_analysis/</a> (accessed January 2022).
- Ford Motor Company. 2021. Ford to Lead America's Shift to Electric Vehicles with New BlueOval City Mega Campus in Tennessee and Twin Battery Plants in Kentucky; \$11.4b Investment to Create 11,000 Jobs and Power New Lineup of Advanced EVS. Retrieved from <a href="https://corporate.ford.com/articles/locations/blue-oval-city.html">https://corporate.ford.com/articles/locations/blue-oval-city.html</a> (accessed April 2022).
- Griffith, G. E, J.M. Omernik and S. Azevedo. 1998. Ecoregions of Tennessee (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale1:1,250,000).
- Grossman, D. H., D. Faber-Langendoen, A. S. Weakley, M. Anderson, P. Bourgeron, R. Crawford, K. Goodin, S. Landaal, K. Metzler, K. D. Patterson, M. Pyne, M. Reid, and L. Sneddon. 1998. International classification of ecological communities: terrestrial vegetation of the United States. Volume I. The National Vegetation Classification System: development, status, and applications. The Nature Conservancy, Arlington, Virginia. 139 pp.
- Hogger, J. B. 1988. Ecology, Population Biology and Behaviour. In: *Freshwater Crayfish: Biology, Management and Exploitation*. Holdich, D.M. & Lowery, R.S. (eds.): 114-144. Croom Helm, London.

- International Association for Research on Cancer. 2002. Non-Ionizing Radiation, Part 1; Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields. Lyon, France: IARC Press.
- Journal of the American Medical Association. 2007. Implantable Cardioverter-Defibrillators. JAMA 297(17), May 2, 2007.
- Kurta, A., S. W. Murray, and D. H. Miller. 2002. Roost selection and movements across the summer landscape. Pages 118-129 in A. Kurta and J. Kennedy, editors. The Indiana Bat: Biology and Management of an Endangered Species. Bat Conservation International, Austin, Texas.
- Leverett, R. 1996. Definitions and History in Eastern Old-Growth Forests: prospects for rediscovery and recovery. Edited by Mary Byrd Davis. Island Press, Washington D.C. and Covelo, California.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1–17. Published 28 April 2016. ISSN 2153 733X.
- Lloyd, O. B. Jr., and W. L. Lyke. 1995. *Ground Water Atlas of the United States, Segment 10.* United States Geological Survey. Reston, Virginia.
- Miller, J.H., Manning, S.T., and S.F. Enloe. 2010. A Management Guide for Invasive Plants in the Southern Forests. Gen. Tech. Rep. SRS-131. U.S. Department of Agriculture, Forest Service, Southern Research Station: 1-3.
- Morse, L.E., J.M. Randall, N. Benton, R. Hiebert, and S. Lu. 2004. An Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on Biodiversity. Version 1. NatureServe, Arlington, Virginia.
- National Institute of Environmental Health Sciences. 1998. Report on Health Effects From Exposure to Power Line Frequency Electric and Magnetic Fields. Research Triangle Park: NIEHS, Publication No. 99-4493.
- -----. 2002. Electric and Magnetic Fields Associated With the Use of Electric Power.

  Retrieved from:

  <a href="http://www.niehs.nih.gov/health/materials/electric">http://www.niehs.nih.gov/health/materials/electric</a> and magnetic fields associated

  with the use of electric power questions and answers english 508.pdf#search

  =electric%20and%20magnetic%20fields%20electric%20power (accessed February 2022).
- National Research Council. 1997. Possible Health Effects of Exposure to Residential Electric and Magnetic Fields. NRC, Committee on the Possible Effects of Electromagnetic Fields on Biologic Systems. Washington National Academy Press.
- NatureServe. 2022. *NatureServe Explorer: An Online Encyclopedia of Life*. Version 7.1. NatureServe, Arlington, Virginia. Retrieved from <a href="https://explorer.natureserve.org/">https://explorer.natureserve.org/</a> (accessed February 2022).

- Pruitt, L., and L. TeWinkel. 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota. 258 pages.
- Scott, M. L., B. A. Kleiss, W. H. Patrick, C. A. Segelquist. The Effect of Developmental Activities on Water Quality Functions of Bottomland Hardwood Ecosystems: The Report of the Water Quality Workgroup. As reported in: Gosslink, J.G. et al. (1990). Ecological processes and cumulative impacts: illustrated by bottomland hardwood wetland ecosystems / edited. Lewis Publishers, Chelsea, Michigan.
- Sutherland, A. B., J. L. Meyer and E. P. Gardiner. 2002. "Effects of Land Cover on Sediment Regime and Fish Assemblage Structure in Four Southern Appalachian Streams." *Freshwater Biology*. 47(9):1791-1805.
- Tennessee Bat Working Group. 2022a. Indiana bat. Retrieved from <a href="http://www.tnbwg.org/TNBWG">http://www.tnbwg.org/TNBWG</a> MYSO.html (accessed February 2022).
- -----. 2022b. Northern long eared bat. Retrieved from <a href="http://www.tnbwg.org/TNBWG">http://www.tnbwg.org/TNBWG</a> MYSO.html (accessed February 2022).
- Tennessee Department of Environment and Conservation. 2012. *Tennessee Erosion and Sediment Control Handbook* Division of Water Resources. Nashville, Tennessee. 4th Edition 2012. Retrieved from <a href="http://tnepsc.org/TDEC">http://tnepsc.org/TDEC</a> EandS Handbook 2012 Edition4/TDEC%20EandS%20Handbook%204th%20Edition.pdf (accessed December 2021).
- -----. 2015. Tennessee Rapid Assessment Method for Wetlands. Nashville, Tennessee: Division of Water Resources, Natural Resources Unit.
- -----. 2019. *Use Classifications for Surface Waters*. Retrieved from <u>0400-40-04.20190911.pdf (tnsosfiles.com)</u> (accessed December 2021).
- -----. 2020. *EPA Approved Lists of Impaired and Threatened Waters*. Retrieved from <a href="https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html">https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality-reports---publications.html</a> (accessed December 2021).
- -----. 2021a. Division of Water Resources Water Well Map Viewer. Retrieved from <a href="https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-resources-data-map-viewers.html">https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-resources-data-map-viewers.html</a> (accessed December 2021).
- -----. 2021b. Wellhead Protection Program. Retrieved from <a href="https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/wellhead-protection-program.html">https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/wellhead-protection-program.html</a> (accessed December 2021).
- ----- 2021c. Division of Water Resources Public Data Viewer. Retrieved from <a href="https://tdeconline.tn.gov/dwr/index.html?find=TN06030003053">https://tdeconline.tn.gov/dwr/index.html?find=TN06030003053</a> 2000 (accessed December 2021).

- -----. 2021d. General National Pollutant Discharge Elimination System Permit for Discharges of Storm Water Associated with Construction Activities. 2021. Retrieved from <a href="https://dataviewers.tdec.tn.gov/pls/enf\_reports/f?p=9034:34051:0::NO:34051:P34051">https://dataviewers.tdec.tn.gov/pls/enf\_reports/f?p=9034:34051:0::NO:34051:P340511</a> <a href="https://dataviewers.tdec.tn.gov/pls/enf\_reports/f?p=9034:34051:0::NO:34051:P340511">https://dataviewers.tdec.tn.gov/pls/enf\_reports/f?p=9034:34051:0::NO:34051:P340511</a> <a href="https://dataviewers.tdec.tn.gov/pls/enf\_reports/f?p=9034:34051:0::NO:34051:P340511</a> <a href="https://dataviewers.tdec.tn.gov/pls/enf\_reports/f?p=9034:34051:0::No:34051:Disp/enf\_reports/f?p=9034:34051:0::No:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_reports/f?p=9034:34051:Disp/enf\_repor
- Tennessee Department of Transportation. 2018. Functional Classification Maps. Fayette and Haywood Counties. Retrieved from <a href="https://www.tn.gov/tdot/driver-how-do-i/look-at-or-order-state-maps/maps/annual-average-daily-traffic-maps1.html#collapsee0e1d1eefc864fc091159e1bdb829c29-2">https://www.tn.gov/tdot/driver-how-do-i/look-at-or-order-state-maps/maps/annual-average-daily-traffic-maps1.html#collapsee0e1d1eefc864fc091159e1bdb829c29-2</a> (accessed December 2021).
- -----. 2021. Transportation Data Management System. Traffic Count Database System. Retrieved from https://tdot.public.ms2soft.com/tcds/tsearch.asp?loc=Tdot&mod=TCDS (accessed December 2021).
- Tennessee Invasive Plant Council. 2021. TN-IPC Invasive Plant Lists. Retrieved from https://www.tnipc.org/invasive-plants/ (accessed July 2021).
- Tennessee Valley Authority. 1981. Class Review of Repetitive Actions in the 100-Year Floodplain, FR Vol. 46, No. 76—Tuesday, April 21, 1981. pp. 22845-22846.
- -----. 2016. Memphis Regional Megasite Power Supply. Final Environmental Assessment. Fayette and Haywood Counties, Tennessee. February 2016. Retrieved from <a href="https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/default-document-library/site-content/environment/environmental-stewardship/environmental-reviews/memphis-regional-megasite-power-supply/mrm-fea.pdf?sfvrsn=8f2f3fbd\_2 (accessed December 2021).
- ------. 2017a. A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities, Revision 3. Edited by G. Behel, S. Benefield, R. Brannon, C. Buttram, G. Dalton, C. Ellis, G. Henley, T. Korth, T. Giles, A. Masters, J. Melton, R. Smith, J. Turk, T. White, and R. Wilson. Chattanooga, Tennessee. Retrieved from <a href="https://www.tva.com/Energy/Transmission-System/Transmission-System-Projects">https://www.tva.com/Energy/Transmission-System/Transmission-System-Projects</a> (accessed February 2022).
- -----. 2017b. Programmatic Biological Assessment for Evaluation of the Impacts of Tennessee Valley Authority's Routine Actions on Federally Listed Bats. Knoxville, Tennessee. Retrieved from <a href="https://www.tva.com/Environment/Environmental-Stewardship/Environmental-Reviews">https://www.tva.com/Environment/Environmental-Stewardship/Environmental-Reviews</a> (accessed February 2022).
- -----. 2019. Integrated Resource Plan and associated Environmental Impact Statement for TVA's Integrated Resource Plan. Knoxville, Tennessee. Retrieved from <a href="https://www.tva.gov/Environment/Environmental-Stewardship/Integrated-Resource-Plan">https://www.tva.gov/Environment/Environmental-Stewardship/Integrated-Resource-Plan</a> (accessed February 2022).

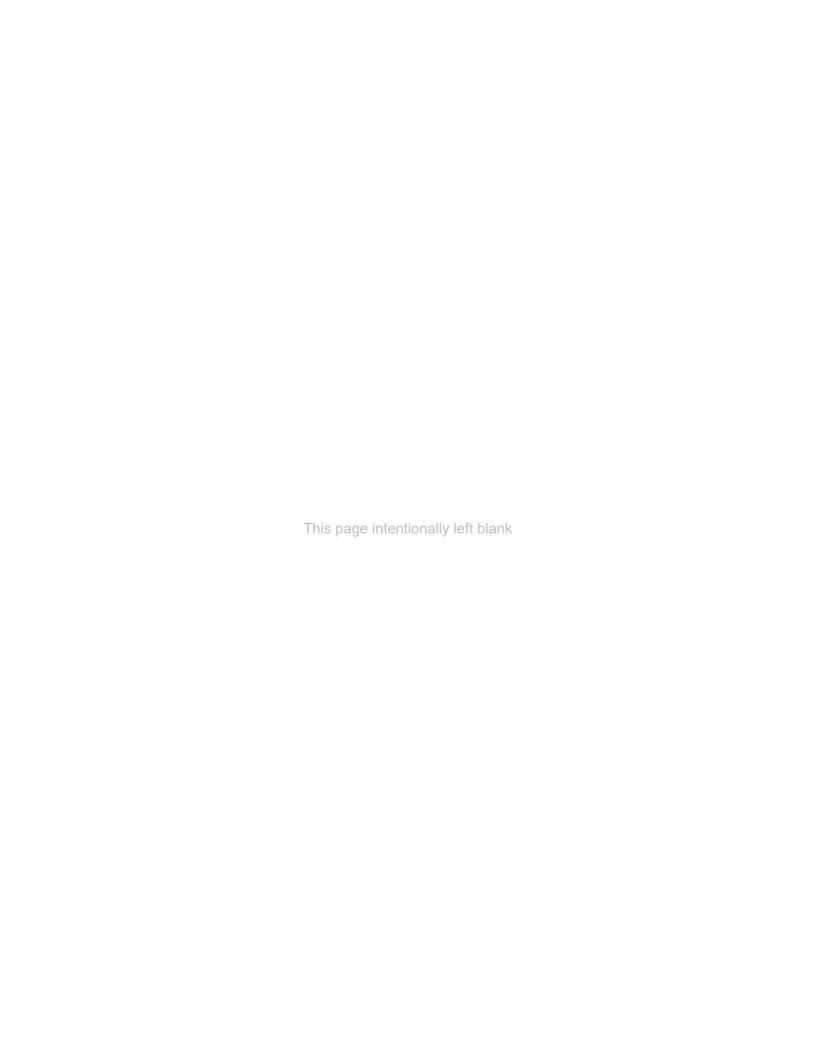
- ----- 2022. Tennessee Valley Authority. Transmission System Related Guidelines and Specifications. Retrieved from <a href="https://www.tva.com/Energy/Transmission-System-Projects">https://www.tva.com/Energy/Transmission-System-Projects</a> (accessed February 2022).
- University of Memphis. 2017. Estimates of Potential Economic Impacts of the Memphis Regional Megasite in Tennessee. Prepared for Tennessee Department of Economic and Community Development by The Sparks Bureau of Business and Economic Research/Center for Manpower Studies. Retrieved from <a href="Memphis Regional Megasite Authority">Memphis Regional Megasite Authority QA 2021.pdf (tn.gov)</a>) (accessed April 2022).
- U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-20. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.
- U.S. Census Bureau. 2011. Decennial Census 2010. Table ID: P1 Total Population. Retrieved from https://data.census.gov/cedsci/ (accessed December 2021).
- -----. 2021a. 2020 Decennial Census Redistricting Data (PL 94-171). Retrieved from <a href="https://data.census.gov/cedsci/">https://data.census.gov/cedsci/</a> (accessed December 2021).
- -----. 2021b. American Community Survey 2015-2019. Detailed Tables. Retrieved from <a href="https://data.census.gov/cedsci/">https://data.census.gov/cedsci/</a> (accessed December 2021).
- -----. 2021c. Poverty Thresholds for 2020. Retrieved from <a href="http://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html">http://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html</a> (accessed December 2021).
- U.S. Department of Agriculture, Natural Resources Conservation Service. 2021. Web Soil Survey. Retrieved from <a href="https://websoilsurvey.sc.egov.usda.gov">https://websoilsurvey.sc.egov.usda.gov</a> (accessed December 2021).
- U.S. Department of Energy. 1996. Questions and Answers; EMF in the Workplace. Electric and Magnetic Fields Associated With the Use of Electric Power. National Institute for Occupational Safety and Health, National Institute of Environmental Health Sciences, Report No. DOE/GO-10095-218, September 1996.
- U.S. Department of Housing and Urban Development. 1985. The Noise Guidebook, HUD-953-CPD Washington, D.C., Superintendent of Documents, U.S. Government Printing Office.
- U.S. Environmental Protection Agency. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Office of Noise Abatement and Control, Arlington, Virginia.
- -----. 1990. Memorandum of Agreement between Department of the Army and the Environmental Protection Agency Concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines. Retrieved from <a href="https://www.epa.gov/sites/production/files/2019-05/documents/1990\_army-epa\_mitigation\_moa.pdf">https://www.epa.gov/sites/production/files/2019-05/documents/1990\_army-epa\_mitigation\_moa.pdf</a> (accessed February 2022).

- -----. 2019. EJSCREEN Technical Documentation. Office of Policy, Washington, D.C. August 2017. Retrieved from <a href="https://www.epa.gov/sites/production/files/2017-09/documents/2017">https://www.epa.gov/sites/production/files/2017-09/documents/2017</a> ejscreen technical document.pdf (accessed December 2021).
- -----. 2018. Environmental Justice. Retrieved from <a href="https://www.epa.gov/environmentaljustice/learn-about-environmental-justice">https://www.epa.gov/environmentaljustice/learn-about-environmental-justice</a> (accessed December 2021).
- -----. 2021. Designated Sole Source Aquifer in EPA Region IV. Retrieved from <a href="https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ad">https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ad</a> a1877155fe31356b (accessed December 2021).
- U.S. Fish and Wildlife Service. 1982. National Wetlands Inventory. Retrieved from <a href="https://www.fws.gov/program/national-wetlands-inventory/wetlands-data">https://www.fws.gov/program/national-wetlands-inventory/wetlands-data</a> (accessed February 2022).
- -----. 2014. Northern Long-eared Bat Interim Conference and Planning. Retrieved from <a href="http://www.fws.gov/midwest/endangered/mammals/nlba/pdf/NLEBinterimGuidance6">http://www.fws.gov/midwest/endangered/mammals/nlba/pdf/NLEBinterimGuidance6</a> <a href="Jan2014.pdf">Jan2014.pdf</a> (accessed December 2019).
- -----. 2015a. Environmental Conservation Online System: Indiana bat (Myotis sodalis). Retrieved from <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a> (accessed April 2022).
- -----. 2015b. Environmental Conservation Online System: Northern long-eared bat (Myotis septentrionalis). Retrieved from <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a> (accessed April 2022).
- -----. 2020. Range-Wide Indiana Bat Survey Guidelines. Retrieved from <a href="https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines">https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines</a> (accessed February 2022).
- U.S. Forest Service. 1995. Landscape Aesthetics, A Handbook for Scenery Management, Agriculture Handbook Number 701.
- -----. 2015. Forest Inventory Data Online (FIDO). Version 1.5.1.05b. Retrieved from <a href="http://apps.fs.fed.us/fia/fido/index.html">http://apps.fs.fed.us/fia/fido/index.html</a> (accessed June 2015).
- U.S. Geological Survey. 1998. Ground-Water Flow Analysis of the Mississippi Embayment Aquifer System, South-Central United States. Retrieved from <a href="https://pubs.usgs.gov/pp/1416i/report.pdf">https://pubs.usgs.gov/pp/1416i/report.pdf</a> (accessed December 14, 2021).
- -----. 2021. Geographic Names Information System (GNIS) Dataset. Retrieved from: <a href="https://geonames.usgs.gov/apex/">https://geonames.usgs.gov/apex/</a> (accessed December 2021).

- U.S. Water Resources Council. 1978. Guidelines for Implementing Executive Order 11988, Floodplain Management. FR Vol. 43, No. 29—Friday, February 10, 1978. pp. 6030-6054.
- Wilder, T.C. and Roberts, T. H. 2002. "A Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing Wetland Functions of Low-Gradient Riverine Wetlands in Western Tennessee," <a href="ERDC/EL TR-02-6">ERDC/EL TR-02-6</a>, U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.
- World Health Organization. 2007a. *Electromagnetic Fields and Public Health*. WHO EMF Task Force Report, WHO Fact Sheet No. 299.
- -----. 2007b. Extremely Low Frequency Fields. Environmental Health Criteria Monograph No. 238
- -----. 2007c. Electromagnetic Fields and Public Health Exposure to Extremely Low Frequency Fields. WHO Fact Sheet No. 322.

Appendix A – Proposed Power Suppl	Appendix A	- Proposed	Power	Suppl
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Appendix A – Aerial View of Proposed Power Supply Including New Transmission Lines and a Substation



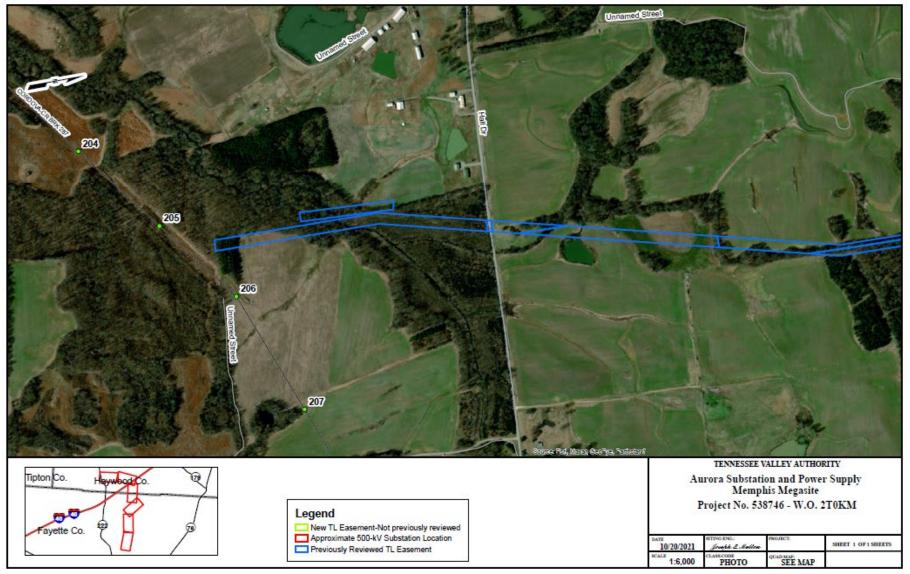


Figure A-1 Aerial View of Proposed Power Supply Including New Transmission Lines and a Substation

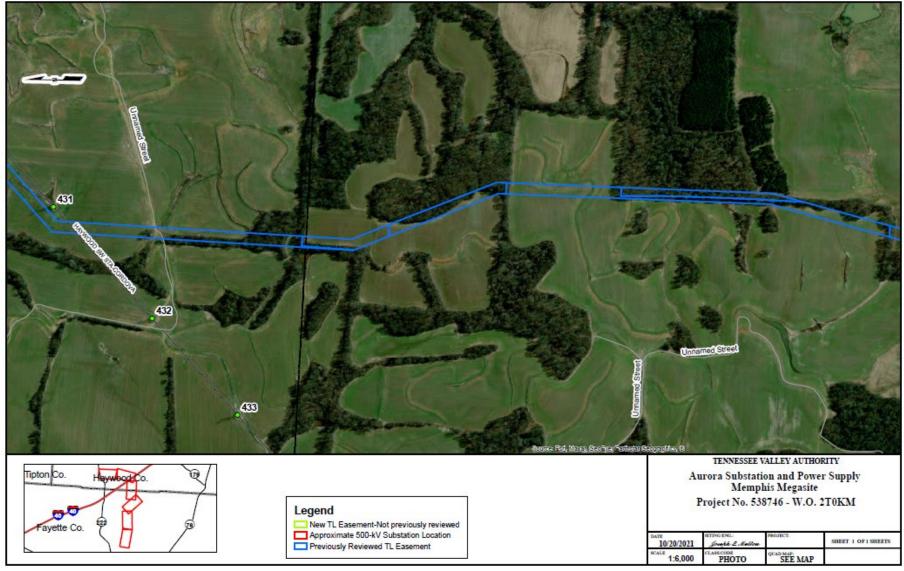


Figure A-2 Aerial View of Proposed Power Supply Including New Transmission Lines and a Substation

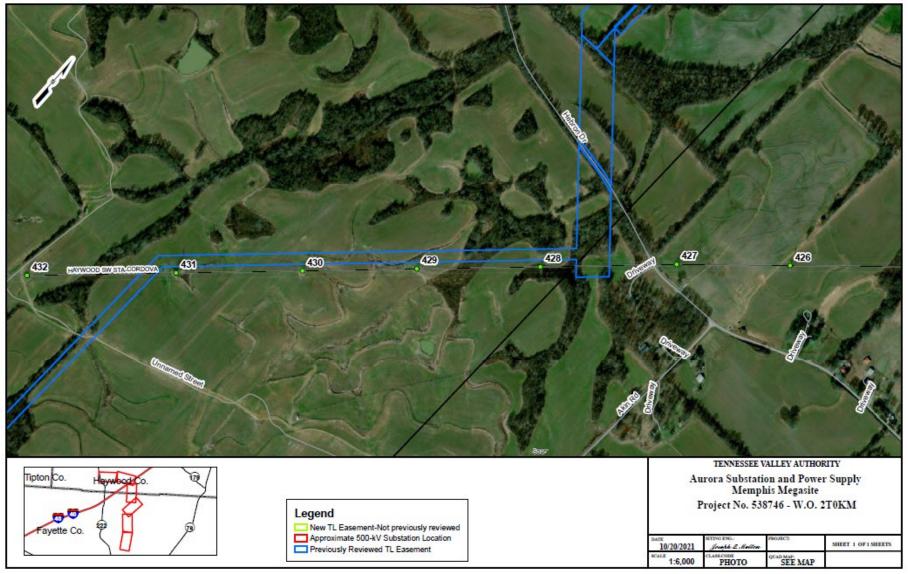


Figure A-3 Aerial View of Proposed Power Supply Including New Transmission Lines and a Substation

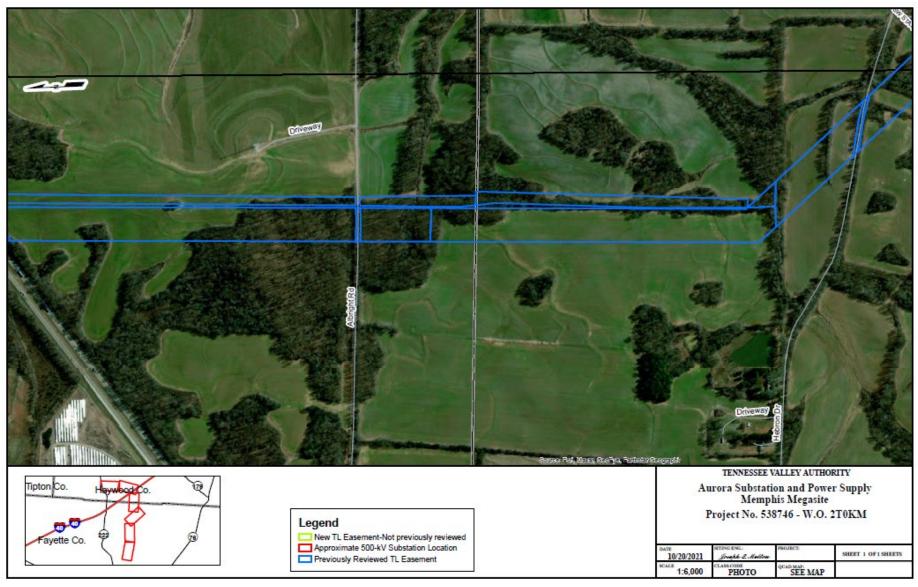


Figure A-4 Aerial View of Proposed Power Supply Including New Transmission Lines and a Substation

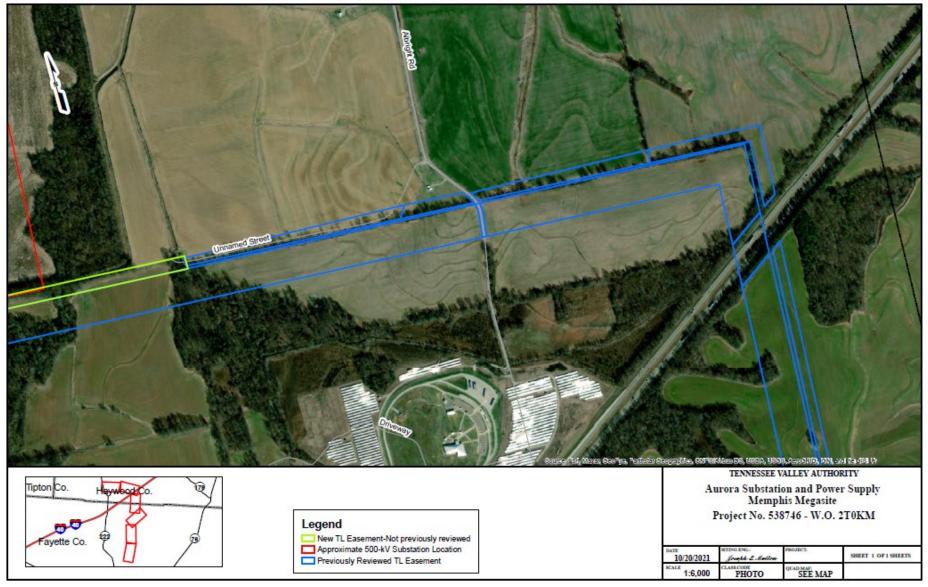


Figure A-5 Aerial View of Proposed Power Supply Including New Transmission Lines and a Substation

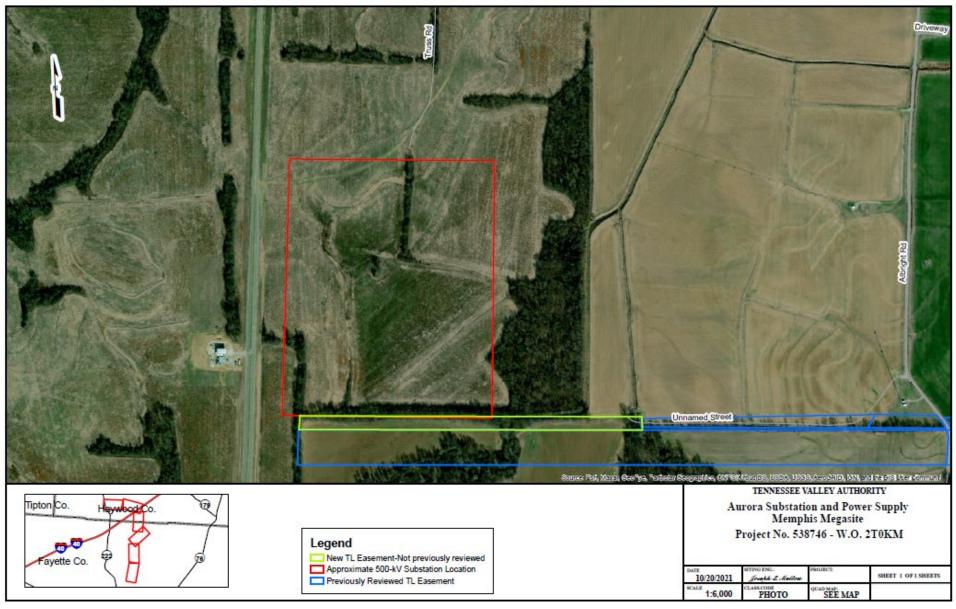
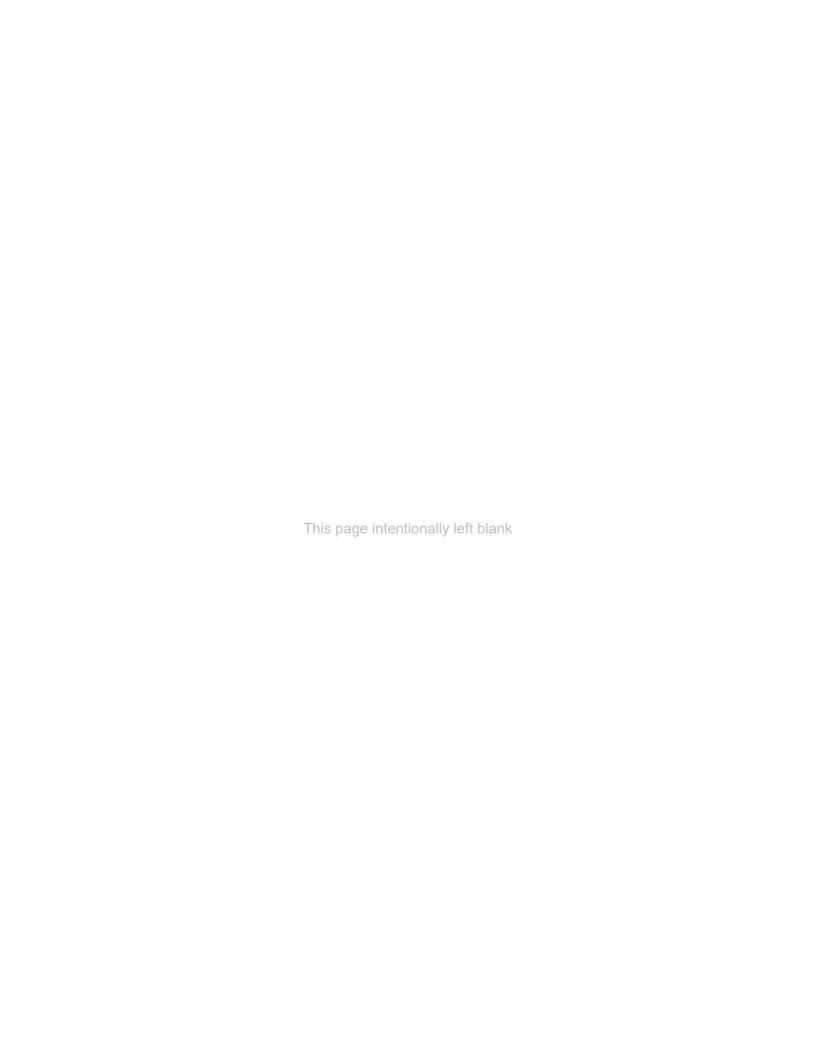


Figure A-6 Aerial View of Proposed Power Supply Including New Transmission Lines and a Substation

Appendix B – Correspondence

Appendix B - Correspondence





# STATE OF TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION DIVISION OF WATER RESOURCES

William R. Snodgrass - Tennessee Tower 312 Rosa L. Parks Avenue, 11th Floor Nashville, Tennessee 37243-1102

March 22, 2022

Mr. Joseph Melton Environmental Program Manager Tennessee Valley Authority (TVA) E-copy: jemelton@tva.gov

Re: NPDES Permit Tracking No. TNR192129
Tennessee Valley Authority (TVA)
TVA Memphis Regional Megsite Power Supply
Fayette and Haywood Counties, Tennessee

Dear Mr. Melton:

You recently submitted a Notice of Intent (NOI) form as part of an application package to obtain coverage under a General NPDES Permit for Storm Water Discharges Associated with Construction Activity. The Division of Water Resources (the division) acknowledges receipt of the most recent version of the application for the above referenced project on March 21, 2022. After review, the application was deemed to be complete on March 22, 2022. Enclosed is the Notice of Coverage (NOC) form which shows the site name and location, receiving stream, effective date of coverage, etc.

#### Contractor Information

The division does not transmit a copy of this letter to your contractor(s). You should make sure that all contractors listed on the NOI are aware of the General Permit requirements

#### Storm Water Pollution Prevention Plan (SWPPP)

You have submitted a Storm Water Pollution Prevention Plan (SWPPP) as required by section 1.4.2 of the General Permit. Please note that the division has not performed an engineering review of the SWPPP and does not certify whether the SWPPP adequately provides for the pollution prevention requirements at the site as described in the General Permit. The division acknowledges that you have submitted a SWPPP that appears to include the required components of a SWPPP. It is the responsibility of all site operators to design, implement, and maintain measures that are sufficient to prevent pollution at the referenced site, and to remain in compliance with the terms and conditions of the General Permit.

#### Annual Mantenance Fee and Termination of Permit Coverage

Effective July 1, 2014, permit fees for the General Permit have been revised. In addition to new application fee amounts, annual maintenance fees are now required for projects that exceed one year of coverage. Permittees wishing to terminate coverage must submit a completed notice of termination (NOT) form, which is available on the division's construction stormwater webpage at

https://www.tn.gov/content/tn/environment/permit-permits/water-permits1/npdes-permits1/npdesstormwater-permitting-program/npdes-stormwater-construction-permit.html.

The division will review the NOT for completeness and accuracy and, when necessary, investigate the site for which the NOT was submitted. The division will notify the applicant that either the NOT form was received and accepted, or that the permit coverage is not eligible for termination and has not been terminated. If applicable, the notification will include a summary of existing deficiencies.

We appreciate your attention to the General Permit and its requirements. If you have any questions, please contact Mr. Jim McAdoo at (615) 532-0684 or by E-mail at <u>Jim.McAdoo@tn.gov</u>.

Sincerely,

W6jin Janjić

Manager, Water-Based Systems

Enclosure

cc: Conner Franklin@tn.gov, Division of Water Resources, Jackson Field Office



## Tracking Number TNR192129

# NOTICE OF COVERAGE UNDER THE GENERAL NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY (CGP)

Tennessee Department of Environment and Conservation Division of Water Resources William R Snodgrass Tennessee Tower 312 Rosa L. Parks Ave., 11th Floor Nashville, Tennessee 37243

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.):

Name of the Construction Project: TVA Memphis Regional Megsite Power Supply (141.5 acres)

Master Tracking Number at the Site: TNR192129

Permittee Name: Tennessee Valley Authority (TVA)

Contractor(s): TVA Transmission Construction & Maintenance

(March 22, 2022)

are authorized to discharge: Storm water associated with construction activity

from facility location: Start: Fayette County, Latitude 35.351, Longitude: -89.386

End: TN-222, Haywood County Latitude: 35.417, Longitude: -89.403

to receiving waters named: Laurel Creek and Unnamed tributaries to Big Muddy Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

Likely presence of threatened or endangered species in one mile radius: No Likely presence of threatened or endangered species downstream: No

Additional pollution prevention requirements apply for discharges into waters which TDEC identifies as:

#### Exceptional Tennessee Waters: No

Your coverage under the CGP shall become effective on March 29, 2022, and shall be terminated upon receipt of a Notice of Termination, which is available on the division's construction stormwater webpage at <a href="https://www.tn.gov/content/tn/environment/permit-permits/water-permits1/npdes-stormwater-permitting-program/npdes-stormwater-construction-permit.html">https://www.tn.gov/content/tn/environment/permit-permits/water-permitts1/npdes-stormwater-permitting-program/npdes-stormwater-construction-permit.html</a>.

RDA 2366



400 West Summit Hill Drive, Knoxville, Tennessee 37902

April 8, 2022

Mr. E. Patrick McIntyre, Jr.
Executive Director
and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA), BLUE OVAL CITY DELIVERY POINT, FAYETTE, HAYWOOD, AND SHELBY COUNTIES, TENNESSEE, (TVA TRACKING NUMBER - CID 82717)

The Ford Motor Company plans to locate an electric vehicle and battery plant manufacturing facility (Blue Oval City) on approximately 1,720 acres of the Memphis Regional Megasite (Megasite). The Megasite is property owned by the state of Tennessee located in the Stanton, Tennessee, area of Haywood and Fayette counties between Memphis and Jackson.

To support the new Blue Oval City facility, Southwest Tennessee Electric Membership Corporation, a local power company (LPC) and distributor of TVA power, plans to construct the Blue Oval City 161-kiloVolt (kV) Substation. To provide power to the new substation, TVA proposes to construct a new 500-kV Substation (Stanton Substation), along with approximately 6.5-miles of planned 161-kV double-circuit transmission line (TL) and approximately 3.4-miles of double-circuit 500-kV TL with accompanying optical ground wire on the TL. TVA's proposed 500-kV substation and TL connections encompasses approximately 45-acres and the TL rights-of-way (ROW) total about 158 acres.

In 2016, TVA completed an analysis of the Megasite Power Supply. The analysis involved potential TL routes capable of supporting either a 161-kV TL or a 500-kV TL that would be constructed to provide power to the Megasite once a tenant(s) had been identified. TVA then purchased about 158 acres of ROW easements for the purpose of constructing a future TL. No construction was undertaken at that time in the absence of plans for the Megasite. In 2015, TVA consulted with the Tennessee State Historic Preservation Officer (SHPO) (letter dated July 16, 2015), the United Keetoowah Band of Cherokee Indians (UKB) in Oklahoma (letter dated July 28, 2015), and the Chickasaw Nation (letter dated July 28, 2015) on the undertaking. The UKB and Chickasaw Nation were the only tribes that had expressed interest to TVA in these counties in 2015. TVA provided the results of the archaeological and historic archaeological surveys within the area of potential effects (APE) for the TL routes for the Megasite Power Supply and TVA's finding on no effect for the undertaking. The Tennessee SHPO responded on August 4, 2015 stating that the APE contained no historic properties eligible for listing in the

Mr. E. Patrick McIntyre, Jr. Page 2 April 8, 2022

National Register of Historic Places (NRHP). The UKB responded on July 29, 2015 stating that they had no comments or concerns. The Chickasaw Nation responded on August 18, 2015 stating their support for the undertaking. The consultation letters are enclosed for your reference. A link to the 2015 survey report can be found here: http://www.tvaresearch.com/download/TVA\_Memphis\_Megasite\_Final\_High\_Res.pdf

The location of TVA's proposed 500-kV substation and the need for both TLs was not known during TVA's 2016 Megasite Power Supply analysis since a tenant had not been identified. Furthermore, the location and design of the LPC substation were chosen by the distributor without TVA involvement. The LPC substation will be constructed and operated by the distributor using its own funds. There is no funding, permit, or license that TVA needs to provide to the distributor for the construction or operation of the LPC substation.

TVA finds that the proposed project constitutes an undertaking (as defined at 36 CFR § 800.16 (y)) that has the potential to cause effects to historic properties. As this undertaking does not qualify as an Appendix A or B activity under TVA's Section 106 Programmatic Agreement, we are following the Standard Review Process for this undertaking.

TVA recommends that the APE for the current undertaking includes: portions of the access routes that were not included in the 2016 analysis; the approximate 6.5 miles of planned 161-kV double-circuit TL and the approximate 3.4 miles of double-circuit 500-kV TL occupying about 158 acres of new ROW; the approximate 45 acres for the 500-kV substation and TL connections; and areas in which the project would be visible within a half-mile radius of the proposed TLs and substation listed above. Detailed maps of the project and investigations are included for your reference in the Tennessee Valley Archaeological Research (TVAR) report cited below.

TVA contracted with TVAR to perform a cultural resources survey of the APE. TVAR documented the results in the enclosed reports titled, A Phase I Cultural Resources Survey for the Tennessee Valley Authority's Project Aurora in Shelby, Haywood, and Fayette Counties, Tennessee. A link to the report can be found here: http://www.tvaresearch.com/download/TVA Project Aurora High Resolution Revised.pdf

TVAR identified a total of 12 archaeological resources within the project boundary. TVAR revisited previously recorded archaeological sites 40HD124 and 40HD136 and two non-site cultural resources (NSCR) that TVAR designated as NSCR 2 (previous designation 40HD K-06) and NSCR 3 (previous designation 40HD J-06). TVAR also identified one historic archaeological site (40HD180), an earthen anomaly, three isolated finds (Isolated Finds 1-3), and three new NSCRs (NSCR 1, 4, and 5).

TVAR recommends the following archaeological resources to be ineligible for the NRHP: NSCRs 1, 2, 3, 4, and 5 and Isolated Finds 1, 2, and 3. TVAR recommends the eligibility of

Mr. E. Patrick McIntyre, Jr. Page 3 April 8, 2022

previously recorded sites 40HD124 and 40HD136 be considered unknown since they have not been fully delineated, however TVAR found no integrity of archaeological deposits within the project footprint.

TVAR identified an earthen anomaly that was initially thought to be a spoil pile from the surrounding, historic land modifications. TVAR notes that the anomaly's surface is irregular with the height differences possibly related to separate depositional events by machinery. TVAR also notes that the anomaly appears to have been used for borrow material at a later time. Multiple historic archaeological resources exist around the anomaly, however Cultural Resource Services, Inc's 2007 survey identified one resource (40HD J-06) with pre-contact materials approximately 200 feet south of the anomaly. TVAR did not find pre-contact materials during their revisit of 40HD J-06 but did recover one piece of clear container glass which TVAR documented as NSCR 3. TVA agrees with TVAR that the origin of the earthen anomaly has not been established and may be difficult to establish. Therefore, the NRHP eligibility should be considered unknown. TVA proposes to avoid ground disturbance within 100 feet of the anomaly and will ensure that the area is clearly marked for avoidance during construction. Future maintenance activities would be subject to the same project restrictions.

TVAR recommends the eligibility of site 40HD180 be considered unknown since the site has not been fully delineated, however the site as it exists within the project footprint may retain integrity. Therefore, TVAR recommends further archaeological work or avoidance. Construction of TVA's Stanton Substation and TL structures will not extend into site 40HD180's boundary.

TVAR identified no previously recorded historic architectural resources or newly identified resources within the half-mile view of the proposed TLs and substation. TVAR did evaluate the historical significance and integrity of the Haywood-Cordova TL (L6119) since the proposed 500-kV would connect to it and would be constructed on adjacent ROW for 3.4 miles. The Haywood-Cordova TL segment (L6119-2), constructed in 1965, was recorded by TVAR as HD-IP-00001/FY-IP-00001/SY-IP-00001 to reflect its pathway as a linear resource through Haywood, Fayette, and Shelby Counties. While TVAR's research found that the TL segment contains 96% of the original steel towers, their evaluation the TL segment found no direct association with an NRHP-listed or eligible facility or association with a historically significant event or significant person or persons. Furthermore, the TL segment demonstrates no significant feats of engineering or direct association with other facilities of historic architectural or engineering significance. Therefore, TVAR recommends L6119-2 to be ineligible for the NRHP listing under Criteria A, B, and C and recommends that the undertaking would have no effect to above-ground historic properties.

The proposed steel pole structures would be added to sections of the TL where similar structures already occur. In that manner, the new structures are consistent with their surroundings and would not alter the overall appearance of the TL. Furthermore, should new information come to Mr. E. Patrick McIntyre, Jr. Page 4 April 8, 2022

light, and the TL would ultimately be determined eligible for the NRHP, the proposed activities detailed above would have no adverse effect.

TVA has reviewed TVAR's findings and agrees with their recommendations.

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

Pursuant to 36 CFR Part 800.5(c) we are notifying you of TVA's finding of no adverse effect for the undertaking; providing the documentation specified in § 800.11(e); and inviting you to review the finding. We are also seeking your agreement with TVA's eligibility determinations and finding that the undertaking as currently planned will have no adverse effects on historic properties.

Please contact Ted Wells by email, ewwells@tva.qov, with your comments.

Sincerely,

James W. Osborne, Jr.

Jan W. Os, Jr.

Manager

Cultural Compliance

EWW:ERB Enclosures cc (Enclosures):

> Ms. Jennifer Barnett Tennessee Division of Archaeology 1216 Foster Avenue, Cole Bldg. #3 Nashville, Tennessee 37210



April 14, 2022

Mr. Benjamin Pitcock
Supervisor, Regulatory Division
U.S. Army Corps of Engineers
Memphis District
167 North Main Street B-202
Memphis, Tennessee 38103-1894

Mr. Gary Fottrell Environmental Program Engineer Tennessee Division Federal Highway Administration 404 BNA Drive, Suite 508 Nashville, TN 37217

Mr. Jim Osborne Deputy Federal Preservation Officer Manager, Cultural Compliance 400 W. Summit Hill Drive, WT 11C-K Knoxville, TN 37902

Ref. Federal Actions related to proposed Blue Oval City Project
Corps Permit Application: MVM-2015-295
TVA Tracking Number - CID 82717
TDOT/FHWA PIN 132132.01 (Proposed Interstate 40/SR194 (Blue Oval))
Haywood, Fayette, and Tipton Counties, Tennessee
ACHP Project # 18229

Dear Mr. Pitcock, Mr. Osborne, and Mr. Fottrell:

The Advisory Council on Historic Preservation has received an inquiry from the Tennessee State Historic Preservation Officer (SHPO) regarding several projects related to the proposed construction of the Blue Oval City project, an industrial automotive manufacturing plant and associated infrastructure near Stanton, Haywood County, Tennessee. There appear to be multiple federal agencies that have federal actions, providing authorization or assistance, requested or required for the Blue Oval City project or for related projects that are intended to support that project. As you know, those federal actions make such projects undertakings subject to review under Section 106 (54 U.S.C. § 306108) of the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq.) and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. Part 800). The SHPO staff has indicated that your agencies have recently and separately initiated Section 106 consultation for construction of the facility or projects related to the facility's construction or future operation. To ensure that the project is efficiently reviewed under Section 106, the ACHP would like to request information from you regarding the steps you have taken thus far to comply with Section 106 and how you have considered the connections among the related projects. We also provide initial observations about the obligations of federal agencies to consider the long-term and cumulative effects of undertakings subject to their review, including effects from connected undertakings, and the efficiencies available in the Section 106 regulations to address such obligations.

Based on the limited information available to us, the Corps of Engineers, Mobile District (USACE) is considering an application for a Section 404 permit associated with the Ford Motor Company's Blue Oval City project which includes the construction of an industrial automotive manufacturing plant and

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facilities, along with accompanying roadways, railroads, parking lots, and stormwater detention/retention infrastructure. The Tennessee Valley Authority (TVA) is proposing to construct a new substation (Stanton Substation) and transmission line to provide electric power to another proposed new substation (Blue Oval City Substation) which would be built by a local power company at the Blue Oval City project site. The Federal Highway Administration (FHWA), in coordination with the Tennessee Department of Transportation (TDOT), proposes to construct a new interchange along Interstate 40 (I-40) as well as roadway extension improvements to SR-194 to serve imminent industrial development at the Blue Oval City project site and also a roadway extension of SR-194 northward, from its current terminus at SR-59 in Fayette County to a new terminus at SR-1 (US-70) in Tipton County.

As you know, Section 106 of the NHPA requires federal agencies to take into account the effects on historic properties from undertakings they sponsor, assist, or authorize. They do so by following the four steps of the Section 106 review process in consultation with SHPO, Tribal Historic Preservation Officer (THPO) if the undertaking is located on or affects historic properties on tribal land, federally recognized tribes, local governments who have jurisdiction over the undertaking or historic properties that may be affected, project proponents including the applicants for federal authorization or assistance, and other stakeholders representative of communities who may have concerns about the undertaking and its effects on historic properties. This required process provides consulting parties with an opportunity to inform the federal review and decision-making process. Federal agencies are also required to keep the public apprised as they work through the Section 106 review and provide the public an opportunity to comment.

The Section 106 implementing regulations direct federal agencies to reasonably consider direct and indirect effects caused by an undertaking, including those that may occur later in time, be farther removed in distance, or be cumulative (36 CFR §800.5(a)(1)). The projects referenced above can be considered essentially part of one overarching undertaking, or, to the extent that they variably have independent utility, connected undertakings that have been stimulated by, are necessary to make possible, and contribute to the cumulative effects of the Blue Oval City project. They also inform the nature and level of federal relationship to the Blue Oval City project. As such, it appears that the USACE, TVA, and FHWA are each responsible to identify and consider not only the effects to historic properties from the project directly requiring its authorization or assistance, but also the effects on historic properties from the connected undertakings. We would also suggest that the projects requiring federal assistance or authorization from TVA and FHWA may each also require USACE regulatory permits. Finally, we remind the federal agencies that the Section 106 review must be completed prior to the implementation of the undertaking.

Thus, in order for the ACHP to provide more detailed guidance to your agencies, we request that you provide us with information that clarifies the project(s) requiring federal authorization or assistance, your consideration of the connections between those projects and the others intended to support the proposed Blue Oval manufacturing facility, and the steps you have carried out to comply with the requirements of the Section 106 review, including the identification of consulting parties and how you have kept the public informed. Whether considered as one all-encompassing undertaking or three "connected undertakings," it appears that the best approach would be one consultation and, if there are any adverse effects to historic properties, one Section 106 agreement developed to resolve adverse effects. At this time, it appears that a Programmatic Agreement (PA) would be the most efficient tool to facilitate and conclude the Section 106 review. An executed PA could enable phasing of the identification effort, allowing initiation of work in parts of the connected undertakings. The federal agencies involved could designate a lead federal agency, or choose to be co-leads and divide up the consultation efforts as appropriate. The resolution of adverse effects set forth in the PA would cover all the participating federal agencies for the project(s) requiring their specific authorization or assistance, as well as the cumulative effects of the connected activities.

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The ACHP is commenting on these issues pursuant to 36 CFR 800.9(a) of the Section 106 implementing regulations. We look forward to assisting the USACE, TVA, and FHWA in meeting its responsibilities under Section 106 of the NHPA. Should you have any questions or wish to discuss this matter further, please contact John T. Eddins, PhD at 202-517-0211, or by e-mail at jeddins@achp.gov.

Sincerely,

Jaime Loichinger Assistant Director

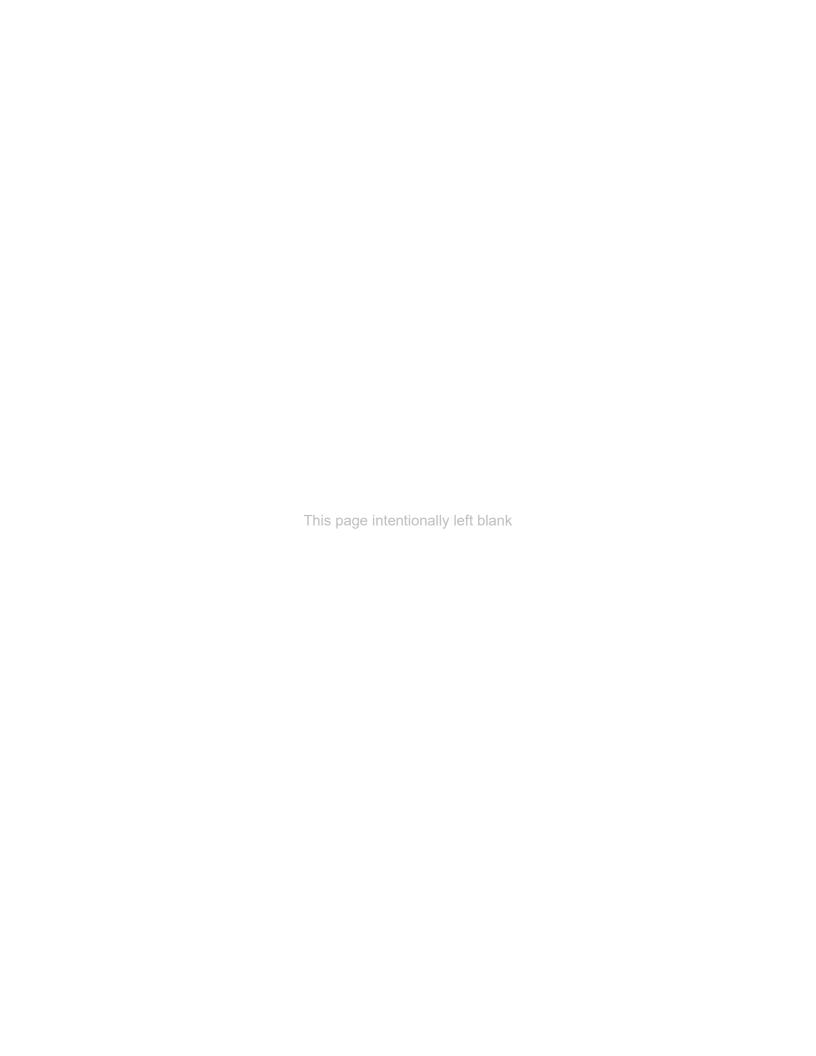
Federal Permitting, Licensing, and Assistance Section

jamo endinger

Office of Federal Agency Programs

Appendix C – Stream Crossing	gs
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Appendix C – Stream Crossings along the Proposed Transmission Line and Access Roads



Appendix C - Stream Crossings along the Proposed 500-kV and161-kV Transmission Line Rights-of-Way

Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
E001	Ephemeral	BMPs	NA	Small channel. TDEC score 9.50	R6	35.41529	-89.40964
E003	Ephemeral	BMPs	NA	Small channel in fence row. TDEC score 6.0	R6	35.41528	-89.4237
E006	Ephemeral*	BMPs	NA	Small swale. Defined bed and bank absent, vegetation composed of upland and FACU species.	R6	35.42211	-89.41632
E007	Ephemeral	BMPs	NA	Small 3ft wide x 2ft deep channel. Dry at time of survey. TDEC score 10.5	R6	35.42202	-89.41132
E008	Ephemeral*	BMPs	NA	Small swale with little to know channel development. Vegetation composed of upland and FACU species	R6	35.41788	-89.40433
E009	Ephemeral	BMPs	NA	Small field drain to nearby creek. Dry at time of survey. TDEC score 6.0	R6	35.4146	-89.40174
E010	Ephemeral	BMPs	NA	Small field drain to nearby creek. Dry at time of survey. TDEC score 7.5	R6	35.4146	-89.40176
E011	Ephemeral	BMPs	NA	Small drain from field to creek. TDEC score 8.0	R6	35.41454	-89.39993
E012	Ephemeral	BMPs	NA	Small/ deep erosional drain to adjacent stream. TDEC score 8.5	R6	35.41481	-89.39628
E013	Ephemeral	BMPs	NA	Small/ deep erosional drain to adjacent stream. TDEC score 8.5	R6	35.41479	-89.39624

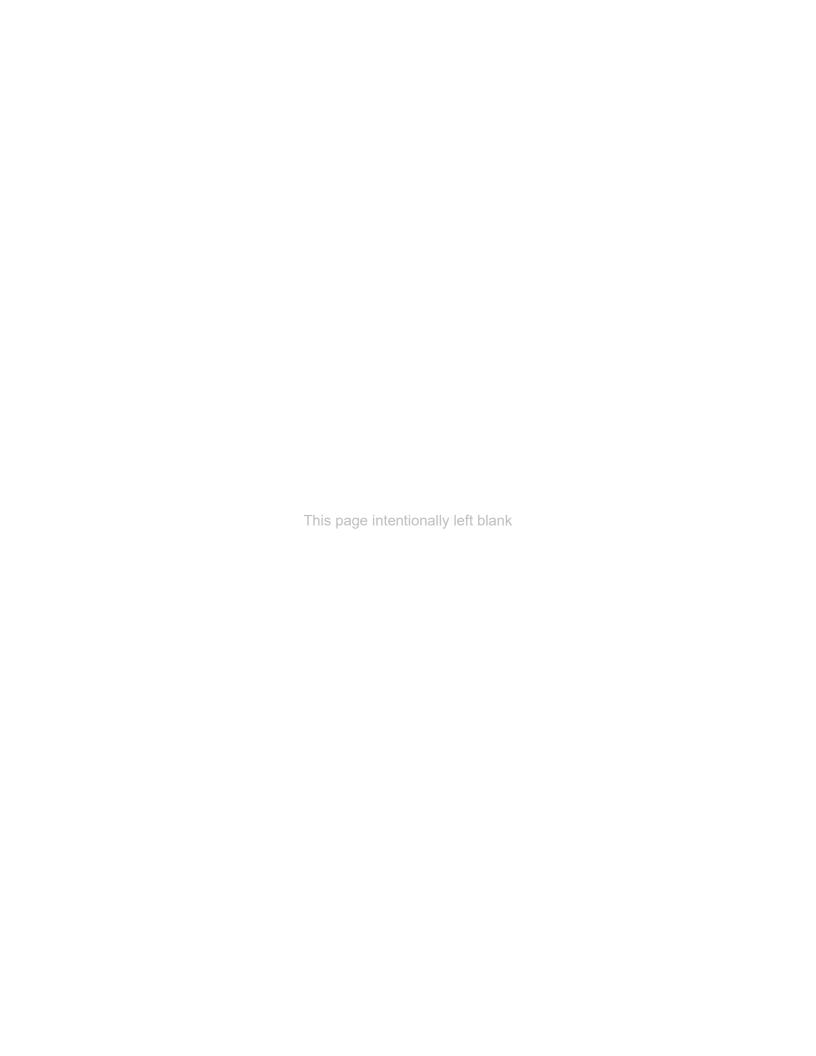
Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
E014	Ephemeral	BMPs	NA	Small/ deep erosional drain to adjacent stream. TDEC score 8.5	R6	35.41477	-89.39614
E015	Ephemeral	BMPs	NA	Small/ deep erosional drain to adjacent stream. TDEC score 8.5	R6	35.41476	-89.39610
E016	Ephemeral	BMPs	NA	Deep channel with stand water in pools. TDEC score 14.0	R6	35.4151	-89.39608
E017	Ephemeral	BMPs	NA	Small 3ft wide x 2ft deep channel. TDEC score 7.5	R6	35.41319	-89.37925
E018	Ephemeral	BMPs	NA	Small 3ft wide x 3ft deep channel. TDEC score 9.0	R6	35.40703	-89.38153
E019	Ephemeral	BMPs	NA	Deep erosional channel. TDEC score 10.0	R6	35.40184	-89.37931
E020	Ephemeral	BMPs	NA	Small channel. TDEC score 13.5	R6	35.40149	-89.37943
E021	Ephemeral	BMPs	NA	1ft wide x 1ft deep channel with clay substrate. TDEC score 3.5	R6	35.38705	-89.3774
E022	Ephemeral	BMPs	NA	Wide muddy channel in cotton field. TDEC score 10.0	R6	35.38705	-89.3776
E023	Ephemeral*	BMPs	NA	Swale in cotton field. Defined bed and bank absent, vegetation composed of upland and FACU species.		35.38256	-89.38294
E024	Ephemeral*	BMPs	NA	Upland forest swale. Defined bed and bank absent, vegetation composed of upland and FACU species		35.3764	-89.38433

Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
E025	Ephemeral	BMPs	NA	Small erosion channel. TDEC score 8.5	R6	35.37238	- 89.38348E
E026	Ephemeral	BMPs	NA	Small erosion channel. TDEC score 8.5	R6	35.37223	-89.38344
E027	Ephemeral	BMPs	NA	Small erosion channel. TDEC score 8.5	R6	35.37214	-89.38342
E028	Ephemeral	BMPs	NA	6ft wide x 3ft deep channel with clay substrate. Lower reaches transition into intermittent stream. TDEC score 9.50	R6	35.36605	-89.38228
P001	Pond	Category A 50ft SMZ	NA	Pond in ROW	POW	35.35695	-89.3835
S001	Stream	Category A 50ft SMZ	Unnamed tributary to Big Muddy Canal	Large meandering channel. TDEC score 24.0	R4	35.41482	-89.39977
S002	Stream	Category A 50ft SMZ	Unnamed tributary to Big Muddy Canal	S001 turns back across ROW	R4	35.41482	-89.39977
S003	Stream	Category A 50ft SMZ	Unnamed tributary to Big Muddy Canal	Blueline stream. TDEC score 20.0	R4	35.39255	-89.37935

Sequence ID	Stream Type	SMZ Category (RB, LB)	Stream Name	Field Notes	Cowardin Code	Latitude	Longitude
S004	Stream	Category A 50ft SMZ	Unnamed tributary to Big Muddy Canal	Large/ deep channel with clay substrate and water in pools. Active ford with riprap present. Due to limited access to reach and some metrics being unavailable. Exerting best professional judgement. TDEC score 14.5	R4	35.36605	-89.38228
S005	Stream	Category A 50ft SMZ	Unnamed tributary to Basswood Creek	Large/ deep channel with clay/ cobble substrate. Dry at time of survey. TDEC score 15.5. Elevating to stream status based on best professional judgement	R4	35.35645	-89.38408
S006	Stream	Category A 50ft SMZ	NA	Small channel. TDEC scored stream from site visit	R4	35.4151	-89.42222
S007	Stream	Category A 50ft SMZ	NA	Ditched feature in agricultural field. TDEC scored stream from site visit	R4	35.42206	-89.41824
S008	Stream	Category A 50ft SMZ	NA	Dry channel with lots of leaf litter. TDEC scored stream from site visit. Blueline on topo map	R4	35.35645	-89.38408

	Appendix	D - I	Bat	Strategy	Screening	Form
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Appendix D – Bat Strategy Project Screening Form



This form should <u>only</u> 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. <sup>1</sup>

Project Name:	Aurora - Ford Blue Oval Po	ower Supply		Date:	10/20/	2021
Contact(s):	Joe Melton	CEC#:	39764	Pro	ject ID:	39764
Project Location	(City, County, State):	Fayette & Haywood	Counties, TN.			
Project Descript	tion:					
To support the	new Ford Blue Oval City facil	ity planned in the Mem	phis, Tennessee area,	TVA proposes to buil	d an appro	ximate 6.5
mi <b>l</b> e 161-kV tra	nsmission loop line, an appro	oximate 3.4 mile 500-kV	transmission line feed	d, and a 500-kV substa	ition.	
			-			
SECTION 1: PRO	OJECT INFORMATION - AC	TION AND ACTIVITIE	S			
	VA Action. If none are appl cuss whether form (i.e., app					d, or Terrestr
☐ 1 Manage Bio Lands	logical Resources for Biodiversity	y and Public Use on TVA R	eservoir 6 M	Naintain Existing Electric	Transmissi	on Assets
2 Protect Cult	ural Resources on TVA-Retained	Land		onvey Property associat Ismission	ed with Ele	ctric
3 Manage Lan	nd Use and Disposal of TVA-Retai	ined Land	■ 8 Es	xpand or Construct New ets	Electric Tra	ansmission
4 Manage Per	mitting under Section 26a of the	TVA Act	_ 9 Pi	romote Economic Devel	opment	
5 Operate, Ma	intain, Retire, Expand, Construct	t Power Plants	□ 10	Promote Mid-Scale Sola	r Generatio	n
STEP 2) Select	all activities from Tables 1	, 2, and 3 below that	are included in the	proposed project.		
TABLE 1. Active required.	ities with no effect to bats.	Conservation measure	es & completion of b	at strategy project re	eview fon	m NOT
1. Loans and	s/or grant awards	8. Sale of TVA prop	erty	☐ 19. Site-specific and reservo		
2. Purchase	of property	9. Lease of TVA pro	perty	20. Nesting plat	forms	
☐ 3. Purchase of facilities	of equipment for industrial	10. Deed modificat rights or TVA principle.	ion associated with TVA roperty	41. Minor water not include piers)		ctures (this do , boat slips or
4. Environme	ental education	11. Abandonment	of TVA retained rights	42. Internal reno of an existin		nternal expans
5. Transfer of equipme	ROW easement and/or ROW ent	12. Sufferance agre	ement	43. Replacemen	t or remov	al of TL poles
☐ 6. Property a	ind/or equipment transfer	13. Engineering or or studies	environmental planning	44. Conductor a installation :		
7. Easement	on TVA property	☐ 14. Harbor limits de	elineation	☐ 49. Non-navigal	ble houseb	oats

		<ol><li>Activities not likely to adversely a tion of bat strategy project review f</li></ol>								asures and
	18.	Erosion control, minor	57	. Wa	ter in	take - non-industrial	79.	Swimn	ning pools/associated	equipment
	24.	Tree planting	S8	. Wa	stewa	ster outfalls	81.	Wateri	intakes – industrial	
	30.	Dredging and excavation; recessed harbor areas	_ 59	. Ma	rine fi	ueling facilities	□ <sup>84.</sup>		off-site public utility of uction or extension	relocation or
	39.	Berm development	□ 60		mmer rinas	cial water-use facilities (e.g.,	85.	Playgro	und equipment - land	Fbased
	40.	Closed loop heat exchangers (heat pumps)	61	. Sep	etic fie	alds	87.	Aboveg	ground storage tanks	
	45.	Stream monitoring equipment – placement and use	□ 66		vate, r athou	residential docks, piers, ises	88.	Underg	round storage tanks	
	46.	Floating boat slips within approved harbor limits	☐ 67	. Siti	ng of	temporary office trailers	90.	Pond cl	osure	
	48,	Laydown areas	□ <sup>68</sup>		ancin Istruc	g for speculative building tion	93,	Standar	rd License	
		Minor land based structures				dings/service operations	94.	Special	Use License	
	51.	Signage installation	_			onal vehide campsites	95.	Recreat	ion License	
	53.	Mooring buoys or posts	□ 75	. Uti	lity lir	es/light poles	96.	Land U	se Permit	
	56.	Culverts	76	. Cor	ncrete	e sidewalks				
rev	lew log	<ul> <li>Activities that may adversely affection REQUIRED; review of bat recordist.</li> <li>Windshield and ground surveys for archaresources</li> </ul>	rds in p	roxii	mity 34		R/Herit	age el		rrestrial
	16.	Drilling			35	. Stabilization (major erosion cont	trol)	_ ×	). Lock maintenance/	construction
■	17.	Mechanical vegetation removal, does not trees or branches > 3" in diameter (in Tab to potential for woody burn piles)	include le 3 due	•	36	. Grading		_ 7	Concrete dam mod	ification
	21.	Herbicide use			37	. Installation of soil improvements	5	73	3. Boat launching ram	ps
■	22.	Grubbing			38	. Drain installations for ponds		□ <sup>77</sup>	<ol> <li>Construction or exp land-based building</li> </ol>	
	23.	Prescribed burns		•	47	. Conduit installation		□ 78	8. Wastewater treatme	ent plants
	25.	Maintenance, improvement or construction pedestrian or vehicular access corridors	on of	ſ	52	. Floating buildings		8¢	). Barge fleeting areas	;
▣	26.	Maintenance/construction of access contr measures	rol	Ī	54	. Maintenance of water control str (dewatering units, spillways, levi		□ <sup>82</sup>	2. Construction of dan levees	n/weirs/
	27.	Restoration of sites following human use	and abu	æ [	55	. Solar panels		□ <sup>83</sup>	<ol> <li>Submarine pipeline boring operations</li> </ol>	, directional
	28.	Removal of debris (e.g., dump sites, hazar material, unauthorized structures)	dous		62	. Blasting		_ 80	5. Landfill construction	n
■	29.	Acquisition and use of fill/borrow materia	ıl	•	63	<ul> <li>Foundation installation for trans support</li> </ul>	mission	_ 85	9. Structure demo <b>l</b> itio	n
■	31.	Stream/wetland crossings		•	64	<ul> <li>Installation of steel structure, over bus, equipment, etc.</li> </ul>	erhead	_ 91	1. Bridge replacement	t
	32.	Gean-up following storm damage		ŀ	65	. Pole and/or tower installation an extension	nd/or	☐ <sup>92</sup>	2. Return of archaeolo remains to former b	
■	33.	Removal of hazardous trees/tree branche	5	$\prod$						
STE	Р3	Project includes one or more acti	vities i	n Ta	ble :	? (Go to Sto	ep 4)	(	NO (Go to Step	13)

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STEP 4) Answer q	uestions <u>a</u> through	<u>e</u> 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 decibe s measured on the A scale (e.g., loud machinery)?  NO (NV2 does not apply)  YES (NV2 applies, subject to records review)								
b) Will project invo	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 pr	escribed burning (ac	tivity 23), estimated	acreage: and tin	neframe(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 - Ju  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 - Ju  31				
d) Will the project in	wolve vegetation pilir	ng/burning? C N	(SSPC4/ SHF7/SHF8 do not apply)					
			'ES (SSPC4/SHF7/SHF8 applies, subject	to review of bat records)				
e) If tree removal (a	activity 33 or 34), est	imated amount: 50	<b>®ac</b> ○trees	CN/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 - Ju  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				
*** For <b>PROJECT LEA</b>		be reviewed by a Herit	May 15-Aug 15):   MAYBE ( tage Reviewer (Natural Resources Organi Date", and submit with project informa					
SECTION 2: REVIE	W OF BAT RECORDS	(applies to project	ts with activities from Table 3 ONL	Y)				
STEP 5) Review of	bat/cave records co	onducted by Herita	ge/OSAR reviewer?					
C YES @ NO		,	•					
Info below complete		antama ()						
Ino octon complete	ed by: Heritage I			Date				
	■ Terrestria			Date Feb 10, 2022				
C	_		Jesse Troxler					
Gray bat records:		_	Within a cave* Within the Cour	,				
Indiana bat records:			Within a cave* Capture/roost to					
_	d bat records: No		niles* Within a cave* Captur	re/roost tree*				
Virginia big-eared b	23	_	_	Mithin 0.35 mi hur - 300 forest				
Caves: None wi	_	3 miles but > 0.5 mi	☐ Within 0.5 mi but > 0.25 mi*	within 0.25 mi but > 200 feet				
Bat Habitat Inspec	tion Sheet comp <b>l</b> ete	d? @ NO ⊜	YES					
Amount of SUITAB	LE habitat to be rem	oved/burned (may	differ from STEP 4e): 70.3	(@ac ⊜trees)* ⊝N/A				

STEP 6) Provide any additional no	tes resulting from H	-	records review in Notes	
Notes from Bat Records Review (e.g.				rvey with negative results):
No federally listed bats known from	Fayette or Haywood (	Co., TN. Suitable ro	osting and foraging present	-field survey 2021.
STEPS 7-12 To be Completed by To	errestrial Zoologist	(if warranted):		
STEP 7) Project will involve:				
Removal of suitable trees within NLEB hibernacula.	0.5 mile of P1-P2 Indi	ana bat hibernacul	a or 0.25 mile of P3-P4 India	ana bat hibernacula or any
Removal of suitable trees within	10 miles of document	ed Indiana bat (or v	vithin 5 miles of NLEB) hibe	macula.
Removal of suitable trees > 10 m	iles from documented	I Indiana bat (> 5 m	iles from NLEB) hibernacul	a.
Removal of trees within 150 feet	of a documented Indi	ana bat or northern	long-eared bat maternity ro	oost tree.
Removal of suitable trees within 2	2.5 miles of Indiana b	at roost trees or wit	hin 5 miles of Indiana bat ca	apture sites.
Removal of suitable trees > 2.5 m	niles from Indiana bat	roost trees or > 5 r	miles from Indiana bat captu	re sites.
Removal of documented Indiana	bat or NLEB roost tre	e, if still suitable.		
□ N/A				
STEP 8) Presence/absence surveys	were/will be condu	cted: () YES	NO	
STEP 9) Presence/absence survey				N/A
STEP 10) Project @ WILL O WILL				C acres or C trees
proposed to be used during the  STEP 11) Available Incidental Take				N/A
TVA Action	Total 20-year	Winter	Volant Season	Non-Volant Season
8 Expand or Construct New Electric		6.075.24	2227.46	22552
Transmission Assets	11,517.87	6,975.24	2,287.46	2,255.2
STEP 12) Amount contributed to 1	VA's Bat Conservat	ion Fund upon ac	tivity completion: \$ 35,	150 OR C N/A
TERRESTRIAL ZOOLOGISTS, after co Terrestrial Zoologists at end of form		, review Tab <b>l</b> e 4, n	nodify as needed, and then	n complete section for
SECTION 3: REQUIRED CONSERVA	TION MEASURES			
STEP 13) Review Conservation Meas override and uncheck irrelevant me				ject. If not, manually
Did review of Table 4 result in <u>ANY</u> rer	naining Conservation	Measures in RED?		
O NO (Go to Step 14) O YES (STOP HERE; Submit for Ten	restrial Zoology Revie	w. Click File/Save A	s, name form as "ProjectLeac	d_BatForm_CEC-or-

## 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
		<b>NV1 -</b> 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.
		SHF4 - If burns need to be conducted during April and May, when there is some potential for bats to present on the landscape and more likely to enter torpor due to colder temperatures, burns will only be conducted if the air temperature is 55° or greater, and preferably 60° or greater.
•		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.

	16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 56, 51, 62, 63, 64, 65, 67, 59, 84, 89	SSPC1 (Transmission only) - Transmission actions and activities will continue to Implement A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities. This focuses on control of sediment and pollutants, including herbicides. Following are key measures:  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.  Revegetate and mulch disturbed areas as soon as practical.  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
•	16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 52, 53, 54, 55, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 70, 71, 73, 76, 77, 78, 80, 81, 82, 83, 86, 87, 88, 89, 90	SSPC2 - Operations involving chemical/fuel storage or resupply and vehicle servicing will be handled outside of riparian zones (streamside management zones) in a manner to prevent these items from reaching a watercourse. Earthen berms or other effective means are installed to protect stream channel from direct surface runoff. Servicing will be done with care to avoid leakage, spillage, and subsequent stream, wetland, or ground water contamination. Oil waste, filters, other litter will be collected and disposed of properly. Equipment servicing and chemical/fuel storage will be limited to locations greater than 300-ft from sinkholes, fissures, or areas draining into known sinkholes, fissures, or other karst features.
	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	L1 - Direct temporary lighting away from suitable habitat during the active season.
	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	L2 – Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution when installing new or replacing existing permanent lights by angling lights downward or via other light minimization measures (e.g., dimming, directed lighting, motion-sensitive lighting).

<sup>&</sup>lt;sup>1</sup>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**

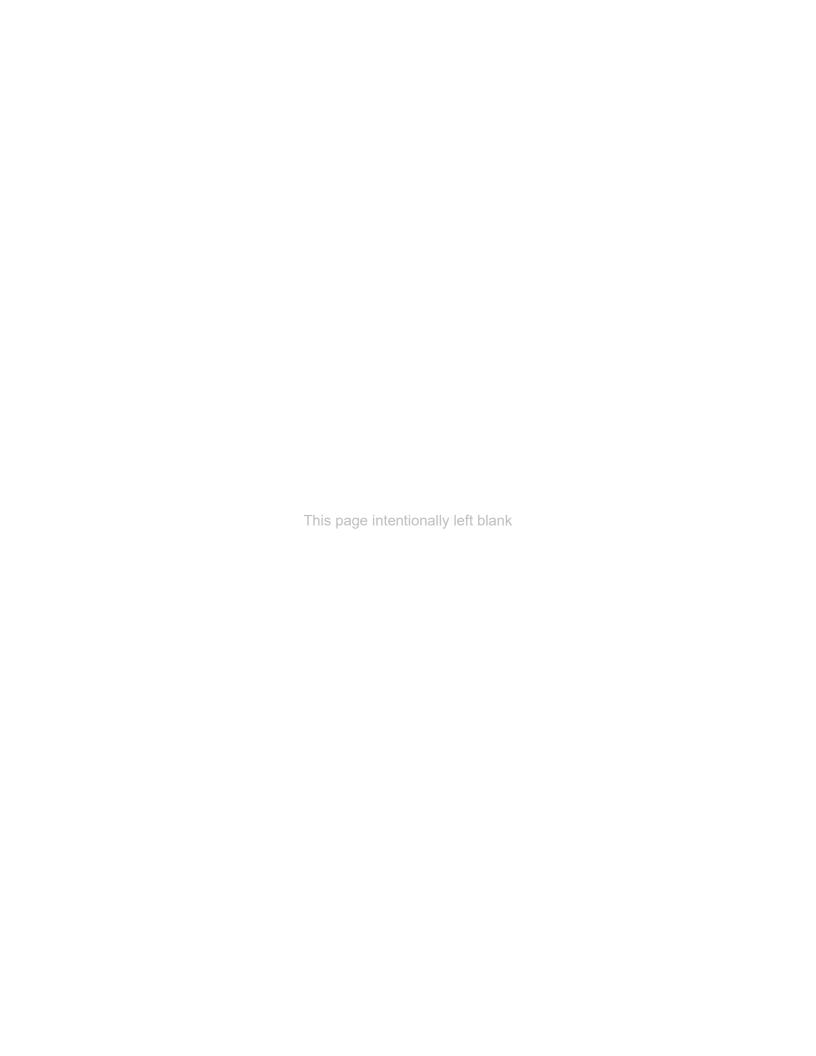
HIDE

Project Review Form - TVA Bat Strategy (06/2019)						
C UNHIDE						
Hide Table 4 Columns 1 and 2 to Facilitate Clean Copy and Paste  OHIDE						
■ UNHIDE						
NOTES (additional info from field review, explanation of no impact or removal of conservation measures).						
Some measures were removed based on the absence of caves.						

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 <a href="mailto:batstrategy@tva.gov">batstrategy@tva.gov</a> Submission of this form indicates that Project Lead/Applicant:

	of this form indicates that Pro		send a copy of form to patsus	ategyistva.gov				
Joe Meltor	1	(name) is (or will be made) aware of the requirements below.						
• TVA	rammatic bat consultation.		equired to comply with TVA's Er ation measures were effective in					
For Use by Te	rrestrial Zoologist Only							
▼ Terrestrial	Zoologist acknowledges that P	roject Lead/Contact (name)	Joe Melton	has been informed of				
any relev	ant conservation measures and	or provided a copy of this for	m.					
	cts that require use of Take and/ ct Lead/Contact has been inform		onservation Fund, Terrestrial Zouse of Incidental Take 70.3	ologist acknowledges O ac O trees				
and that u	use of Take will require \$ 35,15	0 contribution	to TVA's Conservation Fund upo	n completion of activity				
(amount e	entered should be \$0 if cleared i	n winter).						
	For Terrestrial Zo	ology Use Only. Finalize and Pri	nt to Noneditable PDF.					

Appendix E – U.S. Army Corp of Engineers Wetland Determination Data Forms



# WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: 39764 Aurora - Blue Oval - Power Supply City/County:	Haywood County Sampling Date: 30-Nov-21							
Applicant/Owner: TVA	Statu: TN Sampling Point: W001							
Investigator(s): Falon Parker Hutcheon Section, Tow	nehip, Range: S T R							
Landform (hillslope, terrace, etc.): Flat Local relief (co	incave, convex, none): flat Slope: 0.0 % / 0.0*							
Subregion (LRR or MLRA): LRR P Lat: 35.416374	Long.: -89,427256 Detum: NAD83							
Soil Map Unit Name: Collins silt loam, occasionally flooded	NWI classification: PEM1E							
	i ⊕ No ○ (If no, explain in Remarks.)							
Are Venetation . Soil . or Ithdrology . significantly disturbed?	Are "Normal Circumstances" present? Yes ⊕ No O							
	Are normal circumstances present?							
Are Vegetation, Soil, or Hydrology naturally problematic?	(If needed, explain any answers in Remarks.)							
SUMMARY OF FINDINGS - Attach site map showing sampling poin	t locations, transects, important reatures, etc.							
Hydrophytic Vegetation Present? Yes ⊕ No □	Sampled Area							
Hydric Soil Present? Yes ❸ No 〇	yes ⊕ No O							
Wetland Hydrology Present? Yes ⊕ No ○	i a vvecanor							
Remarks:								
W001 is an emergent wetland, saturated from agriculture channeling drainage. Pho	sto#DSCN5747. <0.01 acres. TRAM score = (21) Low.							
HYDROLOGY								
Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)							
Primary Indicators (minimum of one required; check all that apply)	Surface Soil Cracks (06)							
Surface Water (A1) Aquatic Fauna (813)	Sparsely Vegetated Concave Surface (BS)							
High Water Table (A2) Mari Deposits (B15) (LRR U)	Drainage Patterns (B10)							
Saturation (A3) Hydrogen Sulfide Odor (C1)	Moss Trim Lines (B16)							
Water Marks (81) Oxidized Rhoospheres along Living	Roots (C3) Dry Season Water Table (C2)							
Sediment Deposits (B2) Presence of Reduced Iron (C4)	Crayfah Burrows (CB)							
☐ Drift Deposits (B3) ☐ Recent Iron Reduction in Tilled Soil	s (CS) Seturation Visible on Aerial Imagery (CS)							
Algel Mat or Crust (84) Thin Muck Surface (C7)	✓ Geomorphic Position (D2)							
☐ Iron Deposits (85) ☐ Other (Explain In Remarks)	Shallow Aquitard (D3)							
Inundation Visible on Aerial Imagery (87)	✓ FAC-Neutral Test (D5)							
Water-Stained Leaves (89)	Sphagnum moss (D6) (LRR T, U)							
Field Observations:								
Surface Weter Present? Yes @ No O Depth (Inches):2	.							
Water Table Present? Yes O No ⊕ Depth (Inches):								
Sisturation Present? Yes  No O Depth (Inches):	Wetland Hydrology Present? Yes ⊕ No O							
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous ins	pections), if available:							
Remarks:								
The state of the s								

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		Dom			Sampling Point: W001
	Absolute	Spec		Tendle-te-	Dominance Test worksheet:
	Absolute % Cover				Domination Lest worksheet:
		_		200 CO	Number of Dominant Species
1	0	Ш	0.0%		That are OBL, FACW, or FAC: 4 (A)
2	. 0		0.0%		
3.		ПΤ	0.0%		Total Number of Dominant Species Across All Strate: 4 (E)
		==			Species Across All Strata: 4 (II)
4. ,			0.0%		
5		$\sqcup$	0.0%		Percent of dominant Species That Are ORL EACH or EAC: 100.0% (A/B)
B	0		0.0%		That Are OBL, FACW, or FAC:100.0% (A/8)
7	0	ПΤ	0.0%		Prevalence Index worksheet:
B.	-	=-	0.0%	-	
		ш	ULBYN		Total % Cover of: Multiply by:
50% of Total Cover: 0 20% of Total Cover: 0	0 -	Total	Cover		08L species 10 x 1 = 10
Sapling or Sapling /Shrub Stratum (Plot size:	1				FACW species 45 x 2 = 90
		V 10	00.0%	ELCON.	FAC species 20 x 3 = 60
		==		PAUL	
2. ,	0	Ш_(	0.0%		FACU species 0 x 4 = 0
3.	_0_		0.0%		UPL species 0 x 5 = 0
4.			0.0%		
5			0.094		Column Totals:
		=-			Prevalence Index = B/A = 2.133
3	0	==	0.0%		
7	0		0.0%		Hydrophytic Vegetation Indicators:
B		ПΞ	0.0%		
					1 - Rapid Test for Hydrophytic Vegetation
50% of Total Cover: 2.5 20% of Total Cover: 1		Total	Cover		2 - Dominance Test is > 50%
Shrub Stratum (Plot size:)					M 3 - Preventence Index is <3.0 <sup>1</sup>
		п.	0.0%		
		==			Problematic Hydrophytic Vegetation 1 (Explain)
2		<u>∟</u> _	0.0%		
3	. 0		0.0%		Indicators of hydric soil and wetland hydrology mus
4.	0		0.0%		be present, unless disturbed or problematic.
		$\neg$	0.0%		Definition of Vegetation Strata:
5.					_
B			0.0%		Tree - Woody plants, excluding woody vines,
50% of Total Cover: 0 20% of Total Cover: 0	0 .	• Total	Cover		approximately 20 ft (8 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size:)					(7.5 cm) or ranger in diameter as breast ranges (551).
		_			Sapling - Woody plants, excluding woody vines.
1 Andropogon glomeratus		V _ 2	8.6%	FACW	approximately 20 ft (6 m) or more in height and less
2. Ludwigia alternifolia	10		4.3%	OBL	then 3 in. (7.6 cm) DBH.
3. Saccharum alopecuroides	20	$\overline{M}_{2}$	8.6%	EMC	
		=-			Sapling/Shrub - Woody plants, excluding vines, less
			8.6%	PACW	then 3 in. DBH and greater than 3.28 ft (1m) tail.
5	0	⊔	0.0%		and a set to be a remark of the second of th
6.	0		0.0%		Shrub - Woody plants, excluding woody vines.
7.	0	ПΤ	0.0%		approximately 3 to 20 ft (1 to 6 m) in height.
8.		=-	0.094		approximately a to an in ( ) to 0 iii) iii inigit.
		=-			Herb - All herbaceous (non-woody) plants, including
9	0_	<u>ש</u> ַשַ	0.0%		herbaceous vines, regardless of size, and woody
10,	0		0.0%		plants, except woody vines, less than approximately
11.	0	$\Box$	0.0%		3 ft (1 m) in height.
	-	=-			
12,			0.0%		Minimum Minimum Manager and Control
50% of Total Cover. 35 20% of Total Cover. 34	70 -	- Total	Cover	.	Woody vine - All woody vines, regardless of height.
Woody Vine Stratum (Plot size:					
	_	_			
1		=	0.0%		
2	0		0.0%		
3.			0.0%		
		=-	0.0%		
<u> </u>		=			Hydrophytic
5	0	$\sqcup_{\underline{-}}$	0.0%		
50% of Total Cover: 0 20% of Total Cover: 0		- Total	Cover		Present? Yes ® No ○
Remarks: (If observed, list morphological adaptations below).					
<u> </u>					
<u> </u>					

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# SOIL Sampling Point: W/001

Profile Desc	ription: (Describe to	the depth r	vesded to docume	rt the indi-	ator or o	anfirm the	absence of indicators.)	
Dapth	Depth Matrix Barker Fastures			_				
(inches)	Color (moist)	**	Color (moist)	- %	Type	Loc*	Texture	Remarks
0-16	10YR 5/2	90	10YR 6/6	10	D	М	Sit Loam	
							tion: PL=Port Uning, M=N	
		n. RM=Redu	oed Metrix, CS=Cove	red or Cost	nd Semd Kan	elns -Local		
Hydric Soil							Indicators for Prob	ematic Hydric Solls 3:
Hatosol (			Polyvielus Di	dow Surface	(58) (URR	S, T, U)	1 cm Muck (A9) (	LRR (I)
=	pedon (A2)		Thin Dark Se	arface (59) i	LRRS, T, I	u)	2 cm Muck (A10)	(LRR S)
Black His	tic (A3)		Loamy Mud	y Mineral ()	(LPR 0)		Reduced Vertic ()	18) (public MLRA 150A.B)
Hydroger	n Suffide (A4)		Loamy Gley	nd Matrix (F	2)		_	eth Solla (F19) (LRR P. S. T)
Smithed	Layers (A5)		✓ Depleted Mi	ratio (P3)				Loamy Sols (F20) (MLRA 1538)
Organic I	Rodes (A6) (LRR P, T, L	LI)	Redox Dark		1		Red Perent Meter	
	cky Mineral (A7) (LRR P	•	Depleted De		•		Very Shallow Dark	
Muck Pro	sence (A8) (LRR U)		Redox Depr					
=	ck (AS) (LRR P, T)						Other (Explain In	Remarks)
	Below Dark Surface (A	110	Mari (F10) (					
	rk Surface (A12)	11)	Depleted Oc					
			Iron-Mangar					
	eine Redox (A16) (MLRJ		Umbric Surf	ece (F13) (L	RR P, T, U			
	uck Mineral (S1) (LRR C	3, 5)	Delta Ochric	(F17) (MLF	A 151)		No. of Contract of	
Sandy Gi	eyed Matrix (S4)		Reduced Ve	rtk: (F18) (N	ERA 150A,	1506)		of hydrophytic vegetation and hydrokov must be present.
Sendy Re	ndox (55)		Pedmont Pe	oodplain Sol	b (P19) (M	LRA 149A)		disturbed or problematic.
Stripped	Matrix (58)		Anomalous	Bright Loam	y Sola (F20	) (MURA 14	9A, 153C, 153D)	
Dark Surf	face (S7) (LRR.P, S, T,	U)		_				
							I	
Restrictive L	ayer (if observed):							
Type:				_				Yes ⊕ No O
Depth (inc	thes):			_			Hydric Soil Present?	Yes (b) No (
Remarks:								

## WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: 39764 Aurora - Blue Oval - Power Supply	City/County: H	aywood County	Sampling Date: 30-Nov-21
Applicant/Owner: NA	9	ate: TN Sampling P	oint W002
Investigator(s): _Felion Perker Hutchton	Section, Towns	hip, Range: S T	R
Landform (hillslope, terrace, etc.): Flat	Local relief (cons	cave, convex, none): concave	Slope: 0.0 % / 0.0*
Subregion (URR or MURA): LRR P	Lat.: 35,419033	Long.: -89.402375	Detum: NAD83
Soil Map Unit Name: Greneda silt loam, 1-5% slope	s, eroded	NWI classif	fication: PFO1E
Are climatic/hydrologic conditions on the site typics	i for this time of year? Yes	9 No O (If no, explain in	
Are Vegetation, Soil, or Hydrolog	y significantly disturbed?	Are "Normal Circumstances"	present? Yes ① No 〇
Are Vegetation . , Soil . , or Hydrolog	y naturally problematic?	(If needed, explain any answ	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site n	nap showing sampling point	locations, transects, imp	ortant features, etc.
Hydrophytic Vegetation Present? Yes 3 N	0 O	ampled Area	
Hydric Soil Present? Yes ⊕ N	• O	Very (B) No. (C)	
Wetland Hydrology Present? Yes → N	o O within a	Wetland? Tes S No C	
Remarks: W002 is forested wetland in drainage where cha	nnel levels. Photo#DSCN5783. 0.10	acres. TRAM score = (29) Low.	
HYDROLOGY			
Wetland Hydrology Indicators:  Primary Indicators (minimum of one required; of  Surface Water (A1)  High Water Table (A2)  Seturation (A3)  Water Meris (B1)  Sediment Deposits (B2)  Deft Deposits (B3)  Algal Mat or Crust (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Field Observations:  Surface Water Present? Yes  No  Water-Table Present? Yes  No  Seturation Present? Yes  No  Describe Recorded Data (stream gauge, monitori	Aquistic Feuna (B13)  Marl Deposite (B15) (LRR U)  Hydrogen Suifide Odor (C1)  Oxidized Riticospheres along Living R  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils ( Thin Muck Surface (C7)  Other (Explain in Remarks)  Depth (inches):  Depth (inches):	Surfect Soil C Spansely Veg Drainage Pat Moss Trim Lir oots (C3) Dry Season W Crayfelt Burn Geomorphic F Shallow Aquit Y FAC-Neutral 1 Sphagnum m  Wetland Hydrology Present?	etated Concieve Surface (B8)  erris (B10)  erris (B10)  Water Table (C2)  Water Table (C2)  Water Table (C2)  Water Table (C2)  Water Table (C3)  Water Table (C5)  Water Table (C5)  Water (D6)  Cos (D6) (LRR T, U)
Remarks:			

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# VEGETATION (Five/Four Strata) - Use scientific names of plants.

, , , , , , , , , , , , , , , , , , , ,	Dominant	Sampling Point: W002
	Absolute Rel.Stret. Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:	% Cover Cover Status	Number of Dominant Species
1 Platanus occidentalis	30 Z 33.3% FACW	That are OBL, FACW, or FAC: 6 (A)
2 Saltx nigra	30 V 33.3% OSL	
	30 2 33.3% FAOW	Total Number of Dominant
		Species Across All Strate: 6 (8)
7		Percent of dominant Species
	0 0.0%	That Are OBL FACW, or FAC: 100.0% (A/6)
6	0 0.0%	That has stay therety or the
7	0.0%	Prevalence Index worksheet:
8	0.0%	Total % Cover of: Multiply by:
50% of Total Cover: 45 20% of Total Cover: 16	90 = Total Cover	OBL species 40 x 1 = 40
Septing or Septing / Shrub Stratum (Plot sits:		FACM species 80 x 2 = 160
4	0 0.0%	FAC species 5 x 3 = 15
1. ,	- <del> </del>	
<u> </u>		FACU species0 x 4 =0
3. ,	0 0.0%	UPL species0 x 5 =0
4	0.0%	Column Totals: 125 (A) 215 (R)
5	0 0.0%	
6.	0.0%	Prevalence Index = B/A = 1.720
7.	0.0%	Hydrophytic Vegetation Indicators:
8	0 0.0%	
		1 - Rapid Test for Hydrophytic Vegetation
50% of Total Cover: 0 20% of Total Cover: 0	0 = Total Cover	2 - Dominance Test is > 50%
Shrub Stratum (Plot star:)		3 - Prevalence Index is \$3.0 1
1.	0.0%	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2	0.0%	
3.	0 0.0%	<sup>3</sup> Indicators of hydric soil and wetland hydrology must
4	0 0.0%	be present, unless disturbed or problematic.
5.		Definition of Vegetation Strata:
	0 0.0%	
6	0.0%	Tree - Woody plants, excluding woody vines,
50% of Total Cover: 0 20% of Total Cover: 0	0 = Total Cover	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
Herb Stratum (Piot size:)		(7.5 cm) or ranger in summaria as present ranges (550)
		Sepling - Woody plants, excluding woody vines,
1, Andropogon glomeratus	10 V 28.6% FACW	approximately 20 ft (6 m) or more in height and less
2, Ludwigia alternifolia	10 V 28.6% OBL	than 3 in. (7.6 cm) DBH.
3 Coleataenia rigidula	10 Z 28.6% FACW	
4. Rumex crispus	5 14.3% FAC	Septing/Shrub - Woody plants, excluding vines, less
5.	0.0%	than 3 in. DBH and greater than 3.28 ft (1m) tall.
6.	0 0.0%	Shrub - Woody plants, excluding woody vines.
7.	0 0.0%	approximately 3 to 20 ft (1 to 6 m) in height.
8.	0 0.0%	approximately 5 to 20 ft (1 to 0 ft) in resign.
		Herb - All herbaceous (non-woody) plants, including
9	0 0.0%	herbaceous vines, regardless of size, and woody
10	0 0.0%	plants, except woody vines, less than approximately
11	0.0%	3 ft (1 m) in height.
12,	0.0%	
50% of Total Cover: 17.5 20% of Total Cover: 7	35 = Total Cover	Woody vine - All woody vines, regardless of height.
•		
Woody Vine Stratum (Plot size:)		
1		
2. ,	0 0.0%	
3		
4	0.0%	
	0 0.0%	Hydrophytic
•		Vegetation Yes ⊕ No ○
50% of Total Cover: 0 20% of Total Cover: 0	U = Total Cover	research
Remarks: (If observed, list morphological adaptations below).		
"Indicator suffix - National status or professional decision assigned because its	gional status not defined by PWS.	

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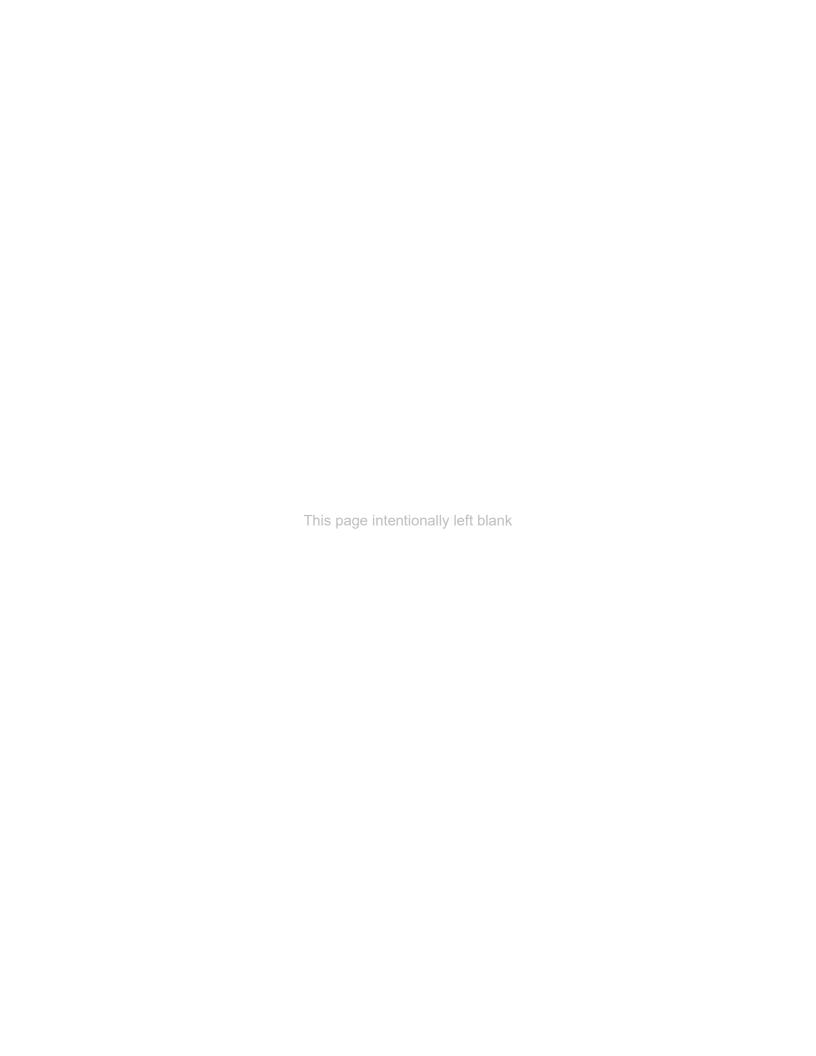
Polyth Market.    Color (moleta)   96
Color (molet)   Color (molet)   %   Color (molet)   %   Text   Loc*   Texture   Remarks
Determination (A1)   Depleted Nation (A2)   D
dric Seil Indicators:  Historio (A1)  Historio (A2)  Historio (A2
Indicators: Historic (A1) Hatic Epipedon (A2) Hatic Epipedon (A2) Hatic Epipedon (A2) Historic (F12) Historic (F13)
Historical (A1)
Hatic Epipedon (A2)
Black Hatic (A3)   Loamy Mucky Mineral (F1) (LRR 0)   Reduced Vertic (F18) (outside MLRA 150A,II)   Hydrogen Suffide (A4)   Loamy Mucky Mineral (F1) (LRR 0)   Reduced Vertic (F18) (outside MLRA 150A,II)   Hydrogen Suffide (A4)   Depleted Matrix (F2)   Predmort Rocopiels Soils (F19) (LRR P, S, T)   Redox Depleted Matrix (F3)   Anomalous Bright Loamy Soils (F20) (MLRA 150A,II)   Redox Depressions (F8)   Red Parent Material (TF2)   Huck Presence (A3) (LRR P, T, U)   Redox Depressions (F8)   Other (Explain in Remarks)   Head to Deplete Depleted Ochric (F11) (MLRA 151)   Depleted Below Derk Surface (A12)   Inon-Manganese Masses (F12) (LRR 0, P, T)   Depleted Below Derk Surface (A12)   Inon-Manganese Masses (F12) (LRR 0, P, T)   Depleted Ochric (F17) (MLRA 151)   Sandy Muck Mineral (S1) (LRR 0, S)   Deta Ochric (F17) (MLRA 151)   Sandy Redox (S3)   Reduced Vertic (F18) (MLRA 150A, 1508)   Sandy Redox (S3)   Redox (S3)   Reduced Vertic (F18) (MLRA 150A, 1508)   Sandy Redox (S3)   Redox (S3)   Redox (S5)   Anomalous Bright Loamy Soils (F20) (MLRA 149A)   Indicators of hydrophytic vegetation and wetland hydrology must be present, unless obsturbed or problematic.  Protective Layer (If observed):  Type:   Depth (Inches):   Hydric Soil Present? Yes (P) No (P)
Hydrogen Suffice (A4)    Loanry Gleyed Matrix (F2)   Reduced Vertic (F18) (cutasis MLSA, 1SAA, 1SAAA, 1SAA, 1SAAA, 1SAAAA, 1SAAA, 1SAAA, 1SAAA, 1SAAAA, 1SAAAA, 1SAAA, 1SAAAA, 1SAAAA, 1SAAAA, 1SAAAA, 1SAAAA, 1SAAAA, 1SAAAA, 1SAAAAA, 1SAAAA, 1SAAAAAA, 1SAAAAAAAA, 1SAAAAAAAA, 1SAAAAAAAAAA
Shatfled Layers (AS)    Depleted Matrix (F3)
Organic Bodies (A6) (URR P, T, U)  Signate Bodies (A7) (URR P, T, U)  Muck Presence (A8) (URR P, T, U)  Muck Presence (A8) (URR P, T)  Muck (A9) (URR P, T)  Depleted Dark Surface (P0)  Redox Depressions (P8)  Other (Explain in Remarks)  Other (Explain in Remarks)  Thick Dark Surface (A11)  Thick Dark Surface (A12)  Coset Preirie Redox (A16) (MURA 150A)  Sandy Muck Mineral (S1) (URR O, S)  Sandy Muck Mineral (S1) (URR O, S)  Sandy Redox (S5)  Sandy Redox (S5)  Pedmont Roodpiain Sols (F19) (MURA 150A)  Seripped Matrix (S8)  Dark Surface (S7) (URR P, S, T, U)  Prictive Layer (If observed):  Wyse:  Repth (Inches):  Hydric Soil Present? Yes ® No C
Sign Mucky Minerial (A7) (LRR P, T, U)    Depleted Dark Surface (P7)   Very Shallow Dark Surface (P12)     Nuck Presence (A8) (LRR P, T)   Redox Depressions (P8)   Other (Explain in Remarks)     Com Muck (A9) (LRR P, T)   Mari (P10) (LRR U)   Depleted Dark Surface (P10) (LRR U)     Depleted Below Dark Surface (A11)   Depleted Ochric (P11) (MLRA 151)     Thick Dark Surface (A12)   Iron-Manganese Missies (P12) (LRR O, P, T)     Coset Prairie Redox (A16) (MLRA 150A)   Umbric Surface (P13) (LRR P, T, U)     Sandy Muck Minerial (S1) (LRR O, S)   Delta Ochric (P17) (MLRA 151)     Sandy Geyed Matrix (S4)   Reduced Vertic (P18) (MLRA 150A, 1508)   Vertical Hydrology must be present, sandy Redox (S5)   Pedimont Moodplain Solis (P19) (MLRA 149A)   Unless disfurbed or problematic.     Scripped Matrix (S8)   Anomalous Bright Learny Solis (P20) (MLRA 149A, 153C, 153D)     Indicators of hydrophytic vegetation are vertically unless disfurbed or problematic.     Scripped Matrix (S8)   Anomalous Bright Learny Solis (P20) (MLRA 149A, 153C, 153D)     Indicators of hydrophytic vegetation are vertically unless disfurbed or problematic.     Scripped Matrix (S8)   Anomalous Bright Learny Solis (P20) (MLRA 149A, 153C, 153D)     Indicators of hydrophytic vegetation are vertically unless disfurbed or problematic.     Scripped Matrix (S8)   Anomalous Bright Learny Solis (P20) (MLRA 149A, 153C, 153D)
Muck Presence (A8) (LRR U)  Redox Depressions (F8)  Depleted Below Dark Surface (A11)  Depleted Below Dark Surface (A12)  Coset Present (A12)  Coset Present (A13) (LRR O, P, T)  Destard Ochric (F13) (LRR O, P, T)  Coset Present (S1) (LRR O, S)  Sandy Muck Mineral (S1) (LRR O, S)  Sandy Muck Mineral (S1) (LRR O, S)  Sandy Redox (S5)  Reduced Vertic (F18) (MLRA 150A, 150B)  Sandy Redox (S5)  Pedimort Pooxipian Sols (F19) (MLRA 140A, 150C, 153C)  Seripped Matrix (S8)  Dark Surface (S7) (LRR P, S, T, U)  Prictive Layer (if observed):  Vyoc:  Repth (inches):  Hydric Soil Present? Yes ® No C
I cm Muck (A5) (LRR P, T)
Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Depleted Ochric (F11) (MLRA 151)  Tron-Mangainese Masses (F12) (LRR O, P, T)  Coast Preirie Redox (A18) (MLRA 150A)  Sandy Muck Mineral (S1) (LRR O, S)  Sandy Muck Mineral (S1) (LRR O, S)  Sandy Redox (S2)  Sandy Redox (S3)  Reduced Vertic (F13) (MLRA 150A, 150B)  Pedmort Roodplain Soils (F19) (MLRA 140A)  Sandy Redox (S3)  Shipped Matrix (S8)  Dark Surface (S7) (LRR P, S, T, U)  Incitive Layer (if observed):  Incitive Layer (if ob
Thick Dark Surface (A12)   Iron-Manganese Masses (F12) (LRR O, P, T)   Coset Preirie Redox (A16) (MLRA 150A)   Umbric Surface (F13) (LRR P, T, U)   Sandy Muck Mineral (S1) (LRR O, S)   Deta Ochric (F17) (MLRA 151)   Sandy Gleyed Matrix (S4)   Reduced Vertic (F18) (MLRA 150A, 150B)   Iron-Manganese Masses (F18) (MLRA 150A, 150B)   Sandy Redox (S5)   Reduced Vertic (F18) (MLRA 150A, 150B)   Vertical Matrix (S8)   Predmort Ploodplain Soils (F19) (MLRA 140A)   Unless disturbed or problematic. Scripped Matrix (S8)   Anomalous Bright Loamy Soils (F20) (MLRA 140A, 153C, 153O)    Irictive Layer (if observed):  Vype:   Reduced Vertic (F18) (LRR P, S, T, U)    Hydric Soil Present? Yes ® No C
Coast Prairie Radox (A15) (MLRA 150A)  Sandy Muck Mineral (S1) (LRR O, S)  Sandy Muck Mineral (S1) (LRR O, S)  Detta Ochric (P17) (MLRA 151)  Reduced Vertic (P18) (MLRA 150A, 150B)  Sandy Radox (S5)  Pedmont Poodplain Soils (P19) (MLRA 140A)  Scripped Martix (S8)  Dark Surface (S7) (LRR P, S, T, U)   Printictive Layer (if observed):  Popth (inches):  Pethod (P18) (LRR P, S, T, U)  Proper Martix (S6)  Present? Yes ® No C
Sandy Muck Mineral (S1) (LRR O, S)  Sandy Gleyed Matrix (S4)  Sandy Redox (S5)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A)  Sendy Redox (S5)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A)  Unless disturbed or problematic.  Sendy Redox (S5)  Sendy Redox (S5)  Predmont Plooxipian Solis (F20) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Predmont Plooxipian Solis (F19) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Anomalous Bright Loamy Solis (F20) (MLRA 149A, 153C, 153D)  Sendy Redox (S5)  Sendy Redox
Sandy Gleyed Metrix (54) Reduced Vertic (F18) (MLRA 150A, 150B) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Scripped Metrix (38) Anomalous Bright Learny Solis (F20) (MLRA 149A, 153C, 153D)  prictive Layer (if observed):  Type:  Depth (Inches):  Hydric Soil Present? Yes ® No C
Sandy Ratiox (SS) Predmort Roodplain Sols (F19) (MLRA 149A) unless disturbed or problematic.  Scripped Matrix (SS) Anomalous Bright Learny Sols (F20) (MLRA 149A, 153C, 153D)  brictive Layer (if observed):  Pype:  Depth (inches):  Hydric Soil Present? Yes ® No O
Stripped Metrix (36) Anomalous Bright Learny Solis (F20) (MLRA 149A, 153C, 153D)  Dark Surface (S7) (LRR P, S, T, U)  brictive Layer (if observed):  Type:  Depth (inches): Hydric Soil Present? Yes ® No O
Dark Surface (S7) (URR P, S, T, U)  trictive Layer (if observed):  Type:  Depth (inches):  Hydric Soil Present? Yes ® No O
Pype:
Depth (inches): Heydric Soil Present? Yes ⊕ No O
Septi (india):

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Appendix F – Prime Farmlands

**Appendix F – Prime Farmlands** 



U.S. Department of Agriculture FARMLAND CONVERSION IMPACT RATING							
		SION IM	IPACT RA	TING			
PART I (To be completed by Federal Agency)  Date 0			Land Evaluation Request 12/7/2020				
		Federal A	gency involved	TVA			
Proposed Land Use Substation		County an	d State Hayw	ood County	, TN		
PART II (To be completed by NRCS)  Date Request Received B NRCS 12/8/2021			Ву	Person O	ompleting For e Lucas	m:	
Does the site contain Prime, Unique, Statewide or Local Important Farmland? YES NO			Acres Ir	rigated	_	Farm Size	
(If no, the FFFA does not apply - do not cor	complete additional parts of this form)			21590 556			
Major Crop(s)	Farmable Land In Govt. Jurisdiction			Amount of Farmland As Defined in FPPA			
Corn	Acres: 273110% 78			Acres: 12394(% 36.3			
Name of Land Evaluation System Used	Name of State or Local 8		nent System			eturned by NF	RC8
Haywood County TN	Haywood County TN n/a			12/20/2021			
PART III (To be completed by Federal Age	ncy)			Site A	Alternative Site B	Site Rating Site C	Site D
A. Total Acres To Be Converted Directly				89.9	0112	-	
B. Total Acres To Be Converted Indirectly							
C. Total Acres in 8ite				89.9			
PART IV (To be completed by NRCS) Lan	d Evaluation Information						
A. Total Acres Prime And Unique Farmland				26.3			
B. Total Acres Statewide Important or Local Important Farmland				0			
C. Percentage Of Farmland in County Or Li	ocal Govt. Unit To Be Converted			.021			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value			63				
PART V (To be completed by NRCS) Land Evaluation Criterion							
Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)			69				
PART VI (To be completed by Federal Agency) Site Assessment Criteria Maximum (Criteria are explained in 7 CFR 655.5 b. For Corridor project use form NRCS-CFA-106) Points			Site A	Site B	Site C	Site D	
Area in Non-urban Use	comour project use form nincan	CFA-100)	(15)	15			
Perimeter in Non-urban Use			(10)	8			
3. Percent Of Site Being Farmed (20)			(20)	20			
Protection Provided By State and Local Government (20)			0				
Distance From Urban Built-up Area			(15)	15			
6. Distance To Urban Support Services (1			(15)	10			
7. Size Of Present Farm Unit Compared To Average (			(10)	0			
8. Creation Of Non-farmable Farmland (10)			(10)	0			
9. Availability Of Farm Support Services (5)			(5)	5			
10. On-Farm Investments (20)			(20)	0			
11. Effects Of Conversion On Farm Support Services (10)			(10)	0			
12. Competibility With Existing Agricultural Use (10)			(10)	0			
TOTAL SITE ASSESSMENT POINTS			160	73	0	0	0
PART VII (To be completed by Federal Agency)							
Relative Value Of Farmland (From Fart V) 100			100	69	0	0	0
Total Site Assessment (From Part VI above or local site assessment) 160			160	73	0	0	0
TOTAL POINT 8 (Total of above 2 lines)			260	142	0	0	0
Site Selected: Site A	Date Of Selection 12/21/21	Date Of Selection 12/21/21		Was A Loca YE		NO 🗸	
Reason For Selection:							
Total points for Site A are below 160. Therefore, consideration of alternative sites is not required.							
Name of Federal agency representative comp	oleting this form: Frin Alson				D	ste: 12/21/	21
/See Instructions on reverse side)  Form AD-1008 (03-02)							

#### STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

- Step 1 Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, <a href="https://ippa.ness.usda.gov/less/">https://ippa.ness.usda.gov/less/</a>.
- Step 2 Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s) of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/serigits/ndlSAFLdll/eig\_public/USA\_mag, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)
- Step 3 NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.
- Step 4 For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.
- Step 5 NRCS will return the original copy of the form to the Foderal agency involved in the project, and retain a file copy for NRCS records.
- Step 6 The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.
- Step 7 The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

# INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM (For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

- Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the
  conversion would restrict access to them or other major change in the ability to use the land for agriculture.
- Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

- Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type
  project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero,
  however, criterion #8 will be weighted a maximum of 25 points and criterion #11 a maximum of 25 points.
- Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the
  FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other
  weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites
  where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse
  impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.

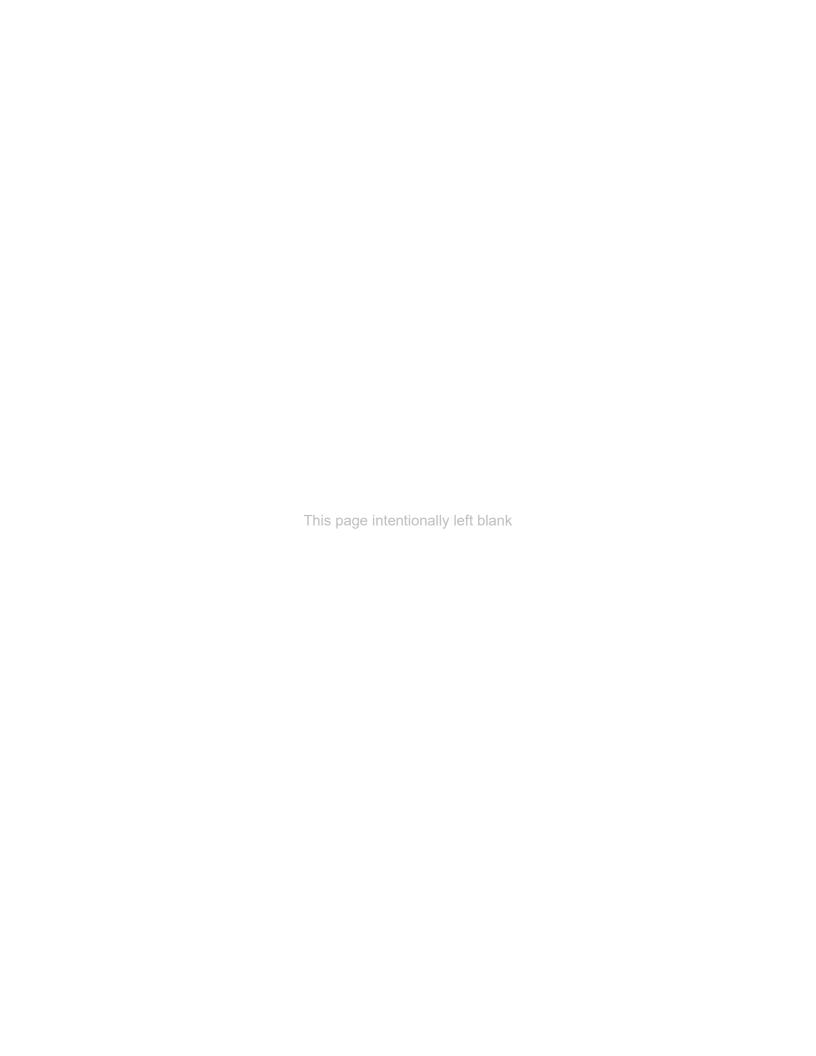
Example: If the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

Total points assigned Site A Maximum points possible = 
$$\frac{180}{200}$$
 X 160 = 144 points for Site A

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

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



# Appendix G - Noise During Transmission Line and Substation Construction and Operation

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 G-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 G-1.	Estimated Anno	yance from Bac	ckground 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 substation and 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 and substations 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.

The substation would produce a loud impulse noise when a breaker is tripped due to excessive current, high voltage, low voltage, low frequency, or other less common problems. When such problems occur, the circuit breaker opens to disconnect part of the system, and the flow of current is interrupted. The noise from the breaker is expected to last 1/20 of a second and range from 96 to 105 dB at 50 feet. Breaker noise would be quite loud, although it is only expected to occur about 18 times each year. Breaker noise may be audible to nearby residents. However, because of the infrequent occurrence, it would not result in a significant impact.

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.

