

**SR Ripley II Solar Facility**  
**FINAL ENVIRONMENTAL ASSESSMENT**  
Lauderdale County, Tennessee  
CEQ Tracking No. EAXX-455-00-000-1730464287

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## **SYMBOLS, ACRONYMS, AND ABBREVIATIONS**

AADT	Annual average daily traffic
AASHTO	American Association of State Highway and Transportation Officials
AC	Alternating current
ACS	American Community Survey
AFL	Addendum Field Locus
AIF	Addendum Isolated Find
APC	Air Pollution Control
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
ARAP	Aquatic Resource Alteration Permit
BG	Block group
BLS	Bureau of Labor Statistics
BMP	Best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGP	Construction Stormwater General Permit
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
CT	Census tract
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
DBH	Diameter at breast height
DC	Direct current
DWR	Division of Water Resources
EA	Environmental assessment
EFO	Environmental Field Office
EIS	Environmental impact statement
EJ	Environmental justice
EMF	Electromagnetic field
EO	Executive Order
ESA	Endangered Species Act
°F	Degree Fahrenheit
FEMA	Federal Emergency Management Agency

FL	Field locus
FR	Federal Register
GHG	Greenhouse gas
HD	Hydrological Determination
HDR	HDR Engineering, Inc.
HS	Historic Structure
HUC	Hydrologic unit code
HUD	U.S. Department of Housing and Urban Development
IF	Isolated find
IPaC	Information for Planning and Consultation
IRP	Integrated Resource Plan
JD	Jurisdictional Determination
kV	Kilovolt
L <sub>dn</sub>	Day-night average sound level
LF	Linear feet
LUST	Leaking underground storage tank
MBTA	Migratory Bird Treaty Act
MPT	Main power transformer
MVT	Medium voltage transformer
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NLCD	National Land Cover Database
NO <sub>2</sub>	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NWP	Nationwide Permit
OHWM	Ordinary high-water mark
OSHA	Occupational Safety and Health Act
PEM	Palustrine emergent wetland

PFO	Palustrine forested wetland
PM <sub>2.5</sub>	Particulate matter less than or equal to 2.5 micrometers
PPA	Power purchase agreement
PSS	Palustrine scrub-shrub wetland
PUBH	Palustrine unconsolidated bottom
PV	Photovoltaic
RACM	Regulated Asbestos-Containing Material
RCRA	Resource Conservation and Recovery Act
RFFA	Reasonably foreseeable future action
RFP	Request for proposal
RNHD	Regional Natural Heritage Database
ROW	Right-of-way
SHPO	State Historic Preservation Office
SMZ	Streamside management zone
SPCC	Spill Prevention, Control, and Countermeasure
SRC	Silicon Ranch Corporation
SWPPP	Stormwater Pollution Prevention Plan
TDEC	Tennessee Department of Environment and Conservation
TDOA	Tennessee Division of Archaeology
TDOT	Tennessee Department of Transportation
TerraX	TerraXplorations, Inc.
THC	Tennessee Historical Commission
TL	Transmission line
TRAM	Tennessee Rapid Assessment Method
Tribes	Federally Recognized Indian Tribes
TVA	Tennessee Valley Authority
U.S.	United States
U.S.C.	U.S. Code
US 51	U.S. Route 51
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

USGCRP	U.S. Global Change Research Program
UST	Underground storage tank
WOTUS	Waters of the U.S.
WWC	Wet weather conveyance

## GLOSSARY OF TERMS

<b>100-Year Floodplain</b>	The area subject to a one percent chance of flooding in any given year.
<b>Ambient Air</b>	Outdoor air in locations accessible to the general public.
<b>Area of Potential Effects (APE)</b>	The geographic area(s) within which an action may directly or indirectly cause changes in the character or use of historic properties, if such properties exist.
<b>Attainment Areas</b>	Those areas of the U.S. that meet National Ambient Air Quality Standards (NAAQS) as determined by measurements of air pollutant levels.
<b>Best Management Practice (BMP)</b>	A practice chosen to minimize environmental effects to a variety of environmental resources. BMPs are typically standard practices and not customized for a particular proposed action.
<b>Climate</b>	A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.
<b>Cumulative Impacts</b>	Impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such actions (40 Code of Federal Regulations [CFR] § 1508.1).
<b>Day/Night Average Sound Level (L<sub>dn</sub>)</b>	A 24-hour average noise level rating used to assess noise impacts for land uses where people sleep and there is a heightened sensitivity to nighttime noise.
<b>Decibel (dB)</b>	A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel (dB) scales are most commonly associated with acoustics (using air pressure fluctuation data); but dB scales sometimes are used for ground-borne vibrations or various electronic signal measurements. The adjusted noise metric that most closely duplicates human perception of noise is known as the A-weighted dB.
<b>Deciduous</b>	Vegetation that sheds leaves in autumn and produces new leaves in the spring.
<b>Direct Impacts</b>	Impacts that are caused by the action and occur at the same time and place (40 CFR § 1508.1).
<b>Ecoregion</b>	A relatively homogeneous area of similar geography, topography, climate, and soils that supports similar plant and animal life.

<b>Emergent Wetland</b>	Wetland dominated by erect, rooted herbaceous plants, such as cattails and bulrush.
<b>Endangered Species</b>	A species in danger of extinction throughout all or a significant portion of its range or territory and listed as endangered by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) following the procedures outlined in the Endangered Species Act (ESA) and its implementing regulations (50 CFR § 424).
<b>Environmental Assessment (EA)</b>	A document prepared for a proposed action that does not qualify as a categorical exclusion (CE) to determine whether an environmental impact statement (EIS) is necessary, or a finding of no significant impact (FONSI) can be prepared. An EA concisely communicates information and analyses about issues that are potentially significant and reasonable alternatives.
<b>Environmental Justice (EJ)</b>	The just treatment and meaningful involvement of all people regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other federal activities that affect human health and the environment.
<b>Ephemeral Stream</b>	Rain-dependent stream that flows only after precipitation.
<b>Erosion</b>	A natural process whereby soil and highly weathered rock materials are worn away and transported to another area, most commonly by wind or water.
<b>Evergreen</b>	Vegetation with leaves that stay green and persist all year.
<b>Floodplains</b>	Any land area susceptible to inundation by water from any source by a flood of selected frequency. For purposes of the National Flood Insurance Program, the floodplain, at a minimum, is that area subject to a one percent or greater chance of flooding (100-year flood) in any given year.
<b>Forest</b>	Vegetation having tree crowns overlapping, generally forming 60–100 percent cover (Grossman et al. 1998).
<b>Forested Wetland</b>	Wetland dominated by trees.
<b>Generation Tie (gen-tie) Line</b>	A dedicated transmission line that connects a solar facility to the existing electrical grid.
<b>Greenhouse Gas (GHG)</b>	A gaseous compound that absorbs infrared radiation and re-radiates a portion of that back toward the earth's surface, thus trapping heat and warming the earth's atmosphere.
<b>Habitat</b>	A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.
<b>Herbaceous Vegetation</b>	Dominated by forbs, generally forming at least 25 percent cover; other life-forms with less than 25 percent cover (Grossman et al. 1998).

<b>Historic Property</b>	Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP; 36 CFR § 800.16(I)).
<b>Indirect Impacts</b>	Impacts that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR § 1508.8).
<b>Intermittent Stream</b>	Seasonal stream that flows during certain times of the year when smaller upstream waters are flowing and when groundwater provides enough water for stream flow.
<b>Landscape Features</b>	The land and water form, vegetation, and structures which compose the characteristic landscape.
<b>Landslide</b>	A slope failure that involves downslope displacement and movement of material either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces.
<b>Large</b>	One of four descriptors used to characterize the level of impact in a manner that is consistent with TVA's current practice. Refers to environmental impacts that are clearly noticeable and are sufficient to destabilize important attributes of the resource.
<b>Liquefaction</b>	A condition in which a saturated cohesion-less soil may lose shear strength because of a sudden increase in pore water pressure caused by an earthquake.
<b>Maintenance Area</b>	An area that currently meet NAAQS, but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act (CAA) conformity review requirements.
<b>Minor</b>	One of four descriptors used to characterize the level of impact in a manner that is consistent with TVA's current practice. Refers to environmental impacts that are not detectable or are so minor that they would not noticeably alter any important attribute of the resource.
<b>Mitigation</b>	(a) Avoiding the impacts altogether by not taking an action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR §1508.20).
<b>Moderate</b>	One of four descriptors used to characterize the level of impact in a manner that is consistent with TVA's current practice. Refers to environmental impacts that are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

<b>National Ambient Air Quality Standards (NAAQS)</b>	Uniform national air quality standards established by the U.S. Environmental Protection Agency (USEPA) that restrict ambient levels of certain pollutants to protect public health (primary standards) or public welfare (secondary standards). Standards have been set for ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide, and lead.
<b>National Environmental Policy Act (NEPA)</b>	The federal law that establishes a national policy on the environment and requires federal agencies to consider the effects of their proposed actions on the environment before final decisions are made and involve the public in the decision making. NEPA does not mandate particular results or substantive outcomes.
<b>National Historic Preservation Act (NHPA)</b>	The 1966 federal law that establishes a national preservation program and a system of procedural protections that requires federal agencies to identify and protect historic resources, including archaeological resources, at the federal level and indirectly at the state and local level. NHPA authorizes the establishment of the NRHP.
<b>National Pollutant Discharge Elimination System (NPDES) and Water Quality Certification</b>	The NPDES permit program was established under the Clean Water Act (CWA) and controls, among other things, the discharge of stormwater associated with certain construction activities involving disturbance of one or more acres. In Tennessee, the NPDES program has been delegated to the Tennessee Department of Environment and Conservation. In addition, Section 401 of the CWA requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the U.S. obtain a state certification that the discharge complies with the CWA.
<b>National Register of Historic Places (NRHP)</b>	A list of places and objects maintained by the National Park Service based on their integrity of location, design, setting, materials, workmanship, feeling and association, and: 1) association with important historical events; or 2) association with the lives of significant historic persons; or 3) embodiment of distinctive characteristics of a type, period, or method of construction or represent the work of a master, or have high artistic value; or 4) have yielded or may yield information important in history or prehistory.
<b>NatureServe</b>	An international network of biological inventories (natural heritage programs or conservation data centers) that provides information about the location and status of animals, plants, and habitat communities, and establishes a system for ranking the relative rarity of those resources.
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>	A toxic, reddish gas formed by the oxidation of nitric oxide. NO <sub>2</sub> is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into NO <sub>2</sub> by subsequent oxidation in the atmosphere. NO <sub>2</sub> is a criteria pollutant, and is a precursor of ozone, numerous types of photochemically generated nitrate particles, and atmospheric nitrous and nitric acids.
<b>No Action Alternative</b>	The alternative in a NEPA study that would continue with the present course of action and in which the proposed activity would not take place. The No Action Alternative provides a baseline of conditions against which the impacts of the Proposed Action Alternative are measured.



<b>No Impact (or “absent”)</b>	One of four descriptors used to characterize the level of impact in a manner that is consistent with TVA’s current practice. Refers to a resource that is not present or, if present, would not be affected by project alternatives under consideration.
<b>Nonattainment Area</b>	An area that does not meet NAAQS. Federal agency actions occurring in a federal nonattainment area are subject to CAA conformity review requirements.
<b>Ozone (O<sub>3</sub>)</b>	A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissue and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth’s surface.
<b>Paleontology</b>	A science dealing with the life forms of past geological periods as known from fossil remains.
<b>Particulate Matter (PM)</b>	Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. PM can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended PM are respiratory irritants. Some components such as crystalline or fibrous minerals are primarily physical irritants. Other components are chemical irritants such as sulfates, nitrates, and various organic chemicals. Suspended PM also can contain compounds such as heavy metals and various organic compounds that are systemic toxins or necrotic agents. Suspended PM or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals. See PM <sub>2.5</sub> .
<b>Particulate Matter ≤2.5 microns (PM<sub>2.5</sub>) (Fine Particulate Matter)</b>	A fractional sampling of suspended PM that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate the alveoli in the lungs. In a regulatory context, PM <sub>2.5</sub> is any suspended PM collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0 to 2.5 microns and a maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.
<b>Perennial Stream</b>	A stream that typically has flowing water in it year-round.

<b>Photovoltaic (PV) Power Generation</b>	The direct conversion of light into electricity at the atomic level. Some materials exhibit a property known as the photoelectric effect that causes them to absorb photons of light and release electrons. When these free electrons are captured, an electric current is produced, which can be used as electricity.
<b>Physiographic Provinces</b>	General divisions of land with each area having characteristic combinations of soil materials and topography.
<b>Power Purchase Agreement (PPA)</b>	A contract between two parties, one who generates and intends to sell electricity, and one who is looking to purchase electricity, defining the commercial terms for the sale of electricity between the two parties.
<b>Preferred Alternative</b>	The action alternative in a NEPA study which the agency believes would fulfill its statutory mission and responsibilities, considering economic, environmental, technical and other factors, and would meet a proposed project's purpose and need.
<b>Prehistoric</b>	Refers to the period wherein American Indian cultural activities took place before written records and not yet influenced by contact with non-native culture(s).
<b>Prime Farmland</b>	Generally regarded as the best land for farming, these areas are flat or gently rolling and are usually susceptible to little or no soil erosion. Prime farmland produces the most food, feed, fiber, forage, and oil seed crops with the least amount of fuel, fertilizer, and labor. It combines favorable soil quality, growing season, and moisture supply and, under careful management, can be farmed continuously and at a high level of productivity without degrading either the environment or the resource base. Prime farmland does not include land already in or committed to urban development, roads, or water storage.
<b>Purpose and Need</b>	A statement by an agency in a NEPA document to describe what it is trying to achieve by proposing an action. The purpose and need statement explain why an action is necessary and serves as the basis for identifying the reasonable alternatives that meet the purpose and need.
<b>Riverine</b>	Having characteristics similar to a river.
<b>Row Crops</b>	Agricultural crops, such as corn, wheat, beans, cotton, etc., which are most efficiently grown in large quantities by planting and cultivating in lines or rows.
<b>Scrub-Shrub</b>	Woody vegetation less than about 20 feet tall. Species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions.
<b>State Historic Preservation Office (SHPO)</b>	The official within and authorized by each state at the request of the Secretary of the Interior to act as liaison for the NHPA.

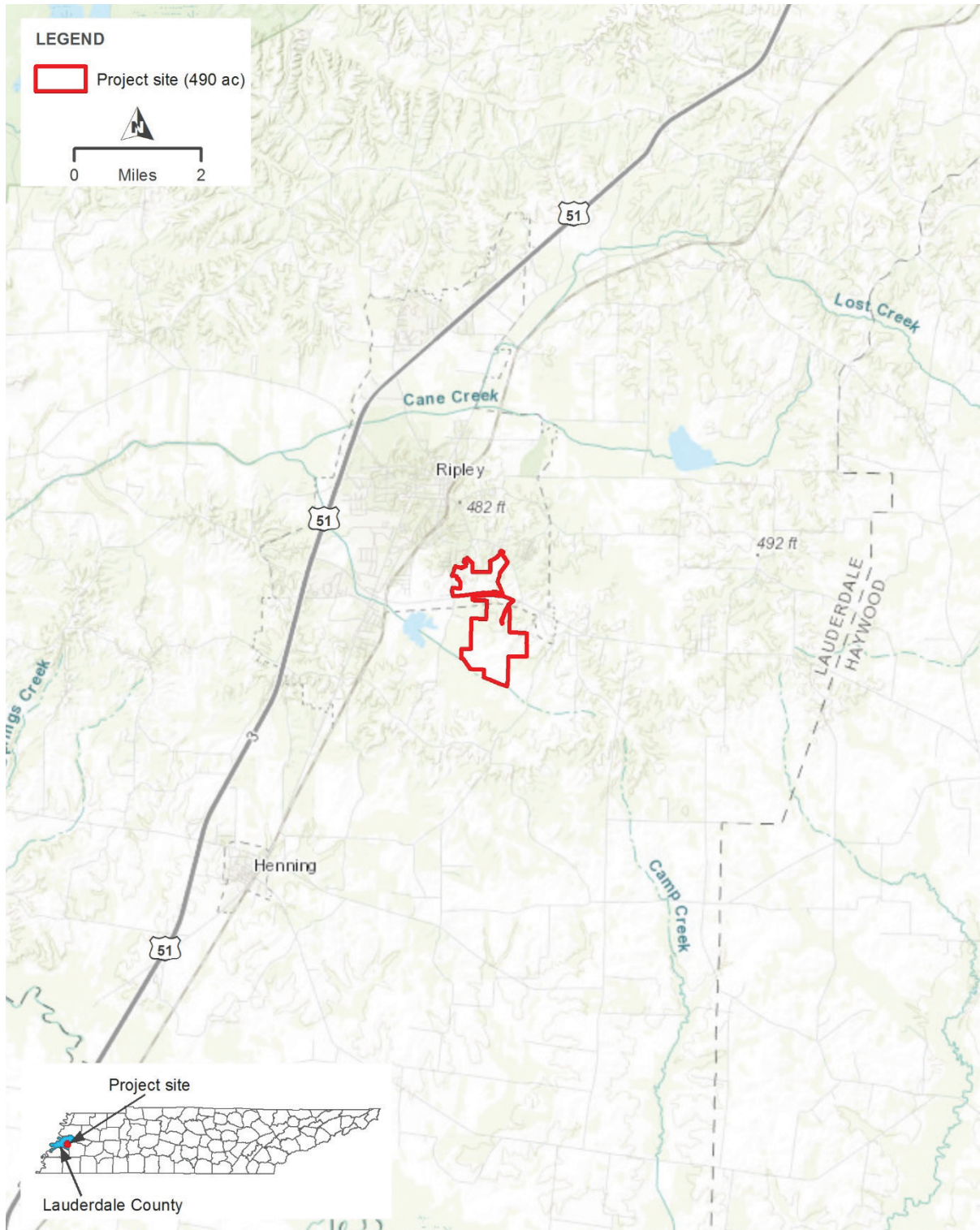
<b>Subsurface</b>	Of or pertaining to rock or mineral deposits which generally are found below the ground surface.
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant, and a precursor of sulfate particles and atmospheric sulfuric acid.
<b>Threatened Species</b>	A species likely to become endangered within the foreseeable future throughout all or a significant portion of its range or territory and which has been listed as threatened by USFWS or NMFS following the procedures set out in the ESA and its implementing regulations (50 CFR § 424).
<b>Upland</b>	The higher parts of a region, not closely associated with streams or lakes.
<b>Wet Weather Conveyance</b>	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 analyses 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.
<b>Wetland</b>	An area inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, mud flats, and natural ponds.
<b>Wildlife Management Area</b>	Land and/or water areas designated by state wildlife agencies, such as the Tennessee Wildlife Resources Agency, for the protection and management of wildlife. These areas typically have specific hunting and trapping regulations as well as rules regarding appropriate uses of these areas by the public.
<b>Woodland</b>	Open stands of trees with crowns not usually touching, generally forming 25 to 60 percent cover (Grossman et al. 1998).

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## CHAPTER 1 – INTRODUCTION

The Tennessee Valley Authority (TVA) entered into a power purchase agreement (PPA) with SR Ripley II, LLC, a wholly owned subsidiary of Silicon Ranch Corporation (SRC), in December 2022, to purchase the electric power generated by a proposed solar photovoltaic (PV) facility in Lauderdale County, Tennessee. The solar facility, known as SR Ripley II, would be owned by SRC and operated by SR Ripley II, LLC. The facility would have a generating capacity of 30 megawatts (MW) alternating current (AC). Ripley Power and Light would connect the solar facility to TVA's existing Ripley–Covington 161-kilovolt (kV) transmission line (TL) via a new approximately 0.3-mile-long 34.5-kV dedicated TL called a generation tie (gen-tie) line from a proposed on-site switchgear to the existing on-site Ripley Power and Light East Industrial Park station (substation). Under the terms of the PPA, TVA would purchase the electricity generated by the solar facility for a term of 20 years, subject to satisfactory completion of all applicable environmental reviews. In addition to purchasing the electric output under the PPA with SR Ripley II, LLC, TVA also proposes to install fiber-optic overhead ground wire (OPGW) on a 0.75-mile length of the Ripley–Covington 161-kV TL, on portions of the TL that are on site. Together, the associated construction and operation of SR Ripley II and the TVA TL upgrade areas are herein referred to as both the “Project” and the “Proposed Action.”

Following a detailed investigation of various alternatives (see Section 2.3), the proposed solar PV facility has been designed to occupy approximately 194 acres of a 490-acre Project site located within the metropolitan limits of Ripley in southeastern Lauderdale County (Figure 1-1). An additional 183 acres of the Project site are anticipated to be utilized for access roads, the implementation of streamside management zones (SMZs), and the 200-foot shading buffer around solar panels. The solar facility would consist of arrays of thin-film PV panels attached to ground-mounted single-axis trackers, central inverters, transformers, a switchgear, an operations and maintenance building, access roads, and all associated cabling and safety equipment.



**Figure 1-1. SR Ripley II Project site in Lauderdale County, Tennessee**

## 1.1 Purpose and Need for Action

TVA is a corporate agency of the United States (U.S.) and the largest public power provider in the country. Through TVA's partnership with 153 local power companies, TVA supplies electricity across 80,000 square miles for 10 million people, 750,000 businesses, and 56 large industrial customers, including military installations and the U.S. Department of Energy facilities at Oak Ridge, Tennessee. TVA's service area includes most of Tennessee and parts of six adjacent states. Since 1933, TVA's mission has been to serve the people of the Tennessee Valley region to make life better.

TVA produces or obtains electricity from a diverse portfolio of energy sources, including solar, hydroelectric, wind, biomass, fossil fuel, and nuclear. In June 2019, TVA completed an Integrated Resource Plan (IRP) and associated environmental impact statement (EIS). The 2019 IRP identified the various resources that TVA intends to use to meet the energy needs of the TVA region over the 20-year planning period while achieving TVA's objectives to deliver reliable, low-cost, and cleaner energy with fewer environmental impacts. The 2019 IRP recommends the expansion of solar generating capacity of up to 14,000 MW by 2038 (TVA 2019)<sup>1</sup>. With the demand for solar energy increasing, TVA has an expansion target of 10,000 MW of solar by 2035 (TVA 2021).

Customer demand for cleaner energy prompted TVA to release a request for proposal (RFP) for renewable energy resources, the 2021 Renewable RFP. In response to this RFP, TVA received multiple proposals from solar developers, including SR Ripley II, LLC. The resulting PPAs, including the SR Ripley II, LLC PPA, would help TVA meet immediate needs for additional renewable generating capacity in response to customer demand and contribute to the fulfillment of the 10,000 MW of solar by 2035 target. The Proposed Action would provide cost-effective renewable energy consistent with the 2019 IRP and TVA goals.

## 1.2 Scope of This Environmental Assessment

The National Environmental Policy Act (NEPA; 42 U.S. Code [U.S.C.] §§ 4321 et seq.) requires federal agencies to evaluate the potential environmental impacts of their proposed actions. This environmental assessment (EA) was prepared consistent with 2022 Council on Environmental Quality's (CEQ) regulations for implementing NEPA at 40 Code of Federal Regulations (CFR) 1500-1508 (87 Federal Register [FR] 23453, April 20, 2022). TVA's 2020 NEPA regulations at 18 CFR 1318 were also applied (85 FR 17434, March 27, 2020).

TVA's Proposed Action, including connection to the existing substation on the Project site, would result in the construction and operation of the proposed solar facility by SR Ripley II, LLC. The scope of this EA covers the impacts of the construction and operation of the solar facility and associated transmission system components. The full extent of the TL upgrade activities includes the installation of a new approximately 0.3-mile-long 34.5-kV gen-tie line from a proposed on-site switchgear to the existing on-site Ripley Power and Light substation and the installation of new OPGW on an approximately 0.75-mile on-site portion of the Ripley–Covington 161-kV TL. The description of the anticipated impacts of these upgrades in Chapter 3 is based on the best information available during the preparation of the Final EA. If TVA determines, because of continuing analyses, that the TL upgrade

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<sup>1</sup>On September 27, 2024, TVA issued the draft 2025 IRP and associated draft EIS, initiating a 75-day public comment period. The 2019 IRP remains valid and guides future generation planning consistent with least-cost planning principles.

activities are likely to result in adverse impacts and associated mitigation measures are outside the range of those described in this Final EA, TVA will seek additional public comments on those aspects of the Proposed Action.

This EA describes the existing environment in the Project area (i.e., the potentially affected area within and beyond the Project site and varies by each resource area), analyzes potential environmental impacts associated with the Proposed Action and the No Action Alternative, and identifies and characterizes potential cumulative impacts from the proposed Project in relation to other past, present, and reasonably foreseeable future actions (RFFAs) within the surrounding area of the Project site.

Under the terms of the PPA, TVA's obligation to purchase renewable power is contingent upon the satisfactory completion of the appropriate environmental review and TVA's determination that the Proposed Action would be "environmentally acceptable." To be deemed "environmentally acceptable," TVA must assess the impact of the Project on the human environment to determine whether (1) any significant impacts would result from the construction, operation, and/or maintenance of the proposed Project and/or associated facilities, and (2) the Project would be consistent with the purposes, provisions, and requirements of applicable federal, state, and local environmental laws and regulations.

Based on internal scoping and identification of applicable laws, regulations, executive orders (EOs), and policies, TVA identified the following resource areas for analysis in this EA: land use; geology, soils, and prime farmland; water resources; biological resources; visual resources; noise; air quality and climate change; cultural resources; natural areas, parks, and recreation; utilities; waste management; public and occupational health and safety; transportation; socioeconomics; and environmental justice.

This EA consists of five chapters discussing the Project alternatives, resource areas potentially impacted, and analyses of these impacts. Additionally, this document includes five appendices containing supporting information. The structure of the EA is outlined below:

- **Chapter 1:** Describes the purpose and need for the Project, public involvement, necessary permits or licenses, and the EA overview.
- **Chapter 2:** Describes the Proposed Action and No Action Alternatives, provides a comparison of alternatives, and discusses the Preferred Alternative.
- **Chapter 3:** Discusses the affected environment and the potential direct, indirect, and cumulative impacts on these resource areas. Mitigation measures are also proposed, as appropriate.
- **Chapter 4:** Contains the List of Preparers of this EA.
- **Chapter 5:** Contains the References Cited in preparation of this EA.
- **Appendix A:** Geological Resources-Related Supporting Information
- **Appendix B:** Water Resources-Related Supporting Information
- **Appendix C:** Biological Resources-Related Correspondence and Supporting Information



- **Appendix D:** Cultural Resources-Related Correspondence and Supporting Information
- **Appendix E:** Public Notice and Responses to Public Comments on the Draft EA

**1.3 Public and Agency Involvement**

In 2023, SRC began working with the city of Ripley and Lauderdale County to introduce the Project to local officials and assist with drafting solar ordinances for the city. SRC mailed informational post cards to adjacent landowners in the summer of 2023, and the city held public hearings around the adoption of new solar ordinances for the eventual vote in December 2023. In April 2024, SRC requested annexation and rezoning of project parcels and attended public hearings related to the annexation and rezoning of the project parcels that support eventual development of the site. The project parcels were rezoned after public hearings and unanimous approval in May 2024. SRC intends to host community meetings to provide further information if deemed necessary based on feedback from the public comment period or as requested by local municipal leaders.

TVA posted the draft EA for a 30-day public review and comment period on its website (<http://tva.com/nepa>), published a notice of availability in newspapers that serve the Lauderdale County area, sent postcards to residents within one mile of the Project site, and notified local, state, and federal agencies and federally recognized tribes that the draft EA was available for review and comment as of July 15, 2024. During the 30-day public review and comment period of the draft EA, a total of 14 comments were received from the public and agencies, including ten individuals, two from the Tennessee Department of Environment and Conservation (TDEC), and one from a local business. TVA has reviewed the comments received on the draft EA, provided responses to substantive comments, and revised the text of this EA in response to the comments as appropriate. The comments on the draft EA and responses to those comments are included in Appendix E. TVA has also consulted on the effects of the Project with appropriate regulatory agencies and tribes.

**1.4 Required Permits, Approvals, and Coordination**

Construction of SR Ripley II would require federal and state permits and/or coordination, as well as certification for the proper installation of some Project components, including the associated transmission interconnection (Table 1-1). Adherence to permit or certification conditions helps to avoid, minimize, or mitigate environmental impacts, as discussed in relation to specific resource areas in Chapter 3.

**Table 1-1. Permits, approvals, and coordination list**

<b>Permit/Approval/Coordination</b>	<b>Justification</b>	<b>Lead Agency</b>
<b>Federal</b>		
Endangered Species Act (ESA) Section 7 Consultation	In compliance with Section 7 of ESA, TVA has consulted with the U.S. Fish and Wildlife Service (USFWS) on Project effects on federally listed species and habitat.	USFWS
Bald and Golden Eagle Protection Act (BGEPA)	Prohibits the take of bald and golden eagles without prior authorization by USFWS. Take includes the killing, injuring, or disturbing of present or nesting eagles.	USFWS

<b>Permit/Approval/Coordination</b>	<b>Justification</b>	<b>Lead Agency</b>
Migratory Bird Treaty Act (MBTA)	Prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by USFWS. Executive Order (EO) 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to take certain actions to conserve migratory birds and implement the MBTA.	USFWS
Clean Water Act (CWA) Section 404 Nationwide Permit (NWP) or Individual Permit	NWPs are required for impacts to U.S. Army Corps of Engineers (USACE)-jurisdictional waters that are less than 0.5 acre. An Individual permit is required if the impacts were to exceed 0.5 acre.	USACE
<b>State</b>		
CWA Section 401 Water Quality Certification Aquatic Resource Alteration Permit (ARAP)	Required for impacts to Tennessee state waters.	TDEC Division of Water Resources (DWR)
National Pollutant Discharge Elimination System (NPDES) Stormwater Construction General Permit (CGP)	As the construction disturbance would be greater than one acre, the Project requires a NPDES Stormwater CGP for discharges into waters of the U.S. (WOTUS). This includes submission of a Notice of Intent (NOI), erosion and sediment control plans, and a stormwater pollution prevention plan (SWPPP).	TDEC DWR – NPDES Stormwater Permitting Program
National Historic Preservation Act (NHPA) Section 106 Consultation	In compliance with Section 106 of NHPA, TVA has consulted with the Tennessee Historical Commission (THC), acting as the Tennessee State Historic Preservation Office (SHPO), and federally recognized tribes with interests in the Project area on Project effects on historic properties (i.e., eligible for the National Register of Historic Places [NRHP]) and other cultural resources (Appendix D).	THC and federally recognized tribes
Encroachment Agreement	Required for aboveground or below ground installation of utilities within state, federal-aid metro-urban, or state-aid highway system road right-of-way (ROWs).	Tennessee Department of Transportation (TDOT)
Septic System Permit	Required for installation of a septic system. The permit involves on-site evaluations to determine if site and soil conditions are suitable for on-site wastewater systems.	TDEC Environmental Field Office (EFO)
Well Installation Notification	Required for installation of a well on the Project site.	TDEC EFO
Burn Permit	May be required for the open burning of any vegetation cleared from the Project site.	Tennessee Division of Forestry

<b>Permit/Approval/ Coordination</b>	<b>Justification</b>	<b>Lead Agency</b>
Natural Heritage Program Consultation	Informal consultation with TDEC recommended if Project triggers an ARAP and state-protected species may be impacted.	TDEC Division of Natural Areas
<b>County/Municipal</b>		
Zoning Permit	Required if an area has zoning requirements and the Project intersects a Federal Emergency Management Agency (FEMA) special flood hazard area. The Project does not intersect a FEMA special flood hazard area. The northern portion of the Project site was partially located within areas zoned as High Density/Mobile Home and General Business and is subject to zoning restrictions. The southern portion of the Project site was in an unincorporated area that has no zoning requirements. Coordination with the city of Ripley and Lauderdale County regarding any necessary zoning changes or permits has been completed and the Project site was recently rezoned to Light Industrial.	City of Ripley

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## CHAPTER 2 – ALTERNATIVES

This chapter describes the two alternatives evaluated in this EA (the No Action Alternative and the Proposed Action Alternative), explains the rationale for identifying the alternatives to be evaluated, provides a comparison of the potential environmental impacts of the evaluated alternatives, and identifies the Preferred Alternative.

### 2.1 No Action Alternative

Under the No Action Alternative, TVA would not purchase the power generated by the Project (i.e., TVA would not be involved with the Project), and SR Ripley II, LLC would not construct the proposed solar PV facility. Existing conditions (e.g., land use, natural resources, visual resources, physical resources, and socioeconomics) in the Project area would not change as a result of the Proposed Action. TVA would continue to rely on other sources of generation described in the 2019 IRP to ensure an adequate energy supply and to meet its goals for increased renewable energy generation. The No Action Alternative provides a baseline of conditions against which the impacts of the Proposed Action Alternative are measured.

### 2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA to purchase the power generated by the proposed solar PV facility. SR Ripley II, LLC would construct, operate, and maintain a 30-MW AC single-axis tracking PV solar power facility on the 490-acre site located in Lauderdale County. Ripley Power and Light would connect the solar facility to TVA's existing Ripley–Covington 161-kV TL via a new approximately 0.3-mile-long 34.5-kV dedicated gen-tie from a proposed on-site approximately 0.5-acre switchgear to the existing on-site Ripley Power and Light substation. Access to the switchgear would be from an access road from State Route 19 or from Highland Street Extended. TVA would install OPGW on approximately 0.75 mile of the portions of the Ripley–Covington 161-kV TL that are on the Project site.

#### 2.2.1 Project Description

The 490-acre Project site is bisected by northwest–southeast-oriented State Route 19 and bounded to the north by Eastland Avenue within the metropolitan limits of Ripley in southeastern Lauderdale County (Figure 2-1). 194 acres of the 490-acre property will be directly impacted by the placement of fencing, panels, and roads. An additional 183 acres of the Project site are anticipated to be utilized for access roads, the implementation of SMZs, and the 200-foot shading buffer around solar panels. The Project site consists primarily of agricultural fields used for cultivating cotton, soybeans, and corn. TVA's existing Ripley–Covington 161-kV TL traverses the Project site in a north–south and east–west orientation. The perimeter of the developed facilities would be enclosed with security fencing. The remaining areas would be undeveloped while allowing for agricultural or vegetation management activities. Approximately four acres of access roads would be constructed or improved to access Project components. Approximately three acres of these access roads would be located within the fenced-in panel areas and approximately one acre of access roads would be outside of the fenced-in panel areas.

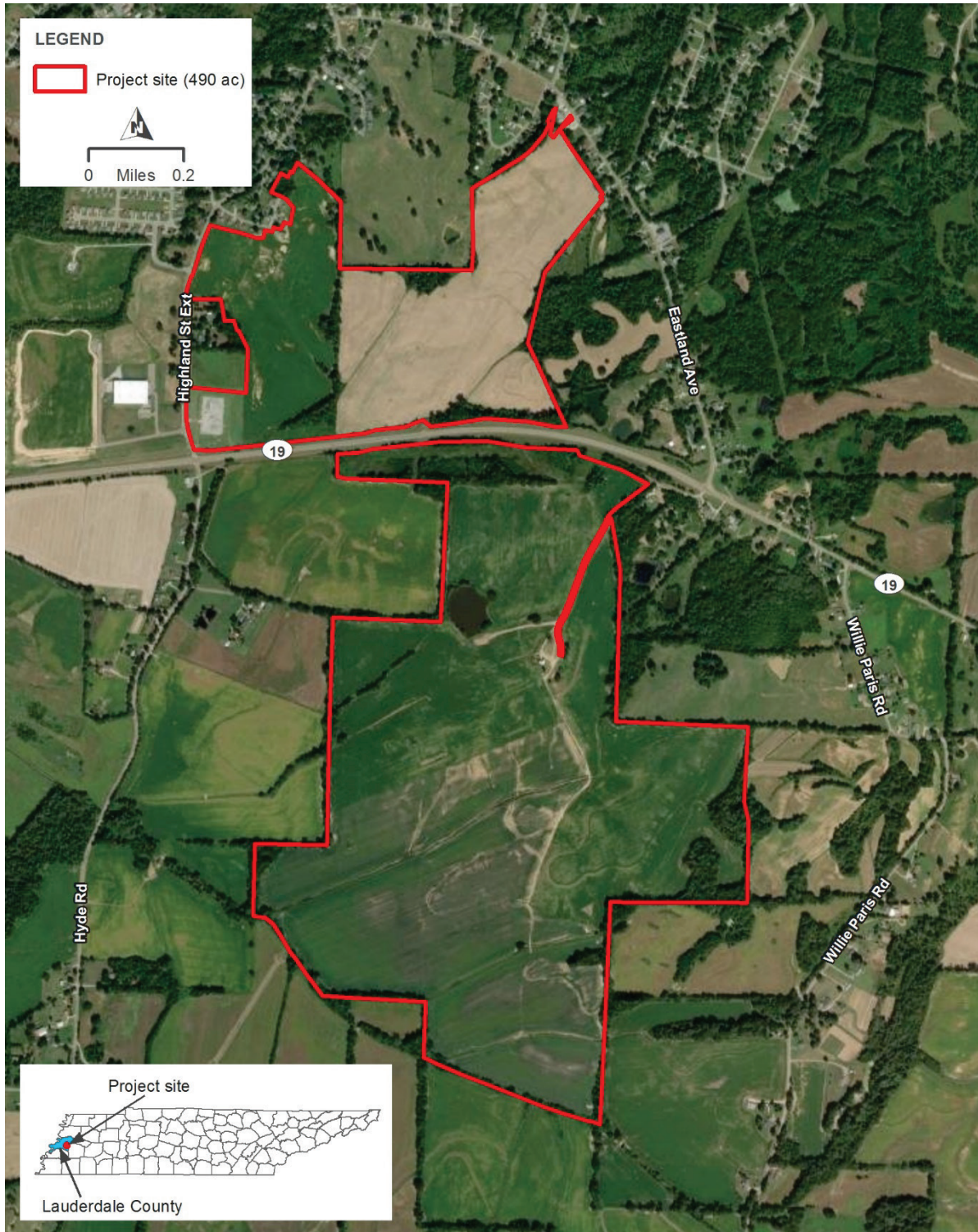
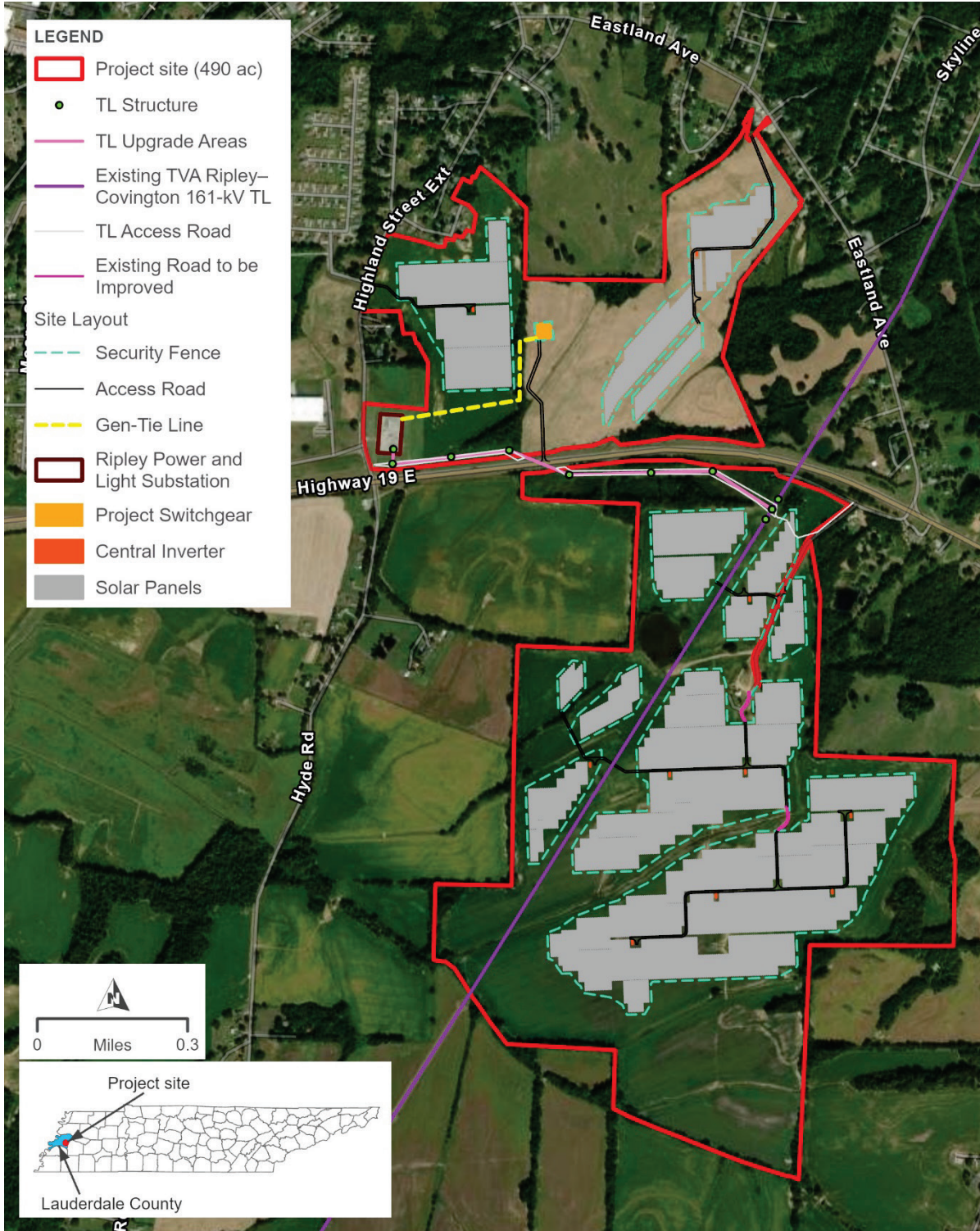


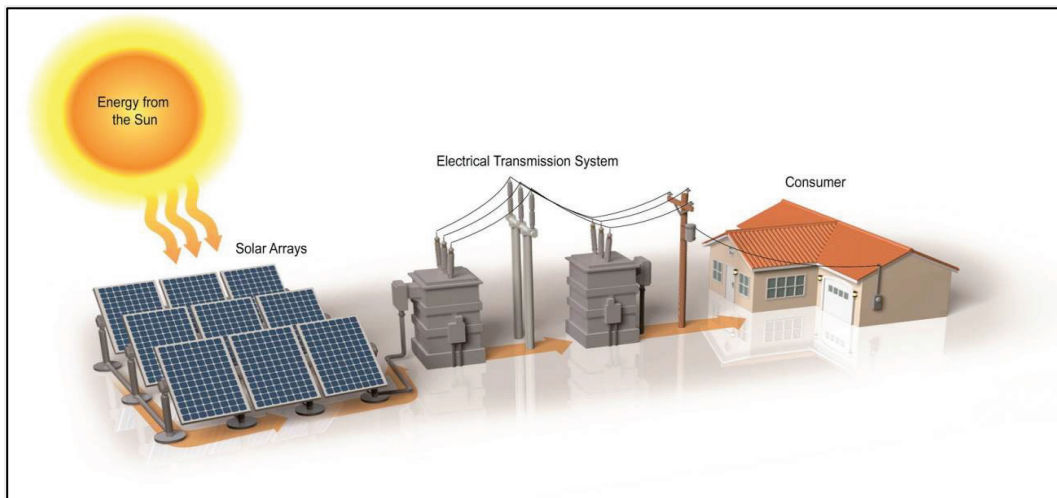
Figure 2-1. Aerial photo showing the 490-acre Project site



**Figure 2-2. Aerial photo showing the proposed layout of SR Ripley II components**

Figure 2-2 shows the Project site with the locations of major Project components. Other temporary or permanent components include construction laydown areas, security and communications equipment, and an operations and maintenance building. Also, if determined necessary, the Project would include water wells and a septic system or pump-out septic holding tank.

The PV panels (i.e., modules) would convert sunlight into direct current (DC) electrical energy. PV power generation is the direct conversion of light into electricity at the atomic level. Some materials exhibit a property known as the photoelectric effect that causes them to absorb photons of light and release electrons. When these free electrons are captured, an electric current is produced, which can be used as electricity (TVA 2014).



**Figure 2-3. General energy flow diagram of PV solar system (not to scale)**

The Project would be composed of anti-reflective PV modules mounted together in arrays. Groups of modules would be connected electrically in series to form “strings” of modules, with the maximum string size chosen to ensure that the maximum inverter input voltage is not exceeded by the string voltage at the Project site’s high design temperature. The modules, approximately 6.6 feet by four feet in size, would be in individual blocks consisting of the PV arrays on steel piles and an inverter station on a concrete pad. Inverter stations convert the DC electricity generated by the modules into AC electricity. Blocks of PV arrays and other facility components would be enclosed by chain-link security fencing. The portions of the Project site outside the fenced-in areas would not be developed.



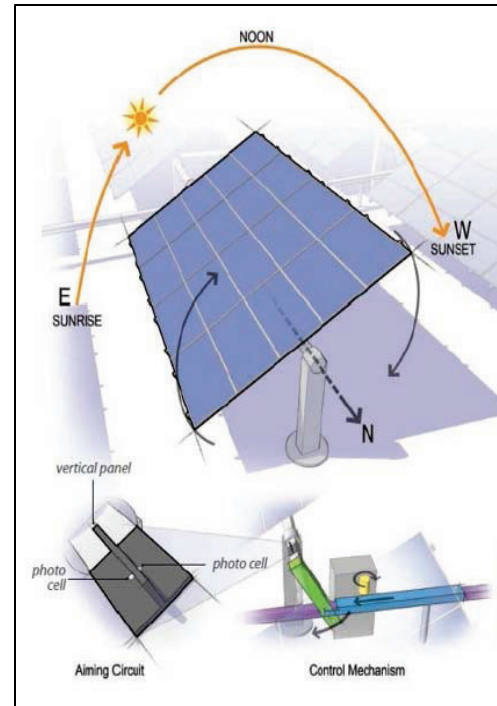
The modules would be attached to single-axis trackers that follow the path of the sun from the east to the west across the sky (Figure 2-4). The inverter specification would fully comply with the applicable requirements of the National Electrical Code and Institute of Electrical and Electronics Engineers standards. Each inverter would be collocated with a medium voltage transformer (MVT) that would step-up the AC voltage to minimize the AC cabling electrical losses between the central inverters and the proposed on-site Project switchgear. Underground AC power cables would connect all the MVTs to the main power transformer(s) (MPT) located within the Project switchgear. Compacted gravel or dirt access roads would provide access to each inverter block and the Project switchgear.

### 2.2.2 Construction

As part of NPDES permit authorization (Section 1.4), the site-specific SWPPP would be finalized with the final grading and civil design and would address all construction-related activities prior to construction commencement. The solar facility site would be prepared by surveying, staking, and installing about 42,000 feet of six-foot-tall chain-link security fencing topped with three strands of barbed wire around the 11 large blocks of facility components and Project switchgear. Entrances to the solar facility would be protected by locked, double-swing gates. The Project site would be accessible only to TVA; SR Ripley II, LLC; and their agents and contractors.

Construction assembly areas (laydown areas) would be established for worker assembly, safety briefings, vehicle parking, and material storage during construction. The laydown areas would likely be graveled and would be placed to avoid cultural, biological, and water resources to the greatest extent practicable. Temporary construction trailers for material storage and office space would be parked on-site. In accordance with TVA requirements, minimum 50-foot SMZs surrounding wetlands as well as intermittent and perennial streams would be established as impact avoidance measures prior to any clearing, grubbing, grading, or utility line installation activities conducted by the construction contractor (TVA 2022a). Apart from non-mechanical removal of trees and other tall vegetation and leaving roots in place to prevent shading of the PV panels, these SMZs would be avoided during construction to the greatest extent practicable. Within SMZs, tree and vegetation removal would be conducted using non-mechanical means and the roots would be left in place. The SMZs would be marked and protected by silt fences and sediment traps in strategic drainage areas, and other erosion prevention and sediment control best management practices (BMPs) would be implemented, as detailed in the site-specific SWPPP.

Construction activities would be sequenced to minimize the time that bare soil in disturbed areas is exposed. Construction areas would be cleared of debris and tall vegetation, mowed, and lightly graded, as needed, for construction and placement of the solar modules, gravel access roads, switchgear, accompanying electrical components, and other



**Figure 2-4. Diagram of single-axis tracking system (not to scale)**

Project components. Vegetation clearing would occur where Project components are planned and, to minimize tree shading, within a 200-foot-wide area surrounding proposed PV panel locations. Four on-site buildings have the potential to be demolished. Clearing of approximately 51 acres of trees and other tall vegetation, outside of SMZs, would be accomplished with chain saws, skidders, bulldozers, tractors, and/or low-ground pressure feller-bunchers. Because the area to be cleared is primarily open agricultural land, minimal vegetative debris would accumulate during site preparation. Any vegetative debris that accumulates on-site would be disposed of by open burning or chipping. If chipping is selected, the chips would be stockpiled in locations outside of the developed solar facility and environmentally sensitive areas and used as erosion-control mulch or disposed of in accordance with appropriate regulations. If burning is selected, only vegetation and untreated wood would be burned in accordance with any local ordinances or burn permits, as presented in Section 1.4, and would be avoided on days air quality alerts have been issued, as much as feasible. If burning needs to be conducted during April and May, when there is some potential for bats to be 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 degrees Fahrenheit (°F) or greater. No burning of other construction debris is anticipated. Construction debris would be recycled or hauled to a nearby disposal site, as discussed in Section 3.12, in accordance with federal, state, and local laws and regulations. Mowing would continue as needed to contain plant growth during construction.

SR Ripley II, LLC would work with the existing landscape (e.g., slope, drainage, utilization of existing roads) where feasible and minimize or eliminate grading work to the greatest extent possible. Grading activities would be performed with earthmoving equipment and would result in a consistent slope. Prior to any major grading, efforts would be made to preserve native topsoil as much as economically feasible. Native topsoil would be removed from the area to be graded and stockpiled on-site, avoiding sensitive resources in accordance with the SWPPP, for redistribution over the disturbed area after the grading is completed. Off-site sediment migration would be minimized by the placement of silt fences around each area of ground disturbance on the Project site. Other appropriate controls, such as temporary vegetative cover, would be used as needed to minimize exposure of soil and to prevent eroded soil from leaving the work area. To manage stormwater during construction, on-site temporary sedimentation basins, sediment traps, or diversion berms would be constructed within the disturbed area of the Project site. Any sedimentation basins and traps necessary during construction would comply with TDEC requirements and would be constructed either by impoundment of natural depressions or by excavating the existing soil.

The floor and embankments of the sedimentation basins would be allowed to naturally revegetate or replanted as necessary after construction to provide natural stabilization and minimize subsequent erosion. Once sufficient revegetation cover is achieved, the Project site would be considered stabilized and temporary construction BMPs would be discontinued and/or removed. Other disturbed areas would be seeded after construction using a mixture of non-invasive grass seeds. The seed mix would be selected by guidance established by the local Natural Resources Conservation Service office.

If conditions require, soil may be further stabilized by mulch or sprayable fiber mat. Hydroseeding may be employed as an alternative measure for areas with steep slopes. Where required, hay mulch would be applied at three tons per acre and distributed over the area. Erosion control measures would be inspected and maintained until vegetation in the disturbed areas is stable.

During construction, water would be used as needed for soil compaction and dust control and for sewer treatment, if determined necessary. Water in sufficient quantity and quality would be provided by delivery via existing municipal water-supply infrastructure at the Project site, water trucks, or by new on-site wells. City water already on the Project site is provided via a well through city of Ripley. If selected, wells would be located to provide access for construction water and to reduce the potential for any substantial groundwater level drawdown. If water quality is unsuitable for potable use without disinfection at a minimum, a potable water treatment system would be installed. If needed, SR Ripley II, LLC would perform initial groundwater drilling and testing to gather information on aquifer characteristics and develop a plan for the well design. Wells would be constructed using conventional well drilling techniques. A truck-mounted drilling rig would set up at the identified location(s). If necessary, gravel would be used to temporarily stabilize the surface at these location(s). Water-based drilling mud would be collected and dewatered, with runoff occurring locally into nearby field areas. Dewatered muds would be non-toxic and may be spread as subsoil during site grading. If determined necessary, sewer treatment would be accomplished through use of a pump-out septic holding tank.

The single-axis trackers would likely be attached to driven galvanized steel pile foundations, depending on results of the upcoming geotechnical survey. The piles would be driven with a hydraulic ram to a depth typically less than 20 feet and surface disturbance is typically limited to areas in which the small tractor-sized hydraulic ram machinery operates, including the pile insertion location. Screw piles are another option for PV foundations; these are drilled into the ground with a truck-mounted auger. Screw piles create a similar soil disturbance footprint as driven piles.

The PV modules would be manufactured off-site and shipped to the Project site ready for installation. The AC collection cables would be installed underground throughout the solar facility in trenches three- to four-feet deep and one- to four-feet wide. The trenches would be backfilled with the excavated soil and then compacted. AC collection cables would be installed by boring beneath streams and wetlands and paved roads and/or as overhead lines mounted on poles. These methods would avoid impacts to waters and appropriate permits would be applied as necessary.

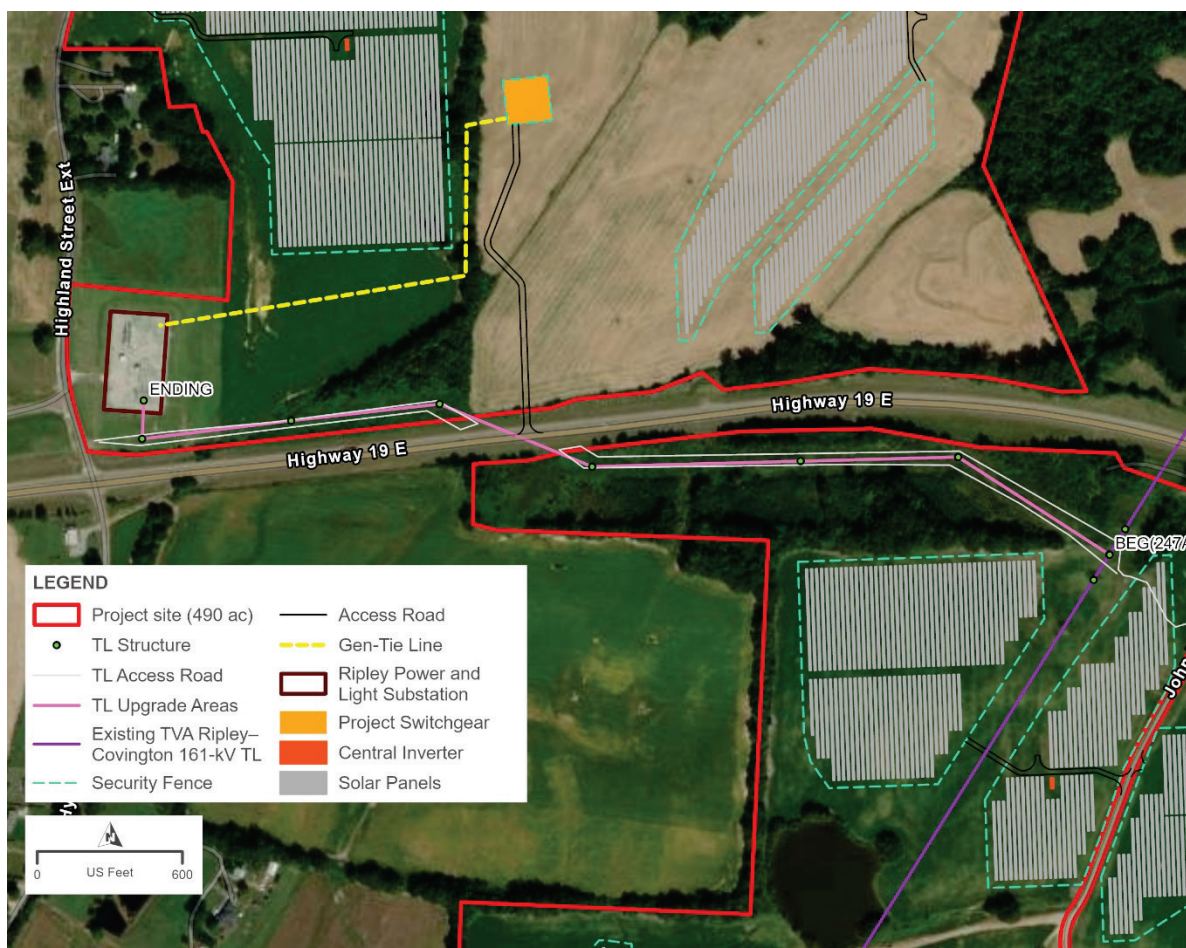
The MPT(s) would be installed on a concrete foundation. An underground or aboveground electrical cable would be installed to connect the MPT to the MVTs through a circuit breaker. As the solar arrays are installed, the balance of the facility, including instrumentation, would continue to be constructed and installed.

Subject to weather, construction activities would take approximately 12 months to complete using a crew of up to 200 workers sourced locally to the greatest extent possible. Work would generally occur during daylight hours, Monday through Saturday. Night-time construction could be necessary to make up schedule deficiencies or to complete critical construction activities and would require temporary lighting.

### **2.2.3 Electrical Interconnection**

Under the Proposed Action, the solar facility would connect to TVA's existing Ripley–Covington 161-kV TL, which traverses east-west and north-south within the Project site (Figure 2-5). To interconnect to TVA's existing electrical grid, Ripley Power and Light would connect the solar facility to TVA's existing Ripley–Covington 161-kV TL via a new approximately 0.3-mile-long 34.5-kV dedicated gen-tie from a proposed on-site switchgear to the existing on-site Ripley Power and Light substation.

Associated with the interconnection, TVA would install OPGW on the approximately 0.75 mile-portion of existing Ripley–Covington 161-kV TL that traverses east–west through the Project site, from the portion of the Ripley–Covington 161-kV TL where the TL diverges from a north–south trajectory at structure 247A to Ripley Power and Light East Industrial Park station, referred to herein as the substation. Installation of OPGW would be performed either using ground equipment or by helicopter. A lineman would work from structure to structure unclipping the existing overhead ground wire (OHGW) and installing a pulley. Access to the structures would be via existing roads. A small rope would be pulled from structure to structure. The rope would be connected to the conductor and ground wire and used to pull these down the line through pulleys suspended from the insulators. A bulldozer and specialized tensioning equipment would be used to pull conductors and ground wires to the proper tension. Crews would then clamp the wires to the insulators and remove the pulleys. Upgrades to existing TL structures to support this effort may include the addition of ground wire suspension arms to select TL structures. TVA TL upgrades, including the installation of OPGW and the addition of ground wire suspension arms, would be limited to access routes within the existing 100-foot ROW (referred to herein as the TL upgrade areas). TVA would also perform telecommunication upgrades at the Ripley 161-kV substation and Covington 161-kV substation.



**Figure 2-5. Aerial photo showing the proposed TL upgrade areas**

### **2.2.4 Operations**

During operation of the solar facility, no major physical disturbance would occur. Moving parts of the solar facility would be restricted to the east-to-west facing tracking motion of the solar modules, which amounts to a movement of less than a one degree angle every few minutes. This movement maximizes the collection of solar energy by rotating with the sun and is barely perceptible. In the late afternoon, module rotation would start to move from west-to-east in a similar slow motion to minimize row-to-row shading. At sunset, the modules would track to a flat or angled stow position.

Except for fence repair, vegetation control, and periodic array inspection, repairs, and maintenance, SR Ripley II would have relatively little human activity during operation. During operations, SR Ripley II would require small groups of workers to be on-site occasionally to manage the facility and conduct regular inspections, maintenance, and repairs, as well as some part-time permanent staff and/or contract employees to manage the land, potentially including grazing by sheep as a substitute for mowing. Inspections would include identifying any physical damage to panels, wiring, central inverters, transformers, and interconnection equipment, and drawing transformer oil samples. Vegetation on developed portions of the Project site would be maintained to a height of about 12 to 18 inches. U.S. Environmental Protection Agency (USEPA)-registered and TVA-approved pesticides, in accordance with TVA BMPs, may be selectively used alongside trimming and mowing to maintain vegetation and limit invasive species. Trees and other tall vegetation near the solar arrays would be managed to prevent shading of the PV panels. The remaining areas would be undeveloped while allowing for agricultural or vegetation management activities.

Precipitation in the region is typically adequate to remove dust and other debris from the PV modules while maintaining energy production. If necessary, module washing would occur on an as-needed basis depending on energy production and amount of precipitation and would comply with proper BMPs to prevent as much soil erosion and/or stream and wetland sedimentation as possible (TVA 2022a). Module washing would likely not produce a discharge waste stream. Water during operation and maintenance would be made available via existing municipal water-supply infrastructure at the Project site, water trucks, or on-site wells as described in Section 2.2.2.

The proposed solar facility would be monitored remotely to identify any security or operational issues. If a problem is discovered during non-working hours, a local repair crew or law enforcement personnel would be contacted if an immediate response were warranted.

### **2.2.5 Decommissioning and Reclamation**

SR Ripley II, LLC would operate the Project and sell power to TVA under the terms of a 20-year PPA. At the end of the 20-year PPA, SR Ripley II, LLC would assess whether to cease operations at the solar facility or to replace equipment, if needed, and attempt to enter into a new PPA with TVA or make some other arrangement to sell the power.

When operations cease, the facility would be decommissioned and dismantled, and the Project site would be restored per Project decommissioning requirements. The decommissioning process would be coordinated with the city of Ripley and Lauderdale County. Decommissioning actions would include the removal of aboveground and below-ground components to a depth of at least three feet. Decommissioning could take several months; therefore, access roads, security fencing, and electrical power would remain in

place for use by the decommissioning and restoration workers until it is no longer needed. The solar panels that are most likely to be used are manufactured by First Solar. Most of the decommissioned equipment and materials would be recycled through SolarCycle or a similar solar panel recycling service. Materials that cannot be recycled would be disposed of at an approved facility in accordance with federal, state, and local laws and regulations. Other wastes, including batteries, would be disposed of off-site and/or recycled in accordance with manufacturer recommendations and appropriate regulations and industry BMPs. Overall, the Project site would be returned to a tillable state and revegetated.

### **2.3 Alternatives Eliminated from Further Consideration**

In determining the suitability for development of a site within TVA's service area that would meet customer needs and the goals of expanding TVA's renewable energy portfolio, multiple factors were considered. This process involved screening potential locations and ultimately eliminating those sites that did not have the needed attributes. This process of review and refinement ultimately led to the consideration of the current proposed Project site.

The site screening process involves several iterations beginning with the general solar resource (the amount of insolation) and the availability of nearby appropriately sized electric infrastructure for interconnection with sufficient available transmission capacity for the proposed solar facility. This is followed by screening for suitable large scale landscape features that would allow for utility-scale solar development including:

- Generally flat landscape with minimal slope, with preference given to disturbed contiguous land with no on-site infrastructure or existing tall infrastructure in the immediate vicinity;
- Land having sound geology for construction suitability, with minimal and/or avoidable floodplains or large forested or wetland areas;
- Large contiguous parcels of land with compatible local zoning and located away from densely populated areas; and
- Ability to avoid and/or minimize impacts to known sensitive biological, visual, and cultural resources.

In addition, as part of the proposal/project selection process, TVA considers multiple factors before selecting to pursue a PPA such as cost, schedule, developer's experience, environmental and cultural resources, transmission, and economic development. As a result of this screening process, the current Project in Lauderdale County was selected for potential solar development.

### **2.4 Comparison of Alternatives**

This EA evaluates the potential environmental impacts that would result from implementing the No Action Alternative or the Proposed Action Alternative. The analysis of impacts in this EA is based on current and potential future conditions on the Project site and surrounding area. A comparison of impacts by alternative is provided in Table 2-1.

**Table 2-1. Comparison of impacts by alternative**

<b>Resource Area</b>	<b>No Action Alternative</b>	<b>Proposed Action Alternative</b>
Land Use	<p>No direct or indirect Project-related impacts on land use.</p> <p>No impacts if existing land use remained primarily agricultural land.</p>	<p>Minor, temporary direct impacts during construction; minor, long-term direct impacts during operation due to land use change from agricultural to solar. Some agriculture may continue to take place on the Project site.</p>
Geology, Soils, and Prime Farmland	<p>No direct or indirect Project-related impacts on geology, soils, and prime farmland.</p> <p>Geology/Soils: Minor impacts if the current land use practices changed or proper BMPs were not followed.</p> <p>Prime Farmland: Minor impacts if agricultural practices continued and proper conservation practices were not followed.</p>	<p>Geology: Minimal direct impacts resulting from implementation of on-site sedimentation basins and utilization of existing terrain with minor excavation.</p> <p>Soils: Minor direct impacts resulting from minor increases in erosion and sedimentation during construction and operation; while in operation, the Project would have beneficial effects to soil health with the maintenance of permanent vegetative cover.</p> <p>Prime Farmland: Minor direct impacts from removal of approximately 160 acres of prime farmland from row cropping for the duration of the Project. However, following decommissioning, the Project site could be returned to agricultural use with little reduction in soil productivity or long-term impacts to prime farmland.</p>

Resource Area	No Action Alternative	Proposed Action Alternative
Water Resources	<p>No direct Project-related impacts on water resources.</p> <p>Groundwater: Minor indirect impacts if the local aquifers were recharged from runoff containing chemical fertilizers and pesticides.</p> <p>Surface Water: Minor indirect impacts if agricultural practices continued and were not accompanied by proper BMPs.</p> <p>Floodplains: Impacts associated with current land uses would continue.</p>	<p>Groundwater: Possible minimal direct impacts if wells are chosen as a method to provide water for construction needs; minor beneficial indirect impacts to groundwater due to reduction in fertilizer and pesticide use and maintenance of permanent vegetative cover.</p> <p>Surface Water: Minor indirect impacts could occur from stormwater runoff during construction with use of BMPs. Minor permanent adverse impacts to three intermittent streams and 30 wet weather conveyances (WWCs). Minor temporary and permanent impacts to three intermittent streams (S008, S010, and S013) and 11 WWCs. Access routes in the TL upgrade areas would require matting of one scrub/shrub wetland (W009) and temporary crossings of two intermittent streams (S011 and S014) and two WWCs. Potential moderate permanent impacts to a forested wetland (W008) due to tree removal and conversion from forested to herbaceous (0.56 acres) would occur to prevent solar panel shading. Permitting would be sought for the features indicated above and for any additional features that would be impacted, as appropriate, for temporary and permanent impacts and associated conditions would be followed, including compensatory mitigation if necessary. Erosion control measures would be employed during construction to minimize sediment runoff. Wetlands and perennial and intermittent streams would be avoided to the extent practicable by certain distances during construction and operations.</p> <p>Floodplains: No direct Project-related impacts on floodplains.</p>



Resource Area	No Action Alternative	Proposed Action Alternative
Biological Resources	No direct or indirect Project-related impacts to vegetation; wildlife; aquatic life; or rare, threatened, and endangered species.	<p>Vegetation: Minor direct impacts to vegetation by clearing approximately 51 acres of trees in forested vegetation communities and other tall vegetation at a maximum within the Project site. Minor beneficial indirect impacts as agricultural land returns to native herbaceous habitat. Herbaceous vegetation communities within the TL upgrade areas would experience minor and temporary impacts during TL upgrade activities. The area would be allowed to revegetate after completion.</p> <p>Wildlife: Minor direct and indirect impacts to common wildlife due to changes to habitat and existence of Project components; the Project is not anticipated to substantially affect populations of migratory bird species of concern.</p> <p>Aquatic Life: Minor impacts from minor increases in erosion and sedimentation during construction and operation. The use of BMPs would reduce the risk of soil erosion and pesticide runoff into streams.</p> <p>Rare, Threatened, and Endangered Species: Implementation of the Proposed Action is not likely to adversely affect federally listed species, including federally listed bat species that potentially occur in the Project area, and would result in minor to minimal impacts to state-listed species. Federally listed bat species may be affected due to removal of up to 53 acres of foraging habitat made up of forested and herbaceous vegetation communities, including nine potentially suitable bat roosting trees. Minimal to negligible impacts anticipated due to habitat loss for the eastern woodrat, little blue heron and monarch butterfly. Habitat for other listed species identified as potentially occurring on the Project site was not found, thus no impact is expected. USFWS concurred with TVA's "may affect but not likely to adversely affect" determinations regarding impacts to federally listed species during Section 7 ESA consultation.</p>

Resource Area	No Action Alternative	Proposed Action Alternative
Visual Resources	<p>No direct or indirect Project-related impacts on visual resources.</p> <p>Minor impacts to visual resources if current land use practices continue.</p>	<p>Temporary, minor impacts on visual resources due to altering the visual character of the Project area and increased activity during construction.</p> <p>Temporary, minor impacts on visual resources in the vicinity of the TL upgrade areas during installation of OPGW, modifications to the existing TL, and other equipment, associated with the TL upgrade activities.</p> <p>Long-term, minimal to minor impacts on visual resources in the vicinity of the new approximately 0.3-mile 34.5-kV gen-tie line.</p> <p>During operations, direct long-term impacts in the immediate vicinity, minimal on a larger scale, due to variation of the visual attributes of the Project area as distance from the Project increases.</p>
Noise	<p>No direct or indirect Project-related impacts on noise.</p>	<p>Temporary, moderate adverse impacts to the ambient noise environment in the Project area would occur during construction; minimal to negligible impacts during operation and maintenance.</p> <p>Temporary, moderate impacts to the ambient noise environmental in the TL upgrade areas due to OPGW installation by helicopter.</p>
Air Quality and Climate Change	<p>No direct or indirect Project-related impacts on air quality and greenhouse gas (GHG) emissions.</p> <p>Minor impacts to air quality if current land use practices continue.</p>	<p>Regional Air Quality: Minor, direct impacts to air quality during construction of the Project.</p> <p>Regional Climate: Minimal to negligible impacts to average temperatures and annual precipitation runoff amounts of the developed area.</p> <p>Greenhouse Gas Emissions: Impacts from GHG emissions during construction would be negligible; long-term beneficial effects due to the nearly emissions-free solar generation, offsetting the need for power that would otherwise likely be generated by the combustion of fossil fuels.</p>
Cultural Resources	<p>No direct or indirect Project-related impacts on cultural resources.</p> <p>Minor impacts if current land use practices continue.</p>	<p>Archaeological Resources: No adverse effects on NRHP-listed or eligible archaeological sites.</p> <p>Architectural Resources: No adverse effects on NRHP-listed or eligible architectural resources.</p>
Natural Areas, Parks, and Recreation	<p>No direct or indirect Project-related impacts on natural areas, parks, and recreation.</p>	<p>No direct or indirect Project-related impacts on natural areas, parks, and recreation.</p> <p>Short-term, minor impacts to hunting in the area surrounding the Project site during construction.</p>

<b>Resource Area</b>	<b>No Action Alternative</b>	<b>Proposed Action Alternative</b>
Utilities	No direct or indirect Project-related impacts on utilities.  Negligible to minor impacts if current land use practices continue.	Potential short-term, minor impacts to local utilities (electricity and telecommunication connections) when bringing the solar facility on-line, conducting TL upgrade activities, or during routine maintenance of the facility.  Long-term, minor beneficial impacts to electrical services across the region due to additional renewable energy resources.
Waste Management	No direct or indirect Project-related impacts on waste management.  Negligible to minor impacts if current land use practices continue.	Minor and temporary impacts during construction due to on-site storage and use of petroleum-based oils, fuels, and general construction waste.  Minor and temporary impact during decommissioning due production of recycling and general waste.
Public and Occupational Health and Safety	No direct or indirect Project-related impacts on public health and safety.  Minor impacts if current land use practices continue.	Minor, temporary impacts during construction that would be minimized with adherence to Occupational Safety and Health Act (OSHA) regulations and health and safety plans.
Transportation	No direct or indirect Project-related impacts on transportation.	Minor, temporary direct impacts to transportation during construction would be minimized through appropriate mitigation.
Socioeconomics	No direct or indirect Project-related impacts on socioeconomics.	Short-term beneficial economic impacts would result from construction, including the purchase of materials, equipment, and services and a temporary increase in employment, income, and population.  Beneficial, long-term direct impacts to economics and population from Project operations. The local tax base would increase from construction of the solar facility and would be beneficial to Lauderdale County and the vicinity.  Minor, long-term direct impacts to the local agricultural economy due to the removal of approximately 344 acres of agricultural land from row cropping for the duration of the Project.
Environmental Justice	No direct or indirect Project-related impacts on minority or low-income populations.	Temporary negligible to minor impacts to communities with EJ concerns.  Beneficial economic impacts would result from construction, including the purchase of materials, equipment, and services and a temporary increase in employment, income, and population.

## 2.5 Best Management Practices and Mitigation Measures

SR Ripley II, LLC and TVA would implement minimization and mitigation measures in relation to resources potentially affected by the construction and operation of the Project. These include standard BMPs and permit requirements, as well as Project-specific measures. These practices and measures are summarized in this section.

### 2.5.1 Standard Practices and Routine Measures

SR Ripley II, LLC and TVA would implement the following minimization and mitigation measures in relation to potentially affected resources:

- Geology and Paleontology
  - Should paleontological resources be exposed during site construction or operation activities, a paleontological expert would be consulted to evaluate the nature of the paleontological resources, recover these resources, analyze the potential for additional impacts, and develop and implement a recovery plan/mitigation strategy;
  - Design the facility to comply with applicable seismic standards prescribed in state and local building codes.
- Soils
  - Install silt fences along the perimeter of vegetation-cleared areas;
  - Implement other soil stabilization and vegetation management measures to reduce the potential for soil erosion during site operations;
  - Separate topsoils during stockpiling in order to preserve and redistribute after disturbance (TDEC 2012); and
  - Make an effort to balance cut-and-fill quantities to alleviate the transportation of soil off-site during construction.
- Water resources
  - Comply with the terms of the SWPPP prepared as part of the NPDES permitting process;
  - Implement a well head protection program and a Spill Prevention, Control, and Countermeasure (SPCC) Plan;
  - Comply with the terms of TDEC ARAP and USACE Section 401 and 404 permits and associated mitigation, and compensatory mitigation per EO 11990, Protection of Wetlands, as applicable;
  - Use BMPs for controlling soil erosion and runoff, such as the use of 50-foot SMZs surrounding intermittent and perennial streams and wetlands according to their rating as defined by TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities* (2022a): Standard Stream Protection (Category A), Protection of Important Streams, Springs, and Sinkholes (Category B), or Protection of Unique Habitat (Category C);
  - Implement other routine BMPs as necessary, such as non-mechanical tree removal within surface water SMZs, wetland matting, and placement of silt fences and sediment traps along SMZ edges;

- Use only USEPA-registered and TVA- approved pesticides per label directions designed to restrict applications near receiving waters and to prevent unacceptable aquatic impacts in areas requiring chemical treatment (TVA 2022a); and
  - Ensure construction and maintenance activities occur during dry periods as much as possible.
- Biological resources
  - Revegetate with non-invasive grasses to reintroduce habitat, reduce erosion, and limit the spread of invasive species (per EO 13112, Invasive Species);
  - Minimize direct impacts to most migratory birds and federally listed bats by following appropriate TVA BMPs when possible (TVA 2022a);
  - Conduct burns only if the air temperature is 55°F or greater in April and May;
  - Follow USFWS recommendations regarding biological resources;
  - Use only USEPA-registered and TVA-approved pesticides in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts in areas requiring chemical treatment;
  - Coordinate with U.S. Department of Agriculture (USDA) and/or USFWS if active osprey and eagle nests are identified during aerial nest surveys of the TL upgrade areas to develop avoidance and minimization measures and ensure compliance under federal law prior to commencement of construction activities; and
  - Implement Avian Power Line Interaction Committee (APLIC) guidelines to minimize impacts to birds during the TL upgrade activities (APLIC and USFWS 2005).
- Noise
  - Limit construction activities primarily to daytime hours and ensure that heavy equipment, machinery, and vehicles utilized at the Project site meet all federal, state, and local noise requirements.
  - Pile-driving within 5,322 feet of the nearest residences would be scheduled during daylight hours Monday through Friday to minimize impacts to the residences.
  - Pile-driving within 4,976 feet of Forerunner Church would be scheduled outside of church services.
- Air quality and climate change
  - Comply with local ordinances or burn permits and avoid burning on days air quality alerts have been issued, as much as feasible, if burning of vegetative debris is required and use BMPs such as periodic watering, covering open-body trucks, establishing a speed limit to mitigate fugitive dust, and maintain equipment in good condition.
- Cultural resources
  - If a previously unknown historic property or unanticipated effects to a known property are discovered after the Section 106 process has been concluded

will immediately discontinue all ground disturbing activity within 200 feet of the resource and TVA will be contacted.

- Waste management
  - Develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials;
  - Submit notification of demolition to the Tennessee Division of Air Pollution Control (APC), report the presence of Regulated Asbestos-Containing Material (RACM) to the APC through the notification process using TDEC form CN-1055 (Notification of Demolition and/or Asbestos Renovation), and handle and dispose of RACM in accordance with applicable federal, state, and local regulations.
- Public and occupational health and safety
  - Implement BMPs for site safety management to minimize potential risks to workers.
- Transportation
  - When warranted, post a flag person during heavy commute periods, prioritize access for local residents, and implement staggered work shifts during daylight hours to manage construction traffic flow near the Project site; and
  - Obtain a TDOT Commercial Driveway Permit for Project related driveways in use during facility operations.
- Environmental justice
  - TVA sent postcard notification of the availability of the Draft EA to residences within one mile of the project area.

### **2.5.2 Non-Routine Mitigation Measures**

- Cultural resources
  - Exclude two archaeological sites identified within the Project site from development or disturbance, in accordance with an Avoidance Agreement between TVA and SR Ripley II, LLC.

## **2.6 The Preferred Alternative**

TVA's preferred alternative for fulfilling its purpose and need is the Proposed Action Alternative. This alternative would generate renewable energy for TVA and its customers with only minor environmental impacts due to the implementation of BMPs and minimization and mitigation efforts, as described in Section 2.5. Implementation of the Project would help meet TVA's renewable energy goals and would help TVA meet customer-driven energy demands on the TVA system.

## CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing environmental, social, and economic conditions of the proposed Project site and the surrounding areas that might be affected if the No Action Alternative or Proposed Action Alternative are implemented. This chapter also describes the potential environmental effects that could result from implementing the No Action or Proposed Action Alternative.

### 3.1 Identification of Other Actions

In addition to the No Action and Proposed Action alternatives identified in Chapter 2, this analysis also considers the past, present, and RFFAs listed in Table 3-1. These actions identified within 10 miles of the Project site were identified as having the potential to, in aggregate, result in larger and potentially adverse effects to the resources of concern. Potential cumulative impacts for resources in which adverse impacts from the proposed Project are anticipated are discussed in each resource section.

**Table 3-1. Summary of other past, present, or RFFAs within 10 miles of the Project site**

Action	Description	Project Type
Chisholm Lake Road Bridge Replacement	A bridge replacement on Chisholm Lake Road, four miles northwest of the Project site.	Past
Lauderdale Community Hospital	A critical access hospital, four miles northwest of the Project site.	Past
Walker East Industrial Park	A proposed 122-acre industrial site in Ripley, a half-mile west of the Project site.	RFFA
Ripley Surface Transportation Block Grant Program Project (Volz Road)	A proposed resurfacing and construction of pipe culverts, guardrail, endwalls, box bridges, and signs along Volz Road from State Route 209 to State Route 3, one mile west of the Project site.	RFFA
Ripley Power and Light Building	An existing 97,500-square-foot industrial building available for lease or purchase on a 13-acre site, 1.5 mile west of the Project site.	RFFA
American Way Site	A proposed 21-acre industrial site in Ripley, three miles north of the Project site.	RFFA
109 Industrial Drive	An existing 34,000-square-foot industrial building available for lease or purchase on a six-acre site, three miles north of the Project site.	RFFA
Hutcherson Building	An existing 43,000-square-foot industrial building available for lease or purchase on a five-acre site, three miles north of the Project site.	RFFA

Action	Description	Project Type
Interstate 69 – Segment 8	A proposed extension of the Interstate 69 corridor. Segment 8 includes a 65-mile-long new four-lane divided interstate route from Dyersburg to Millington. Both build alternatives would extend northeast-southwest through the Project area but not interfere with the Project site. Build Alternative G is two miles east of the Project site and Build Alternative R is three miles west of the Project site.	RFFA
Intersection Improvement (State Route 3 at Curve Nankipoo Road)	A proposed improvement of the intersection of State Route 3 at Curve Nankipoo Road, six miles northeast of the Project site.	RFFA
Briadco Tool Building	An existing 20,000-square-foot industrial building available for purchase on a nine-acre site, eight miles southwest of the Project site.	RFFA
Rialto Industrial Site	A proposed 165-acre industrial site in Covington, nine miles southwest of the Project site.	RFFA

Sources: Construction Bid Source 2022; TDOT 2023a, 2023b; TVA Economic Development 2024; USDA 2022a

## 3.2 Land Use

### 3.2.1 Affected Environment

Land use is defined as the way people use and develop land, including leaving land undeveloped or using land for agricultural, residential, commercial, and industrial purposes. The area surrounding the Project site consists of agricultural, forested, and rural-residential land. Consistent with the surrounding area, imagery data collected from the National Land Cover Database (NLCD) show the Project site as primarily cultivated crops, hay/pasture, and deciduous forest (Multi-Resolution Land Characteristics Consortium [MRLC] 2021, Table 3-2, Figure 3-1). The 490-acre Project site generally consists of flat to gently sloping land that ranges in elevation from approximately 328 to 476 feet above mean sea level. Elevation is higher in the northeast portions of the Project site, decreasing towards the southwest. According to historical aerial imagery and topographic quadrangle maps, land use in the Project area has remained relatively unchanged and dominated by agriculture and residential land since at least 1947 (HDR Engineering, Inc. [HDR] 2022; Appendix A). No parks or other public outdoor recreation facilities occur in the Project area.

The Project site was zoned for High Density/Mobile Home and General Business (Ripley Municipal Planning Commission 2022, City of Ripley n.d.). SR Ripley II, LLC has coordinated with the city of Ripley and Lauderdale County regarding zoning, and the Project site was recently rezoned to Light Industrial.



**Table 3-2. Land cover types on the Project site**

<b>NLCD Land Cover Type</b>	<b>Approximate Area (acres)</b>	<b>% of Project site</b>
Cultivated Crops	405	83%
Deciduous Forest	14	3%
Developed, Low Intensity	3	<1%
Developed, Medium Intensity	1	<1%
Developed, High Intensity	<1	<1%
Developed, Open Space	9	2%
Hay/Pasture	48	10%
Mixed Forest	2	<1%
Open Water	3	<1%
Shrub/Scrub	4	<1%
Woody Wetlands	1	<1%
<b>Total</b>	<b>490</b>	<b>100%</b>

Source: MRLC 2021

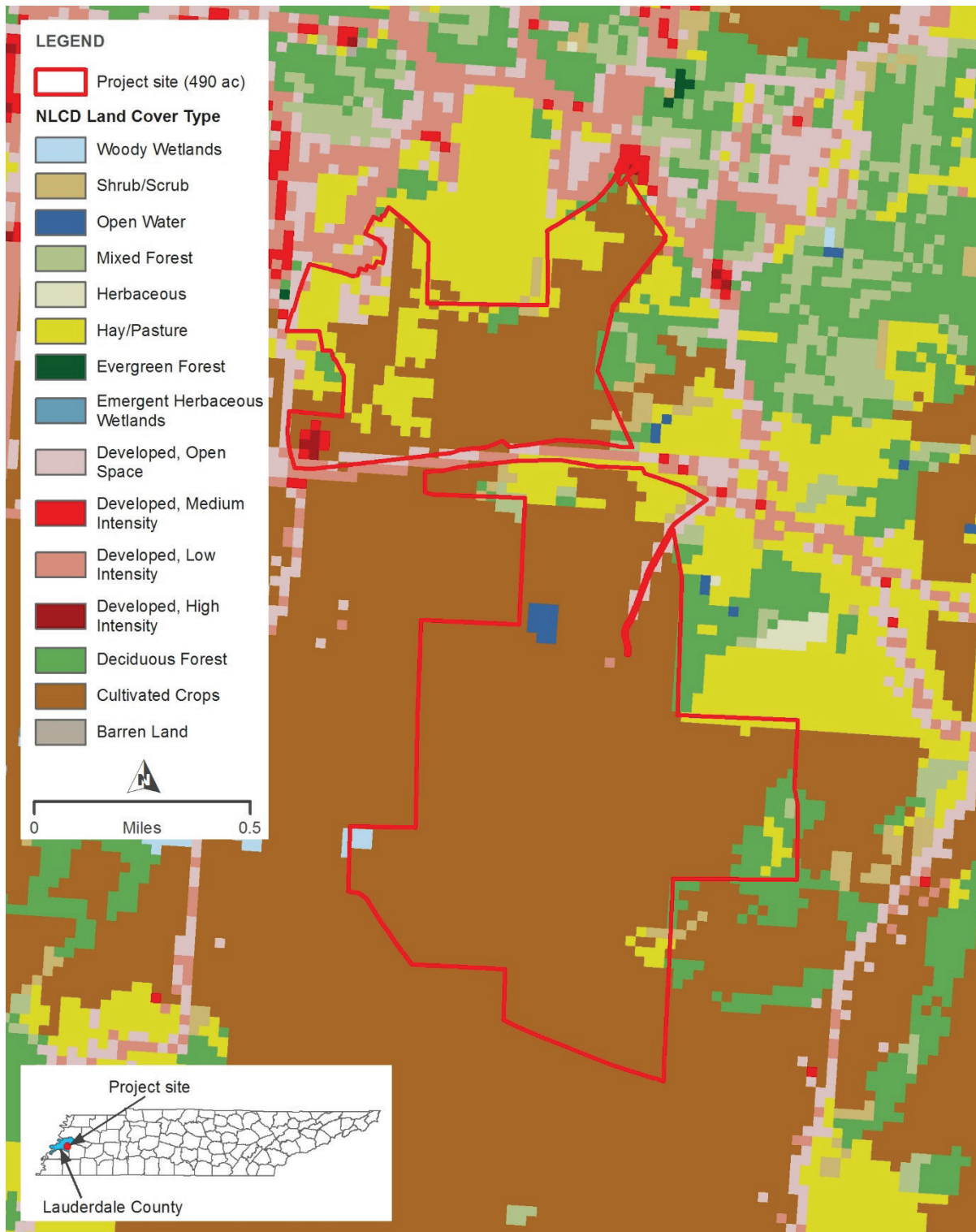


Figure 3-1. Land cover in the Project area

## 3.2.2 Environmental Consequences

### 3.2.2.1 No Action Alternative

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts to land use would result. Existing land use would likely remain primarily agricultural land for the foreseeable future.

### 3.2.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, the development of the solar facility would result in the long-term change in land use from primarily agricultural land dominated by cultivated crops to primarily light industrial. During field surveys, approximately 88 percent (430 acres) of the 490-acre Project site was identified as being used for row crops (Section 3.5.2.2.1, Table 3-9). Approximately 78 percent (377 acres) of the 490-acre Project site would be developed into the solar facility. The developed area, 200-foot shading buffers, and SMZs would remove 344 acres of previously delineated row cropping vegetation communities from row cropping use during the lifetime of the Project. Therefore, 86 acres of land that has been used for row cropping on the Project site would be left undeveloped while allowing for agricultural or vegetation management activities. The 344 acres of previously delineated row cropping vegetation communities removed from row cropping during the lifetime of the Project represents 0.002 percent of the 181,299 acres of cropland in Lauderdale County, therefore the acreage of land that would be removed from row cropping would be insignificant compared to the available cropland in the county (USDA 2022b).

A small portion of the facility site comprising the Project switchgear would change to light industrial-only land use. Neither Lauderdale County nor the city of Ripley have publicly available land use plans. SR Ripley II, LLC has coordinated with the city of Ripley and Lauderdale County, and The Project site was rezoned to Light Industrial in May 2024. Permits for the construction and operation of the solar facility would be sought if necessary (Ripley Municipal Planning Commission 2022, City of Ripley n.d.). The Proposed Action would have minor negative impacts on land use in the area. Ripley Power and Light's installation of the approximately 0.3-mile 34.5-kV gen-tie line would not change current land uses. Following decommissioning the Project site would remain under the Light Industrial zoning classification.

### 3.2.2.3 Cumulative Impacts

The RFFAs, such as the potential developments of the Walker Industrial Park, American Way Site, Interstate 69 – Segment 8, and Lauderdale Community Hospital Construction, would contribute to additional changes in land use from agricultural and forested land to industrial in the area. Neither Lauderdale County nor the city of Ripley have publicly available land use plans. The Proposed Action, when considered with the past and RFFAs, could have minor, cumulative impacts on land use in the area, including the development of up to about 300 acres for industrial uses.

## 3.3 Geology, Soils, and Prime Farmland

### 3.3.1 Affected Environment

#### 3.3.1.1 Geology

The Project site is in Lauderdale County, approximately 48 miles northeast of Memphis in the Gulf Coast Coastal Plain Physiographic Province, which is characterized by low rolling hills and wide stream valleys consisting of loess deposited during the Quaternary age (Greene and Wolfe 2000). The Project site lies on top of the Mississippi Embayment, which

is a geologic basin filled with 3,000 feet or more of Cretaceous to Recent age sediments deposited primarily in a Coastal Plain setting. The sedimentary sequence is dominated by unconsolidated sand, silt, and clay with minor lignite bedding (Hosman and Weiss 1991). The alluvium consists of irregular lenses of fine sand, silt, and clay in the upper part and coarse sands, gravelly sands, and sandy gravels in the lower part. The alluvium varies in thickness from about a few feet in some areas to 45 feet to 90 feet adjacent to the loess bluffs to as much as 175 feet in the floodplain. The alluvium is underlain by a series of highly consolidated clays and dense sands of the Claiborne Group (Hardeman et al. 1966).

### **3.3.1.2 Paleontology**

During the Precambrian Eon, the area that is now present-day Tennessee was in the southern hemisphere and covered by a shallow, tropical sea that was home to diverse species of sea life. By the Paleozoic Era, Tennessee was located along the southern border of present-day North America and was still covered by sea water. These shallow waters were home to brachiopods, trilobites, crinoids, bryozoans, corals, and various other sea life. During the Late Carboniferous period, mountain building in the eastern portion of Tennessee caused an abundance of soil to be carried throughout central and western Tennessee. Rivers flowing towards the shallow sea in the western portion of the state deposited this sediment resulting in the formation of swampy deltaic environments. Decaying plant life within these deltaic environments would eventually form coal deposits throughout Tennessee. Tennessee was above sea level throughout the Mesozoic Era until the Cretaceous period when shallow seas began to again cover Western Tennessee. These shallow seas across the western portion of Tennessee were home to crinoids, oysters, snails, and various other marine life (The Paleontology Portal 2021).

The Eocene-age Clairborne Formation, which underlies the Project area, generally thickens westward across Lauderdale County and may reach a thickness of over 400 feet in the vicinity of the Project area (Russell and Parks 1975). Therefore, fossils of cultural significance are unlikely to be identified within the Project area.

### **3.3.1.3 Geological Hazards**

Examples of common geological hazards include landslides, volcanoes, earthquakes/seismic activity, and karst topography. The Project site is located on low undulating terrain. No significant slopes are present within several miles; therefore, landslides are not a potential risk. No volcanoes are present within several hundred miles of the Project site. Due to the presence of unconsolidated silts, sands, and gravels which are not susceptible to sinkhole development, sinkholes would be a minimal risk on or in the vicinity of the Project site.

The Project site is located within the southeastern edge of the New Madrid Seismic Zone, which is a 150-mile-long seismic zone extending from Illinois to Arkansas and into portions of five states. The largest seismic events in the area occurred between 1811 and 1812 (USGS 2021). Seismic instrumentation was installed in 1974 to monitor the area and since then, approximately 4,000 earthquakes have been recorded; however, they are typically too small to be felt. While the New Madrid Fault Line is considered a potential source of intraplate earthquakes in the region, the faults responsible for associated seismic activity are ancient (i.e., no recent faulting) and deep seated. Land movement along the fault system is minimal to none and global positioning system measurements from a recent study indicated that faults are moving less than 0.2 millimeters per year, which could indicate that the potential for larger earthquakes in the area has diminished (Gardner 2009).

#### **3.3.1.4 Soils**

The Project site contains 15 soil types. Most of the soils on the Project site are composed of Adler silt loam, zero to two percent slopes, occasionally flooded (27.2 percent); Memphis silt loam, five to eight percent slopes, moderately eroded, northern phase (22.9 percent); Memphis silt loam, 12 to 20 percent slopes, severely eroded, northern phase (20.3 percent); Loring silt loam, two to five percent slopes, severely eroded (6.5 percent); Memphis silt loam, eight to 12 percent slopes, severely eroded, northern phase (5.6 percent); and Loring silt loam, five to eight percent slopes, severely eroded (5.2 percent); with other soil types consisting of less than three percent each (USDA 2023a; Figure 3-2, Table 3-3). Most of the soils on the Project site are not hydric. However, the Center silt loam, zero to three percent slopes and Convent silt loam, occasionally flooded soils have a hydric rating of one to 32 percent. Hydric soils are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA 2024).

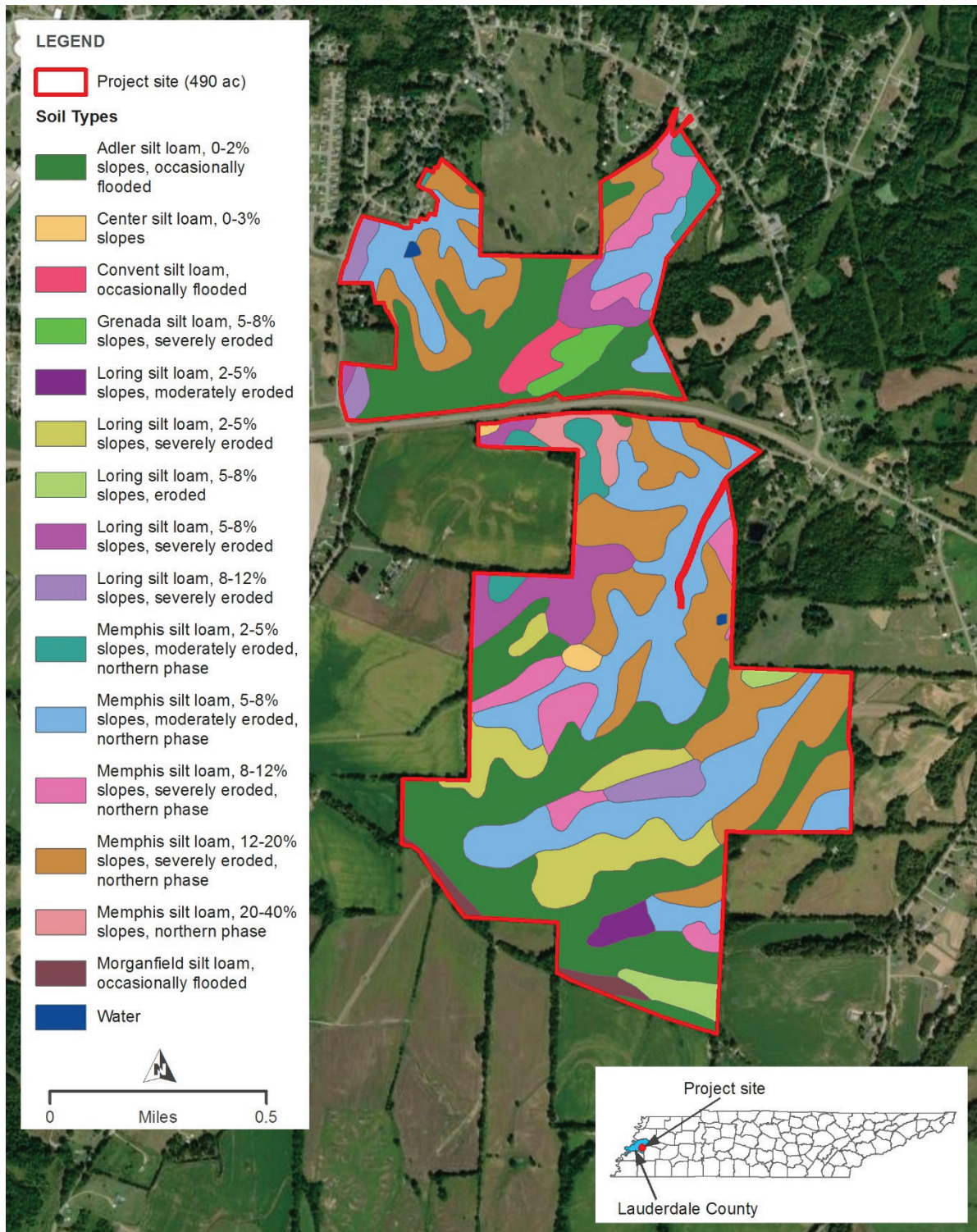


Figure 3-2. Soils on the Project site

**Table 3-3. Soils on the Project site**

<b>Soil Type</b>	<b>Acreage and % of Project site</b>	<b>Prime Farmland</b>	<b>Hydric Rating</b>	<b>Drainage Class</b>	<b>Flooding/ Ponding</b>	<b>Parent Material</b>	<b>Landform</b>
Adler silt loam, 0 to 2 percent slopes, occasionally flooded (Ad)	133.2 (27.2%)	Yes	0	Moderately well drained	Occasional/ No	Coarse-silty alluvium	Natural levees, alluvial fans
Center silt loam, 0 to 3 percent slopes (Ce)	2.3 (0.5%)	Yes	9	Somewhat poorly drained	No/No	Loess	Flats, stream terraces
Convent silt loam, occasionally flooded (Ct)	5.6 (1.2%)	Yes (if drained)	8	Somewhat poorly drained	Occasional/ No	Silty alluvium	Floodplains
Grenada silt loam, 5 to 8 percent slopes, severely eroded (GrC3)	6.1 (1.2%)	No	0	Moderately well drained	No/No	Loess	Loess hills
Loring silt loam, 2 to 5 percent slopes, eroded (LoB2)	4.0 (0.8%)	Yes	0	Moderately well drained	No/No	Loess	Loess hills
Loring silt loam, 2 to 5 percent slopes, severely eroded (LoB3)	31.8 (6.5%)	No	0	Moderately well drained	No/No	Loess	Loess hills
Loring silt loam, 5 to 8 percent slopes, eroded (LoC2)	7.6 (1.5%)	No	0	Moderately well drained	No/No	Loess	Loess hills
Loring silt loam, 5 to 8 percent slopes, severely eroded (LoC3)	25.4 (5.2%)	No	0	Moderately well drained	No/No	Loess	Loess hills
Loring silt loam, 8 to 12 percent slopes, severely eroded (LoD3)	10.9 (2.2%)	No	0	Moderately well drained	No/No	Loess	Loess hills
Memphis silt loam, 2 to 5 percent slopes, moderately eroded, northern phase (MeB2)	12.4 (2.5%)	Yes	0	Well drained	No/No	Fine-silty noncalcareous loess	Loess hills

SR Ripley II

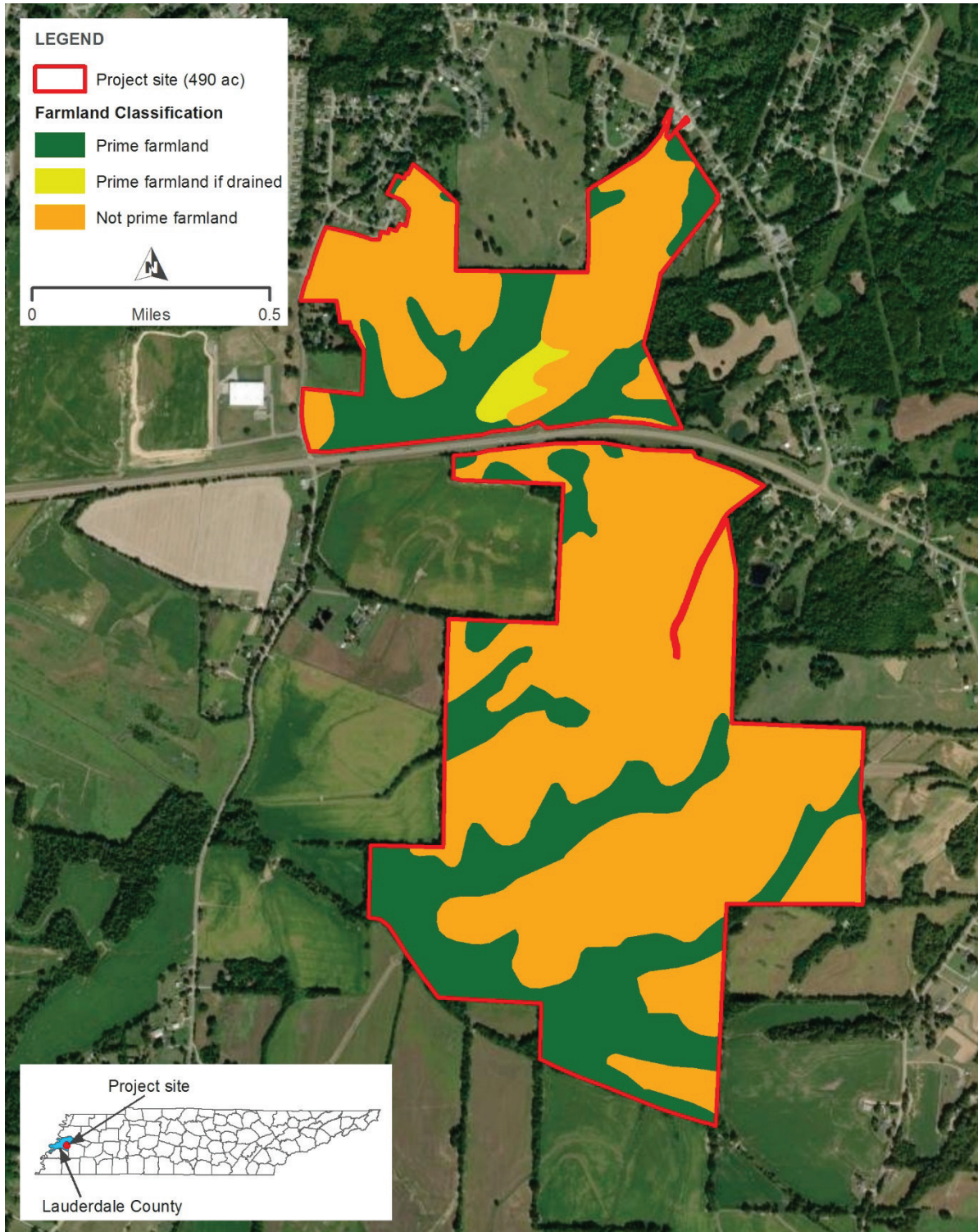
Soil Type	Acreage and % of Project site	Prime Farmland	Hydric Rating	Drainage Class	Flooding/Ponding	Parent Material	Landform
Memphis silt loam, 5 to 8 percent slopes, moderately eroded, northern phase (MeC2)	112.5 (22.9%)	No	0	Well drained	No/No	Fine-silty noncalcareous loess	Loess hills
Memphis silt loam, 8 to 12 percent slopes, severely eroded, northern phase (MeD3)	27.3 (5.6%)	No	0	Well drained	No/No	Fine-silty noncalcareous loess	Loess hills
Memphis silt loam, 12 to 20 percent slopes, severely eroded, northern phase (MeE3)	99.4 (20.3%)	No	0	Well drained	No/No	Fine-silty noncalcareous loess	Loess hills
Memphis silt loam, 20 to 40 percent slopes, northern phase (MeF)	6.4 (1.3%)	No	0	Well drained	No/No	Fine-silty noncalcareous loess	Loess hills
Morganfield silt loam, occasionally flooded (Mo)	4.9 (1.0%)	Yes	0	Well drained	Occasional/ No	Silty alluvium	Floodplains
Water (W)	0.6 (0.1%)	No	0	Not applicable	Not applicable	Not applicable	Not applicable
<b>Total Prime Farmland</b>	<b>162.4 (33.1%)</b>						

Source: USDA 2023a



**3.3.1.5 Prime Farmland**

Prime farmland is land that is the most suitable for economically producing sustained high yields of food, feed, fiber, forage, and oilseed crops. Prime farmlands have the best combination of soil type, growing season, and moisture supply and are available for agricultural use (i.e., not water or urban built-up land). The Farmland Protection Policy Act (7 U.S.C. § 4201 *et seq.*), requires federal agencies to consider the adverse effects of their actions on prime or unique farmlands. The purpose of the Farmland Protection Policy Act is “to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.” Based on soils data obtained from the USDA Web Soil Survey, approximately 162 acres (33 percent) of the Project site are designated as prime farmland, as illustrated in Figure 3-3. Table 3-3 describes the soil types, including those classified as prime farmland, located on the Project site.



**Figure 3-3. Farmland classifications on the Project site**

### **3.3.2 Environmental Consequences**

#### **3.3.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no direct or indirect Project-related impacts on geological resources, paleontological resources, soils, or prime farmlands would result. Existing land use would likely remain primarily agricultural land for the foreseeable future.

#### **3.3.2.2 Proposed Action Alternative**

Under the Proposed Action Alternative, direct impacts to soil and prime farmland resources would occur as a result of construction and operation of the Project. Impacts to geology would be minimal due to the depth of superimposed soil on the bedrock. Approximately 40 percent (194 acres) of the 490-acre Project site would be cleared and/or graded for the solar facility and associated interconnection facilities. Grading and clearing for the solar facility would cause minor, localized increases in erosion and sedimentation, resulting in minor impacts to geology and soils.

##### **3.3.2.2.1 Geology and Paleontology**

Under the Proposed Action, impacts to geological resources are unlikely due to the depth to bedrock. On-site sedimentation basins would be shallow and, to the extent feasible, utilize the existing terrain without requiring extensive excavation. Other excavations would be no more than a few feet deep. The steel piles supporting the solar arrays would either be driven or screwed into the ground to a depth typically less than 20 feet.

Should paleontological resources be exposed during site construction or operation activities, a paleontological expert would be consulted to evaluate the nature of the paleontological resources, recover these resources, analyze the potential for additional impacts, and develop and implement a recovery plan/mitigation strategy.

##### **3.3.2.2.2 Geologic Hazards**

Hazards resulting from geological conditions would be minor because the Project site is in a relatively stable geologic setting. There is a moderate potential for small to moderate intensity seismic activity. The facility would be designed to comply with applicable seismic standards prescribed in state and local building codes. A seismic event could cause minor impacts to the Project site and equipment on the site. The Project could be subject to potential adverse effects from ground failure associated with liquefaction during a strong seismic event. Structural damage to PV panels, PV panel support structures, and other associated equipment could occur. Since the Project site would not be staffed during operation, potential damage to on-site structures would pose very limited risk to humans. Geologic hazard impacts on-site would be unlikely to impact off-site resources.

Ripley Power and Light's proposed overhead connection associated with the 34.5-kV gen-tie line would be designed to comply with applicable standards. Potential impacts from seismic activity would be minimal and unlikely to cause adverse impacts to the proposed structures. Further, modifications to the existing Ripley Power and Light substation would occur within its existing footprint. The seismic activity resulting from these modifications would not result in new impacts to the Ripley Power and Light substation.

##### **3.3.2.2.3 Soils**

During construction, soils on the 194 acres proposed for development of the solar facility would be disturbed from site preparation and construction activities. Any stockpiled soils from the area where vegetation clearing and grading occurs, including topsoils, would be

replaced following cut-and-fill activities to the extent practical and, therefore, likely not require off-site hauling of soils. Topsoils would be separated during stockpiling in order to preserve and redistribute after disturbance (TDEC 2012). Should borrow material such as sand, gravel, rip rap, or other aggregate, such as large rocks, be required for Project site activities, these resources may be obtained either from on-site sources, if available, or from nearby permitted off-site sources.

The creation of small areas of new impervious surface, totaling about one acre, would result in a minor increase in stormwater runoff and potential increase in soil erosion. Planting of perennial and annual, non-invasive vegetation within the limits of disturbance along with use of BMPs described in the SWPPP (see Section 1.4), such as soil erosion and sediment control measures, would minimize the potential for increased soil erosion and runoff. Following construction, implementation of soil stabilization and vegetation management measures would reduce the potential for erosion impacts during facility operations.

During operation and maintenance of the solar facility and associated interconnection facilities, minor disturbance could occur to soils. Routine maintenance would include periodic motor replacement; inverter air filter replacement; fence repair; vegetation control; and periodic PV array inspection, repairs, and maintenance. The Project would implement mechanized landscaping using lawnmowers and weed eaters. Trimming and mowing would likely be performed several times per year, depending on growth rate, to maintain an appropriate groundcover height of about 12 to 18 inches. While mowing would be the primary means of maintaining growth of vegetation on-site, grazing sheep may also be used. Selective spot applications of herbicides may be employed around facilities and structures to control weeds. Herbicides would be applied by a professional contractor or a qualified Project technician. These maintenance activities would not result in any adverse impacts to soils during operation.

#### **3.3.2.2.4 Prime Farmland**

Approximately 78 percent (377 acres) of the 490-acre Project site would be developed into the solar facility, access roads, implementation of SMZs, and 200-foot shading buffer around solar panels. The developed area, implementation of SMZs, and 200-foot shading buffer around solar panels would cause the removal of 99 acres with prime farmland soils from row cropping. Therefore, 63 acres with prime farmland soils on the Project site would be undeveloped while allowing for agricultural or vegetation management activities. The 162 acres with prime farmland soils removed from row cropping during the lifetime of the Project represents 0.002 percent of the 83,556 acres with prime farmland soil in Lauderdale County, therefore the acreage of prime farmland soils that would be removed from row cropping would be insignificant compared to the available area with prime farmland soils in the county.

Any area within the Project site not developed for the solar facility would be undeveloped and agricultural or vegetation management activities may occur. Adhering to BMPs during construction and operation of the solar facility, including installing erosion control dams during stockpiling events, would preserve topsoil and limit erosion, resulting in negligible impacts to prime farmland. Due to the limited amount of grading and excavation onsite, most soils would remain in-situ.

Moreover, solar projects do not result in the permanent or irreversible conversion of farmland. During operations, soils would have an opportunity to develop in place with minimal ground disturbance and possibly regenerate while not in active agricultural

production. When the solar and supporting materials are removed, the site could be readily returned to agricultural production. Based on the limited site disturbance, there would be minimal direct and indirect adverse impacts on prime farmland under the Proposed Action. Following decommissioning of the solar facility, the Project site could be returned to agricultural use with little reduction in soil productivity or long-term impacts to prime farmland.

### **3.3.2.3 Cumulative Impacts**

The RFFAs, such as the potential developments of the Walker Industrial Park, American Way Site, Interstate 69 – Segment 8, and Lauderdale Community Hospital Construction, together with the Proposed Action, could disturb subsurface materials in the area, create new impervious surfaces in the area, and remove current prime farmland from production in the area, resulting in minor, cumulative impacts on geology, soils, and prime farmland, including the development of up to about 300 acres for industrial uses.

## **3.4 Water Resources**

### **3.4.1 Affected Environment**

#### **3.4.1.1 Groundwater**

Groundwater is water located beneath the ground surface, within soils and subsurface formations known as hydrogeological units or aquifers. Aquifers have sufficient permeability to conduct groundwater infiltration and to allow economically significant quantities of water to be produced by man-made water wells and natural springs.

In the state of Tennessee water wells are managed by TDEC Division of Water Resources under the Tennessee Water Action of 1963. Drilling of a water well must be conducted by a licensed well drilling contractor and pumps must be installed by a licensed installer. Well construction standards are stated in the Tennessee Department of Environment and Conservation Water Resources Division Water Well Licensing Regulations and Well Construction Standards (Chapter 0400-45-09). Prior to well installation, an NOI to Drill a Well must be submitted to TDEC at least one hour prior to drilling activities.

Review of the TDEC Water Well Desktop Application plots several residential and irrigation wells on nearby properties. The wells are installed in unconsolidated materials at depths ranging from 105 to 205 feet below ground surface and reported well yield ranged from 10 to 900 gallons per minute. Water withdrawals of 10,000 gallons or more on any day in Tennessee must be registered with TDEC Division of Water Resources under the Water Resources Information Act of 2002, TCA, Section 69-7-301. This information is filed using the Water Pumpage Data Report form (CN-1119) and Water Withdrawal Registration form (CN-1226).

The Project area is underlain by the extensive Mississippi Embayment aquifer system (Lloyd and Lyke 1995). Groundwater recharge and discharge correspond to topographic highs and lows, respectively. The direction of groundwater flow in the vicinity of the Project may be affected by agricultural pumping and local surface water bodies; however, it would likely flow into tributaries of Cane Creek.

#### **3.4.1.2 Surface Water**

Surface water is any water that flows above ground and includes, but is not limited to, streams, ditches, ponds, lakes, and wetlands. TDEC also designates certain surface watercourses as WWCs. Streams are classified as either perennial, intermittent, or

ephemeral based on the occurrence of surface flow. Perennial streams are relatively permanent waters with perennial flow from the groundwater table, which is generally located above the streambed throughout the year. Intermittent streams usually have baseflow at least once per year, typically, in the winter and spring. Ephemeral streams are above the groundwater table and convey flow only during, and for a short duration after (generally less than 48 hours), and in direct response to, a precipitation event. In Tennessee, any water course or ditch that carries water only in direct response to a precipitation runoff and is not a stream, is classified as a WWC. Wetlands are those areas inundated by surface water or groundwater such that vegetation adapted to saturated soil conditions is prevalent. Examples of wetlands include swamps, marshes, bogs, and wet meadows.

Surface waters with certain physical and hydrologic characteristics (defined bed and bank, ordinary high-water mark, connectivity, or specific hydrologic, soil, and vegetation criteria) are considered WOTUS. Regulatory guidance for the definition of WOTUS is subject to change as USEPA and USACE issue relevant rulings. Currently in Tennessee, potential for federal jurisdiction was evaluated based on USACE 2008 Rapanos Guidance as well as the current understanding of the *Sackett v. EPA* ruling (e.g., identifying relatively permanent waters that are indistinguishable from other relatively permanent waters). See the Aquatic Ecology and Wetlands Assessment (Appendix B) for further information on regulatory guidance.

CWA is the primary federal statute that governs the discharge of pollutants and fill materials into WOTUS under Sections 402, 404, and 401. WOTUS are defined through a jurisdictional determination (JD) by USACE as described above. CWA Section 404 NWPs would be required for impacts to jurisdictional waters that are less than 0.5 acre. NWPs are issued by USACE to authorize the construction, expansion, or modification of certain activities that would discharge dredged or fill material into WOTUS, provided the proposed activities meet specific criteria. Solar facility impacts are often authorized under Number 12 (Utility Line Activities), Number 14 (Linear Transportation Projects), and/or Number 51 (Land-Based Renewable Energy Generation Facility). If impacts exceed 0.5 acre, a USACE Individual Permit must be used to authorize impacts to WOTUS. State agencies have jurisdiction over water quality. The limits on activities affecting CWA Section 401 state waters are defined by both a USACE JD and a Hydrological Determination (HD) accepted by TDEC DWR. Project site development would also be subject to potential permitting through TDEC DWR via an application for an ARAP (Tennessee's Section 401 permit). General ARAP permits are triggered by specific types of impact activities (e.g., road crossings or utility crossings) or triggered by impacts to feature type (e.g., wetland alterations), and each General ARAP has different impact thresholds for triggering an Individual ARAP. Depending on the extent of impacts, mitigation may be required for certain features.

The Project site is in the Cane Creek watershed (10-digit Hydrologic Unit Code [HUC] 0801020807) of the Lower Hatchie River watershed. The on-site surface waters drain south and east into various ditches and tributaries that flow into Hyde Creek, which flows northwest along the southern boundary of the Project site into Cane Creek, approximately three miles from the Project site boundary (USGS 2022).

Field surveys were conducted in September 2022 and November 2023 on the Project site to determine the presence of wetlands, streams, and open waters and assess their quality (Appendix B). Water resources were delineated according to USACE 1987 *Wetland*

*Delineation Manual* and the 2010 USACE *Atlantic and Gulf Coastal Plain Regional Supplement (Version 2.0)*. Jurisdictional WOTUS were determined based on USACE 2008 Rapanos Guidance as well as the current understanding of the *Sackett v. EPA* ruling. Wetland and open water features were classified according to the Cowardin naming convention (Cowardin et al. 1979). Wetland quality was assessed using the Tennessee Rapid Assessment Method (TRAM). Streams were determined utilizing the methodology and guidance provided in *Regulatory Guidance Letter 05-05* and the 2020 TDEC DWR *Guidance for Making Hydrologic Determinations (Version 1.5)*. HD will be requested from TDEC, and JD will be requested from USACE. The pending USACE JD verification and TDEC HD will confirm the jurisdictional status of the onsite federal and state waters, respectively.

One perennial stream (S001 [Hyde Creek]; 819 linear feet [LF]), 17 intermittent streams (19,932 LF), and 65 WWCs (23,250 LF) were delineated on the Project site (Table 3-4; Table 3-5; Figure 3-4; Figure 3-5). Detailed tables and figures of individual surface waters and wetlands are included in the Aquatic Ecology and Wetlands Assessment Technical Report (Appendix B).

**Table 3-4. Summary of jurisdictional watercourses within the Project site**

Feature Identifier	Flow Regime	Cowardin Classification <sup>1</sup>	TDEC HD (Score) <sup>2</sup>	TVA SMZ Category <sup>3</sup>	Presumed Jurisdiction		Average OHWM <sup>4</sup> (ft)	LF within Project Site
					Section 404	Section 401		
S001	Perennial	R5UB	Stream [24]	A	Yes	Yes	12	819
S002	Intermittent	R4SB5	Stream [21.5]	A	Yes	Yes	4	4,083
S003	Intermittent	R4SB5	Stream [16]	A	Yes	Yes	8	473
S004	Intermittent	R4SB5	Stream [15]	A	Yes	Yes	5	1,565
S005	Intermittent	R4SB5	Stream [20]	A	Yes	Yes	5	2,779
S006	Intermittent	R4SB5	Stream [23]	A	Yes	Yes	6	1,748
S007	Intermittent	R4SB5	Stream [19.5]	A	Yes	Yes	6	701
S008	Intermittent	R4SB5	Stream [19.25]	A	Yes	Yes	4	1,105
S009	Intermittent	R4SB5	Stream [19]	A	Yes	Yes	5	488
S010	Intermittent	R4SB5	Stream [21]	A	Yes	Yes	6	1,565
S011	Intermittent	R4SB5	Stream [19.5]	A	Yes	Yes	4	356
S012	Intermittent	R4SB5	Stream [20]	A	Yes	Yes	4	218
S013	Intermittent	R4SB5	Stream [20]	A	Yes	Yes	4	2,147
S014	Intermittent	R4SB5	Stream [22.5]	A	Yes	Yes	3	340
S015	Intermittent	R4SB5	Stream [19]	A	Yes	Yes	5	1,204
S016	Intermittent	R4SB5	Stream [23.5]	A	Yes	Yes	3	944
S017	Intermittent	R4SB3	Stream [23]	A	Yes	Yes	18	98
S018	Intermittent	R4SB5	Stream [21.5]	A	Yes	Yes	6	118
<b>Total:</b>								<b>20,751</b>

1. R4SB3: Riverine Intermittent, Cobble-Gravel Streambed; R4SB5: Riverine Intermittent, Mud Streambed; R5UB: Riverine Unknown Perennial, Unconsolidated Bottom (Cowardin et al. 1979).

2. When applying HD methodology, watercourses are scored based on primary and secondary field indicators. Primary indicators (denoted as a score of "P") are individual or combinations of field characteristics that, under normal circumstances and in the absence of any directly contradictory evidence, are considered to be definitive for jurisdictional purposes. Secondary indicators are evaluated if none of the primary indicators are present at the time of survey. A watercourse is considered a stream if the secondary indicators score greater than 19 or else is considered a WWC.

3. SMZs surrounding streams and wetlands according to their rating as defined by TVA 2022a. Categories include: A = Standard Stream Protection; B = Protection of Important Streams, Springs, and Sinkholes; C = Protection of Unique Habitat; and Best Management Practices (BMPs) for wet weather conveyances.

4. Ordinary high-water mark (OHWM): Width of stream at ordinary high-water mark.



**Table 3-5. Summary of non-jurisdictional watercourses within the Project site**

Feature Identifier	Cowardin Classification <sup>1</sup>	TDEC HD (Score) <sup>2</sup>	TVA SMZ Category <sup>3</sup>	Presumed Jurisdiction		Average Width	LF within Project Site
				Section 404	Section 401		
E001	R6	WWC [15]	BMPs	No	No	4	105
E002	R6	WWC [12]	BMPs	No	No	2	57
E003	R6	WWC [14]	BMPs	No	No	2	64
E004	R6	WWC [13.5]	BMPs	No	No	2	624
E005	R6	WWC [13.5]	BMPs	No	No	2	867
E006	R6	WWC [10]	BMPs	No	No	2	194
E007	R6	WWC [14.5]	BMPs	No	No	3	126
E008	R6	WWC [13]	BMPs	No	No	2	29
E009	R6	WWC [18.5]	BMPs	No	No	3	278
E010	R6	WWC [12]	BMPs	No	No	2	341
E011	R6	WWC [18]	BMPs	No	No	4	831
E012	R6	WWC [12]	BMPs	No	No	2	231
E013	R6	WWC [9.5]	BMPs	No	No	2	57
E014	R6	WWC [15.5]	BMPs	No	No	5	904
E015	R6	WWC [11.5]	BMPs	No	No	2	173
E016	R6	WWC [17.5]	BMPs	No	No	4	255
E017	R6	WWC [8.5]	BMPs	No	No	1	307
E018	R6	WWC [14]	BMPs	No	No	2	879
E019	R6	WWC [13]	BMPs	No	No	2	867
E020	R6	WWC [12]	BMPs	No	No	2	400
E021	R6	WWC [10.5]	BMPs	No	No	3	205
E022	R6	WWC [11]	BMPs	No	No	2	295
E023	R6	WWC [11.5]	BMPs	No	No	2	311
E024	R6	WWC [11]	BMPs	No	No	2	187
E025	R6	WWC [11]	BMPs	No	No	4	133
E026	R6	WWC [11.5]	BMPs	No	No	1	121
E027	R6	WWC [12]	BMPs	No	No	2	409
E028	R6	WWC [18]	BMPs	No	No	3	587
E029	R6	WWC [11]	BMPs	No	No	2	131
E030	R6	WWC [13.5]	BMPs	No	No	2	134
E031	R6	WWC [15]	BMPs	No	No	2	871
E032	R6	WWC [12]	BMPs	No	No	1	778
E033	R6	WWC [15.5]	BMPs	No	No	2	306
E034	R6	WWC [15.5]	BMPs	No	No	2	210
E035	R6	WWC [13]	BMPs	No	No	2	321
E036	R6	WWC [11.5]	BMPs	No	No	2	396
E037	R6	WWC [7.5]	BMPs	No	No	1	1,004

Feature Identifier	Cowardin Classification <sup>1</sup>	TDEC HD (Score) <sup>2</sup>	TVA SMZ Category <sup>3</sup>	Presumed Jurisdiction		Average Width	LF within Project Site
				Section 404	Section 401		
E038	R6	WWC [9]	BMPs	No	No	2	207
E039	R6	WWC [10]	BMPs	No	No	2	321
E040	R6	WWC [14]	BMPs	No	No	2	456
E041	R6	WWC [11]	BMPs	No	No	2	188
E042	R6	WWC [10]	BMPs	No	No	1	330
E043	R6	WWC [14.5]	BMPs	No	No	2	76
E044	R6	WWC [15.5]	BMPs	No	No	2	438
E045	R6	WWC [18]	BMPs	No	No	2	161
E046	R6	WWC [17]	BMPs	No	No	2	105
E047	R6	WWC [13.5]	BMPs	No	No	3	50
E048	R6	WWC [11.5]	BMPs	No	No	2	626
E049	R6	WWC [16]	BMPs	No	No	1	150
E050	R6	WWC [13.5]	BMPs	No	No	1	330
E051	R6	WWC [10.5]	BMPs	No	No	1	163
E052	R6	WWC [17.5]	BMPs	No	No	5	135
E053	R6	WWC [17.5]	BMPs	No	No	2	85
E054	R6	WWC [15.5]	BMPs	No	No	2	336
E055	R6	WWC [12.5]	BMPs	No	No	2	75
E056	R6	WWC [13]	BMPs	No	No	2	583
E057	R6	WWC [13]	BMPs	No	No	2	192
E058	R6	WWC [13]	BMPs	No	No	2	93
E059	R6	WWC [14]	BMPs	No	No	5	224
E060	R6	WWC [13]	BMPs	No	No	2	1,216
E061	R6	WWC [13]	BMPs	No	No	2	156
E062	R6	WWC [13]	BMPs	No	No	2	571
E063	R6	WWC [13]	BMPs	No	No	2	160
E064	R6	WWC [13]	BMPs	No	No	2	423
E065	R6	WWC [13]	BMPs	No	No	2	1,517
<b>Total:</b>							<b>23,250</b>

<sup>1</sup> R6: A wetland, spring, stream, river, pond, or lake that exists for a short period (Cowardin et al. 1979).

<sup>2</sup> When applying HD methodology, watercourses are scored based on primary and secondary field indicators. Primary indicators (denoted as a score of "P") are individual or combinations of field characteristics that, under normal circumstances and in the absence of any directly contradictory evidence, are considered to be definitive for jurisdictional purposes. Secondary indicators are evaluated if none of the primary indicators are present at the time of survey. A watercourse is considered a stream if the secondary indicators score greater than 19 or else is considered a WWC.

<sup>3</sup> SMZs surrounding streams and wetlands according to their rating as defined by TVA 2022a. Categories include: A = Standard Stream Protection; B = Protection of Important Streams, Springs, and Sinkholes; C = Protection of Unique Habitat; and Best Management Practices (BMPs) for WWCs.

One pond, P001, was identified on the Project site. This pond is 2.9 acres (Table 3-6; Figure 3-4; Figure 3-5). Detailed tables and figures of individual surface waters and wetlands are included in the Aquatic Ecology and Wetlands Assessment Technical Report (Appendix B).

**Table 3-6. Summary of open waters within the Project site**

Feature Identifier	Cowardin Classification <sup>1</sup>	TVA SMZ Category <sup>2</sup>	Presumed Jurisdiction		Acreage within Project site
			Section 404	Section 401	
P001	PUBHh	A	Yes	Yes	2.9
<b>Total:</b>					<b>2.9</b>

<sup>1</sup>PUBH: Palustrine Unconsolidated Bottom, Permanently Flooded, Diked/Impounded (Cowardin et al. 1979).

<sup>2</sup> SMZs surrounding aquatic features according to their rating as defined by TVA 2022a. Categories include: A = Standard Stream Protection; B = Protection of Important Streams, Springs, and Sinkholes; C = Protection of Unique Habitat; and Best Management Practices (BMPs) for WWCs.

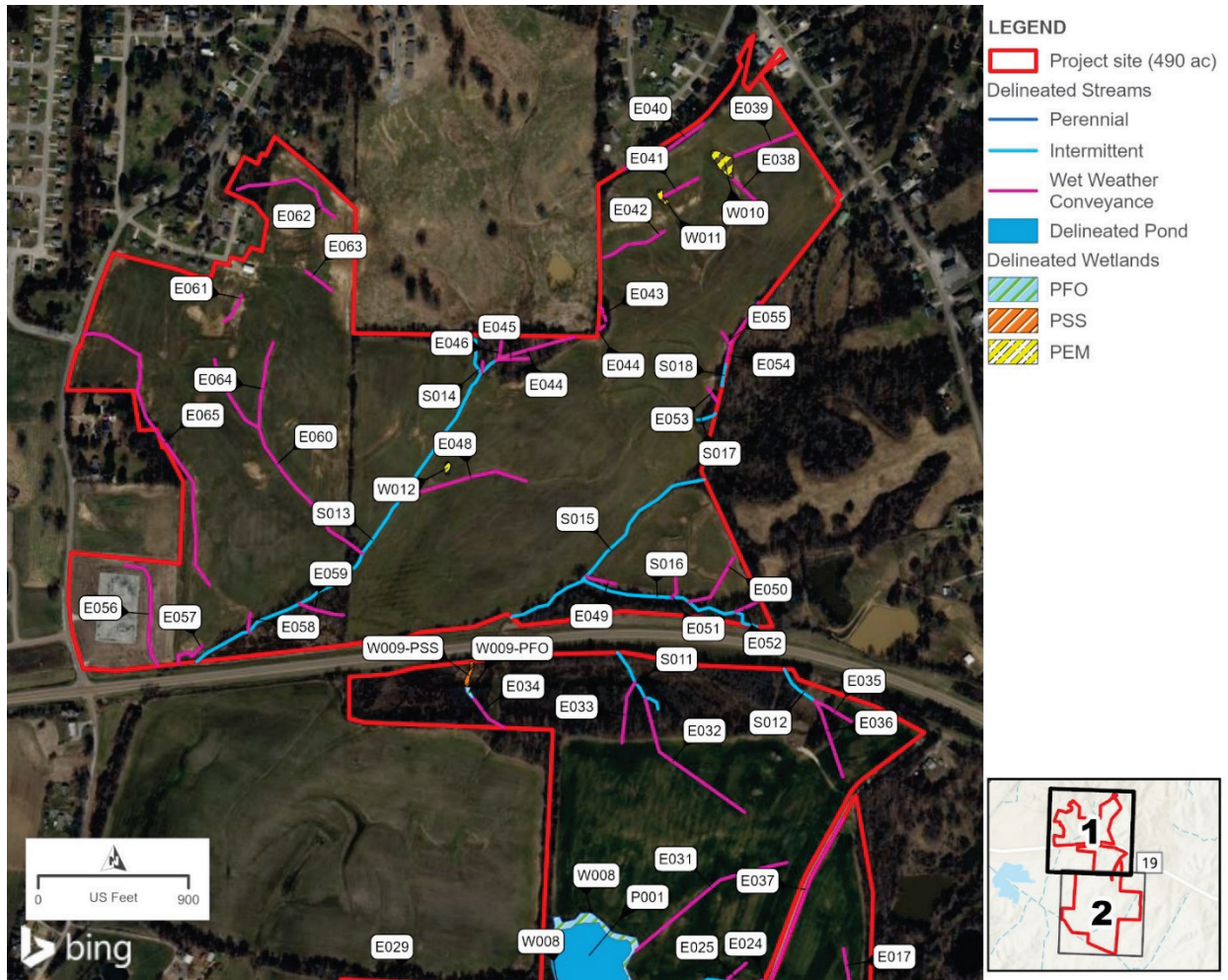
A total of 12 wetlands (4.06 acres) were identified on the Project site, including seven palustrine emergent wetlands (PEM) totaling 0.65 acres; three palustrine forested wetlands (PFO) totaling 1.08 acres; one PEM/PFO wetland totaling 1.43 acres; and one PFO/palustrine scrub-shrub (PSS) wetland of 0.9 acres (Table 3-7; Figure 3-4; Figure 3-5). Detailed tables and figures of individual surface waters and wetlands are included in the Aquatic Ecology and Wetlands Assessment Technical Report (Appendix B). TVA is subject to EO 11990, Protection of Wetlands.

**Table 3-7. Summary of wetlands within the Project site**

Feature Identifier	Cowardin Classification <sup>1</sup>	TRAM Functional Capacity (Score) <sup>2</sup>	TVA SMZ Category	Presumed Jurisdiction		Acreage within Project Site
				Section 404	Section 401	
W001	PEM	Low [16]	A	No	Yes	0.04
W002	PEM	Low [16]	A	No	Yes	0.13
W003	PEM	Low [12]	A	No	Yes	0.06
W004	PFO	Low [29]	A	No	Yes	0.30
W005	PFO	Low [32]	A	No	Yes	0.04
W006	PEM	Low [15]	A	No	Yes	0.14
W007	PEM/PFO	Moderate [58]	A	Yes	Yes	PEM: 0.35 PFO: 1.08
W008	PFO	Low [37]	A	Yes	Yes	0.74
W009	PFO/PSS	Low [27]	A	Yes	Yes	PFO:0.30 PSS: 0.60
W010	PEM	Low [9]	A	No	Yes	0.20
W011	PEM	Low [9]	A	No	Yes	0.05
W012	PEM	Low [12]	A	No	Yes	0.03
<i>Presumed Jurisdictional under Section 404 Total:</i>						<i>3.07</i>
<i>Presumed Non-Jurisdictional Under Section 404 Total:</i>						<i>0.99</i>
<b>Total:</b>						<b>4.06</b>

<sup>1</sup> PEM: Palustrine Emergent Wetland; PSS: Palustrine Scrub/Shrub Wetland; PFO: Palustrine Forested Wetland (Cowardin et al. 1979).

<sup>2</sup> When applying TRAM methodology, wetlands are scored into three categories based on wetland function, condition, and quality: low (scores 0-29), good/moderate (30-59), and superior (60-100).



**Figure 3-4. Delineated wetlands, watercourses, and ponds on the northern portion of the Project site**

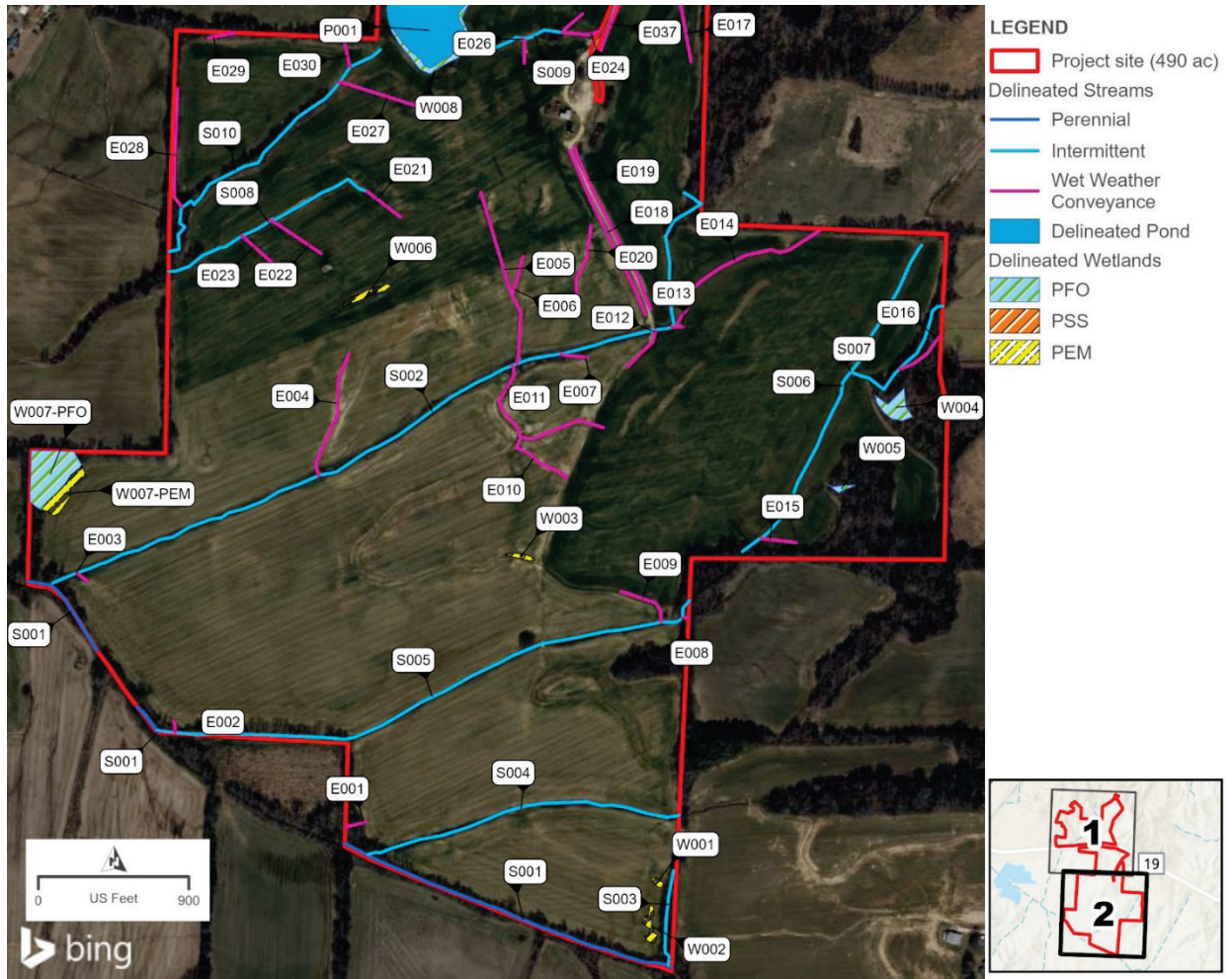


Figure 3-5. Delineated wetlands, watercourses, and ponds on the southern portion of the Project site

### 3.4.1.3 Floodplains

A floodplain is the relatively level land area along a stream or river that is subject 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 subject 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 a floodplain to ensure that the Project is consistent with EO 11988, Floodplain Management and local floodplain development regulations.

Based on Lauderdale County Flood Insurance Rate Map Panels 47097C0357D and 47097C0359D, approximately 52 acres of the Project site are within the FEMA-identified 100-year floodplain (Figure 3-6; FEMA 2021).

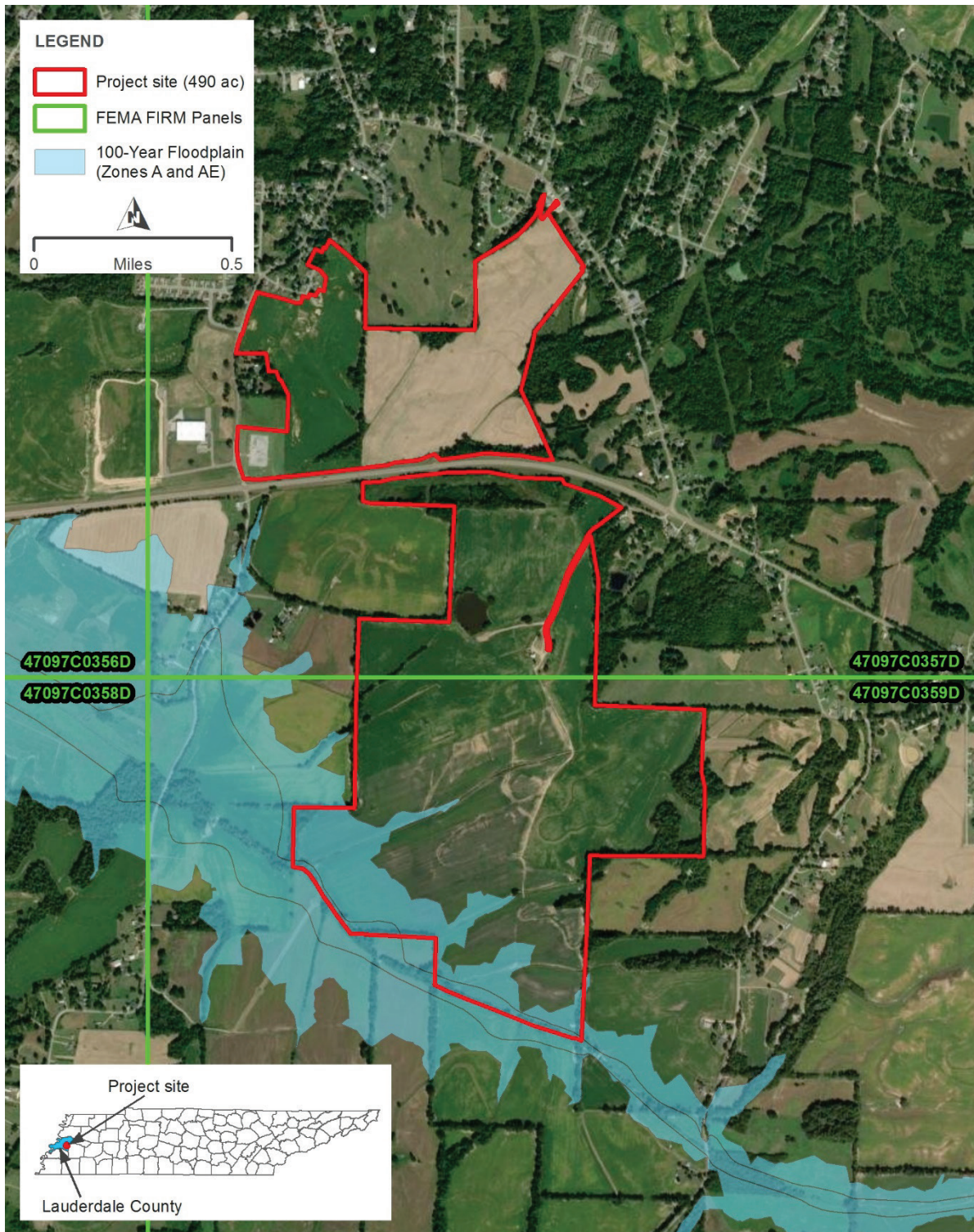


Figure 3-6. Floodplains in the Project area

## **3.4.2 Environmental Consequences**

### **3.4.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no direct Project-related impacts to water resources would likely occur. Existing land use would likely remain primarily agricultural land for the foreseeable future, and water resources would remain as they are at the present time. Indirect impacts to water resources could occur due to continuing agricultural use of the Project site. Erosion and sedimentation on-site could alter runoff patterns on the Project site and impact downstream surface water quality. In addition, if the local aquifers are recharged from surface water runoff, chemical fertilizer and pesticide use could impact both the surface water and groundwater.

### **3.4.2.2 Proposed Action Alternative**

Under the Proposed Action Alternative, minor direct impacts to groundwater, surface waters, and floodplains would result from construction and operation of the Project.

#### **3.4.2.2.1 Groundwater**

Minor adverse impacts to the supply and availability of groundwater may be encountered with implementation of the Proposed Action Alternative. Many neighboring residential and agricultural properties rely on water wells for potable and irrigation water. Pumping of groundwater for construction activities could modify stable conditions currently exhibited in private wells. Water use greater than 10,000 gallons per day is not anticipated, however, the Project would comply with the TDEC regulations by providing daily reporting of water use greater than 10,000 gallons per day, monitoring the aquifer, if applicable. Due to the type of lithology and underlying aquifer, minor to minimal impacts are anticipated.

##### **3.4.2.2.1.1 Construction-related Groundwater Needs**

Direct adverse impacts to the supply and availability of groundwater are not anticipated with implementation of the Proposed Action Alternative. During construction, hazardous materials would be on-site that could contaminate groundwater resources, including petroleum products for fuel and lubrication of construction equipment, hydraulic fluids, and a variety of other chemicals commonly used for general construction projects. Implementation of a well head protection program and a SPCC Plan would reduce the potential for leaks or spills from construction equipment and outline procedures and protocols to quickly address potential spills that may occur. Pollution to groundwater from sedimentation could occur during construction activities resulting from erosion. Appropriate BMPs would be followed, and all proposed Project activities would be conducted in a manner to ensure waste materials are contained and the introduction of pollutants to the receiving waters would be minimized. A TDEC CGP would be needed. TDEC's CGP allows coverage for sites exceeding 50 acres of disturbance with additional monitoring required. Upon considering certain criteria, including total acreage to be disturbed, the TDEC Director has discretion to require an individual permit for construction stormwater discharges. Although the site exceeds 50 acres, grading/construction could be conducted in a phased approach with adequate BMPs/erosion controls to ensure construction stormwater discharges are managed adequately to prevent sedimentation in off-site runoff, and thus the Project could be appropriately managed under a CGP. This permit also requires the development and implementation of a SWPPP.

Water and sewer services would be required during construction of the Project. Construction-related water use would support site preparation and grading activities. The

primary use of water during construction would be for compaction and dust control during grading and earthwork. Smaller quantities of water would be required for other minor uses.

Water used during construction would be provided via existing municipal water-supply infrastructure at the Project site, delivery by water trucks, or on-site wells. If wells are selected, SR Ripley II, LLC would conduct groundwater drilling and testing to gather information on aquifer characteristics and develop a plan for the well design. If required, water-based drilling muds would be collected and dewatered, with runoff occurring locally into nearby field areas. Dewatered muds would be non-toxic and could be distributed as subsoil during site grading. If necessary, sewer treatment would be accomplished through use of a pump-out septic holding tank. If installed, groundwater wells and the septic holding tank would be appropriately permitted and constructed to avoid impacts to groundwater.

#### **3.4.2.2.1.2 Operation- and Maintenance-related Groundwater Needs**

The primary uses of water during operation and maintenance would be for dust control, equipment washing, and potential restroom facilities. The internal access roads would not be heavily traveled during normal operation; therefore, water use for dust control would be infrequent. Precipitation in the region is typically adequate to remove dust and other debris from the PV modules while maintaining energy production; therefore, manual module washing is not anticipated unless a site-specific issue is identified. If necessary, module washing would occur no more than twice a year.

Equipment washing and any potential dust control discharges would be handled in accordance with BMPs for water-only cleaning. Water needs during operation and maintenance would be provided either via the existing municipal water-supply infrastructure at the Project site, water trucks, or on-site wells. Operation- and maintenance-related water needs would not adversely affect groundwater resources.

#### **3.4.2.2.1.3 Overall Groundwater Impacts**

Overall, impacts on local aquifers and groundwater are anticipated to be minor to minimal due to the limited volume of groundwater required for initial construction, operation, maintenance, or decommissioning and closure. Implementation of BMPs and a Decommissioning and Closure Plan would reduce the potential for hazardous materials to reach groundwater resources throughout construction and operation of the facility. The use of BMPs and a SWPPP would reduce the possibility of on-site hazardous materials reaching the groundwater during operation or maintenance.

Additionally, minor, indirect beneficial impacts to groundwater could occur from the discontinued use of broad applications of pesticides and fertilizers due to change from row crops to permanent vegetative cover.

#### **3.4.2.2.1.4 Cumulative Impacts**

The slight increase in impervious surface resulting from development of the solar facility may inhibit groundwater infiltration and recharge to the local aquifer. Any change would be minor with little effect on groundwater quantity or quality. Due to the relatively small increase of impervious surfaces that would change as a result of the Project and RFFAs, cumulative impacts of past and RFFAs, including the Proposed Action, on groundwater would likely be minor.



#### 3.4.2.2.2 Surface Water

Impervious surfaces prevent rain from percolating through the soil and result in additional runoff of water and pollutants into storm drains, ditches, and streams. Clearing of vegetation and groundcover and the addition of impervious surfaces could alter the current stormwater flows. The Proposed Action Alternative would increase the impervious cover on the Project site by approximately one acre, thus altering and possibly increasing the concentrated stormwater flow off the Project site. This flow would be properly treated by diverting the stormwater discharge to Project sedimentation basins during construction and with implementation of stormwater BMPs. With the use of BMPs such as maintenance of SMZs, per TVA BMPs, around perennial and intermittent streams and similar SMZs around wetlands, as well as implementation of erosion control measures to minimize sediment runoff during construction, direct impacts to surface water would be minor. During the facility design process, impacts to on-site watercourses have been avoided or minimized to the maximum extent practicable. Wetland impacts have been avoided to the extent practicable; therefore, this Project is consistent with the requirements of EO 11990, Protection of Wetlands. Appropriate BMPs would be implemented during operation of the Project.

The construction and operation of the Project would permanently affect three intermittent streams and 30 WWCs (82 LF and 9,281 LF, respectively). Figure 3-7 and Figure 3-8 illustrate watercourse, wetland, and pond locations relative to Project components. Due to the construction of road crossings using culverts, three intermittent streams (S008, S010, and S013) totaling an estimated 82 LF, summarized in Table 3-8, and 11 WWCs totaling an estimated 377 LF would be permanently affected. If access to the switchgear from Highland Street Extended is chosen, impacts to S013 would be avoided and impacts to three additional WWCs would occur. The Project would also affect 30 WWCs totaling an estimated 8,903 LF due to the placement of solar panels and/or other Project components. Impacts caused by the construction of Project components to WWCs would entail piling placement and grading where necessary for solar array or central inverter installation but would not require CWA Section 404/401 permitting.



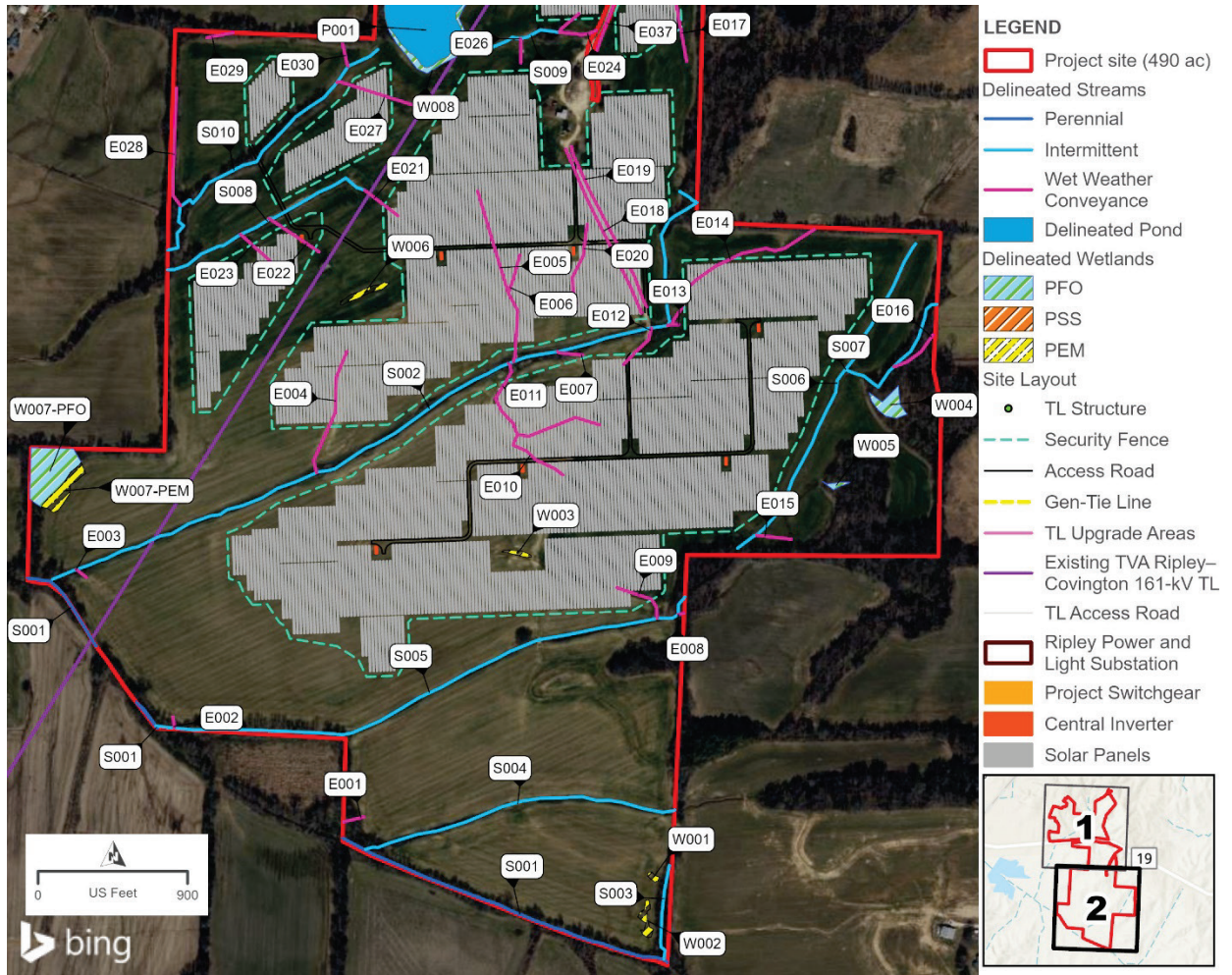


Figure 3-8. Proposed Project components in relation to delineated wetlands, watercourses, and ponds on the southern portion of the Project site

Table 3-8. Proposed Action Alternative stream impacts within the Project site

Feature Identifier	Flow Regime	HD Recommendation <sup>1</sup>	TVA SMZ Category <sup>2</sup>	Impacts		Estimated Impact (LF)
				Duration	Type	
S008	Intermittent	Stream	A	Permanent	Fill (Culvert)	25
S010	Intermittent	Stream	A	Permanent	Fill (Culvert)	28
S013 <sup>3</sup>	Intermittent	Stream	A	Permanent	Fill (Culvert)	29
<b>Total Permanent Impacts</b>						<b>82</b>

<sup>1</sup> When applying HD methodology, watercourses are scored based on primary and secondary field indicators. Primary indicators are individual or combinations of field characteristics that, under normal circumstances and in the absence of any directly contradictory evidence, are considered to be definitive for jurisdictional purposes. Secondary indicators are evaluated if none of the primary indicators are present at the time of survey.

<sup>2</sup> SMZs surrounding streams and wetlands according to their rating as defined by TVA 2022a. Categories include Standard Stream Protection (Category A), Protection of Important Streams, Springs, and Sinkholes (Category B), or Protection of Unique Habitat (Category C).

<sup>3</sup> If access to the switchgear from Highland Street Extended is chosen, impacts to S013 would be avoided. Total impacts would amount to 53 LF.

Appropriate BMPs and mitigation measures would be applied to S008, S010, and S013 for anticipated road crossings. The Project anticipates seeking a CWA Section 401 General ARAP for Construction or Removal of Minor Road Crossings and a CWA Section 404 NWP 14 for Linear Transportation Projects; if necessary, the Project would obtain a CWA Section 401 Individual ARAP or CWA Section 404 Individual Permit and would adhere to required compensatory mitigation. Construction equipment would avoid crossing streams to the maximum extent practicable. However, if necessary, temporary stream crossings would be utilized with adherence to BMPs to minimize impacts to stream banks and channels and be considered under the appropriate CWA Section 404/401 permits as needed. Vegetation clearing at stream crossings would be minimized to the maximum extent practicable. Surface water impacts to potentially jurisdictional waters are not anticipated from the installation of electrical cables due to the use of underground installation by boring or by attaching overhead cables to poles. If underground installation is chosen as the method of installation, the Project would pursue an ARAP for Utility Crossings. Appropriate BMPs would be implemented during construction and operation of the Project. If required, mitigation would be purchased to offset impacts for these features. If additional watercourse impacts are identified appropriate permitting would be sought and BMPs would be applied.

Wetlands and their SMZs located on the Project site have predominantly been avoided. However, permanent impacts to 0.56 acres of one forested wetland (W008) within the 200-foot-wide area surrounding proposed panel locations would be caused by clearing to reduce solar panel shading. W008 would be permanently impacted by conversion from forested to herbaceous. TVA BMPs, such as 50-foot SMZs and silt fencing, would be maintained and applied. If further impacts to wetlands are identified the Project would apply for CWA Section 401 or 404 permitting as necessary. If required, mitigation would be purchased to offset impacts for these features. Appropriate BMPs would be implemented during construction and operation of the Project.

SRC will submit a JD request to USACE and obtain the necessary permit(s), before construction begins, and will follow the permit requirements and mitigation measures to minimize impacts to wetlands.

#### **3.4.2.2.1 Electrical Interconnection**

Ripley Power and Light's construction of the new approximately 0.3-mile 34.5-kV gen-tie line that would be necessary to interconnect the solar PV facility to TVA's existing electrical transmission network would result in stream and wetland impacts. No new poles would be installed in wetlands or streams or, to the extent practicable, within the 50- to 60-foot SMZs around the wetlands and streams. Typically, gen-tie installation requires vehicular access to each gen-tie structure to perform either boring underground or overhead installation. Three WWCs (E056, E060, E065) intersect the proposed gen-tie line location; these watercourses do not require CWA Section 401 or 404 permitting. Temporary stream crossings and other construction and maintenance activities associated with the installation of the 34.5-kV gen-tie line would comply with appropriate state permit requirements and TVA requirements as described in TVA's BMP manual (TVA 2022a).

TL upgrade activities to TVA's existing electrical transmission network would result in minor stream and wetland impacts. The installation of approximately 0.75 mile of OPGW and addition of ground wire suspension arms on the existing Ripley–Covington 161-kV TL would likely require vehicular access along the 100-foot ROW to each TL structure to perform aerial work.

TL upgrade activities along the Ripley–Covington 161-kV TL would lead to minor temporary impacts to one scrub/shrub wetland (W009) from matting. Prior to placing matting the wetland may be hand cleared while leaving stumps in place. After the TL upgrade activities are completed, matting will be taken up and the wetland will be allowed to revegetate and return to pre-matting conditions. Thus, impacts to W009 are anticipated to be temporary. Two intermittent streams (S011 and S014) and two WWCs (E056 and E057) would experience minor temporary or permanent impacts depending on the method employed to cross the watercourses. If these watercourses were avoided during TL upgrade activities only temporary impacts would occur. If access roads are constructed, permanent impacts would occur. Appropriate BMPs and mitigation measures would be applied to S011 and S014 for anticipated road crossings. TVA anticipates seeking a CWA Section 401 General ARAP for Construction or Removal of Minor Road Crossings and a CWA Section 404 NWP 14 for Linear Transportation Projects; if necessary, TVA would obtain a CWA Section 401 Individual ARAP or CWA Section 404 Individual Permit and would adhere to required compensatory mitigation.

Access across wetlands located in the ROW would be conducted in accordance with wetland BMPs to minimize soil compaction and ensure only temporary impacts result (TVA 2022a). This includes use of low ground pressure equipment, wetland mats, and dry season work scheduling. Temporary stream crossings and other construction and maintenance activities associated with the TL upgrade activities would comply with appropriate state permit requirements and TVA requirements as described in TVA's BMP manual (TVA 2022a).

#### **3.4.2.2.2 Decommissioning and Site Reclamation-related Groundwater and Wastewater Needs**

If the facility were to be decommissioned or closed, a Decommissioning and Closure Plan would be developed. The Decommissioning and Closure Plan would detail procedures to control erosion and sedimentation to comply with NPDES requirements and permits. Water usage for potential decommissioning and closure is not likely to exceed that used for operation and maintenance. Therefore, impacts to groundwater resulting from decommissioning and closure of the facility are not anticipated.

Conditions may change by the time facility closure and decommissioning becomes necessary. A final Decommissioning and Closure Plan would be created based on site conditions at the time of facility closure.

The Project would comply with NPDES requirements by preparing and implementing a SWPPP and filing a NOI to comply with the CGP NPDES Permit. The plan would include procedures to be followed during decommissioning to prevent erosion and sedimentation, non-stormwater discharges, and contact between stormwater and potentially polluting substances.

Decommissioning and site reclamation would likely be staged in phases, allowing for a minimal amount of disturbance and requiring minimal dust control and water usage. It is anticipated that water usage during decommissioning and site reclamation would not exceed construction or operational water usage.

#### **3.4.2.2.3 Cumulative Impacts**

Similar to the Project, the past and RFFAs are subject to CWA and TDEC jurisdiction, ensuring current and foreseeable surface water impacts are considered, permitted, and/or

mitigated in accordance with wetland regulations. This regulatory oversight ensures maintenance of the chemical, biological, and physical integrity of the aquatic environment, including wetlands, within these watersheds for the long term. Cumulative effects are considered in the CWA permitting process to ensure individual waterbody impacts do not collectively result in degradation to WOTUS, including jurisdictional wetland and stream resources. Due to implementation of BMPs and adherence to NWP and ARAP conditions and surface water mandates, regulation, permitting, and mitigation; the Project is not anticipated to contribute to cumulative stream and wetland impacts at the watershed scale.

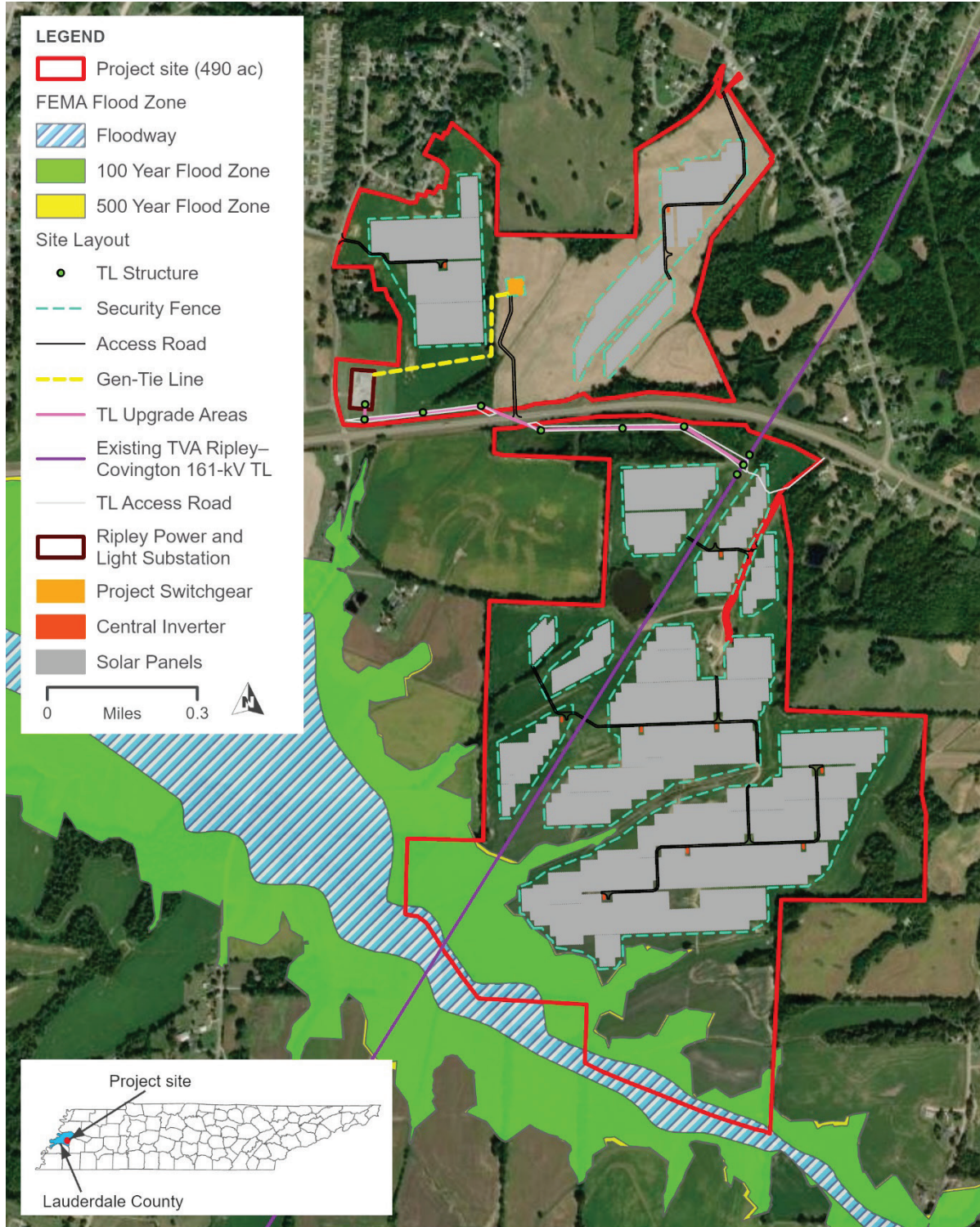
#### **3.4.2.2.3 Floodplains**

As a federal agency, TVA adheres to the requirements of EO 11988, Floodplain Management. 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" (EO 11988, Floodplain Management). 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.

The solar facility components, Project switchgear, and 34.5-kV gen-tie line would be located outside both FEMA-identified 100-year floodplains and floodplains of unmapped streams (Figure 3-9). Therefore, the Project would be consistent with EO 11988, and no impacts to floodplains and their natural and beneficial values would occur.

##### **3.4.2.2.3.1 Cumulative Impacts**

Because the Project would not affect floodplains, the Proposed Action would not result in cumulative impacts to floodplains and their natural and beneficial values.



**Figure 3-9. Proposed Project components in relation to floodplains in the Project area**

## 3.5 Biological Resources

### 3.5.1 Affected Environment

The Project area lies in the Mississippi Valley Loess Plains Level III ecoregion, while the Project site is located within the Loess Plains Level IV ecoregion (USEPA 2022). This ecoregion is a productive agricultural area of soybeans, cotton, corn, milo, and sorghum crops, along with livestock and poultry. Natural plant communities in this ecoregion are oak-hickory and southern floodplain forests, although most of the forest cover has been removed for cropland. Some less-disturbed bottomland forest and cypress-gum swamp habitats remain in the area.

Habitat assessments were conducted by HDR environmental scientists in September 2022, presence/absence surveys were conducted by TVA biologists for threatened and endangered plant and aquatic species in April 2023, bat mist netting surveys were conducted by Environmental Solutions & Innovations, Inc. bat biologists in June 2023, and a federal and state protected plant species and habitat survey was conducted by environmental consultant Dan Spaulding on the Project site in October 2023 (Appendix C). Results of the background research and field surveys are described in this section.

#### 3.5.1.1 Vegetation

Field surveys of the Project site, conducted between September 2022 as well as October and November 2023, focused on documenting plant communities, invasive plants, and the presence of threatened and endangered plant species on portions of the Project site that would be disturbed by the Project. Using the National Vegetation Classification System (Grossman et al. 1998), vegetation types observed during field surveys consist of row crops, dry deciduous forest, mesic deciduous forest, herbaceous, and wet deciduous forest. The plant communities observed on the Project site are common and well represented throughout the region. The structure and species composition of forest stands on the Project site varies, but no forested areas on the Project site had the structural characteristics indicative of old growth forest (Bureau of Land Management 2024). Factors like soils, slope, and landscape help determine the type of forest present, but previous land use is an important factor determining the number and type of species a forest stand supports. The forest stands present on the Project site are heavily disturbed by human activities and contain a large proportion of invasive species.

Most of the Project site is comprised of agricultural fields, 430 acres (88 percent), with forested edges. Current management activities on the Project site are focused on production of cotton, soybean, and corn, with crop harvesting underway at the time of the 2022 surveys. Forested areas comprise approximately 51 acres (10 percent) of the Project site. Most large contiguous forest stands are in the central and southeastern sections of the Project site with other smaller forested areas located along streams and fields. Average diameter at breast height (DBH) in these forest areas is 20–40 inches. Table 3-9 provides a summary of the vegetation community types with four of the community types occupying less than four percent of the Project site. Figure 3-10 displays the locations of the plant communities in the Project site. See Appendix C for further information.

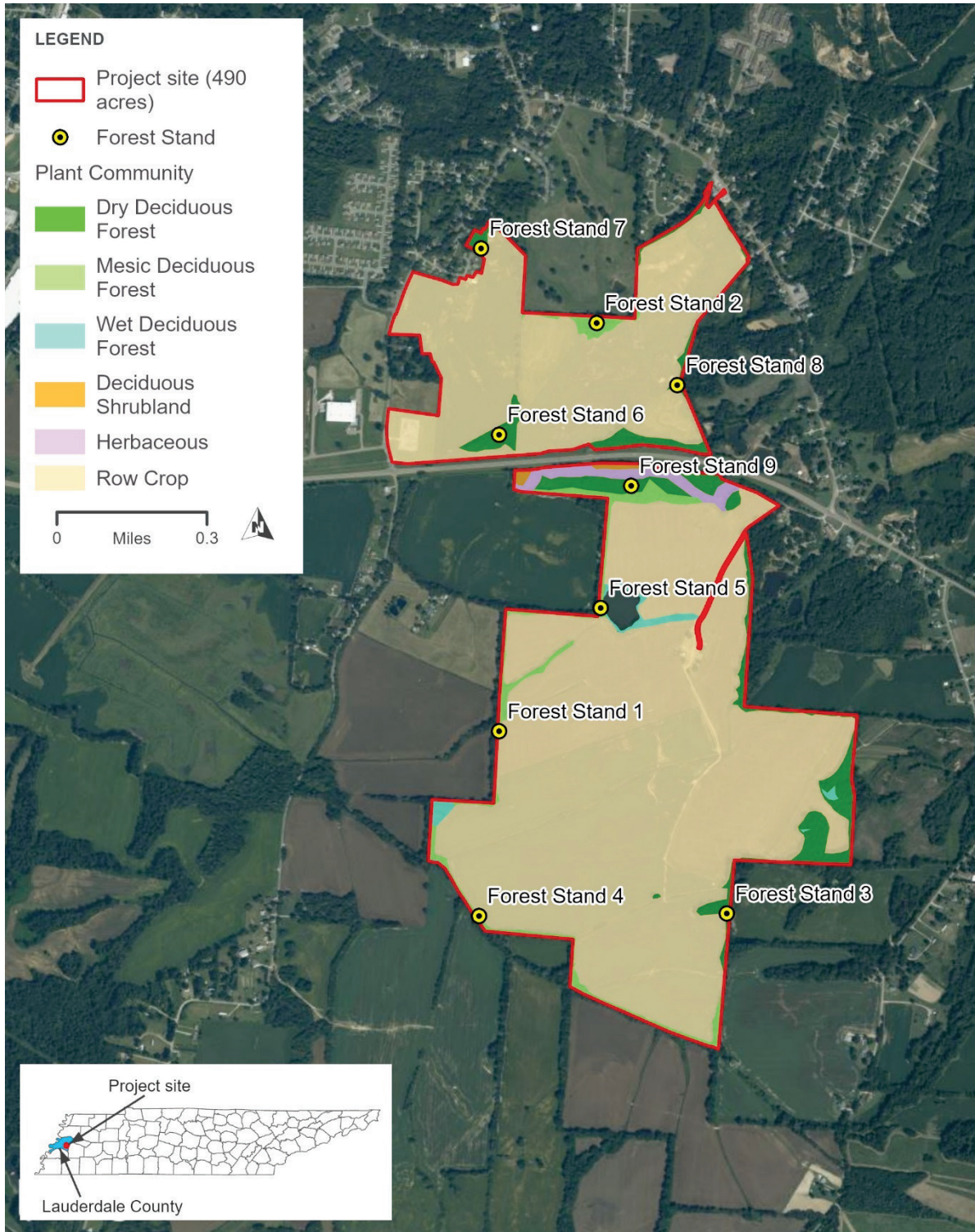


**Table 3-9. Vegetation communities on the Project site**

<b>Vegetation Community</b>	<b>Approximate Area (acres)</b>	<b>% of Project site</b>
Row Crops (cotton, soybean, and corn)	430	88%
Dry Deciduous Forest	30	6%
Mesic Deciduous Forest	16	3%
Herbaceous	7	1%
Wet Deciduous Forest	4	<1%
Open Water	3	<1%
<b>Total</b>	<b>490</b>	<b>100%</b>

Dry and mesic deciduous forests, characterized by canopies composed of more than 70 percent deciduous trees, border the agricultural fields on the Project site and feature a diverse array of tree species. Wet deciduous forests exist around the pond and several of the wetlands on the Project site. Dominant tree species within the forested areas along the Project site boundary include black walnut, black willow, American sycamore, sugar maple, white oak, sugarberry, black cherry, and Osage orange. Common overstory and midstory plants found in the forested areas consisted of black willow, sugar maple, and sugarberry. The shrub layer of the forested areas contains highbush blueberry and sassafras. Average DBH of overstory species is approximately 20–40 inches. Common herbaceous plants found in the herb layer includes the following species: cinnamon fern, proso millet, royal fern, valley redstem, nutgrass, and redtop panic grass. Common vine plants found in the forested areas include poison ivy, crossvine, greenbriers, and Virginia creeper. At several locations within wet deciduous forest habitat, the forest surrounds open water which support species like black willow and black alder. Forested wetlands on site include hydrophytic species listed above such as sycamore, black willow, and American elm (Appendix C).

Herbaceous vegetation communities are defined as non-cultivated areas with herbaceous species accounting for greater than 70 percent of total cover. Several emergent wetlands on the Project site are dominated by herbaceous vegetation, primarily proso millet due to the disturbed nature of the area (Appendix C).



**Figure 3-10. Vegetations communities on the Project site**

### 3.5.1.1.1 Non-Native and Invasive Plants

Noxious weeds are defined as any plant or plant product that can directly or indirectly injure or cause damage to crops, livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment (USDA 2023b). USDA maintains a list of federally recognized noxious weeds (USDA 2010, 2012). No federally noxious weeds were observed on the Project site.

Seven non-native invasive species were documented on the Project site, including black alder, autumn-olive, Japanese honeysuckle, Japanese stiltgrass, Johnson grass, Chinese privet, and multiflora rose. These species are most often found in ruderal forested areas, along field edges, and in areas prone to disturbance. Japanese honeysuckle, Japanese stiltgrass, Chinese privet, black alder, and multiflora rose were found in some of the forested stands. Invasive plants were found in both forest and herbaceous vegetation areas. These species occur on about 15 percent of the Project Site and in both forest and herbaceous vegetation areas.

### 3.5.1.2 Wildlife

Vegetation communities described in the prior section provide suitable habitat for many common wildlife inhabiting the region, both seasonally and year-round. The majority of the Project site is made up of agricultural fields, hayfields/pastureland, and other herbaceous areas, such as lawns, that offer habitat to bird species such as the grasshopper sparrow, sedge wren, and eastern meadowlark among others (Nocera and Koslowsky 2011).

Mammals potentially present in fields or pasture include the northern short-tailed shrew, coyote, and eastern harvest mouse among others (Map of Life 2023). Reptiles with the potential to occur in agricultural portions of the Project site include the garter snake, black rat snake, kingsnake, and copperhead (David 2020).

Forested vegetation communities are also present on the Project site. These vegetation communities offer habitats to bird species such as the blue jay, warbling vireo, and tufted titmouse among others. Mammals with a potential to occur within forested areas on the project site include the Appalachian cottontail, eastern gray squirrel, long-tailed weasel, and woodland vole among others. Amphibian species such as the spring peeper could also be present in forested areas on the Project site. Reptiles with the potential to occur in forested areas of the Project site include species such as the coal skink and southeastern five-lined skink among others (TWRA 2024).

The wetlands on the Project site offer habitats to a wide variety of species, including birds such as the American bittern, Virginia rail, and Acadian flycatcher among others. Mammals that frequent wetland habitats include species such as the bobcat, swamp rabbit, racoon, and marsh rat. Amphibian species with potential to occur within wetlands on the Project site include species such as the northern cricket frog or green tree frog among others. Reptiles that could potentially inhabit wetlands on the Project site could include species such as the eastern wormsnake, common king snake, or eastern mud turtle among others (TWRA 2024).

Pedestrian surveys of the Project site for terrestrial wildlife were conducted simultaneously with the vegetation survey in September 2022 and in November 2023. Table 3-10 includes a list of species that were either directly observed on the Project site or whose evidence (i.e., tracks, scat, remains) was identified during the field survey. Additional details on field observations are provided in Appendix C.

**Table 3-10. Common wildlife species observed on the Project site**

<b>Species Observed (Common Name)</b>	<b>Scientific Name</b>	<b>Notes/Habitat Observed</b>
<b>Birds</b>		
Woodpecker sp.		Flying around a tree and pecking at tree within upland forested habitat
Northern cardinal	<i>Cardinalis cardinalis</i>	Flying around low-hanging branches within scrub/shrub habitat
American crow	<i>Corvus brachyrhynchos</i>	Flying overhead
Red-tailed hawk	<i>Buteo jamaicensis</i>	Flying overhead
Killdeer	<i>Charadrius vociferus</i>	In agricultural fields and roadbeds in open areas
Black vulture	<i>Coragyps atratus</i>	Flying overhead
Blue jay	<i>Cyanocitta cristata</i>	Flying overhead
European starling	<i>Sturnus vulgaris</i>	Flying overhead
Carolina wren	<i>Thryothorus ludovicianus</i>	Flying overhead
<b>Amphibians</b>		
Spring peeper	<i>Pseudacris crucifer</i>	Heard near pond
American toad	<i>Anaxyrus americanus</i>	In damper forested areas throughout the site
Green treefrog	<i>Hyla cinerea</i>	Within a smaller wetland
<b>Reptiles</b>		
Five-lined skink	<i>Plestiodon fasciatus</i>	In forested areas
<b>Invertebrates</b>		
Grasshopper sp.		Flying through the cotton and soybean fields
Paper wasp		In nest bordering forested wetland
<b>Mammals</b>		
White-tailed deer	<i>Odocoileus virginianus</i>	In forested area
<b>Tracks/Scat/Remains</b>		
Turtle sp. remains		Near a dry pond
Deer tracks and scat		In several locations across the site
Raccoon tracks		In several of the creek beds throughout the site

### 3.5.1.2.1 Migratory Birds

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to take certain actions to conserve migratory birds and implement the MBTA. The MBTA prohibits the “take” of migratory birds. The regulatory definition of “take” as defined by 50 CFR § 10.12, “means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue hunt, shoot, wound, kill, trap, capture, or collect.” The following prohibitions apply to migratory bird nests: “possession, sale, purchase, barter, transport, import and export, take, and collect.” The MBTA is executed and enforced by USFWS. TVA and SR Ripley II, LLC and its contractors would act in compliance with the MBTA.

Approximately 290 birds have been identified in Lauderdale County (eBird 2023), and additional species may occur regularly. USFWS maintains a list of migratory birds of conservation concern (USFWS 2021). These species are not listed under the ESA but are a high conservation priority of USFWS and without additional conservation action are likely to become candidates for listing under the ESA. Thirty-nine species of birds of conservation concern are listed for Bird Conservation Region 27, Southeastern Coastal Plain, which contains the Project site. Of these 39 species, at least 18 potentially occur with some regularity on or in the immediate vicinity of the Project site based on habitat observed (Table 3-11).

Both bald and golden eagles are protected by the MBTA and the Bald and Golden Eagle Protection Act (BGEPA). Bald eagles typically utilize forested areas adjacent to large bodies of water for nesting and roosting habitat. These birds nest and roost in tall, mature coniferous or deciduous trees that afford a wide view of the surroundings. Although bald eagles are frequently observed in Lauderdale County (eBird 2023), the suitability of the Project site as habitat for the bald eagle is low due to the absence of large water bodies on or nearby the Project site.

The golden eagle is a rare winter resident in Tennessee and most reports of the species have been in the vicinity of reservoirs near a mix of forest and open habitats for foraging. One golden eagle has been reported from Lauderdale County (eBird 2023) and the golden eagle is not likely to occur on the Project site.

Osprey typically inhabit areas along large rivers, lakes, and reservoirs and 24 observations were made in Lauderdale County (eBird 2023). While osprey are no longer listed as endangered in the state of Tennessee, they are a species of interest to TVA. In Tennessee, osprey arrive in March to begin their breeding season, building nests and raising young from April through July. Osprey build nests in trees and man-made structures (e.g., transmission structures) near or over water. Forested areas located along streams and open water features may provide suitable habitat for osprey on the Project site. Suitable habitat was observed within the larger open waters located on the northeastern and southeastern portions of the Project site, but no individuals were observed nesting on utility poles and no nests were located during the field surveys.

**Table 3-11. Migratory bird species of concern potentially occurring on the Project site**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Season of Occurrence</b>	<b>Likelihood of Presence</b>	<b>Habitat Description</b>
Eastern whip-poor-will	<i>Antrostomus vociferus</i>	Spring through fall	Likely	Inhabits deciduous and mixed forests with open understory and forest edges; reported from vicinity
Chimney swift	<i>Chaetura pelagica</i>	Spring through fall	Likely	Nests in chimneys and less frequently large, open-topped hollow trees; reported from vicinity and likely forages over Project site
Chuck-will's-widow	<i>Antrostomus carolinensis</i>	Spring through fall	Possible	Inhabits oak and pine woodlands and edges of swamps
Lesser yellowlegs	<i>Tringa flavipes</i>	Spring and fall	Possible	Inhabits extensive emergent wetlands and seasonally flooded agricultural fields with sparse, low vegetation
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Year-round	Likely	Inhabits open forests and pine savannahs, reported from vicinity
Wood thrush	<i>Hylocichla mustelina</i>	Spring through fall	Likely	Inhabits deciduous and mixed forests with shrubs in understory; reported from vicinity
Bachman's sparrow	<i>Thryomanes bewickii</i>	Spring through fall	Possible	Inhabits brushy areas, thickets and scrub in open country, open and riparian woodland; reported from vicinity
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Spring through fall	Possible	Inhabits grasslands of intermediate height and are often associated with clumped vegetation interspersed with patches of bare ground; reported from vicinity
Henslow's sparrow	<i>Centronyx henslowii</i>	Spring	Likely	Inhabits open fields and meadows with grass interspersed with weeds or shrubby vegetation, especially in damp or low-lying areas; reported from vicinity
Field sparrow	<i>Spizella pusilla</i>	Year-round	Likely	Inhabits grasslands with scattered shrubs and saplings, recently clear-cut areas; reported from vicinity
Rusty blackbird	<i>Euphagus carolinus</i>	Winter	Possible	Inhabits forested wetlands
Prothonotary warbler	<i>Protonotaria citrea</i>	Spring through fall	Possible	Inhabits forested wetlands with areas of standing water
Kentucky warbler	<i>Geothlypis formosa</i>	Spring through fall	Likely	Inhabits moist deciduous forest with shrubby understory
Cerulean warbler	<i>Setophaga cerulea</i>	Spring through fall	Unlikely	Inhabits large tracts of mature deciduous forest with scattered canopy gaps

Common Name	Scientific Name	Season of Occurrence	Likelihood of Presence	Habitat Description
Prairie warbler	<i>Setophaga discolor</i>	Spring through fall	Likely	Inhabits brushy fields and recently harvested, regenerating woodlands
Osprey	<i>Pandion haliaetus</i>	Spring through fall	Possible	Inhabits areas near large bodies of water, may nest on TLs
Bald eagle	<i>Haliaeetus leucocephalus</i>	Year-round	Unlikely	Inhabits coasts, rivers, large lakes; in migration, also mountains, open country.
Golden eagle	<i>Aquila chrysaetos</i>	Winter	Unlikely	Inhabits open mountains, foothills, plains, open country

Source: USFWS 2021; NatureServe 2023; TWRA 2023a

### 3.5.1.3 Aquatic Life

A desktop review of existing natural heritage data, existing knowledge of the distribution of aquatic fauna and their preferred habitats, existing hydrologic data, and aerial imagery was conducted to analyze the proposed Project site prior to aquatic field surveys. During HDR field surveys, environmental scientists observed the following species: leopard frogs, green frogs, cricket frogs, unidentified tadpole species, and western mosquito fish with streams throughout the Project site. Additionally, pond sliders were observed in a pond on the Project site.

Field surveys of the Project site for aquatic species were conducted by TVA biologists in April 2023 (Appendix C). Most streams encountered on the Project site were degraded due to ongoing agricultural practices. These streams were generally channelized and actively eroding, creating an incised stream channel that supports very little aquatic life. Fish and crayfish sampling was conducted in Hyde Creek and associated tributaries. One fish (black bullhead) and one crayfish (warpaint mudbug) were collected in unnamed tributaries to Hyde Creek; one fish (western mosquito fish) was collected in Hyde Creek during the sampling and all species are relatively common. A list of aquatic species encountered during the aquatic surveys are included in Table 3-12.

**Table 3-12. Aquatic species encountered on the Project site**

<b>Species Observed (Common Name)</b>	<b>Scientific Name</b>	<b>Notes/Habitat Observed</b>
<b>Amphibians</b>		
Leopard frog	<i>Lithobates pipiens</i>	In multiple streams throughout the site
Green frog	<i>Lithobates clamitans</i>	In multiple streams throughout the site
Cricket frog	<i>Acris spp.</i>	In streams and ponded areas throughout the site
Tadpole sp.	<i>Lithobates spp.</i>	In many puddles and streams throughout the site
<b>Reptiles</b>		
Pond slider	<i>Trachemys scripta</i>	In pond on the site
<b>Fish</b>		
Black bullhead	<i>Ameiurus melas</i>	In unnamed tributary to Hyde Creek
Western mosquito fish	<i>Gambusia affinis</i>	In Hyde Creek
<b>Crayfish</b>		
Warpaint mudbug	<i>Lacunicambarus erythroductylus</i>	In burrows alongside unnamed tributary to Hyde Creek
<b>Insects</b>		
Caddisfly	<i>Trichoptera</i>	In many drainages throughout the site
Midge	<i>Ceratopogonidae</i>	In many drainages throughout the site
Mayfly	<i>Ephemeroptera</i>	In many drainages throughout the site
Scud	<i>Amphipoda</i>	In many drainages throughout the site
Fly larva sp.	<i>Psychoda spp.</i>	In many drainages throughout the site

#### **3.5.1.4 Rare, Threatened, and Endangered Species**

Rare, threatened, and endangered species are regulated by both the federal and state governments. Following TVA (2023a) guidelines, HDR reviewed the TVA Regional Natural Heritage Database (RNHD; TVA 2022c) for aquatic species within the Cane Creek watershed (HUC 0801020807), plant species within five miles of the Project site, known caves within three miles of the Project site, terrestrial species within three miles of the Project sites, and natural areas within three miles of the Project site. HDR also reviewed TDEC Rare Species Data Viewer (TDEC 2024) for state or federal species of conservation concern with potential to occur on the Project site and within a three-mile radius of the Project site. In conjunction with the TVA RNHD, the USFWS Information for Planning and Consultation (IPaC) for federal species of conservation concern was examined for species with potential to occur on the Project site and Lauderdale County (USFWS 2024). The compiled animal species lists are included in Appendix C.

Based on this research as well as field surveys conducted in September 2022 and April 2023, the Project site contains suitable or potentially suitable habitat for three federally listed bat species, one federally listed reptile, and one insect that is a candidate for listing as well as one mammal species in need of management, one state-listed fish species, two fish species in need of management, and three bird species in need of management (Table 3-13). No designated critical habitat for federally listed species occurs on or in the vicinity of the Project site. No caves or other unique terrestrial animal habitats were observed during field reviews or are known within three miles of the Project site. No state-



or federally listed plant species are known within five miles of the Project site and none were observed during field surveys. No federally listed plant species are known within Lauderdale County. Five plant species of special concern and two state-listed plant species are known within Lauderdale County, but none are anticipated to occur on the Project site due to the absence of suitable habitat.

**Table 3-13. Federally and state-listed species potentially occurring on the Project site**

Common Name	Scientific Name	Status <sup>1</sup>		Likelihood of Presence	Habitat Description
		Federal	State		
<b>Mammals</b>					
Northern long-eared bat	<i>Myotis septentrionalis</i>	E	--	Possible	Inhabits a variety of habitats including wet meadows, damp woods, uplands, abandoned structures, and sinkhole fissures/karst features; found statewide.
Indiana bat	<i>Myotis sodalis</i>	LE	E	Possible	Inhabits various habitats including wet meadows, damp woods, and uplands, including abandoned structures
Tri-colored bat	<i>Perimyotis subflavus</i>	PE	T	Possible	Inhabits open-grassy fields, hayfields, shrubby fields, fence rows, and edges of woods
Little brown bat	<i>Myotis lucifugus</i>	UR	--	Possible	Inhabits various habitats including caves, abandoned structures, and forested areas
Eastern woodrat	<i>Neotoma floridana illinoensis</i>	--	D	Possible	Inhabits forested areas
<b>Reptiles</b>					
Alligator snapping turtle	<i>Macrochelys temminckii</i>	PT	T	Unlikely	Inhabits deep pools in large rivers, lakes and swamps
<b>Fish</b>					
Alligator gar	<i>Atractosteus spatula</i>	--	D	Unlikely	Inhabits sluggish pools of large rivers, oxbows, swamps, and backwaters
Blue sucker	<i>Cycleptus elongatus</i>	--	T	Unlikely	Inhabits swift waters over firm substrates in big rivers
Plains minnow	<i>Hybognathus placitus</i>	--	D	Unlikely	Inhabits clear to highly turbid rivers and creeks with sandy bottoms
<b>Insects</b>					
Monarch butterfly	<i>Danaus plexippus</i>	C	--	Possible	Inhabits meadows and grasslands with nectar producing plants and milkweed.
<b>Birds</b>					
Little blue heron	<i>Egretta cerulea</i>	--	D	Possible	Forages in wetlands and along shorelines, nests in forest near water bodies
Cerulean warbler	<i>Setophaga cerulea</i>	--	D	Unlikely	Inhabits extensive mature deciduous forest with scattered canopy gaps
Swainson's warbler	<i>Limnothlypis swainsonii</i>	--	D	Unlikely	Inhabits bottomland forests with thick shrub, cane, and/or sapling understory

Common Name	Scientific Name	Status <sup>1</sup>		Likelihood of Presence	Habitat Description
		Federal	State		
<b>Plants</b>					
Tissue sedge	<i>Carex hyaline</i>	--	S	Unlikely	Inhabits forested bottomland swamps and riverbanks
Featherfoil	<i>Hottonia inflata</i>	--	S	Unlikely	Inhabits ditches, wet sloped areas, and ponded areas. In Tennessee most likely to occur in Reelfoot Lake
Cedar elm	<i>Ulmus crassifolia</i>	--	S	Unlikely	Inhabits bottomland swamps and along stream and riverbanks
Lake cress	<i>Neobeckia aquatica</i>	--	S	Unlikely	Inhabits slow moving shallow open waters
Red starvine	<i>Schisandra glabra</i>	--	T	Unlikely	Inhabits loess bluffs along the Mississippi River
Ovate-leaved arrowhead	<i>Sagittaria platyphylla</i>	--	S	Unlikely	Inhabits swamps
Butternut	<i>Juglans cinerea</i>	--	T	Unlikely	Inhabits well-drained bottomland and floodplain forests

Sources: USFWS 2024; TVA 2022c; TDEC 2024

<sup>1</sup> Status Codes: C = Candidate for listing; D = Deemed in Need of Management; E = Endangered; LE = Listed Endangered; S = Special Concern; T = Threatened; PE = Proposed Endangered; PT = Proposed Threatened

<sup>2</sup> TWRA 2023b; USFWS 2006; USFWS 2015

One state species deemed in need of management that could occur on the Project site is the eastern woodrat. This species inhabits forested areas. Suitable habitat was observed on the Project site, but no individuals were observed during field surveys.

The northern long-eared bat, Indiana bat, little brown bat, and tri-colored bat could also occur on the Project site. During the summer, the Indiana bat and northern long-eared bat roost singly or in colonies underneath bark, in cavities, or crevices of both live and dead trees of varying size, age, and species (USFWS 2015). The Indiana bat and northern long-eared bat overwinter in large numbers in caves and cave-like structures such as mines and railroad tunnels. The tricolored bat roosts in trees, cliffs, and sometimes buildings in the summer (TWRA 2024b). This species hibernates in caves, rock crevices, and mines (TWRA 2024b). The little brown bat may also occur on the Project site and was targeted in mist net surveys in anticipation of its potential status change. During the summer, male little brown bats can be solitary or living in small colonies that inhabit in rocky crevices, hollow trees, loose bark, or under shingles or sidings of building and females of this species lives in nursery colonies in the spring and summer, which could be cliff crevices, hollow trees, under loose bark, or in undisturbed buildings (TWRA 2024a). In winter, the little brown bat hibernates in caves.

Approximately 53 acres was considered suitable summer foraging and roosting habitat for the Indiana bat, northern long-eared bat, tricolored bat, and little brown bat (Figure 3-11). These areas consist of trees of varying ages, including dead snags, that have exfoliating bark, crevices, or cracks. Foraging habitat for these species is present in the Project site over ponds, wetlands, open agricultural fields, and streams. Additional foraging habitat occurs within forested habitat, forest edges, and tree lines. Foraging habitat for these species is present in the TL upgrade area over wetlands, open agricultural fields, forest edges, and tree lines. The water resources for these bat species include a pond primarily

fed by rainwater and stream channels located on the Project site and TL upgrade area. No suitable overwinter habitat exists for the federally listed bat species.

The 53 acres of suitable summer bat habitat on the Project site was categorized on quality of potential summer roosting habitat (Table 3-14). While most bat habitat is found in forested areas on the Project site, some bat habitat was identified across surface waters and in herbaceous vegetation communities. High quality habitat contains mature forest with several trees that have a DBH of >15 inches, is near waterways, and has low density understory. The high quality habitat is located on the western and northern perimeters of the Project site and in the area between two fields in the eastern portion of the Project site. Bat habitat categorized as high quality account for approximately 31 acres of the Project site. Moderate quality habitat contains several suitable roosting trees that have a DBH of 3-15 inches and a denser understory. The moderate quality habitat consists of mixed deciduous forest located along the northern border of the Project site and centrally around an agricultural freshwater pond. These areas were considered to have moderate quality habitat due to historic agricultural use and few trees with exfoliating bark. The moderate quality habitat accounts for approximately 15 acres of the forested area on the Project site. Low quality habitat contains younger trees that have grown close together (TVA 2023a). Low quality habitat was observed south of State Route 19 on the Project site. The seven acres of low-quality habitat consisted of mixed deciduous trees with a high percentage of sapling and vine vegetation and herbaceous vegetation communities. The buildings and culverts were inspected for bat habitat, but none were deemed as suitable habitat due to active human use and frequent water flow, respectively (Appendix C).

A mist net survey for bats was conducted on the Project site for four nights in June 2023. Eight eastern red bats, a common species found across Tennessee, were captured during the survey. No threatened, endangered, or proposed species were captured. Further detail on the mist net survey can be found in Appendix C.

**Table 3-14. Summary of suitable bat habitat stands**

Stand Number	Habitat Suitability	Area (acres)
Stand 1	High	3.7
Stand 2	High	2.6
Stand 3	High	13.5
Stand 4	Low/Moderate	6.3
Stand 5	High/Moderate	9.6
Stand 6	Moderate	3.1
Stand 7	High	1.1
Stand 8	Low/Moderate	6.0
Stand 9	Low	6.6
<b>Total:</b>		<b>52.5</b>

The alligator snapping turtle is unlikely to occur within the Project site. This species inhabits large bodies of water, which were not observed during the field surveys. The alligator gar, blue sucker, and plains minnow are unlikely to occur within the Project site due to the absence of suitable habitat.

Meadows and grasslands with nectar-producing plants are present on the Project site and may provide suitable habitat for the monarch butterfly. Due to the time of year the survey was performed, milkweed was not in bloom and not easily identified and no milkweed was observed at the time of survey.

Due to the presence of wetlands and forests, the little blue heron could be present on the Project site. The cerulean warbler and Swainson's warbler are not anticipated to inhabit the Project site as suitable habitat was not observed for these species.

None of the plant species listed in Table 3-13 or suitable habitat for these species were observed during field surveys.

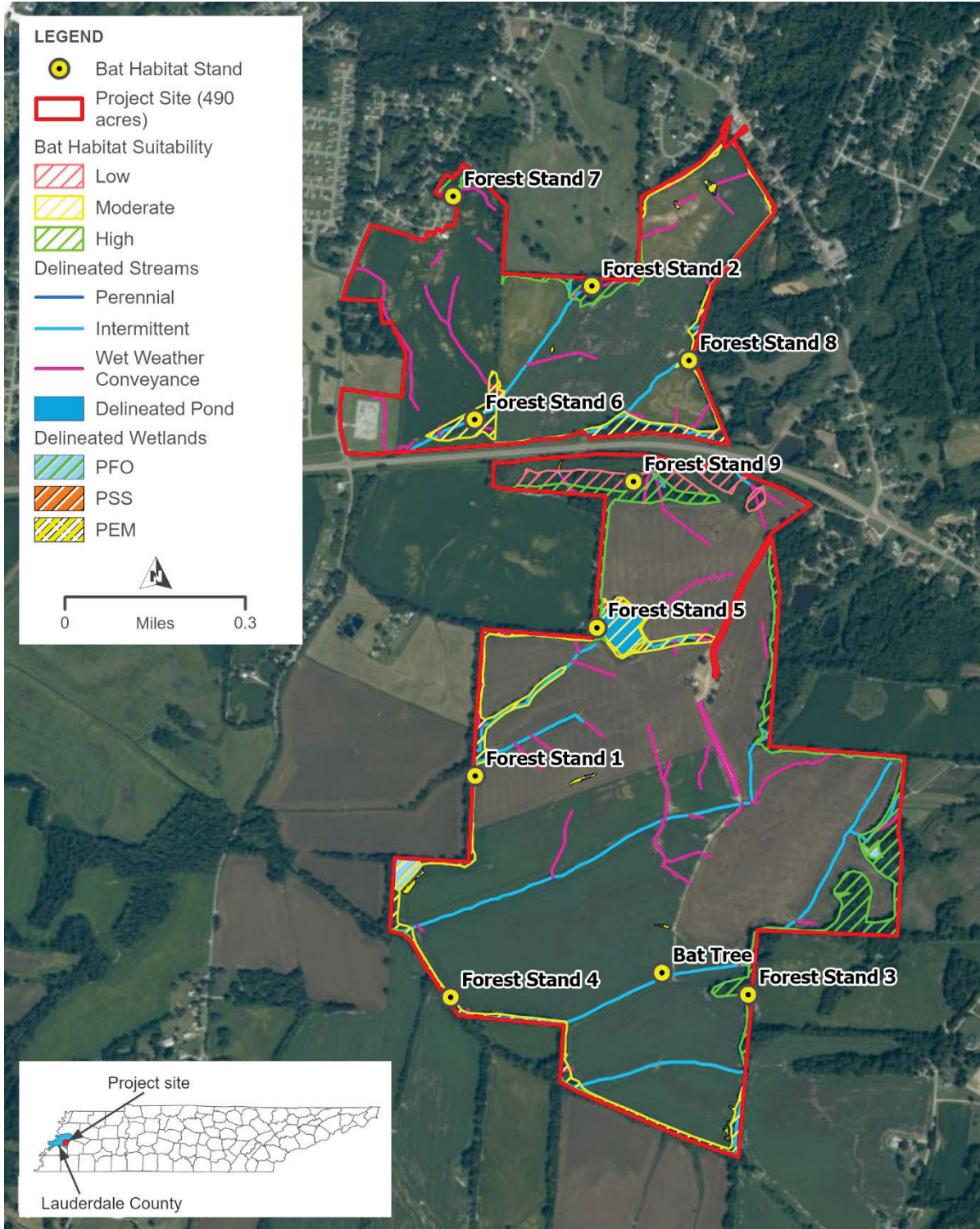


Figure 3-11. Bat habitat on the Project site

## **3.5.2 Environmental Consequences**

### **3.5.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts to biological resources would occur. Existing land use would likely remain primarily agricultural land for the foreseeable future.

### **3.5.2.2 Proposed Action Alternative**

Under the Proposed Action Alternative, direct impacts to vegetation and wildlife would result from construction and operation of the Project.

#### **3.5.2.2.1 Vegetation**

Under the Proposed Action Alternative, construction of the solar facility would have minor impacts to vegetation. Most of the Project site consists of agricultural fields (430 acres) that have been regularly disturbed and are managed for crop production. About nine to 30 acres of dry deciduous forest, six to 16 acres of mesic deciduous forest, and two to four acres of wet deciduous forest would be cleared because of Project site construction, totaling approximately 17 acres at a minimum and up to 51 acres of permanent impacts. Additional mixed deciduous trees occur outside of the Project footprint. These areas support native and non-native species and have low conservation value. The forested areas, primarily consisting of deciduous trees, do not support rare or uncommon plant communities. The Project site's forest cover is representative of the local areas forest cover, which is made up of cropland interspersed with oak-hickory and southern floodplain forests (Griffith et al. 1998)

Clearing and grading activities would temporarily remove vegetation from the Project site. Following construction, disturbed portions within the fenced-in areas of the solar facility would be seeded with non-invasive grasses. Vegetation on the 194 acres of developed portions and within a 200-foot shade reduction buffer around the fenced-in solar panels (approximately 159 acres) of the Project site would be maintained to control growth through occasional mowing. Soil erosion and sediment control measures would be used to minimize the potential for increased soil erosion and runoff. Following construction, implementation of soil stabilization and vegetation management measures would reduce the potential for erosion impacts during facility operation. The remaining areas would be undeveloped while allowing for agricultural or vegetation management activities. These portions of the Project site would eventually succeed from cropland to shrubland and eventually forest.

Herbaceous vegetation communities are within the TL upgrade areas and could be disturbed during TL upgrade activities. Impacts are anticipated to be minor and temporary, as the area would be allowed to revegetate after the completion of TL upgrade activities.

#### **3.5.2.2.1.1 Non-Native and Invasive Plants**

Under the Proposed Action Alternative, non-native and invasive plant species on the Project would be removed or graded and cleared during construction and managed with selective herbicides as needed during operation. To minimize the introduction and spread of invasive species, standard operating procedures would be consistent with EO 13112 (Invasive Species) for revegetating the area with non-invasive plant species.

#### **3.5.2.2.2 Wildlife**

Under the Proposed Action Alternative, the Project site would be cleared of debris and tall vegetation, mowed, and lightly graded, as needed for installation of the solar arrays and associated infrastructure. Direct effects to some individual animals would occur to those

individuals that are immobile during the time of habitat removal (e.g., during breeding/nesting and hibernation seasons). Habitat removal would likely disperse mobile wildlife into surrounding areas in attempts to find new food resources, shelter, and to reestablish territories. Security fencing would enclose discrete blocks of solar arrays, leaving corridors which would allow wildlife to travel across the Project site. Due to the large amount of already disturbed habitat being impacted, and the amount of similarly suitable habitat in areas immediately adjacent to the Project site, impacts to populations of common wildlife species are anticipated to be minimal to negligible.

#### **3.5.2.2.1 Migratory Birds**

Of the 39 birds of conservation concern, 18 could occur with some regularity on or in the immediate vicinity of the Project based on suitable available habitat. The clearing of forest would eliminate potential habitat for the Kentucky warbler, chuck-will's-widow, eastern whip-poor-will, chimney swift, wood thrush, rusty blackbird, prothonotary warbler, cerulean warbler, and red-headed woodpecker as well as other more common migratory birds inhabiting forests. The removal of wooded and brushy fencerows and scattered large trees would eliminate potential habitat for the prairie warbler, Henslow's sparrow, Bachman's sparrow, and field sparrow. Areas of the TL ROWs that are not maintained as grassland or cropland would provide habitat for the prairie warbler. The removal of open fields and croplands would eliminate potential habitat for the lesser yellowlegs and the grasshopper sparrow. The Project would establish 50-foot SMZs surrounding wetlands and intermittent streams that would include maintaining the existing riparian vegetation when possible. Therefore, the Project effects to wetlands and riparian vegetation would result in a negligible to minor adverse impact to populations of migratory birds.

Although construction and operation of the Project may reduce the foraging potential on the Project site, the Project is not anticipated to have an adverse effect on populations of migratory birds that require open country with scattered trees and shrubs, such as the prairie warbler, grasshopper sparrow, field sparrow, Bachman's sparrow, and Henslow's sparrow. Similar habitat type is available adjacent to the Project site, within Lauderdale County, and within adjacent counties, and would likely absorb displaced individuals.

51 acres of forested area would be cleared to minimize shading of the solar panels on the Project site. Impacts on mature, deep, and shady bottomland forest, which provides habitat for species such as the wood thrush, prothonotary warbler, rusty blackbird, chuck-will's-widow, and Kentucky warbler would occur. Taking into consideration the total of approximately 108,180 acres of forested land in Lauderdale County, the Project would have minor adverse effects on these species. Any effects would be limited in scale relative to the surrounding available habitat.

Overall, while the implementation of the Project would reduce habitat for some migratory bird species, particularly those occupying crop fields and open grassland habitats, the effect on migratory birds, while adverse, would be localized and minor.

Bald eagles are unlikely to nest or forage on the Project site due to its distance from large waterbodies; however, potential habitat exists along the existing Ripley–Covington 161-kV TL as bald eagles may nest on TL structures. Prior to construction activities, TVA would perform an aerial nest survey of each pole structure to identify active eagle nests, and if identified, TVA would engage USDA-Wildlife Services or USFWS as appropriate to provide guidance on avoidance and minimization measures and ensure compliance under federal law prior to commencement of work. With these measures, Project actions would not

impact bald eagles and would, therefore, be in compliance with the National Bald Eagle Management Guidelines (USFWS 2007). Suitable non-breeding roosting and foraging habitat for golden eagles exists on the Project site. However, due to the rarity of golden eagles in the region and the availability of suitable roosting and foraging in nearby similar habitat, the Project would likely not impact golden eagles.

Osprey typically inhabit areas along large rivers, lakes, and reservoirs and have been observed in Lauderdale County (eBird 2023). They forage over rivers and lakes and nest in trees or man-made structures (e.g., transmission structures) near or over water. Ospreys are unlikely to nest or forage on the Project site due to its distance from large waterbodies (TWRA 2023c). No individuals or nests were observed on the Project site.

#### **3.5.2.2.3 Aquatic Life**

Under the Proposed Action Alternative, impacts to aquatic life are expected to be minor or negligible. Potential impacts to aquatic species from the Project may result from herbicide runoff into streams. Indirect impacts to aquatic species may also occur due to minor increases in erosion and sedimentation during construction and operations. Streamside management zones, or vegetative buffers, would be left intact on the Project site. Thus, the changes would occur due to minor increases in erosion and sedimentation during construction and operations. These Project effects would be temporary and minimized by adherence to soil management BMPs.

Ephemeral streams and WWCs documented on the Project site only flow in response to precipitation events and do not support aquatic life. Ground disturbances surrounding ephemeral streams, in the form of installing small-diameter PV array pilings and trenching for installation of electrical cables, would be relatively minimal, and BMPs would be implemented to prevent or reduce surface water runoff from carrying suspended solids into adjacent waterbodies (TVA 2022b).

Due to the construction of road crossings using culverts, three intermittent streams (S008, S010, and S013) totaling an estimated 82 LF would be permanently affected. If access to the switchgear from Highland Street Extended is chosen, impacts to S013 would be avoided. Applicable CWA Section 404 and 401 permits would be obtained from USACE and TDEC for any stream alterations, and application of the terms and conditions of these permits would further minimize impacts to aquatic species.

#### **3.5.2.2.4 Rare, Threatened, and Endangered Species**

The northern long-eared bat, Indiana bat, tricolored bat, little brown bat, eastern woodrat, monarch butterfly, and little blue heron could occur on the Project site.

Forested areas provide potential roosting and/or foraging habitat for the four bat species. No suitable winter roosting habitat exists for the federally listed bat species. Minimal to negligible impacts are anticipated for the northern long-eared bat, Indiana bat, tricolored bat, and little brown bat due to the absence of hibernacula documented within five miles of the Project site and the anticipation of tree clearing associated with the Project. Up to the total forested area on the Project site and additional suitable bat habitat area, approximately 53 acres, may be cleared for the Project. This includes up to approximately 31 acres of high-quality bat habitat, 15 acres of moderate-quality bat habitat, and seven acres of low-quality bat habitat. However, no listed bat species were caught during the mist net survey conducted on the Project site. If burning needs to be conducted during April and May, when there is some potential for bats to be 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°F or greater. Taking into consideration the total of approximately 108,180 acres of forested land in Lauderdale County that provides potential bat habitat, clearing the existing vegetation, including 53 acres of existing bat habitat on the Project site, and light grading would be considered minor impacts due to the abundance of nearby habitat (NLCD 2021). While bat foraging habitat would be affected and that could result in effects to federally listed bat species, the amount of forested area to be removed is relatively small with consideration to the available acreage in the region. USFWS concurred with TVA’s “may affect but not likely to adversely affect” determinations regarding impacts to federally listed species during Section 7 ESA consultation.

Forested areas could provide suitable habitat for the eastern woodrat. Up to the total forest area on the Project site of approximately 51 acres could be cleared for the Project. Similar habitat is adjacent to the Project site, so the Project is anticipated to have minimal impacts on this species.

Potential suitable habitat, including flowering plants, for the monarch butterfly occurs on the fringes of the Project site where the solar facility would generally not be developed. Therefore, minimal to negligible impacts are anticipated.

Wetlands and forests on the Project site provide suitable foraging and nesting habitat for the little blue heron. Nesting habitat could be impacted as approximately 51 acres of forested land may be cleared on the Project site, however, similar suitable habitat is available adjacent to the Project site. Only 0.56 acres of wetlands are expected to be impacted, therefore impacts to foraging habitat for the little blue heron are expected to be minimal.

No suitable habitat was observed in the Project site for the alligator snapping turtle, alligator gar, blue sucker, plains minnow, cerulean warbler, Swainson’s warbler, tissue sedge, feather foil, cedar elm, lake cress, red starvine, ovate-leaved arrowhead, or butternut. Therefore, these species are not anticipated to be impacted by the Project.

### **3.5.2.3 Cumulative Impacts**

RFFAs may occur at multiple locations near the Project site, and these other projects would affect vegetation and wildlife habitat. However, given that agriculture is the dominant land use in the areas suited for development, future development would likely not result in substantial impacts to identified critical or unique terrestrial habitats. Considering the total of approximately 108,180 acres of forested land in Lauderdale County, habitat impacts by RFFAs are likely to be minimal (NLCD 2021). While RFFAs in the surrounding region could remove available habitats for wildlife in the foreseeable future, the impacts of the Project would not result in substantial cumulative impacts to vegetation and wildlife due to the small area of vegetation to be removed and the type of forest and other vegetative communities to be removed. Past and RFFAs in the surrounding region and their associated direct and indirect impacts are reasonably certain to gradually degrade existing streams and aquatic species on the Project site over the next several decades. Overall, because the impacts to federally and state-listed species would be avoided or minimized in consultation with USFWS, cumulative effects to threatened and endangered species would be minor.

## **3.6 Visual Resources**

### **3.6.1 Affected Environment**

Visual resources are composed of the visible character of a place and include both natural and human-made attributes. Visual resources influence how an observer experiences a particular location and distinguishes it from other locations. Such resources are important to people living in or traveling through an area and can be an essential component of historically and culturally significant settings. For this analysis, the scenery management system and associated analytical assessment procedures developed by the U.S. Forest Service are adapted for use within a natural and human-built environment and integrated with planning methods used by TVA (TVA 2016; USDA 1995). The general Project area viewshed is evaluated based on its scenic attractiveness and scenic integrity. Scenic attractiveness is a measure of the scenic beauty of a landscape based on perceptions of the visual appeal of landforms, waterways, vegetation, and the human-built environment. Scenic attractiveness is assessed as either distinctive, typical/common, or indistinctive. As adapted for this analysis, scenic integrity measures the degree of visual unity of the natural and cultural character of the landscape. Scenic integrity is evaluated as either low, moderate, or high. This analysis also considers the existing character of the Project site as an important factor in understanding the affected environment.

The Project site is comprised of agricultural fields situated on the outskirts of rural-residential areas within the city of Ripley and just outside the city limits in unincorporated Lauderdale County. The northern portion of the Project site borders a small neighborhood on Robinson Circle, a few single-family homes along Eastland Avenue, and Forerunner Church. The southern portion is adjacent to a few isolated single-family homes as well as the Wood Family Cemetery. The Project site is predominantly flat to gently sloping undeveloped agricultural land with forested areas bordering the Project site which also serve as riparian SMZs along on-site streams. Scenic attractiveness of the general Project area viewshed is rated as typical or common of a rural agricultural and rural residential area. Scenic integrity is assessed as moderate due to the relative unity of the surrounding natural and cultural character. Figure 3-12 and Figure 3-13 show general views of the Project site.



**Figure 3-12. Agricultural land on the Project site**



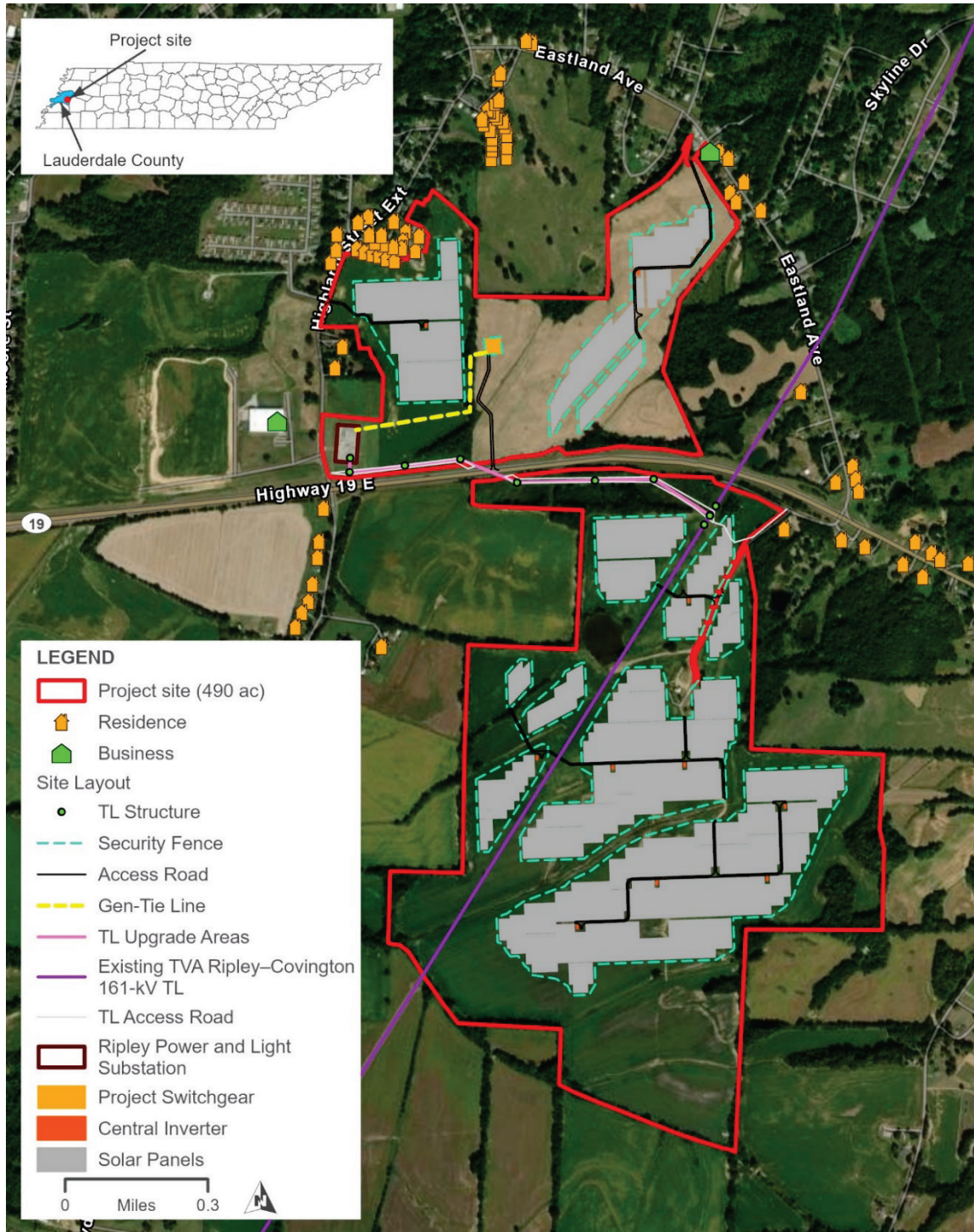
**Figure 3-13. Forested land on the Project site**

Prominent visual receptors (viewpoints) surrounding the Project site, where the changes to the appearance of the Project site (i.e., the visual effects) would be most readily observed, include along State Route 19, small residential concentrations along Highland Street Extended, Sadler Street, Crescent Drive, Bluebird Street, and Eastland Avenue, as well as isolated single family homes along John Lamar Road and Hyde Road (Table 3-15, Figure 3-14). The Wood Family Cemetery is also located just east of the Project site off Willie Paris Road and is overgrown and within a forested area.

Long-range views from viewpoints near the Project site, primarily along or off State Route 19, Highland Street Extended, Sadler Street, Crescent Drive, Bluebird Street, Eastland Avenue, Hyde Road, and John Lamar Road are largely obscured by mixed deciduous trees in fencerows and woodlots.

**Table 3-15. Viewpoints in the vicinity of the Project site**

<b>Location</b>	<b>Description</b>	<b>Viewpoint Type</b>	<b>Views to Project site</b>
State Route 19	Two-lane paved public road that extends east–west bisecting the Project site and intersects with US 51 to the northwest and Interstate 40 in the city of Brownsville to the southeast.	Road travelers	Partially obscured by mixed deciduous trees in fencerows and woodlots
Highland Street Extended	Two-lane paved public road that extends north–south approximately 0.3 mile west of the Project site, intersects with Eastland Avenue to the north and State Route 19 to the south.	Residential concentration of single-family homes Road travelers	Partially obscured by mixed deciduous trees in fencerows and woodlots
Sadler Street	Two-lane paved public road that intersects with Highland Street Extended.	Residential concentration of single-family homes	Partially obscured by mixed deciduous trees in fencerows and woodlots
Crescent Drive	Two-lane paved public road that intersects with Highland Street Extended and Bluebird Street.	Residential concentration of single-family and multi-family homes	Partially obscured by scattered individual mature deciduous trees and mixed deciduous trees in fencerows and woodlots
Bluebird Street	Two-lane paved public road that intersects with Crescent Drive and Eastland Avenue.	Residential concentration of single-family and multi-family homes	Partially obscured by scattered individual mature deciduous trees and mixed deciduous trees in fencerows and woodlots
Lynn Street	Two-lane paved public road that intersects with Robinson Circle and Eastland Avenue.	Residential concentration of single-family homes	Partially obscured by mixed deciduous trees in fencerows
Robinson Circle	Two-lane paved public road that intersects with Lynn Street and Eastland Avenue.	Residential concentration of single-family homes	Partially obscured by mixed deciduous trees in fencerows
John Lamar Road	Two-lane paved access road that intersects with State Route 19.	Two residential single-family isolated homes Road travelers	Partially obscured by mixed deciduous trees in fencerows and woodlots



**Figure 3-14. Viewpoints in the vicinity of the Project site**

### 3.6.2 Environmental Consequences

#### 3.6.2.1 No Action Alternative

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts to visual resources would result. Existing views of the Project site, primarily agricultural land, would remain relatively unchanged. Visual changes may occur over time as vegetation on the Project site changes. For example, if the Project site were no longer cultivated or mowed, vegetation would change from low-profile plants to shrubs and trees.

#### 3.6.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, SR Ripley II, LLC would construct and operate a 30-MW AC single-axis tracking PV solar power facility. Visual concerns are often associated with both large- and small-scale solar facilities and their electrical infrastructure. The Project site generally consists of predominantly flat to gently sloping farmland with woodlots and forested fencerows bordering parts of the Project site. Construction of the proposed facilities would convert what is currently primarily agricultural land to an industrial use mostly consisting of low-profile PV arrays. Figure 3-14 shows the proposed Project elements and the locations of nearby vantage points (receptors) from which Project elements may be visible. Figure 3-15 and Figure 3-16 show representative views of the type of solar panels proposed for the Project. In the morning, when panels would be facing east, the more pronounced visual effects of the glossy front PV panel surfaces would largely occur from vantage points to the east of the Project site, along State Route 19 and Eastland Avenue. In the evening, when panels would be facing west, the more pronounced visual effects would largely occur from vantage points to the west of the Project site, along State Route 19, Highland Street Extended, Sadler Street, Crescent Drive, and Bluebird Street.



Figure 3-15. Single-axis, tracking PV system with panels near maximum tilt as viewed from the east or west



**Figure 3-16. The backside of the solar panels in early morning or late afternoon configuration**

Construction activities would temporarily alter the visual character of the Project area. During construction, heavy machinery would be present, changing the appearance from area vantage points. Within the 194-acre area to be developed for the Project and 200-foot shading buffer for solar panels, trees and other tall vegetation would be removed, and portions of the area would be graded, changing the contour, color, and texture of the scenery attributes. During and after grading, the Project site would appear as a mixture of neutral colors such as browns and grays due to earthmoving, road construction, and installation of concrete pads. Water would be used to keep soil from aerosolizing; thus, dust clouds are not anticipated. Visual impacts from construction would be minimal at night, as most construction is anticipated to occur during the day. Overall, there would be minor direct and indirect impacts to visual resources in the Project area during the construction phase of the Proposed Action. However, these impacts would be temporary, lasting approximately 12 months, subject to weather.

The manufactured, structured appearance of the built facility would be most apparent from vantage points surrounding the Project site along State Route 19, Highland Street Extended, Sadler Street, Crescent Drive, Bluebird Street, and Eastland Avenue. The perimeter of the 11 large blocks of facility components and Project switchgear would be enclosed with six-foot-tall chain-link security fencing topped with three strands of barbed wire.

The Project would be more visually intrusive in the morning and late afternoon, when the panels would be facing east or west, respectively, at their maximum tilt, with the upper edge of the panels about eight feet from the ground. This effect would not be present at midday

when the panel profile would be flat and about five feet tall. The anti-reflective PV panel surfaces would minimize glare and reflection.

The visual alteration from agricultural and forested land in an area where scenic integrity is rated as moderate to high due to the relative unity of the surrounding natural and cultural character to a large solar facility would likely result in moderate adverse visual impacts. Overall, the visual effects of the built facility would likely be minor due to the visibility of relatively small portions of the facility components. Visual effects from the Project would be minimal on a larger scale, due to variation of the visual attributes of the Project area as distance from the Project increases.

Currently undeveloped portions of the Project site presently used as agricultural fields would remain undeveloped while allowing for agricultural or vegetation management activities, resulting in minor visual changes.

Ripley Power and Light would install a new approximately 0.3-mile 34.5-kV gen-tie line from the proposed Project switchgear to the existing Ripley Power and Light substation in the western portion of the Project site. The new TL structures would be visible to travelers along State Route 19, travelers and residences along Highland Street Extended and Hyde Road, and residences along Sadler Street. Other equipment associated with the 34.5-kV gen-tie line may also be visible. Because this area is already crossed by several TLs with prominent TL structures and the viewshed has been altered, the addition of an approximately 0.3-mile 34.5-kV gen-tie line would likely result in minimal to minor impacts to the scenery at viewpoints near the western portion of the Project site.

TVA would perform network upgrades to approximately 0.75 mile of its existing Ripley–Covington 161-kV TL. This extent of the TL is located within the Project site through a mix of forested areas and agricultural fields along State Route 19 and within view of some small residential concentrations. If used, a helicopter would be visible to these residences during the installation of OPGW in the vicinity. Other equipment associated with the TL upgrade activities may also be visible. Overall, the TL upgrade activities would likely result in temporary, minimal to minor impacts to the scenery at viewpoints in the vicinity of the TL upgrade areas.

### **3.6.2.3 Cumulative Impacts**

The Proposed Action would alter the visual character of the Project site by converting a large area of agricultural land to numerous low-profile parallel rows of PV panels and a switchgear. Much of the developed Project site would not be visible from nearby public roads and residences. The visual impacts at other locations around the Project site perimeter would be low to moderate and mostly at middle-ground distances. The potential industrial development of RFFAs in the Project area (up to 300 acres) could result in greater visual impacts due to the size of the buildings and supporting infrastructure. Because the visual impacts of the Proposed Action would be comparatively low and localized, the Proposed Action has little potential to result in adverse cumulative visual impacts.



## 3.7 Noise

### 3.7.1 Affected Environment

#### 3.7.1.1 Noise Regulations

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). The human ear does not perceive all sound frequencies equally well. Therefore, measured sound levels are adjusted or weighted to correspond more closely to noise perceived by human hearing. The adjusted noise metric that most closely duplicates human perception of noise is known as the A-weighted decibel (dBA). The threshold of human hearing is zero decibels (dB), and the threshold of discomfort or pain is around 120 dB.

The Noise Control Act of 1972, along with its subsequent amendments, delegates authority to the states to regulate environmental noise and directs government agencies to comply with local community noise statutes and regulations. Although there are no federal, state, or local regulations for community noise in Lauderdale County, the Project site is within the city limits of Ripley and is subject to the Ripley Municipal Code. As stated in the Ripley Municipal Code (MTAS 1994):

The erection (including excavation), demolition, alteration, or repair of any building in any residential area or section or the construction or repair of streets and highways in any residential area or section, other than between the hours of 7:00 A.M. and 6:00 P.M. on week days, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector granted for a period while the emergency continues not to exceed thirty (30) days. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavation of streets and highways between the hours of 6:00 P.M. and 7:00 A.M. and if he shall further determine that loss or inconvenience would result to any party in interest through delay, he may grant permission for such work to be done between the hours of 6:00 P.M. and 7:00 A.M. upon application being made at the time the permit for the work is awarded or during the process of the work.

The Project site was recently rezoned to Light Industrial and no parcels are considered residential districts (Ripley Municipal Planning Commission 2022).

A day-night average sound level ( $L_{dn}$ ) is a 24-hour noise descriptor used to assess noise impacts for land uses where people sleep and there is a heightened sensitivity to nighttime noise. The  $L_{dn}$  noise metric is recommended by USEPA and has been adopted by most federal agencies (USEPA 1974). The USEPA 1974 guidelines recommend that  $L_{dn}$  not exceed 55 dBA for outdoor residential areas. The U.S. Department of Housing and Urban Development (HUD) considers a  $L_{dn}$  of 65 dBA or less to be compatible with residential areas (HUD 1985). Common indoor and outdoor noise levels from various noise sources are listed in Table 3-16.

**Table 3-16. Common indoor and outdoor noise levels**

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

Source: American Association of State Highway and Transportation Officials (AASHTO) 1993

**3.7.1.2 Background Noise Levels**

The Project site is comprised of agricultural fields situated on the outskirts of rural-residential areas within the city of Ripley and just outside the city limits in unincorporated Lauderdale County. The northern portion of the Project site borders a small neighborhood on Robinson Circle and a few single-family homes along Eastland Avenue. The southern portion is adjacent to a few isolated single-family homes as well as the Wood Family Cemetery. Ambient noise at the Project site consists mainly of agricultural sounds, such as noises from farm machinery; natural sounds, such as from wind and wildlife; and moderate traffic sounds. Noise levels of these types generally range from 45 to 55 dBA (U.S. Department of Transportation [USDOT] 2006). Traffic noise levels along State Route 19, which extends east-west bisecting the Project site, likely range from 70 to 80 dBA at a distance of 50 feet (Corbisier 2003).

The Project site and a surrounding 0.5-mile radius were examined to identify potential noise-sensitive receptors. Noise-sensitive receptors are defined as those locations or areas where dwelling units or other fixed, developed sites of frequent human use occur. Approximately 417 noise-sensitive receptors are within the area examined (Figure 3-17).

These include residences, apartment buildings, farm buildings, garages, storage buildings, one church, one commercial building, one vacant building, and one industrial building with each building generally counted as one receptor. No receptors exist on the Project site as the several buildings presently on the site are no longer occupied or used and would be demolished as part of the Proposed Action. Residential concentrations are primarily located near the northern portion of the Project site, while a few residences and other building classifications are scattered outside of the eastern and western boundaries of the Project site. The nearest residence is approximately 150 feet from the nearest proposed PV array. The Forerunner Church is approximately 1,250 feet from the nearest proposed PV array.

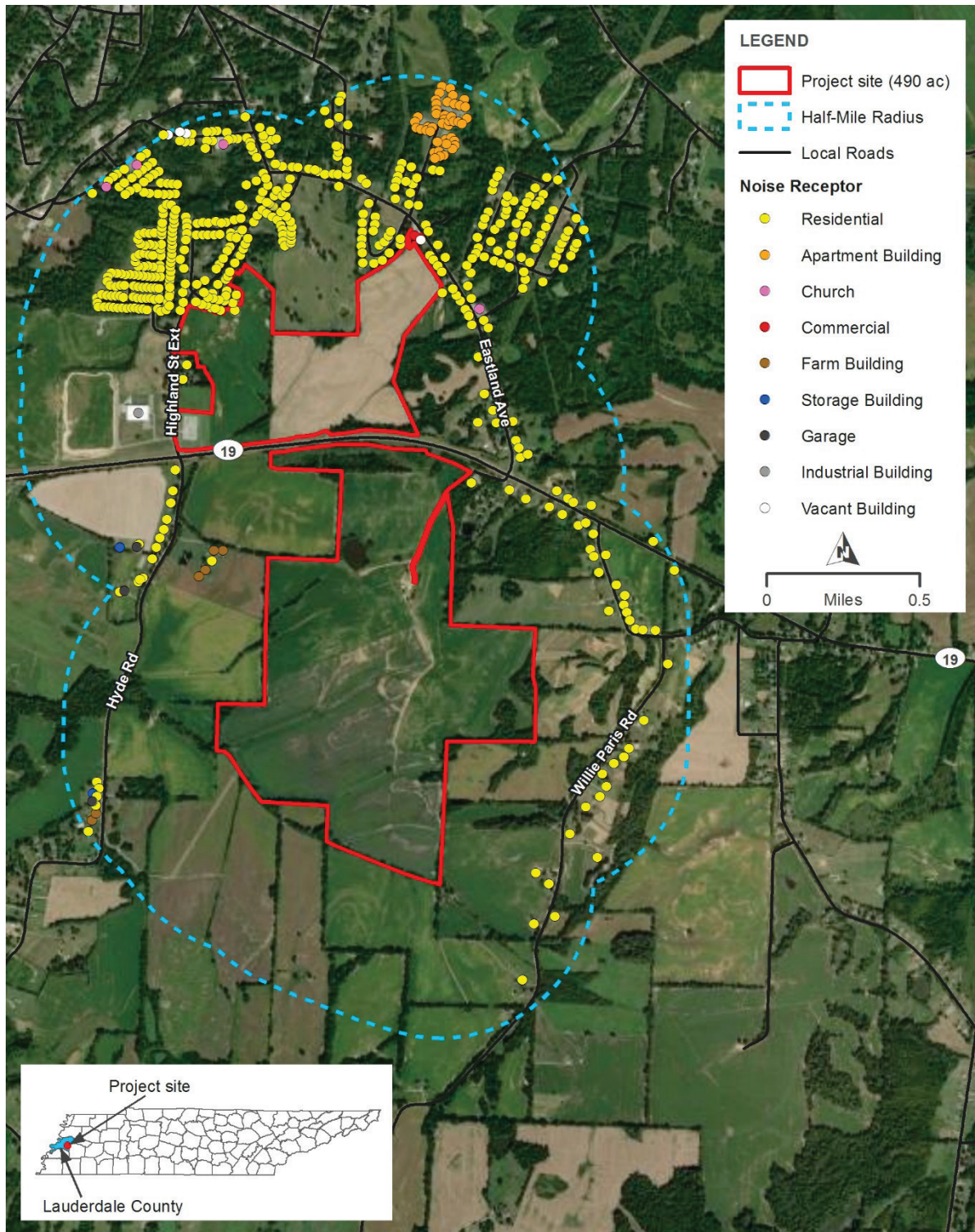


Figure 3-17. Noise receptors within 0.5 mile of the Project site boundary

### 3.7.2 Environmental Consequences

#### 3.7.2.1 No Action Alternative

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts on the ambient sound environment would occur. Existing land use would remain primarily agricultural land for the foreseeable future, and the ambient sound environment would likely remain as it is at present.

#### 3.7.2.2 Proposed Action Alternative

Direct and indirect noise impacts associated with implementation of the Proposed Action would primarily occur during construction. Construction equipment produces a range of sounds. Noisy construction equipment, such as delivery trucks, dump trucks, water trucks, service trucks, bulldozers, chain saws, bush hogs, or other large mowers for tree clearing, produce maximum noise levels of approximately 84 to 85 dBA at a distance of 50 feet. These types of equipment would be used for approximately 12 months at the Project site.

Construction noise would cause temporary and minor adverse impacts to the ambient sound environment in the Project area. Several residences and a few nonresidential buildings would experience heightened noise during construction, primarily from pile-driving activities. However, when agricultural activities are more active in the spring, early summer, fall, and early winter, ambient sounds in the surrounding area are often higher than the typical 45 to 55 dBA in the surrounding area, and these existing noises would help offset effects from the Project during this time. The area adjacent to the northern portion of the site would not receive this benefit as there is minimal farmland nearby. Additionally, construction would primarily occur during daylight hours, between sunrise and sunset in compliance with the Ripley Municipal Code; therefore, the Project would not affect ambient noise levels at night during most of the construction period. Most of the proposed equipment would not be operating on-site for the entire construction period but would be phased in and out according to the progress of the Project.

The activity producing the most noise for an extended period would be pile-driving during the construction of the array foundations, which would be completed in approximately three months. Standard construction pile drivers are estimated to produce between 90 to 95 dBA at a distance of 50 feet (USDOT 2006). These noise levels would typically diminish with distance from the PV arrays at a rate of approximately six dBA per each doubling of distance. The nearest residence and church are approximately 150 feet and 1,250 feet, respectively, from the nearest proposed PV array. Based on straight line noise attenuation, it is estimated that noise levels from pile-driving would attenuate to approximately 81 to 86 dBA or less at the nearest residence and approximately 62 to 67 dBA or less at the Forerunner Church. These noise levels are above HUD and USEPA guidelines of 65 and 55 dBA, respectively. Based on straight line noise attenuation, the distances required for pile-driving to attenuate to 55 dBA or less at the nearest residence and church are 5,322 feet and 4,976 feet, respectively. Therefore, pile-driving within 5,322 feet of the nearest residences would be scheduled during daylight hours Monday through Friday to minimize impacts to the residences and pile-driving within 4,976 feet of Forerunner Church would be scheduled outside of church services to minimize impacts to the church. Construction workers would wear appropriate hearing protection in accordance with OSHA regulations. Pile-driving activities would result in temporary, moderate noise impacts. Noise-sensitive receptors near the TL upgrade areas would temporarily experience heightened noise primarily during the installation of OPGW by helicopter. Pile-driving activities and the installation of OPGW by helicopter would result in temporary, moderate noise effects.

Following completion of construction activities, the ambient sound environment would return to existing levels or below existing levels by eliminating seasonal use of some agricultural equipment. The moving parts of the PV arrays would be electric-powered and produce little noise. The central inverters would produce noise levels of approximately 62 dBA at 50 feet, and the Project switchgear would emit approximately 50 dBA at 300 feet. As no noise receptors are within 50 feet of the proposed inverter locations or 300 feet of the Project switchgear, noise impacts from these Project components are anticipated to be minimal to negligible. Thus, noise impacts from the operation of the Project are not anticipated. The periodic mowing of the Project site to manage the height of vegetation surrounding the solar panels would produce noise levels comparable to those resulting from current row crop operations.

Overall, implementation of the Proposed Action would result in moderate, temporary adverse impacts to the ambient noise environment in the Project area during construction, and negligible to minimal impacts during operation and maintenance of the solar facility.

### **3.7.2.3 Cumulative Impacts**

RFFAs would likely result in noise impacts in the Project area. Four RFFAs are within three miles of the Project site (Walker Industrial Park, American Way Site, Ripley Surface Transportation Block Grant Program Project [Volz Road], and both build alternatives of the proposed Interstate 69 – Segment 8). If there is overlap in the construction schedules of these projects and the Proposed Action, cumulative impacts to noise receptors during the construction period could occur. This would result in minor, short-term noise impacts.

## **3.8 Air Quality and Climate Change**

### **3.8.1 Affected Environment**

Ambient air quality is determined by the type and concentration of pollutants emitted into the atmosphere, the size and topography of the airshed in question, and the prevailing meteorological conditions in that airshed. Through the passage of the Clean Air Act of 1970 and subsequent amendments, the U.S. Congress mandated the protection and enhancement of air quality for the nation. USEPA established the National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants to protect the public health and welfare: sulfur dioxide, ozone, nitrogen dioxide (NO<sub>2</sub>), particulate matter whose particles are less than or equal to 2.5 micrometers (PM<sub>2.5</sub>), particulate matter whose particles are less than or equal to 10 micrometers, carbon monoxide (CO), and lead (USEPA 2023a).

The primary NAAQS were promulgated to protect public health, and the secondary NAAQS were promulgated to protect public welfare (e.g., visibility, crops, forests, soils, and materials) from any known or anticipated adverse effects of air pollutants. Areas in compliance with the NAAQS are designated as attainment areas and areas in violation of the NAAQS are designated as nonattainment areas (USEPA 2022). New sources potentially located in or near these nonattainment areas may be subject to more stringent air permitting requirements. Nonattainment areas are usually listed by county. Areas that cannot be classified based on available information for a particular pollutant are designated as unclassifiable and are treated as attainment areas unless proven otherwise. Areas that were formerly designated as nonattainment for a pollutant and later come into compliance are categorized under the term “maintenance” for that pollutant for the next 20 years, assuming they continue to meet the NAAQS for that pollutant. If an area remains in attainment for a 20-year maintenance period, the status is reassigned to normal attainment.

### **3.8.1.1 Regional Air Quality**

The Project site is within a rural agricultural area situated on the outskirts of rural-residential areas within the city of Ripley and just outside the city limits in unincorporated Lauderdale County. Residential concentrations are primarily located near the northern portion of the Project site, while a few residences and other building classifications are scattered outside of the eastern and western boundaries of the Project site. Lauderdale County has no active air quality monitoring sites listed in USEPA’s national database for NAAQS-regulated pollutants and is in attainment for all NAAQS as are the adjacent counties (USEPA 2023b; 2023c). The nearest active monitoring sites are in Dyersburg (PM<sub>2.5</sub>), Millington (ozone), and Jackson (PM<sub>2.5</sub>), approximately 23 miles northeast, 29 miles southwest, and 39 miles east of the Project site, respectively (USEPA 2023d).

### **3.8.1.2 Regional Climate**

Climate conditions, and therefore daily weather conditions, determine the potential for the atmosphere to disperse emissions of air pollutants. Based on climate data from the Ripley observation station, approximately one mile east of the Project site, the coldest month is January, with average maximum and minimum temperatures of approximately 48°F and 29°F, respectively. The warmest month is July, with average maximum and minimum temperatures of approximately 90°F and 70°F, respectively. Precipitation is highest in May and averages approximately 57 inches per year (National Oceanic and Atmospheric Administration [NOAA] 2021). On average, approximately 29 tornados occur in Tennessee each year (NOAA 2023).

### **3.8.1.3 Greenhouse Gas Emissions**

GHGs are specific gases that trap heat in the atmosphere and include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases (USEPA 2023e). GHG emissions include natural and man-made compounds that disperse throughout the earth’s atmosphere. GHGs act as insulation and contribute to the maintenance of global temperatures. As the levels of GHG emissions in the atmosphere increase, the result is an increase in temperature on earth, commonly known as global warming. This can result in altered precipitation patterns, increased intensity of storms, sea level rise, and other changes.

Apart from water vapor, the primary GHG emitted by human activities in the U.S. is CO<sub>2</sub>, representing approximately 79 percent of total GHG emissions in the U.S. (USEPA 2023e). The largest source of CO<sub>2</sub> and of overall GHG emissions is fossil fuel combustion, accounting for 92 percent of CO<sub>2</sub> emissions (USEPA 2023f). GHG emissions from the TVA power system are described in the IRP (TVA 2019).

## **3.8.2 Environmental Consequences**

### **3.8.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed. Therefore, no Project-related impacts on climate or air quality would result and beneficial impacts of reduced carbon emissions would not be realized. Existing land use would likely remain primarily agricultural land for the foreseeable future, with little effect on climate and air quality. The main source of emissions in the Project area would continue to be from sources such as automobiles and agricultural equipment.

### **3.8.2.2 Proposed Action Alternative**

Under the Proposed Action, minor direct impacts to air quality would result from the construction of the Project and minimal impacts would occur during operation. The effects

of the GHG emissions expected during construction would be negligible. The Proposed Action would have longer term, minor beneficial impacts to air quality by increasing the capacity of non-emitting generating facilities providing power to the TVA system and offsetting the need for new fossil fuel power generation and its associated emissions.

### **3.8.2.2.1 Regional Air Quality**

#### **3.8.2.2.1.1 Construction-related Impacts**

Most potential air quality impacts associated with the Proposed Action would occur during construction. Construction activities would create emissions from construction equipment and vehicles, contracted employees' personal vehicles, and fugitive dust suspension from clearing, grading, and other activities. Tree debris from clearing would be removed by either burning or chipping. Burning debris would generate temporary localized air quality impacts due to smoke particles and gases. Any such burning would be done in accordance with local ordinances or burn permits and would likely not have any health consequences for this rural area.

Combustion of gasoline and diesel fuels by internal combustion engines (haul trucks and off-road vehicles) would generate local emissions of particulate matter, nitrogen oxides, CO, volatile organic compounds, and sulfur dioxide. The total amount of these emissions would be small and, overall, would result in negligible air quality impacts.

Fugitive dust emissions, a contributor to PM<sub>2.5</sub> (Chen et al. 2019), from vehicular traffic over paved and unpaved roads would be composed mainly of particles that would be deposited near the roadways, along the routes taken to reach the Project site. As necessary, fugitive dust emissions from construction areas and paved and unpaved roads would be mitigated using BMPs including wet suppression and establishing a speed limit, which would also maintain equipment in good condition. Wet suppression can reduce fugitive dust emissions from roadways and unpaved areas by as much as 95 percent (USEPA 1998). Therefore, direct impacts to air quality associated with construction activities would likely be minor.

#### **3.8.2.2.1.2 Operation- and Maintenance-related Impacts**

The operation of the Project is not anticipated to have any negative impacts to regional air quality. Agricultural practices, which currently raise dust and emit combustion byproducts, would be discontinued at the Project site. Therefore, operations could ultimately result in a minor beneficial impact to local air quality.

### **3.8.2.2.2 Regional Climate**

#### **3.8.2.2.2.1 Construction-related Impacts**

No noticeable direct or indirect impacts to the local or regional climate would be associated with the construction of the proposed Project.

#### **3.8.2.2.2.2 Operation- and Maintenance-related Impacts**

No indirect impacts to regional climate are expected during the operational phase. The ground below the modules is shaded, reducing the ground temperature proportionally, and lowering the ambient air temperature below the array. On a hot sunny summer day, the top side of the panels would be hot to the touch. The heat from the panels may radiate just above the panels (inches) where it cools to ambient temperature. The changes that occur in urban development from increased impervious surfaces and lack of evapotranspiration can create a "heat island" effect. The solar array is not expected to create a "heat island" effect because there will still be substantial evapotranspiration occurring at the site as vegetation would grow under and around the solar panels. Further, there is no research that suggests



the shading below the array or the atmosphere above the array is negatively impacting the community or surrounding environments. The Proposed Action would change the surface characteristics somewhat, but it would have little effect on soil permeability and hydrologic characteristics of the developed area.

### **3.8.2.2.3 Greenhouse Gas Emissions**

#### **3.8.2.2.3.1 Construction-related Impacts**

The use of construction equipment, which would be well maintained, would cause a minor increase in GHG emissions during construction activities. Combustion of gasoline and diesel fuels by internal combustion engines (trucks and off-road vehicles) at the Project site would generate emissions of CO<sub>2</sub> and very small amounts of other GHG emissions such as methane and nitrous oxide. Additional GHG emissions would result from transporting materials and workers to the Project location, and elsewhere in the U.S. or globally from production and transportation of the facility components. The production of facility components would likely represent the largest portion of the Project-related GHG emissions. The total GHG emissions due to construction should eventually be offset by Project operation over the long term, assuming the electricity generated by the Project would reduce the need for some new fossil-fuel-based electricity generation and its associated GHG emissions.

Tree and other tall vegetation removal during construction of the Project would result in a minor loss of potential carbon sequestration, especially given that most of the Project site is currently fields and open land. Trees and other tall vegetation currently remove CO<sub>2</sub> from the air and sequester it as biomass. The loss of this carbon sink would constitute a minor adverse direct and indirect impact as sequestration would have continued for the life of the vegetation and long into the future, assuming that other changes at the Project site did not result in any deforestation. The loss of the carbon sink from tree removal would be at least partially offset by the increased sequestration of CO<sub>2</sub> by the permanent grass-dominated vegetation that would be maintained on the Project site.

#### **3.8.2.2.3.2 Operation- and Maintenance-related Impacts**

The operation of the Project is not anticipated to have any negative impacts from GHG emissions. No emissions would be produced by the operation of the solar facility or electrical lines. Minor emissions would occur during maintenance activities, including facility inspections and periodic mowing. Conversely, the nearly emissions-free power generated by the solar facility would offset the need for new power that would otherwise be generated, at least in part, by the combustion of fossil fuels. The reduction in GHG emissions resulting from the operation of the solar facility would have little noticeable effect on regional or larger scales. It would, however, be a component of the larger ongoing system-wide reduction in GHG emissions from the TVA power system through reducing the need for some fossil-fuel-based electricity generation. The adverse impacts of GHG emissions are described in the U.S. Global Change Research Program's (USGCRP) Fourth National Climate Assessment (USGCRP 2018), and the beneficial impacts of TVA's reduction in GHG emissions are described in the TVA IRP (TVA 2019).

#### **3.8.2.3 Cumulative Impacts**

Past and RFFAs would likely contribute a substantially higher percentage of air pollutant emissions, including GHGs, to the region than the Proposed Action. This includes both temporary construction and long-term operational emissions. Additionally, the operational emissions from these other actions would likely have at least minor negative impacts on air quality in the region. However, the Proposed Action would provide at least a minor

beneficial impact on air quality in the region due to producing renewable energy that reduces the need for certain fossil-fueled utility power generation. In addition, all other actions would likely comply with applicable air quality requirements and permitting and would implement emissions reduction actions as part of construction activities (e.g., wet suppression to reduce fugitive dust).

## 3.9 Cultural Resources

### 3.9.1 Affected Environment

Cultural resources are properties and places that illustrate aspects of Precontact or historic times or have long-standing cultural associations with established communities and/or social groups. Cultural resources may include archaeological sites, unmodified landscapes and discrete natural features, modified landscapes, human-made objects, structures such as bridges or buildings, and groups of any of these resources, sometimes referred to as districts.

Section 106 of the NHPA, as amended (54 U.S.C. § 300101 *et seq.*), addresses the effects of federal and/or federally funded projects on tangible cultural resources—that is, physically concrete properties—of historic value. The NHPA provides for a national program to support both public and private efforts to identify, evaluate, and protect the nation’s important cultural resources. Once identified, these resources are evaluated for inclusion in the NRHP maintained by the National Park Service. Tangible cultural resources may qualify for inclusion in the NRHP if they are 50 years of age or older (unless in exceptional cases) and if found to embody one or more of four different types of values, or criteria, in accordance with 36 CFR § 60.4.

Cultural resources that are listed or considered eligible for listing in the NRHP are called “historic properties.” Federal agencies are required by the NHPA to consider the possible effects of their undertakings on historic properties and take measures to avoid, minimize, or mitigate any adverse effects. “Undertaking” includes any project, activity, or program that has the potential to affect 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.

Evaluating an undertaking’s effects on historic properties is accomplished through a four-step review process outlined in Section 106 of the NHPA (36 CFR § 800). These steps are initiation, identification, assessment of adverse effects, and resolution of any adverse effects. A project may have effects on a historic property that are not adverse. However, if the agency determines that the undertaking’s effect on a historic property would diminish any of the qualities that make the property eligible for the NRHP (based on the criteria for evaluation at 36 CFR § 60.4), the effect is said to be adverse. Examples of adverse effects would be ground disturbing activity in an archaeological site or erecting tall buildings or structures within the viewshed of a historic building in such a way as to diminish the historic building’s integrity of feeling or setting and its ability to convey its historic and/or architectural significance. Adverse effects must be resolved. Resolution may consist of avoidance (such as redesigning a project to avoid impacts or choosing a project alternative that does not result in adverse effects), minimization (such as redesigning a project to lessen the effects or installing visual screenings), or mitigation. Adverse effects to archaeological sites are typically mitigated by means of excavation to recover the important scientific information contained within the site. Mitigation of adverse effects to historic buildings and structures sometimes involves thorough documentation of the resource by compiling historic records, studies, and photographs.

Agencies are required to consult with the appropriate SHPOs, federally recognized Indian tribes (Tribes) that have an interest in the undertaking, and any other party with a vested interest in the undertaking. Through various regulations and guidelines, federal agencies are encouraged to coordinate Section 106 and NEPA review to improve efficiency and allow for more informed decisions. Under NEPA, impacts to cultural resources that are part of the affected human environment but not necessarily eligible for the NRHP must also be considered. Generally, these considerations as well as those of NRHP-eligible traditional cultural resources (also called traditional cultural properties; see Parker and King [1998]) are accomplished through consultation with parties having a vested interest in the undertaking, as described above.

### **3.9.1.1 Previous Surveys**

A search of the archaeological records maintained by Tennessee Division of Archaeology (TDOA) was conducted to determine the presence of recorded cultural resources within the archaeological area of potential effect (APE; the original 435-acre Project site plus an adjacent 55-acre addendum parcel added later in the planning process, resulting in an expanded 490-acre Project site) or vicinity. The review revealed that one previous survey of TVA's existing Ripley–Covington 161-kV TL ROW, was conducted within a one-mile radius at the Project site. This survey identified three archaeological sites that were previously identified within the archaeological APE (Barbour and Southard 2023a).

Site 40LA216, 40LA217, and 40LA218 were recorded as a historic artifact scatter. Several historic ceramic and glass fragments were recovered with dates ranging from 1780 to 1925 across these sites and were attributed to several structures in the vicinity. Given the low-density nature and lack of diversity in the recovered assemblages, the sites are listed as not eligible for the NRHP.

### **3.9.1.2 Archaeological Survey Results**

#### **3.9.1.2.1 Original 435-acre Project site**

A Phase I archaeological survey was conducted by TerraXplorations, Inc. (TerraX) on the original 435-acre Project site from May 25 to July 7, 2021, to determine the presence of archaeological resources (Barbour and Southard 2023a). The entire archaeological APE was subjected to an intensive archaeological survey consisting of pedestrian survey and systematic shovel testing. A total of 965 shovel tests were excavated on the original 435-acre Project site, resulting in the identification of three archaeological sites (40LA231, 40LA232, and 40LA233), five isolated finds (IF) (IF-1, IF-2, IF-3, IF-4, and IF-5), and three field loci ([FL]-1, FL-6, and FL-15) (Barbour and Southard 2023a). Additionally, the three previously recorded sites (40LA216, 40LA217, and 40LA218) located in the archaeological APE were relocated by the current survey efforts. The historic artifacts from relocated sites during the current investigation were consistent with the historic artifact assemblages from the previous investigation. As a result, the findings from this investigation were incorporated into those previously identified sites. The site boundaries of 40LA217 and 40LA218 were slightly expanded through delineation efforts. All archaeological sites, with the exception of Sites 40LA231, 40LA232, 40LA233, and FL-15, are recommended as not eligible for the NRHP under Criteria A through D because of lack of integrity and significance, and no further work is recommended at these sites.

Site 40LA231 is an early- to mid-nineteenth-century historic artifact scatter, and possibly associated with the historic Wood Family Cemetery (FL-15). Several artifacts were located in what appear to be intact deposits dating to the early- to mid-nineteenth century. Given

the derived ages of other historic scatters in the survey area, the early date for Site 40LA231 and the presence of intact deposits warrants further investigation. As such, 40LA231 is recommended as potentially eligible for NRHP listing under Criterion D. The site is recommended to be avoided, along with a 20-meter buffer to create an exclusion area from development.

The walkover visit to FL-15, the Wood Family Cemetery, determined that the cemetery is located in a rectangular stand of trees that has maintained its shape through several land development episodes, indicating the boundary likely extends into the area located within the archaeological APE. The architectural survey recommended that the Wood Family Cemetery eligible for NRHP listing under Criterion A and B, and Criteria Considerations C and unassessed under D, however SHPO did not agree with the assessment. After further discussions with the SHPO, the Wood Family Cemetery was found to be not eligible under Criteria A and B as due to lack of significance. SHPO concurred with this determination in a letter dated March 27, 2024. A 20-meter buffer surrounding the visible edges of the cemetery was created for avoidance.

Sites 40LA232 and 40LA233 are multi-component artifact scatters. The historic components date to 1930 for 40LA232 and 1947 for 40LA233. Until the late-twentieth century, several structures were located within the 40LA232 and 40LA233 site areas. The precontact components associated with these sites consist of lithic debitage. As such, a time period cannot be assigned at this time. Due to their lack of integrity and data potential, the investigated portions of 40LA232 and 40LA233 within the archaeological APE are unlikely to yield information regarding the history of this region. However, as they were not able to be fully delineated due to survey area constraints, they are recommended as having an unknown/unassessed eligibility for the NRHP under Criterion D, and no further work is recommended at these sites within the boundaries of the archaeological APE.

TVA consulted with THC and the following Federally recognized Indian tribes (Tribes) (Absentee Shawnee Tribe of Indians of Oklahoma, Cherokee Nation, The Chickasaw Nation, Eastern Shawnee Tribe of Oklahoma, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, The Osage Nation, Quapaw Nation, Shawnee Tribe, and United Keetoowah Band of Cherokee Indians in Oklahoma) on these NRHP eligibility determinations in a letter dated May 25, 2023. In a letter dated March 1, 2024, THC concurred that no archaeological resources eligible for listing in the NRHP would be affected by this undertaking. TVA received responses from two consulting Tribes, The Chickasaw Nation and The Shawnee Tribe, with agreement to TVA's findings and determinations.

#### **3.9.1.2.2 Addendum Parcel**

A Phase I archaeological survey was conducted by TerraX on the addendum parcel from November 8 to November 11, 2023, to determine the presence of archaeological resources (Barbour and Southard 2023b). A total of 177 shovel tests were excavated on the addendum parcel, resulting in the identification of an addendum FL (AFL-1) and addendum IF (AIF-1). In addition to shovel testing, five deep auger tests were excavated in specific shovel tests on the addendum parcel to test for the presence of potentially deeply buried deposits. All five tests were negative for deeply buried cultural deposits. Given that these resources could not be associated with historical structures (HS) predating 1950, AFL-1 and AIF-1 do not qualify as archaeological sites per TDOA guidelines. AFL-1 and AIF-1 are recommended not eligible for NRHP inclusion under Criterion D, and no further work is

recommended at these sites. THC concurred that no archaeological resources eligible for listing in the NRHP will be affected by the undertaking in a letter dated March 1, 2024.

### **3.9.1.3 Architectural Survey Results**

#### **3.9.1.3.1 Original 435-acre Project site**

A Phase I architectural resources survey was conducted by TerraX on the original 435-acre and a 0.5-mile viewshed buffer of the Project site from October 31 to November 5, 2022, to determine the presence of architectural resources (Shane et al. 2023a). During the architectural resources survey, TerraX recorded 113 primary historic-age architectural resources or HS in the 0.5-mile buffer of the original 435-acre Project site (Shane et al. 2023a; Appendix D; Figure 3-18). None of these resources were previously recorded. Additionally, only one resource (HS-112, the Wood Family Cemetery) was located on the original 435-acre Project site. TerraX determined that two resources are individually eligible for listing in the NRHP (HS-112 and HS-113) and 40 resources are eligible as contributing resources to NRHP-eligible historic districts (HS-26–HS-43 and HS-55–HS-76).

The Crescent Heights Historic District (HS-113), consisting of 18 contributing resources (HS-26–HS-43), is recommended under Criteria A and C as it reflects the growth of public-funded housing in Ripley during the mid-century.

The remaining 72 resources were determined to lack the historical significance or architectural or engineering distinction necessary for listing in the NRHP and are therefore recommended not eligible for listing. Therefore, a finding of no historic properties affected was recommended. TVA consulted with THC on these NRHP eligibility determinations in a letter dated May 30, 2023. In a letter dated June 16, 2023 (Appendix D), THC concurred with TVA's NRHP eligibility determination of HS-113. In a letter dated March 27, 2024, THC concurred that the Wood Family Cemetery (HS-112) is not eligible under Criteria A and B due to the inability to associate the resource with significant events/individuals and does not retain integrity. Evaluations revealed that a grouping of three buildings, two religious (HS-99 and HS-100) and one residential (HS-101), are potentially eligible structures associated with the Forerunner Baptist Church (Figure 3-18). The church (HS-99) is currently an African American church with an associated Sunday school and offices building (HS-100) and a parsonage (HS-101). Current research indicates that the church buildings were constructed in 1943 and 1965. However, the current congregation of the Forerunner Baptist Church was not established until 2002. Due to the age of the church building, further research on the connection to the African American community of Ripley is required to make a determination on the eligibility of the church and its associated buildings. This further research includes, but is not limited to, an evaluation for NRHP eligibility under the "Historic Rural African American Churches in Tennessee, 1850-1970" Multiple Property Documentation Form.

#### **3.9.1.3.2 Addendum Parcel**

A Phase I architectural resources survey was conducted by TerraX on the addendum parcel from November 7 to November 10, 2023, to determine the presence of architectural resources (Shane et al. 2023b; Appendix D). During the architectural resources survey, TerraX recorded 85 primary historic-age architectural resources in the 0.5-mile APE (Shane et al. 2023b). None of these resources were previously recorded. Additionally, only one resource (HS-12, a residential outbuilding) was located on the addendum parcel. Only HS-115, Rice Park Office Building and surrounding park, is eligible for listing in the NRHP. In the letter dated March 27, 2024, THC concurred that there would be no adverse effect on the Rice Park Office Building by proceeding with the proposed project.

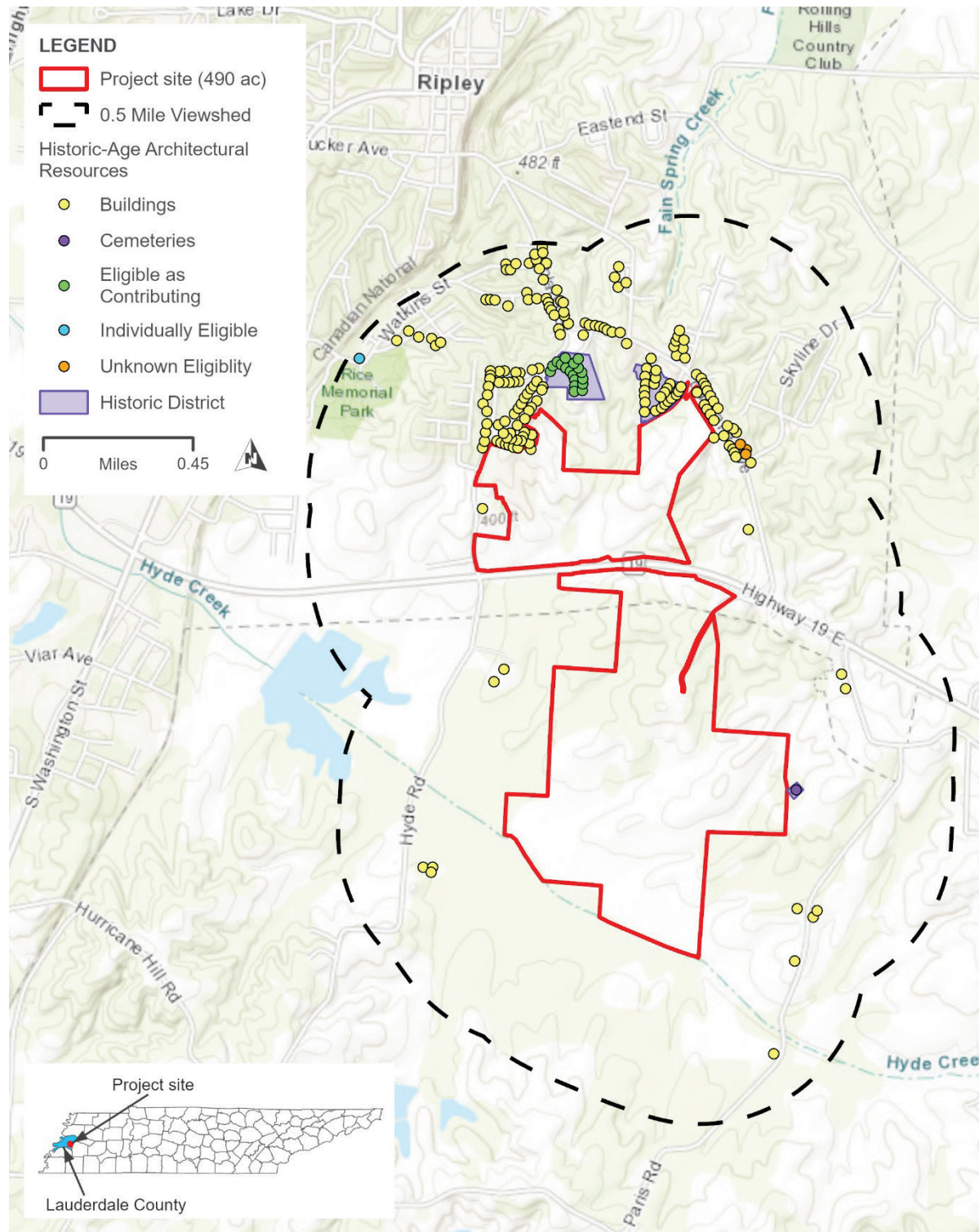


Figure 3-18. Architectural resources in the vicinity of the Project site

### **3.9.2 Environmental Consequences**

#### **3.9.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, there would be no Project-related impacts to cultural resources.

#### **3.9.2.2 Proposed Action Alternative**

Under the Proposed Action Alternative, SR Ripley II, LLC would construct and operate a 30-MW AC single-axis tracking PV solar power facility. Site 40LA231 and the Wood Family Cemetery (FL-15/HS-112) would each be avoided by all Project-related ground-disturbing activities through the placement of orange barrier fencing along the full extent of each site's boundary during construction. The project will avoid development in the areas of Site 40LA231 and the Wood Family Cemetery (FL-15/HS-112). The use of orange barrier fence to demarcate the boundary of 40LA231 and Wood Family Cemetery would be employed to avoid impacting the sites. In addition, a 20-meter buffer around the Wood Family Cemetery was created for avoidance. The footprints of both areas have been provided to ensure that the areas are avoided. TVA also determined that 40LA231 and Wood Family Cemetery would not be affected by the Project, in accordance with an Avoidance Agreement between TVA and SRC.

The Project would result in the installation of panels to the north of Site 40LA231 and to the west and south of the Wood Family Cemetery. The Project would consist of solar panels that are eight feet in height when they are fully upright in the early morning and late afternoon and five feet high at midday, when they are lying flat as well as security fencing that is eight feet in height. The Wood Family Cemetery is located in a rectangular stand of mature trees that would remain as a visual buffer, minimizing the visual effects of the Project. The Crescent Heights Historic District and Rice Park Office Building and surrounding park would not be affected by the Proposed Action Alternative. In a letter dated March 27, 2024, THC concurred that Forerunner Baptist Church, the Crescent Heights Historic District, and Rice Park Office Building would not be adversely affected by the undertaking. Should previously undiscovered cultural resources be identified during construction or operation, construction in the affected area would be immediately stopped and the discovery location secured against further disturbance, pending completion of consultation with appropriate stakeholders. TVA and THC would be consulted before any further action is taken.

No cultural resources or historic properties would be affected by installation of the 34.5-kV gen-tie line. AFL-1 and AIF-1, located on the addendum parcel within 0.3-mile of the 34.5-kV gen-tie line, were recommended not eligible for NRHP inclusion under Criterion D, and no further work is recommended at these sites.

Equipment access would be conducted to minimize soil compaction and other effects should cultural resources be present. This includes use of light duty or low ground pressure equipment, or the use of wetland mats, per the conditions of TVA's Section 106 Programmatic Agreement (TVA 2020). For any additional maintenance activities, TVA would follow the stipulations in TVA's Section 106 Programmatic Agreement by consulting with the THC and Tribes with interests in the Project area on Project effects on historic properties eligible for NRHP (Appendix D). TVA did not receive any concerns from consulting Tribes.

### **3.9.2.3 Cumulative Impacts**

The Project would avoid all the NRHP-eligible or undetermined cultural resources on the Project site. The Project would have visual effects on Site 40LA231; however, the Wood Family Cemetery, the Crescent Heights Historic District, and Rice Park office building and surrounding park, would not be adversely affected due to modern intrusions and/or setbacks from the resources. While the RFFAs may have adverse impacts on cultural resources, the Project would not contribute to cumulative impacts because the Project would not impact any listed or eligible NRHP archaeological or architectural sites. TVA consulted with THC on these NRHP eligibility determinations (Appendix D).

## **3.10 Natural Areas and Recreation**

### **3.10.1 Affected Environment**

Natural areas include managed areas such as wildlife management areas, national wildlife refuges, habitat protection areas, ecologically significant sites, and streams listed on the Nationwide Rivers Inventory (NRI) due to their high scenic, recreational, and other values. Parks and recreation facilities include boat ramps, community centers, swimming pools, and other public and private places devoted to recreation. This section addresses the natural areas, parks, or recreation areas that are on, immediately adjacent to (within 0.5 mile), or within five miles of the Project site (Figure 3-19).

Rice Park, Ripley City Park, and Holly Street Park are located approximately 0.5 mile, 1.2 miles, and 1.6 miles northwest of the Project site, respectively. Rice Park and Ripley Park both offer baseball diamonds and leisurely outdoor activities. Park goers at Ripley Park can also utilize tennis and basketball courts, playground equipment, and a splash pad. Holly Street Park consists of a basketball court. Additionally, during the public comment period, one commenter stated that the land surrounding the Project site is used informally for hunting.



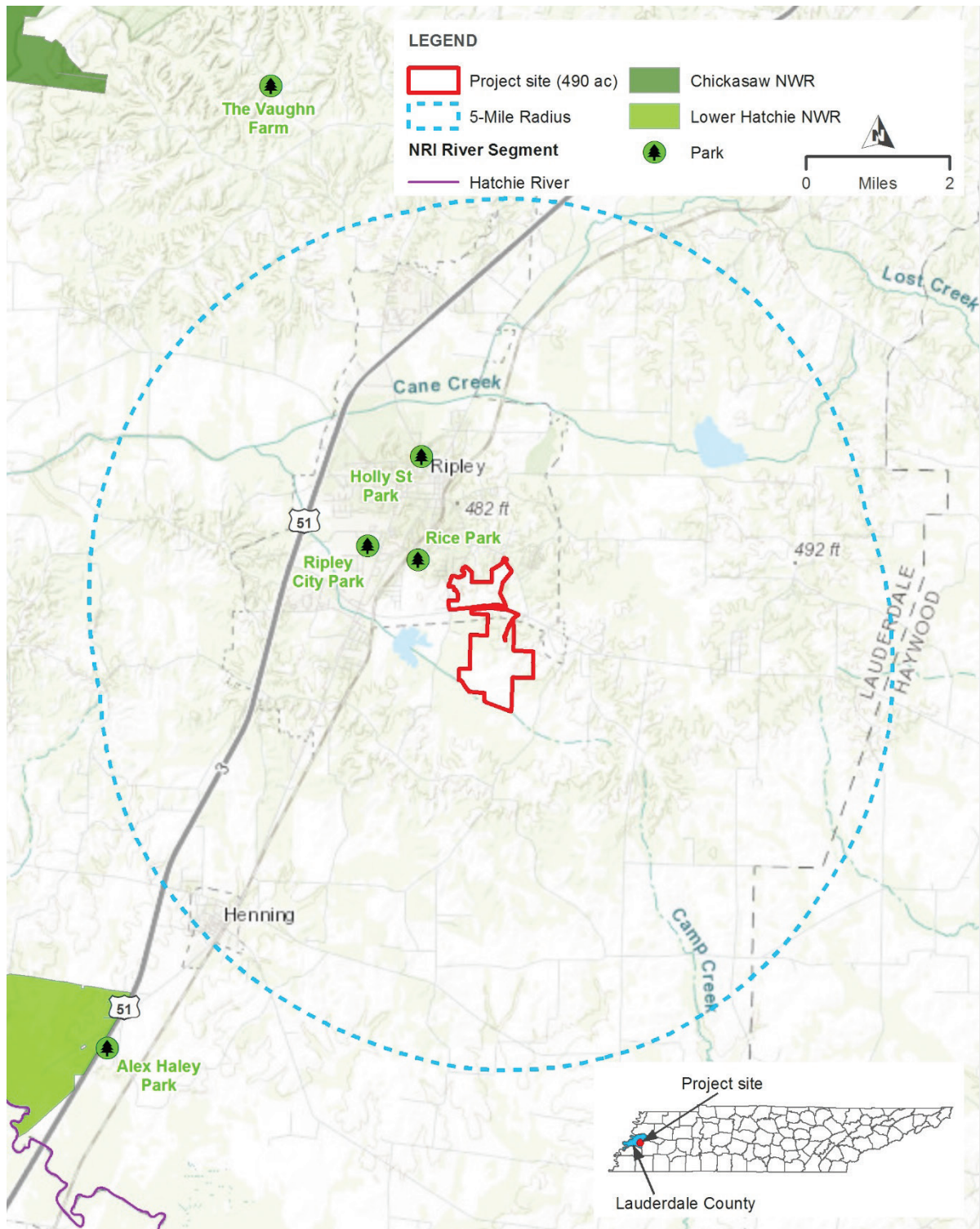


Figure 3-19. Natural areas, parks, and recreation in the vicinity of the Project site

### **3.10.2 Environmental Consequences**

#### **3.10.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts to natural areas, parks, and recreation would occur.

#### **3.10.2.2 Proposed Action Alternative**

Under the Proposed Action Alternative, the proposed solar facility would be constructed; however, because developed outdoor recreation areas are located sufficiently distant from the Project no Project-related impacts to natural areas, parks, and recreation would occur. Hunting that occurs surrounding the Project site would be disrupted during construction due to noise disturbance and presence of construction workers and construction equipment. Construction would primarily occur during daylight hours, Monday through Saturday, and on each day between sunrise and sunset in compliance with the Ripley Municipal Code. The activity producing the most noise for an extended period would be pile-driving during the construction of the array foundations, which would be completed in approximately three months. Following completion of construction activities, the ambient sound environment would return to existing levels or below existing levels by eliminating seasonal use of some agricultural equipment and disruptions to hunting would not occur.

#### **3.10.2.3 Cumulative Impacts**

The RFFAs such as the potential development of the industrial sites (up to 300 acres) would reduce the suitability of lands for recreation and management of natural areas within Lauderdale County. This would decrease the amount of potentially available land to support dispersed outdoor recreation activities such as hunting, fishing, or nature observation. The combined effect of these future land development actions and the Project would likely result in a slight reduction in resources for dispersed recreation. However, in view of the relatively large amounts of rural and undeveloped lands within the county, cumulative impacts on dispersed recreation opportunities would likely be minor.

### **3.11 Utilities**

#### **3.11.1 Affected Environment**

The Project site is within a rural-residential area of Lauderdale County, partially within the city limits of Ripley. This section describes utility services in the Project area and the effects of the alternative actions on those services.

##### **3.11.1.1 Telecommunications**

In addition to various mobile providers, telecommunication services in the Project area are provided by AT&T, Spectrum, EarthLink, HughesNet, and Aeneas Communications.

##### **3.11.1.2 Electricity**

Electrical service is provided by Ripley Power and Light, which purchases power generated by TVA (TVA 2023b). TVA's existing Ripley–Covington 161-kV TL crosses the northern portion of the Project site in a north–south orientation.

##### **3.11.1.3 Natural Gas**

Natural gas service is provided by Ripley Gas, Water & Wastewater (Ripley Gas, Water & Wastewater 2023). There are no known natural gas pipelines on the Project site.

#### **3.11.1.4 Water and Sewer**

Water and sewer services are provided either by Ripley Gas, Water & Wastewater or through private wells and private septic systems (Ripley Gas, Water & Wastewater 2023).

### **3.11.2 Environmental Consequences**

#### **3.11.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, there would be no Project-related impacts to utilities. Existing land use would remain a mix of agricultural and forested land for the foreseeable future, and existing on-site utilities would likely remain unchanged, except for potential upgrades and maintenance.

#### **3.11.2.2 Proposed Action Alternative**

Modifications to existing utilities would occur with implementation of the Proposed Action Alternative. This would include Project-related TL upgrade activities along TVA's existing Ripley–Covington 161-kV TL. Electrical service for the Project would be provided by Ripley Power and Light. A service drop would be installed during construction to provide construction power and Ripley Power and Light would coordinate with customers if outages were necessary. The Project would obtain water by delivery via water trucks, accessing existing municipal water-supply infrastructure at the Project site, or installing on-site wells. There are no plans for additional features to be built off-site for water or sewer infrastructure.

Short-term adverse impacts to local utilities such as electrical service due to brief outages could occur when bringing the solar facility online or during routine maintenance of the solar facility. If outages on the Ripley–Covington 161-kV TL or other TLs are required, TVA would work with Ripley Power and Light to provide alternative means of providing electrical service to the area to avoid service interruptions. TVA would also try to perform these outages at low-impact times, such as overnight, to maintain power service to Ripley Power and Light.

No long-term adverse impacts would likely be associated with the Project. Implementation of the Proposed Action Alternative would result in additional renewable energy resources in the region and would, thus, constitute a beneficial impact to electrical services across the region.

#### **3.11.2.3 Cumulative Impacts**

The Project could cause occasional, short-term adverse impacts to local utilities such as electricity connections when installing the 34.5-kV gen-tie line, conducting TL upgrade activities, bringing the solar PV facility on-line, or during routine maintenance of the facility. Thus, the Project, along with the past and RFFAs, may contribute to some minor short-term outages in the Project area as these facilities are constructed or maintained. Given the nature of the Proposed Action, long-term cumulative adverse impacts to utilities are not anticipated.

## **3.12 Waste Management**

### **3.12.1 Affected Environment**

“Hazardous materials” and “hazardous waste” are substances that, because of their quantity, concentration, or characteristics (physical, chemical, or infectious), may present a danger to public health and/or the environment if released. These substances are defined by the Comprehensive Environmental Response, Compensation, and Liability Act (42

U.S.C. §§ 9601 *et seq.*) and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act ([RCRA]; 42 U.S.C. §§ 6901 *et seq.*). Regulated hazardous wastes under RCRA include any solid, liquid, contained gaseous, or semisolid waste or combination of wastes that exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or is listed as a hazardous waste under 40 CFR § 261. Storage and use of hazardous materials and wastes are regulated by local, state, and federal laws and regulations including the Emergency Planning and Community Right-to-Know Act (42 U.S.C. §§ 116 *et seq.*) and RCRA.

According to historical aerial imagery and topographic maps obtained from a Phase I Environmental Site Assessment, land use in the Project area has remained relatively unchanged and dominated by agriculture and residential land since at least 1947 but likely earlier, based on historical trends. Primary changes since the 1950s include the addition and removal of residences and the extension of State Route 19 east of the Project site boundaries (USGS 1956, 1986). No hazardous waste generating sites or underground storage tanks (USTs) were identified on the Project site and no recommendations were identified on the Project site during the Phase I Environmental Site Assessment. SRC will comply with federal, state, and local regulations if previously unknown waste disposal is discovered on the Project site. SRC will contact the TDEC Jackson Field Office if previously unknown USTs are encountered on the Project site.

Within the city limits of Ripley, solid waste is collected via curbside collection through Lauderdale County for a fee (TDEC 2011). Waste is collected at the Lauderdale County Landfill. Various vendors offer hazardous waste removal.

### **3.12.2 Environmental Consequences**

#### **3.12.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related waste would be generated and no impacts to waste management resources would occur. Existing land use would remain primarily agricultural land for the foreseeable future, and existing waste management conditions would remain as they are at present.

#### **3.12.2.2 Proposed Action Alternative**

Under the Proposed Action Alternative, storage and use of liquid materials in the form of petroleum-based oils and fuels, and generation of liquid and solid wastes in the form of used oil, construction debris, packing materials, and general construction waste would occur during construction and would be moderate and temporary. Waste would be disposed of utilizing contracted refuse collection and recycling services. All applicable federal, state, and local regulatory requirements would be followed in the collection and disposal of waste to minimize health and safety effects. Decommissioned equipment and materials, including PV panels, racks, and transformers, would be recycled through SolarCycle or a similar solar panel recycling service. Materials that cannot be recycled would be disposed of at an approved facility in accordance with applicable local, state, and federal laws and regulations.

##### **3.12.2.2.1 Materials Management**

During construction of the proposed solar facility, materials would be stored on-site in storage tanks, vessels, or other appropriate containers specifically designed for the characteristics of these materials. The storage facilities would include secondary containment in case of tank or vessel failure. Construction- and decommissioning-related

materials stored on-site would primarily be liquids such as used oil, diesel fuel, gasoline, hydraulic fluid, and other lubricants associated with construction equipment. Safety Data Sheets for all applicable materials present on-site would be made readily available to on-site personnel.

Fueling of some construction vehicles would occur in the construction area. Other mobile equipment would return to the on-site laydown areas for refueling. Special procedures would be identified to minimize the potential for fuel spills, and spill control kits would be carried on all refueling vehicles for activities such as refueling, vehicle or equipment maintenance procedures, waste removal, and tank clean-out. A fuel truck may be stored on-site for approximately 12 months during construction of the Project. The total volume of the on-site tanks would exceed 1,320 gallons, the threshold above which a SPCC plan would be required (40 CFR § 112). The facility would fall under USEPA's SPCC requirements of "oil-filled operational equipment" and a Tier I Qualified Facility; therefore, no double-walled protection would be required, and the SPCC plan would not have to be certified by a Professional Engineer (USEPA 2010). The SPCC plan would be prepared prior to construction to prevent oil discharges during facility operation.

During operation, bulk chemicals would be stored in storage tanks and other chemicals would be stored in returnable delivery containers. Chemical storage areas would be designed to contain leaks and spills. The transport, storage, handling, and use of chemicals would be conducted in accordance with applicable laws, ordinances, regulations, and standards. While the various transformers would contain oil, there would be no separate transformer oil stored on-site related to transformers. The quantities of these materials stored on-site would be evaluated to identify the required usage and to maintain sufficient inventories to meet use rates without stockpiling excess chemicals.

In addition to the chemicals listed above, small quantities (less than 55 gallons, 500 pounds, or 200 cubic feet) of janitorial supplies, office supplies, laboratory supplies, paint, degreasers, pesticides, air conditioning fluids (chlorofluorocarbons), gasoline, hydraulic fluid, propane, and welding rods typical of those purchased from retail outlets may also be stored and used at the facility. Flammable materials (e.g., paints, solvents) would be stored in flammable material storage cabinet(s) with built-in containment sumps. Due to the small quantities involved and the controlled environment, a spill could be cleaned up without environmental consequences.

SR Ripley II, LLC would develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials (e.g., Hazardous Material Business Plan). Facility personnel would be supplied with appropriate personal protective equipment and would be properly trained in the use of personal protective equipment as well as the handling, use, and cleanup of hazardous materials used at the facility and the procedures to be followed in the event of a leak or spill. Adequate supplies of appropriate cleanup materials would be stored on-site.

#### **3.12.2.2 Waste Management**

Construction, operation, and decommissioning of the Project would generate solid waste. Construction of the solar facility is estimated to result in the generation of approximately 6,083 to 12,167 cubic yards of solid waste (152 to 304 truckloads at 40 cubic yards each) consisting of construction debris and general trash, including pallets and flattened cardboard module boxes. SR Ripley II, LLC estimates that an additional 281 to 563 truckloads would be required for hauling equipment for a total of 433 to 867 truckloads

during construction. Information on wastes anticipated to be generated during Project construction is provided in Table 3-17.

**Table 3-17. Summary of construction waste streams and management methods**

Waste stream	Origin and composition	Estimated frequency of generation	On-site treatment	Waste management method/off-site treatment	
Construction waste – hazardous	Empty hazardous material containers	Intermittent	None	Return to vendor	
Construction waste – hazardous	Used oil, hydraulic fluid, oily rags	Intermittent	None	Recycle, remove to off-site disposal location	
Construction waste – non-hazardous	Steel, glass, plastic, wood/pallets, cardboard, paper	Continuous	None	Recycle wherever possible, otherwise dispose to Class I landfill	
Sanitary waste – non-hazardous	Portable chemical toilets – sanitary waste	Periodically pumped to tanker truck by licensed contractors	None	Ship to sanitary wastewater treatment plant	

The anticipated quantities of waste produced during Project operations are summarized in Table 3-18. Universal wastes and unusable materials produced as a result of implementation of the Proposed Action would be handled, stored, and managed in accordance with federal and state requirements.

**Table 3-18. Summary of operation waste streams and management methods**

Waste stream	Origin and composition	Estimated amount	Estimated frequency of generation	Waste management method	
				On-site	Off-site
Used hydraulic fluid, oils, and grease – petroleum-related wastes	Tracker drives, hydraulic equipment	333 gallons per year	Intermittent	Accumulate for <90 days	Recycle
Oily rags, oil absorbent, and oil filters – petroleum-related wastes	Various	One 55-gallon drum every three months	Intermittent	Accumulate for <90 days	Sent off-site for recovery or disposed at Class I landfill
Spent batteries	Lead acid/lithium ion	333	Every 10 years	Accumulate for <90 days	Recycle

Waste collection and disposal would be conducted in accordance with applicable regulatory requirements to minimize health and safety effects. To the extent possible, waste would be recycled. Materials that cannot be recycled would be disposed of at an approved facility to be determined by the designated contractor(s). No waste oil would be disposed of on the Project site.

If necessary, SR Ripley II, LLC or the construction contractor would obtain a hazardous waste generator identification number from the State of Tennessee prior to generating any hazardous waste. Tennessee has not established state-specific spill prevention plans in addition to the federal SPCC plan requirements. However, the state requires many types of facilities to maintain a current contingency plan, including hazardous waste treatment, storage, and disposal facilities; USTs that contain oil or hazardous substances; sites seeking NPDES permits for discharges; sites storing hazardous substances in aboveground storage tanks; and sites storing used oil. Standards for hazardous waste treatment, storage, and disposal facilities fall under Rule 0400-12-01-05. Copies of any spill and cleanup reports would be kept on-site.

Four on-site buildings have the potential to be demolished. Prior to demolition, a hazardous materials survey of the on-site buildings will be conducted and SR Ripley II, LLC will submit notification of demolition to APC. The presence of RACM will be reported to the APC through the notification process using TDEC form CN-1055 (Notification of Demolition and/or Asbestos Renovation). RACM would be handled and disposed of in accordance with applicable federal, state, and local regulations.

SR Ripley II, LLC, through designated contractor and subcontractor personnel, would be responsible for daily inspection, cleanup, and proper labeling, storage, and disposal of all refuse and debris produced. Disposal containers such as dumpsters or roll-off containers would be obtained from a proper waste disposal contractor. Records of the amounts generated would be provided to the designated SR Ripley II, LLC environmental specialist.

Upon expiration of the 20-year PPA or an amended or alternative PPA for the sale of power after the 20 years, SR Ripley II, LLC would develop a decommissioning plan to document the recycling and/or disposal of solar facility components in accordance with applicable federal, state, and local laws and regulations. To the extent possible, waste would be recycled. More specifically, portions of the panels that could be recycled, including steel, glass, and aluminum, would be recycled. Materials that could not be recycled would be disposed of at a landfill or approved facility to be determined by the contractor(s).

### **3.12.2.2.3 Wastewater**

Wastewater potentially generated during construction or operation may include domestic sewage and wastewater from non-detergent equipment washing and dust control. Portable toilets or other temporary facilities would be used for the construction workforce. Water used for equipment washing and dust control would be handled in accordance with BMPs described in the Project stormwater/BMP plan. If an additive is required to help facilitate the cleaning process, the wastewater stream or the waste product would need to be evaluated to ensure it is properly disposed of according to applicable federal, state, and local regulations. With application of these BMPs, no adverse effects would be anticipated from wastewater generated during the Project.

### **3.12.2.3 Cumulative Impacts**

Past and RFFAs, together with the Proposed Action, would create new waste streams within the area. Storage and use of liquid materials in the form of petroleum-based oils and fuels, and generation of liquid and solid wastes in the work of used oil, construction debris, packing materials, and general construction waste would also occur. Overall, the Project effects, likely similar to the past and RFFAs, would be mitigated through implementation of BMPs for waste and wastewater, SPCC plans, and hazardous material business plans. With proper planning and implementation of BMPs, adverse reasonably foreseeable environmental trends and planned actions from the Project in relation to waste management would not occur.

## **3.13 Public and Occupational Health and Safety**

### **3.13.1 Affected Environment**

The Project site is currently private property and agricultural land use dominates. Public emergency services in the area include urgent care clinics, hospitals, law enforcement services, and fire protection services.

The Mid-South Convenient Care clinic, located on U.S. Route 51 (US 51) in Ripley, approximately four miles (six-minute drive) northwest of the Project site, is the closest urgent care center to the Project site. The Lauderdale Community Hospital is the closest hospital, located on Asbury Avenue in Ripley, approximately 3.5 miles (five-minute drive) northwest of the Project site.

Law enforcement services in the city of Ripley are provided by the Ripley Police Department, approximately 1.5 miles (four-minute drive) northwest of the Project site. Law enforcement services in Lauderdale County are provided by the Lauderdale County Sheriff's Department in Ripley, approximately three miles (five-minute drive) northwest of the Project site. Fire protection services are provided by the Ripley Fire Department, approximately 1.5 miles (four-minute drive) northwest of the Project site.

The Tennessee Emergency Management Agency has the responsibility and authority to coordinate with state and local agencies in the event of a release of hazardous materials.

### **3.13.2 Environmental Consequences**

#### **3.13.2.1 No Action Alternative**

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts on public health and safety would result. Existing land use would remain primarily agricultural land for the foreseeable future, and existing public health and safety issues would likely remain as they are at present.

#### **3.13.2.2 Proposed Action Alternative**

Under the Proposed Action Alternative, workers on the Project site would have an increased safety risk during construction of the proposed solar facility. However, because construction work has known hazards, the standard practice is for contractors to establish and maintain health and safety plans in compliance with OSHA regulations. Health and safety plans emphasize BMPs for site safety management to minimize potential risks to workers. Examples of BMPs include employee safety orientations; establishment of work procedures and programs for site activities; use of equipment guards, emergency shutdown procedures, lockout procedures, site housekeeping, and personal protective equipment; regular safety inspections; and plans and procedures to identify and resolve hazards.



Potential public health and safety hazards could result from increased traffic on roadways due to construction of the Project. Residential and other human use areas along roadways used by construction traffic to access the Project site would experience increased employee, commercial, and industrial traffic. Awareness of these residences and establishment of traffic procedures to minimize potential safety concerns would be addressed in the health and safety plans followed by construction contractor(s).

Approximately 2,500 gallons of fuel for vehicles would be kept on the Project site in storage tanks during construction of the proposed solar facility. An SPCC plan would be implemented to minimize the potential of a spill and to instruct on-site workers on how to contain and clean up any potential spills. The 11 blocks of PV arrays and the switchgear would be securely fenced during construction and for the duration of operation, and access gates would normally remain locked. General public health and safety would not be at risk in the event of an accidental spill on-site. Emergency response would be provided by the local, regional, and state law enforcement, fire, and emergency responders.

During operation, solar PV systems generate electromagnetic fields (EMF). However, according to a study published by North Carolina State University (2017), solar PV technologies and solar inverters do not pose human health risks. EMF produced by electricity has enough energy to produce heat but not enough to remove electrons from a molecule or damage DNA. Distance from the EMF source and security fencing proposed to surround separate portions of the Project, renders the exposure to EMF insubstantial and, therefore, not harmful to human health. The strength of the EMF present at the perimeter of a solar facility is substantially lower than the typical exposures to EMF from household sources such as refrigerators and microwave ovens (National Institute for Occupational Safety and Health [NIOSH] 2014).

Most of the increased safety risk occurs during construction, which should be completed within approximately 12 months, and the risks that have been identified are known, manageable risks. Overall, impacts to public health and safety in association with implementation of the Proposed Action would be considered temporary and minor.

### **3.13.2.3 Cumulative Impacts**

As with the past and RFFAs, the Project would comply with OSHA regulations and health and safety plans to prevent or minimize the negative effects of worker-related accidents. The Project would also comply with SPCC plans, hazardous material plans, and other waste management BMPs to avoid or minimize related health and safety issues. With proper planning and implementation of BMPs, cumulative impacts from the Project in relation to public health and safety would not occur.

## **3.14 Transportation**

### **3.14.1 Affected Environment**

#### **3.14.1.1 Roads**

The Project site is bisected by northwest-southeast-oriented State Route 19 and bounded to the north by Eastland Avenue. State Route 19 is a two-lane paved public road that intersects with US 51 to the northwest and Interstate 40 in the city of Brownsville to the southeast. Eastland Avenue is a two-lane paved public road that extends northwest-southeast along the northern boundary of the Project site. Highland Street Extended, a two-lane paved public road that extends north-south approximately 0.3 mile west of the Project site, intersects with Eastland Avenue to the north and State Route 19 to the south. Hyde

Road, a two-lane paved public road that extends north-south approximately 0.3 mile west of the Project site, intersects with State Route 19 to the north and Hurricane Hill Road to the south. Willie Paris Road, a two-lane paved public road that extends north-south approximately 0.3 mile east of the Project site, intersects with State Route 19 to the north and Hurricane Hill Road to the south. The Project site is also bisected by several unnamed private dirt roads.

### 3.14.1.2 Road Traffic

Existing traffic volumes on some of the roads in the Project area were determined using 2021 Annual Average Daily Traffic (AADT) counts measured at existing TDOT traffic count stations (TDOT 2023c). Eight TDOT stations are located within one mile of the Project site. Table 3-19 shows the 2021 AADT counts at these stations.

**Table 3-19. 2021 AADT counts near the Project site**

Station	Roadway	Distance from the Project	AADT
42	Eastland Ave	620 ft east	2,474
110	Highland St Ext	0.2 mi west	2,068
60	Willie Paris Rd	0.3 mi southeast	272
72	Highland St	0.6 mi northwest	4,194
41	Eastend St	0.8 mi north	1,422
100	S Jefferson St	0.9 mi northwest	2,298
101	Knee St	1.0 mi west	1,845
109	State Route 19	1.0 mi west	4,476

Source: TDOT 2023c

### 3.14.1.3 Rail and Air Traffic

The closest rail line is operated by Canadian National Railway Company and is located approximately one mile west of the Project site. The closest general aviation airport is the Covington Municipal Airport in Covington, located approximately nine miles southwest of the Project site. The closest major airport, and the only one in the vicinity with regular commercial passenger service, is the Memphis International Airport in Memphis, approximately 51 miles southwest of the Project site.

## 3.14.2 Environmental Consequences

### 3.14.2.1 No Action Alternative

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts on transportation resources would result. Existing land use would remain primarily agricultural land for the foreseeable future, and the existing transportation network and traffic conditions would likely remain as they are at present.

### 3.14.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, the development of the solar facility would result in minor direct impacts to road traffic due to an increase in construction related traffic in the vicinity of the Project site. Subject to weather, construction activities would take approximately 12 months to complete using a crew of approximately 200 workers maximum. Work would generally occur during daylight hours for five to six days a week. Some of these construction workers would likely come from the local area or region. Other workers could come from outside the region, and if so, many would likely stay in local hotels

in the vicinity. It is anticipated that workers would drive personal vehicles to the Project site. Some of the individual workers and work teams would likely visit local restaurants and other businesses.

Due to the proximity of the Project site to the city of Ripley, possible moderate traffic impacts along State Route 19, State Route 209, US 51, Highland Street, Highland Street Extended, and Eastland Avenue could occur, as a portion of the construction workers would likely commute to the Project site from and through Ripley. During construction, increased traffic would result in moderate impacts to roads in the immediate vicinity of the Project site, primarily State Route 19, Highland Street, Highland Street Extended, and Eastland Avenue. Traffic flow around the Project site would be heaviest at the beginning of the workday, at lunch, and at the end of the workday. Use of mitigation measures, such as posting a flag person during heavy commute periods to manage traffic flow, prioritizing access for local residents, and implementing staggered work shifts during daylight hours, would reduce potential adverse impacts to traffic and transportation.

Construction equipment and material delivery and waste removal would require an average of two to three flatbed semi-trailer trucks or other large vehicles visiting the Project site each day. The Project site would be accessed via routes that do not have load restrictions. These vehicles should be easily accommodated by existing roadways; therefore, only minor impacts to transportation resources in the Project area would result from construction vehicle activity.

Construction and operation of the Project would have no effect on operation of airports in the region. The operation of the Project would not affect commercial air passenger or freight traffic in the region and would not adversely affect any aerial crop dusters operating in the vicinity of the Project site. The Project would also obtain a TDOT Commercial Driveway Permit for driveways necessary for the Project site during operations.

Overall, direct impacts to transportation resources associated with implementation of the Proposed Action would be anticipated to be minor during construction due to the influx of workers and truckloads of construction equipment, materials, and waste removal traveling to and from the Project site. These impacts would be temporary and minimized through appropriate mitigation. The Proposed Action would not result in any indirect impacts to transportation.

#### **3.14.2.3 Cumulative Impacts**

The Project would implement minimization and mitigation measures if Project construction would likely disrupt normal traffic patterns; thus, Project effects to road traffic would be temporary, minor, and minimized or mitigated. Effects to local, regional, and major airports are not anticipated. Past and RFFAs would also likely result in minor impacts to transportation. The proposed extension of Interstate 69 and the potential development of the industrial sites (up to 300 acres) could contribute to cumulative impacts to traffic depending on the timing of those projects. However, impacts would be short-term, and coordination could occur to minimize impacts to local commuters. Overall, with implementation of minimization and mitigation measures, the Project is likely not contribute to cumulative impacts to area transportation.

### **3.15 Socioeconomics**

#### **3.15.1 Affected Environment**

The Project site is within the metropolitan limits of Ripley in southeastern Lauderdale County. The Project site and a surrounding one-mile radius (defined as the Project area for socioeconomics) were examined to identify U.S. Census Bureau (USCB) 2020 Census Tract (CT) block groups (BGs). The Project site overlaps CT 505.05 BG 1 and CT 505.06 BG 1 and is within one mile of CT 505.04 BG 3, CT 505.05 BGs 2-4 and CT 505.06 BG 2, and CT 506.00 BG 1 (Figure 3-20). CT 505.05 encompasses the portion of the city of Ripley east of State Route 209 and north of State Route 19. CT 505.06 encompasses the small portion of the city of Ripley south of State Route 19 and the unincorporated portion of southeastern Lauderdale County north of Hurricane Hill Road and Taxpayer Road. Lauderdale County is primarily rural and includes only small clusters of densely populated areas.

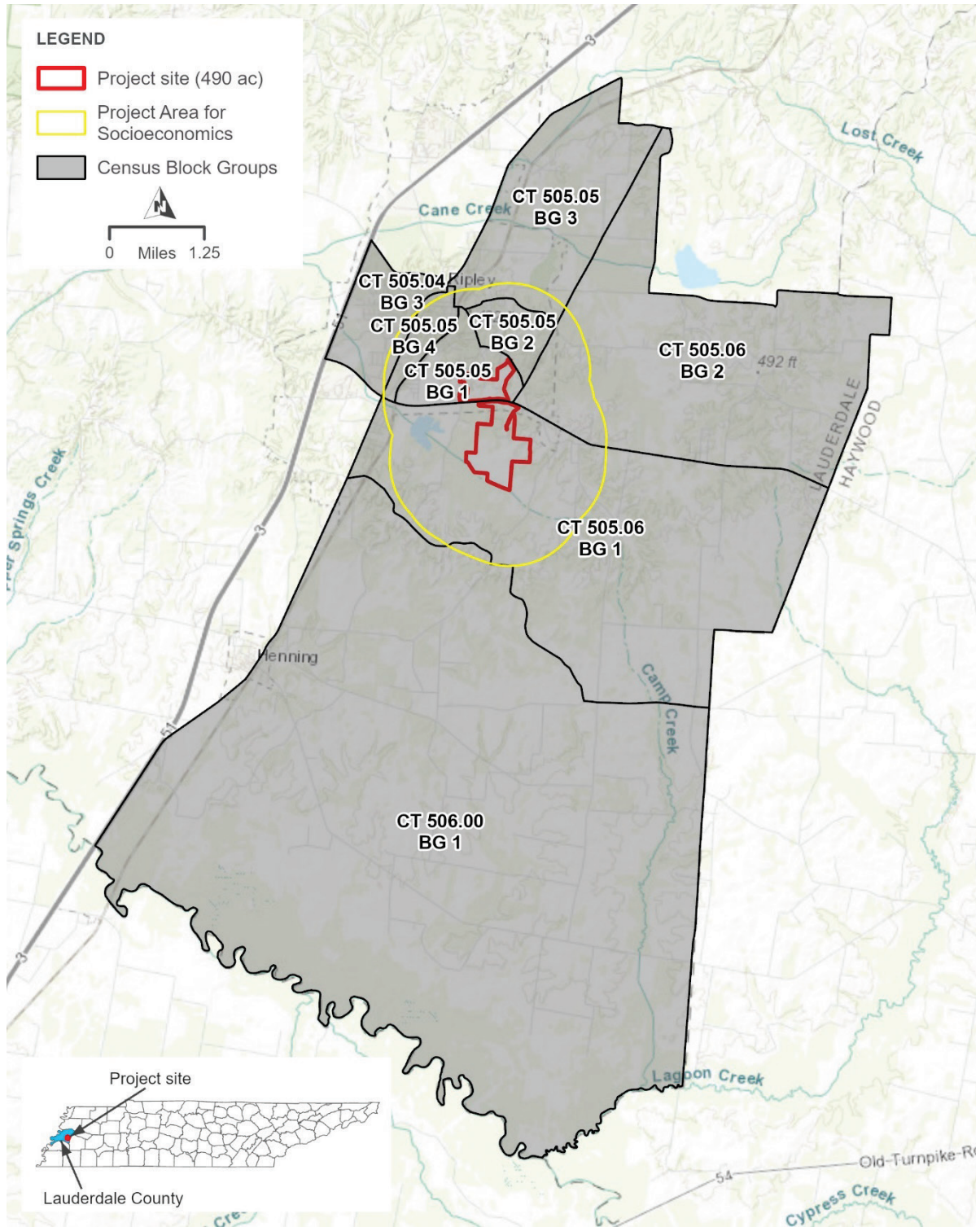


Figure 3-20. USCBA BGs in the Project area

### 3.15.1.1 Population and Demographics

Population data for the affected BGs, the county, and the state are provided in Table 3-20, based on the 2010 Census and 2020 Census. As shown, from 2010 to 2020, all affected BGs and the county recorded population losses while the state recorded population growth (USCB 2010; USCB 2020). The Tennessee State Data Center (2022) projects that the population of the county would continue to decrease, and the population of the state would continue to increase by 2040.

**Table 3-20. Population trends in the Project area for socioeconomics, county, and state**

Geographic Area	2010 Census	2020 Census	Percent Change 2010-2020	Projection 2040	Percent Change 2020-2040
CT 505.04 BG 3	--	1,626	--	--	--
CT 505.05 BG 1*	1,885	1,396	-25.9	--	--
CT 505.05 BG 2	1,076	883	-17.9	--	--
CT 505.05 BG 3	506	505	-0.2	--	--
CT 505.05 BG 4	685	682	-0.4	--	--
CT 505.06 BG 1*	1,266	1,133	-10.5	--	--
CT 505.06 BG 2	1,254	1,166	-7.0	--	--
CT 506.00 BG 1	792	717	-9.5	--	--
Lauderdale County	27,815	25,143	-9.6	24,706	-1.7
Tennessee	6,346,105	6,910,840	8.9	7,888,046	14.1

Sources: Tennessee State Data Center 2022; USCB 2010; USCB 2020

\* Project site lies partially within CT 505.05 BG 1 and CT 505.06 BG 1.

“—” indicates that no data is available.

### 3.15.1.2 Employment and Income

Employment and income data for the affected BGs, the county, and the state are provided in Table 3-21, based on the 2022 American Community Survey (ACS) and Bureau of Labor Statistics (BLS). As shown, six of the eight affected BGs have higher percentages of civilians in the labor force than the county. CT 505.05 BG 2 has a much lower percentage of civilians in the labor force and median household income than both the other affected BGs, the county, and the state.

**Table 3-21. Employment and income in the Project area for socioeconomics, county, and state**

<b>Geographic Area</b>	<b>% Civilian Labor Force, 2022 ACS</b>	<b>Unemployment Rate, 2022 ACS</b>	<b>Unemployment Rate, Mar. 2024, BLS</b>	<b>Median Household Income, 2022 ACS</b>
CT 505.04 BG 3	45.0	7.6	--	\$38,415
CT 505.05 BG 1*	51.6	14.9	--	\$41,692
CT 505.05 BG 2	44.4	13.4	--	\$23,000
CT 505.05 BG 3	54.5	5.7	--	\$48,478
CT 505.05 BG 4	55.3	10.0	--	\$40,375
CT 505.06 BG 1*	62.3	3.8	--	\$44,760
CT 505.06 BG 2	60.7	2.8	--	\$55,179
CT 506.00 BG 1	49.8	8.4	--	\$23,169
Lauderdale County	49.1	6.1	4.5	\$46,702
Tennessee	61.9	5.0	3.2	\$64,035

Sources: USCB 2022b; USCB 2022c; BLS 2024a; BLS 2024b

\* Project site lies partially within CT 505.05 BG 1 and CT 505.06 BG 1.

“—” indicates that no data is available.

The top three industries for the affected BGs, the county, and the state are provided in Table 3-22, based on the 2022 ACS. Manufacturing, retail trade, and public administration are important industries for the area (USCB 2022d).

**Table 3-22. Top industries in the Project area for socioeconomics, county, and state**

<b>Geographic Area</b>	<b>Ranking</b>		
	<b>Highest Percentage</b>	<b>Second Highest Percentage</b>	<b>Third Highest Percentage</b>
CT 505.04 BG 3	Retail trade (23.2%)	Educational services, and health care and social assistance (17.2%)	Construction (12.1%)
CT 505.05 BG 1*	Manufacturing (29.6%)	Retail trade (22.1%)	Transportation and warehousing, and utilities (11.3%)
CT 505.05 BG 2	Manufacturing (26.4%)	Public administration (25.2%)	Educational services, and health care and social assistance (19.1%)
CT 505.05 BG 3	Manufacturing (40.3%)	Retail trade (26.4%)	Other services, except public administration (11.1%)
CT 505.05 BG 4	Retail trade (28.6%)	Manufacturing (17.2%)	Public administration (16.2%)
CT 505.06 BG 1*	Manufacturing (29.6%)	Wholesale trade (23.3%)	Public administration (9.3%)

Geographic Area	Ranking		
	Highest Percentage	Second Highest Percentage	Third Highest Percentage
CT 505.06 BG 2	Manufacturing (32.4%)	Educational services, and health care and social assistance (22.4%)	Public administration (8.9%)
CT 506.00 BG 1	Manufacturing (30.5%)	Educational services, and health care and social assistance (25.6%)	Retail trade (24.1%)
Lauderdale County	Manufacturing (29.0%)	Educational services, and health care and social assistance (17.3%)	Retail trade (11.2%)
Tennessee	Educational services, and health care and social assistance (22.3%)	Manufacturing (12.9%)	Retail trade (11.7%)

Source: USCB 2022d

\* Project site lies partially within CT 505.05 BG 1 and CT 505.06 BG 1.

### 3.15.2 Environmental Consequences

#### 3.15.2.1 No Action Alternative

Under the No Action Alternative, the proposed solar facility would not be constructed; therefore, no Project-related impacts to socioeconomics would occur. Existing socioeconomic conditions would remain as they are at present or change at approximately the current rate.

#### 3.15.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, a new solar facility would be built in the Project area. Subject to weather, construction activities would take approximately 12 months to complete using a crew of approximately 200 workers maximum. Short-term beneficial economic impacts would result from construction activities associated with the Project, including the purchase of materials, equipment, and services and a temporary increase in employment and income. This increase would be local or regional, depending on where the goods, services, and workers were obtained. It is likely some construction materials and services would be purchased locally in Lauderdale County and/or in adjacent counties. Most of the other components of the solar and transmission facilities would be acquired from outside the local area. Also, some of the construction workforce would likely be sought locally or within the region. The direct impact to the economy associated with construction of the Project would be short-term and beneficial.

Most of the indirect employment and income impacts would come from the expenditure of the wages earned by the workforce involved in construction activities, as well as the local workforce used to provide materials and services. This could result in increased sales to businesses nearby and on route to the Project site. Therefore, construction of the proposed solar facility could have minor, beneficial, short-term, indirect impacts to the local economy in Lauderdale County.



During operations, the Project may require small groups of staff to be on-site occasionally to manage the facility and conduct regular inspections, as well as some part-time permanent staff and/or contract employees that manage vegetation on the Project site. Therefore, operation of the solar facility would have minor beneficial impacts on employment and the populations in Lauderdale County.

The Project has been designed to minimize impacts to adjacent and nearby properties and is unlikely to negatively affect area property values. As discussed in Section 3.6, long-range views from residential farm complexes, historic properties, and churches in the Project area are generally limited by mature deciduous trees framing property boundaries, nearby fields, and roads.

The Project is not anticipated to have an impact to agricultural employment as the removal of 344 acres from tenant farming and row cropping during the lifetime of the Project represents 0.002 percent of the total cropland in Lauderdale County (USDA 2022b). Therefore, the 344 acres of land removed from row cropping and tenant farming on the Project site would be insignificant compared to the available cropland in the county. Two out of the three parcels purchased for the Project site were tenant farmed before being purchased by SR Ripley II, LLC. Therefore, impacts to land available for tenant farming are expected to be minimal. During the Project, 86 acres of land that has been used for row cropping on the Project site would be undeveloped while allowing for agricultural or vegetation management activities. Following decommissioning of the solar facility, the site could be utilized for a variety of types of agricultural production, including row cropping.

As the crops produced on the land prior to the Project were either fiber crops (cotton) or non-specialty food crops (soybean and corn), no increase in food prices is anticipated. Additionally, the 344 acres of land removed from row cropping on the Project site would be insignificant compared to the available cropland in the county.

Overall, socioeconomic impacts for the operation of the proposed solar facility would be beneficial and long-term, but minor relative to the total economy of the region. The local tax base would increase from construction of the solar facility and would be most beneficial to Lauderdale County and the vicinity.

### **3.15.2.3 Cumulative Impacts**

Economic benefits of the Proposed Action and the past and RFFAs considered for this analysis include the purchase of materials, equipment, and services, and moderate short- to long-term increases in employment and income. These increases would be local or regional, depending on where the goods, services, and workers have been or are obtained. Overall, short- to long-term, moderate beneficial cumulative impacts to socioeconomics would result from implementation of the Proposed Action in combination with the other actions considered in the area. Indirect, cumulative impacts to socioeconomics would also occur from the expenditure of wages earned by the workforce involved in construction activities and facility operation.

## **3.16 Environmental Justice**

### **3.16.1 Affected Environment**

Environmental justice (EJ) is defined in EO 14096 as “just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other federal activities that affect human health

and the environment.” EJ-related impacts are analyzed to identify and address, as appropriate, disproportionate and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations, as guided by EO 12898 and EO 14096.

CEQ offers guidance for identifying communities with EJ concerns (CEQ Guidance; CEQ 1997). Based on CEQ Guidance, communities with EJ concerns were identified using the 2022 ACS and the thresholds or definitions as follows:

- Minority populations exceeding 50 percent, where minority populations are defined as people who identify themselves as Asian or Pacific Islander, American Indian or Alaskan Native, Black (not of Hispanic origin), Hispanic, some other race, or those indicating two or more races (i.e., all USCB race and ethnic categories apart from One Race White);
- Low-income populations, where per capita income is at or below the annual statistical poverty threshold from the USCB Current Population Reports Series P-60 on Income and Poverty, \$15,225 or the official poverty rate for the US as a whole, 11.5 percent (USCB 2023);
- Groups demonstrating differential patterns of consumption of natural resources among minority and low-income populations, or tribal populations.

The Project site and a surrounding one-mile radius were examined to identify USCB 2020 CT BGs; this is defined as the Project area for EJ. Within the Project area and in addition to the above thresholds, minority EJ populations were defined as the BGs with minority percentages that were 10 percent or more above the state percentage or both the county and state percentages. In other words, each BG’s minority percentage, must be at least 110 percent of the state’s and/or county’s minority percentage to qualify as an EJ population in this analysis. The pertinent thresholds will be displayed in each of the following tables. Low-income EJ populations were also defined as the BGs with poverty rates that were five percent or more above the state percentage or both the county and state percentages. Low-income populations can also be defined by per capita income measurements that were five percent or more below the state measurement or both the county and state measurements. In other words, each BG’s poverty rate, must be at least 105 percent of the poverty rate of the state and/or county or at least 95 percent of the per capita income of the state and/or county to qualify as an EJ population in this analysis. The pertinent thresholds will be displayed in each of the following tables. BGs meeting these thresholds are identified as the areas where the chance for amplified environmental and human health effects to minority and low-income populations may be greatest (i.e., the qualifying communities with EJ concerns).

### **3.16.1.1 Minority Populations**

According to the 2022 ACS, minority populations in all BGs except three are higher than the county and the state (Table 3-23; Figure 3-21; USCB 2022e). Overall minority percentages and Black or African American percentages of CT 505.05 BGs 1-3, CT 505.06 BG 1, and CT 506.00 BG 1 exceeded the 50-percent threshold noted in CEQ Guidance. Additionally, the remaining CT BGs exceed the minority and Black percentages in Tennessee, indicating that these CTs have a higher percentage of minority communities than is typical of the state. All BGs qualify as minority communities with EJ concerns due to meeting or exceeding the thresholds for the state or the county and the state.

No tribal areas are known to exist within a one-mile radius of the Project site (BIA 2018). However, an officially recognized community of the Mississippi Band of Choctaw Indians resides in Henning, Tennessee, approximately four miles southwest of the Project site and within Lauderdale County (Hébert 2013). Additionally, no groups demonstrating differential patterns of consumption of natural resources among minority or low-income populations were observed.

**Table 3-23. Minority percentages and ethnicities in the Project area for EJ, county, and state**

Geography	% Minority	% White <sup>1*</sup>	% Black / African Am. <sup>+</sup>	% Am. Indian / Alaska Native <sup>#</sup>	% Asian <sup>^</sup>	% Native Hawaiian / Pacific Islander <sup>&gt;</sup>	% Some Other Race <sup>**</sup>	% Two or More Races <sup>##</sup>	% Hispanic / Latino <sup>2*</sup>
Tennessee	28.7	79.5	17.3	1.8	2.6	0.2	5.8	6.9	6.3
Lauderdale County	41.2	63.8	36.1	1.0	0.5	0.0	2.5	3.8	1.7
<i>Minority EJ Thresholds to Meet or Exceed</i>									
State	31.7	--	19.1	2.0	2.9	0.2	6.4	7.6	7.0
County	45.5	--	39.9	1.1	0.6	0.0	2.8	4.2	1.9
CT 505.04 BG 3	<b>38.8</b>	65.2	29.9	0.0	0.0	0.0	5.8	1.0	5.8
CT 505.05 BG 1*	<b>94.1</b>	11.0	93.1	1.0	0.0	0.0	0.4	5.0	0.0
CT 505.05 BG 2	<b>80.5</b>	25.8	80.5	0.0	0.0	0.0	0.0	6.3	0.0
CT 505.05 BG 3	<b>77.9</b>	22.1	77.9	0.0	0.0	0.0	0.0	0.0	0.0
CT 505.05 BG 4	<b>36.3</b>	65.4	34.6	1.7	0.0	0.0	0.0	1.7	0.0
CT 505.06 BG 1*	<b>70.2</b>	30.8	69.2	1.0	0.0	0.0	0.0	1.8	0.0
CT 505.06 BG 2	<b>34.9</b>	60.9	34.9	0.0	0.8	0.0	0.0	0.0	0.0
CT 506.00 BG 1	<b>73.3</b>	40.9	62.9	0.0	2.6	0.0	9.0	15.4	26.7

Source: USCB 2022e; \* Table ID: B03002; + Table ID: B02009; # Table ID: B02010; ^ Table ID: B02011; > Table ID: B02012; \*\* Table ID: B02013; ## Table ID: C02003

<sup>1</sup> Race percentages are provided for those reporting a particular race alone or in combination.

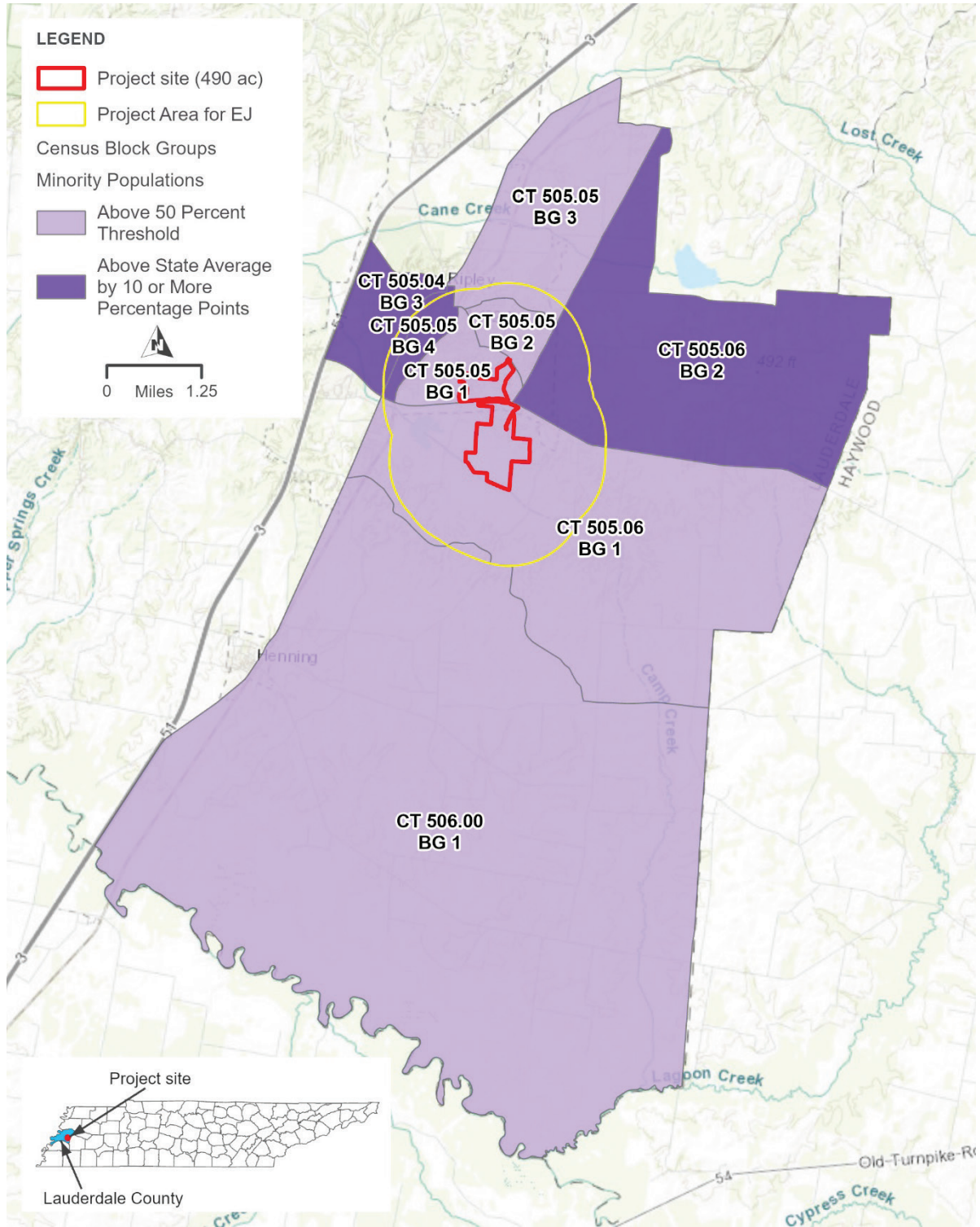
<sup>2</sup> This group is calculated separately from the other ethnicities and may include overlap from the other categories, as the USCB does not consider Hispanic or Latino a "race."

\* Project site lies partially within CT 505.05 BG 1 and CT 505.06 BG 1.

**Bolded** cells indicate that percentages exceed the 50 percent threshold noted in CEQ Guidance.

**Yellow** highlighted cells indicate BGs with minority percentages that are at least 10 percent greater than the state.

**Green** highlighted cells indicate BGs with minority percentages that are at least 10 percent greater than both the county and state.



**Figure 3-21. Minority populations in the Project area for EJ**

### 3.16.1.2 Low-Income Populations

According to the 2022 ACS, the poverty rates of CT 505.05 BGs 1, 2 and 4 and CT 506.00 BG 1 are much higher than the other BGs, the county, and the state (Table 3-24; Figure 3-22; USCB 2022f). Poverty rates of the county, state, and all BGs except for CT 505.05 BG 3 and CT 505.06 BG 2 exceed 11.5 percent, the official 2022 poverty rate for the U.S. as a whole, indicating that they all have high percentages of people living in poverty. Per capita income in CT 505.05 BGs 1 and 2, CT 505.06 BG 1, and CT 506.00 BG 1 was lower than the other BGs, the county, and the state (USCB 2022g). However, the BGs, county, and state all had per capita income amounts that were higher than the U.S. per capita income poverty threshold of \$15,225. All BGs qualify as low-income EJ populations due to meeting or exceeding the thresholds for the percent of persons below poverty level for the state or the county and the state and/or meeting or being under the threshold for per capita income.

**Table 3-24. Poverty in the Project area for EJ, county, and state**

<b>Geography</b>	<b>Per Capita Income</b>	<b>Percent of Persons Below Poverty Level</b>
Tennessee	\$36,040	13.3
Lauderdale County	\$24,358	18.0
<i>Low-Income EJ Thresholds</i>		
<i>State</i>	\$34,914	<b>14.0</b>
<i>County</i>	\$23,169	<b>18.9</b>
CT 505.04 BG 3	\$28,415	<b>13.4</b>
CT 505.05 BG 1*	\$20,344	<b>27.3</b>
CT 505.05 BG 2	\$17,532	<b>39.4</b>
CT 505.05 BG 3	\$24,904	6.4
CT 505.05 BG 4	\$28,607	<b>27.5</b>
CT 505.06 BG 1*	\$21,057	<b>16.5</b>
CT 505.06 BG 2	\$30,937	10.3
CT 506.00 BG 1	\$18,810	<b>32.0</b>

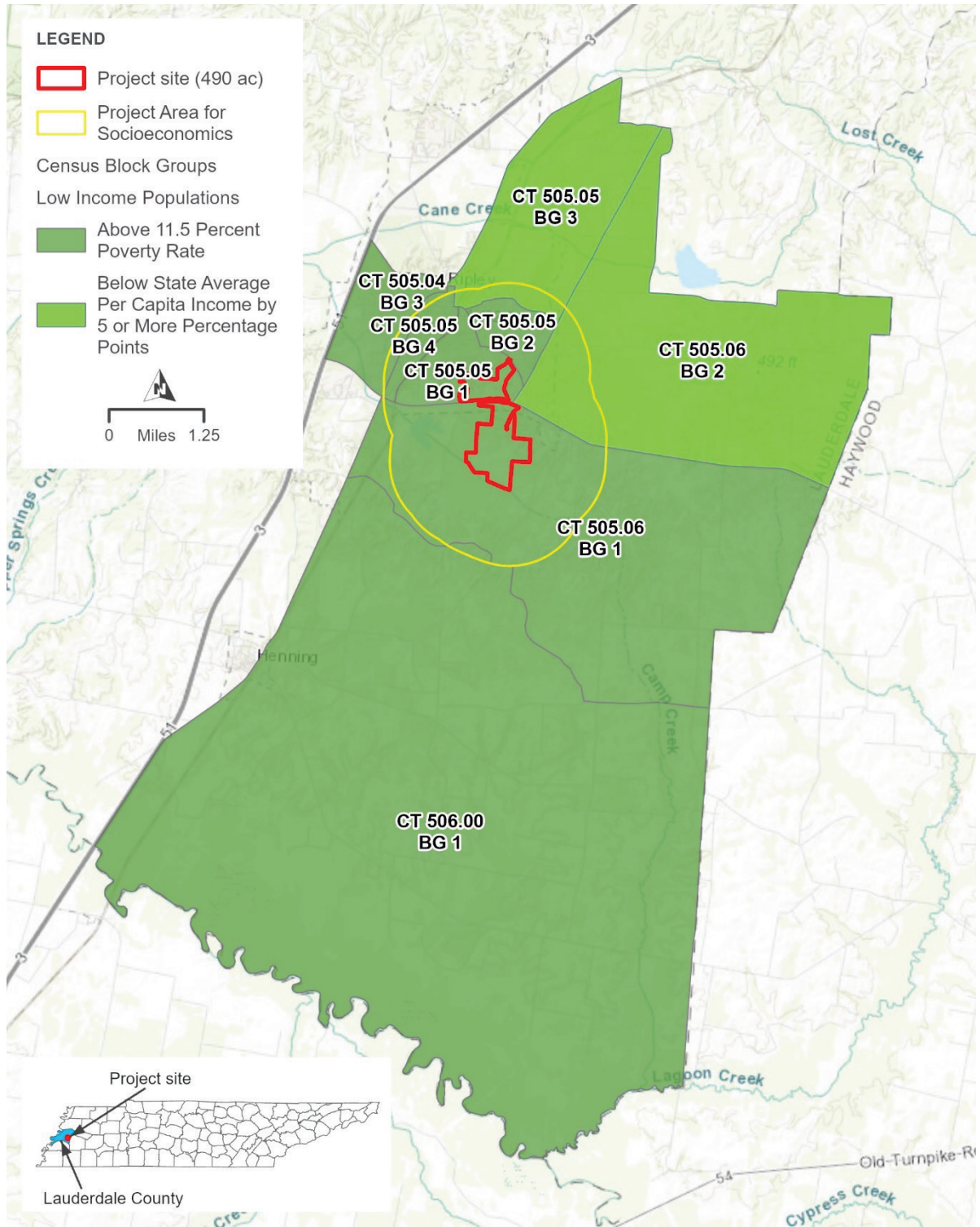
Source: USCB 2022f; USCB 2022g

\* Project site lies partially within CT 505.05 BG 1 and CT 505.06 BG 1.

**Bolded** cells indicate that percentages exceed 11.5 percent, the official 2022 poverty rate for the U.S.

**Yellow** highlighted cells indicate BGs with low-income rates that are at least five percent different than the state.

**Green** highlighted cells indicate BGs with low-income rates that are at least five percent different than both the county and state.



**Figure 3-22. Low-income populations in the Project area for EJ**

### **3.16.1.3 Environmental Justice Indices**

The USEPA EJScreen tool was used to consider 13 different environmental indicators (i.e., EJ indices) in the Project area in comparison to the state (USEPA 2023g). These EJ indices were examined to determine the risk of negative health impacts for residents living within the Project area, as all BGs in the Project area qualify as EJ populations. The 13 EJ indices that were examined included PM<sub>2.5</sub>, ozone, diesel particulate matter, air toxics cancer risk, air toxics respiratory hazard index, toxic releases to air, traffic proximity and volume, lead paint, Superfund proximity, risk management plan (RMP) facility proximity, hazardous waste proximity, USTs and leaking UST (LUST), and wastewater discharge. EJ indices of 50 or greater were considered to have above average pollution levels (above the 50<sup>th</sup> percentile as compared to the state). The results of this examination indicated that the majority of the BGs in the Project area generally contained above average levels of pollution.

The 13 environmental indicators measure pollutants that may impact human health. All BGs in the Project area had percentiles of 50 or greater in at least two EJ indicators. Two of the BGs examined scored above average pollution and indicated five EJ indices above the 50<sup>th</sup> percentile as compared to the state (Table 3-25). The remaining six BGs had below-average pollution percentiles (below the 50<sup>th</sup> percentile) with only two to three EJ indices each above the 50<sup>th</sup> percentile. The highest percentile (99<sup>th</sup>) in the BGs occur in CT 505.04 BG 3; CT 505.05 BGs 1, 2, and 4; and CT 505.06 BG 1 for wastewater discharge.



Table 3-25. BG EJ indices percentile comparisons to the state for the Project area for EJ

Geography	PM <sub>2.5</sub>	Ozone	Diesel Particulate Matter	Air Toxics Cancer Risk	Air Toxics Respiratory Hazard index	Toxic Releases to Air	Traffic Proximity and Volume	Lead Paint	Superfund Proximity	RMP Facility Proximity	Hazardous Waste Proximity	USTs LUSTs	Wastewater Discharge
<i>Lauderdale County</i>													
CT 505.04 BG 3	38	18	33	0	2	50	50	44	<b>53</b>	31	44	<b>78</b>	<b>99</b>
CT 505.05 BG 1*	37	17	31	0	2	47	25	35	<b>54</b>	32	42	<b>66</b>	<b>99</b>
CT 505.05 BG 2	37	17	31	0	2	50	22	<b>70</b>	<b>55</b>	28	48	45	<b>99</b>
CT 505.05 BG 3	37	17	31	0	2	<b>67</b>	34	<b>88</b>	<b>56</b>	24	<b>64</b>	44	<b>97</b>
CT 505.05 BG 4	37	17	31	0	2	49	<b>53</b>	<b>89</b>	<b>54</b>	30	47	<b>90</b>	<b>99</b>
CT 505.06 BG 1*	37	18	21	0	2	40	30	<b>63</b>	<b>55</b>	34	32	30	<b>99</b>
CT 505.06 BG 2	37	18	21	0	2	47	9	44	<b>58</b>	25	41	0	<b>95</b>
CT 506.00 BG 1	49	20	22	0	2	45	12	<b>55</b>	<b>53</b>	<b>52</b>	21	17	46

Source: USEPA 2023g

\* Project site lies partially within CT 505.05 BG 1 and CT 505.06 BG 1.

**Bolded** cells indicate EJ indices levels of 50 or greater, considered to have above average pollution levels (above the 50<sup>th</sup> percentile as compared to the state).



### 3.16.2 Environmental Consequences

#### 3.16.2.1 No Action Alternative

Under the No Action Alternative, the proposed solar facility would not be constructed, and there would be no changes to the Project area attributable to the Proposed Action; therefore, no disproportionate and adverse human health or environmental effects on minority or low-income populations would occur.

#### 3.16.2.2 Proposed Action Alternative

Based on the analyses presented in Section 3.16.1, including the results of the USEPA EJScreen analyses, minority and low-income populations are present in the Project area at higher rates than the county and state. The Project area also has a poverty rate that is higher than the official U.S. poverty rate of 11.5 percent.

##### 3.16.2.2.1 Construction-related Impacts to Communities with EJ Concerns

During construction, communities with EJ concerns would experience temporary and minor impacts to the ambient noise environment in the Project area. Several residences and a few nonresidential buildings, such as Forerunner Church, would experience heightened noise during construction, primarily from pile-driving activities and installation of OPGW in the TL upgrade areas by helicopter. Construction would primarily occur during daylight hours, Monday through Saturday, and on each day between sunrise and sunset in compliance with the Ripley Municipal Code; therefore, the Project would not affect ambient noise levels at night during most of the construction period. The activity producing the most noise for an extended period would be pile-driving during the construction of the array foundations, which would be completed in approximately three months. Pile-driving within 5,322 feet of the nearest residences would be scheduled during daylight hours Monday through Friday to minimize impacts to the residences and pile-driving within 4,976 feet of Forerunner Church would be scheduled outside of church services to minimize impacts to the church. The Forerunner Church usually has services on Tuesday evenings and throughout the day on Sunday. Construction related impacts such as noise or dust should not highly impact this community since they are not present during construction hours.

Construction related short-term adverse impacts to utilities, including potential planned electrical service outages, could occur when bringing the solar facility online, conducting TL upgrade activities, or during routine maintenance of the solar facility. If outages on the Ripley–Covington 161-kV TL or other TLs are required, TVA would work with Ripley Power and Light to provide alternative means of providing electrical service to the area to avoid service interruptions. TVA would also try to perform these outages at low-impact times, such as overnight, to maintain power service to the Ripley Power and Light service area.

Public health and safety of the EJ population would have temporary and minor effects from the possibility of increased employee, commercial, and industrial traffic. However, this is a common problem during construction and there are traffic procedures that can be used to minimize potential safety concerns. Emergency response would be provided by the local, regional, and state law enforcement, fire, and emergency responders.

Two BGs are above the 50<sup>th</sup> percentile as compared to the state for traffic proximity and volume, indicating that these BGs already experience certain traffic related stressors (Table 3-25). Transportation effects associated with construction activities would be concentrated on public roads in the immediate vicinity of the Project site. Due to an increase in construction and worker traffic during construction, there could be a temporary, moderate increase in traffic that is not likely to increase the risk to the public. Therefore,

there would be a minor, temporary effects related to increased traffic and driver safety. Use of mitigation measures as appropriate, such as posting a flag person during heavy commute periods to manage traffic flow, prioritizing access for local residents, and implementing staggered work shifts during daylight hours, could minimize potential adverse impacts to traffic to minor levels.

### **3.16.2.2.2 Operation- and Maintenance-related Impacts to Communities with EJ Concerns**

The most noticeable long-term impacts to communities with EJ concerns would be changes to visual resources, impacts to cultural resources, and conversion of land use from agricultural land to industrial. Wastewater discharge potential during construction and operation is also considered as seven of the eight BGs in the Project area are impacted by wastewater discharge. Visual effects of the built facility would likely be minor due to the visibility of relatively small portions of the facility components.

The cultural resources within the Project's viewshed may also be impacted by the Proposed Action. The Crescent Heights Historic District is recommended for NRHP listing as it reflects the growth of public-funded housing in Ripley during the mid-century. Forerunner Baptist Church is another NRHP eligible site that is within the viewshed of the Proposed Action. Additionally, the Rice Park Office Building, which is eligible for NRHP listing, and the surrounding park are located in the Project's viewshed. THC concurred that the Forerunner Baptist Church, Crescent Heights Historic District, and Rice Park Office Building would not be adversely affected by the undertaking.

The development of the solar facility would result in the long-term change in land use from primarily agricultural land dominated by cultivated crops to primarily industrial land. This change would happen due to a change in zoning, which is described in greater detail in Section 3.2. The change in zoning category to Light Industrial is expected to have negligible negative impacts to the community while the solar facility is operational. Land use conversion would also have long-term impacts on the agricultural industry in the Project area; however, agricultural industries are not a top employer in the Project area for EJ qualifying BGs as described in Section 3.15.1.2 and Table 3-22.

Seven of the eight BGs in the Project area are above the 50<sup>th</sup> percentile as compared to the state for wastewater discharge, indicating that these BGs already experience certain wastewater discharge related stressors (Table 3-25). Wastewater potentially generated during construction or operation may include domestic sewage and wastewater from non-detergent equipment washing and dust control. Another source of wastewater is the waste from portable toilets or other temporary facilities that would be used for the construction workforce. This wastewater will be periodically pumped to tanker trucks by licensed contractors and sent to a sanitary wastewater treatment facility. Water used for equipment washing and dust control would be handled in accordance with BMPs described in the Project stormwater/BMP plan. With application of these BMPs, no adverse effects would be anticipated from wastewater generated during the Project; and communities with EJ concerns would not experience disproportionate effects.

Long-term operation and maintenance related impacts to visual resources, cultural resources, and land use would result in minor to negligible impacts to communities with EJ concerns. No adverse impacts to cultural resources of importance to EJ communities or viewsheds of EJ communities are anticipated as a part of the Proposed Action. Land use

changes would be unlikely to impact communities with EJ concerns as agriculture is not a main industry in the Project area.

**3.16.2.2.3 Summary of EJ Impacts**

Direct and indirect impacts that occur due to the project could have negligible to minor impacts on minority and low-income communities with EJ concerns. Most impacts would occur during the 12-month construction period. Off-site impacts would be minor or mitigated as described in Table 3-26. The standard practices, BMPs, and mitigation efforts that can minimize potential impacts are summarized in Table 3-26 by resource area.

**Table 3-26. Summary of impacts to EJ communities and mitigation measures**

<b>Resource Area</b>	<b>Descriptors of Impact</b>	<b>Standard Practices, BMPs, and Mitigation Measures</b>
Noise	Temporary, Minor, Direct	Construction to occur during daylight hours, Monday through Saturday, and on each day between sunrise and sunset in compliance with the Ripley Municipal Code
Utilities	Long term yet short instances, Direct	Scheduling outages at low-impact times Work with Ripley Power and Light to provide alternative means of providing electrical service to the area to avoid service interruptions
Public and Occupational Health and Safety	Temporary, Minor, Indirect and Direct	Using traffic procedures designed to minimize potential safety concerns as needed
Visual Resources	Long term, Minor, Direct	None proposed
Cultural Resources	No adverse affects	None proposed
Land Use	Long term, Minor, Indirect	None proposed
Transportation	Short term, Minor, Direct	Posting a flag person during heavy commute periods to manage traffic flow Prioritizing access for local residents and implementing staggered work shifts during daylight hours
Waste Management	Short term, Minor, Direct	Pumping wastewater from portable toilets into tanker trucks to get sent to a sanitary wastewater treatment plant Following BMPs for dust control and equipment washing

The Project is expected to have beneficial effects to the local economy by providing construction employment opportunities that would potentially benefit low-income populations.

SRC and TVA would conduct various public involvement activities. SRC has worked with the city of Ripley and Lauderdale County to introduce the Project to local officials. SRC sent

postcards to adjacent landowners to inform them of the Proposed Action. TVA has posted the draft EA for a 30-day public review and comment period on the TVA website, published a notice of availability in newspapers that serve the Lauderdale County area, sent postcards to residents in the Project area, and notified local, state, and federal agencies and federally recognized tribes that the draft EA is available for review and comment. TVA has reviewed the comments received on the draft EA, provided responses to substantive comments, and revised the text of this EA in response to the comments as appropriate. The comments on the draft EA and responses to those comments are included in Appendix E.

### **3.16.2.3 Cumulative Impacts**

As with past and RFFAs, the Project would consider impacts to communities with EJ concerns within the Project boundaries and surrounding area. With proper planning, community input, and aligning goals with community desires, cumulative impacts from the Project in relation to EJ would be minimized. However, as past and RFFAs were analyzed within a 10-mile radius of the Project site and communities with EJ concerns have been identified within the Project area, these communities may possibly experience cumulative disproportionate or adverse effects due to their presence in the area.

RFFAs, as explained in section 3.1, include multiple industrial facilities and road improvements. The nature of the industries that would come to the buildings available for lease or purchase are not known, but increased industrialization could exacerbate already high EJ indicators depending on the emissions and byproducts of the industries. Depending on the emissions, this could impact the overall health of the community. If these industrial facilities are successful, they could lead to increased changes in land use and zoning to accommodate industrial rather than agricultural uses. The Volz Road project could increase traffic in the area which would have a cumulative impact with the traffic caused by the Project if they occur concurrently. Expansion of the highway and road improvements are expected to benefit the community by allowing for more connection between opportunities, which could benefit low-income EJ communities. The impacts from noise, utilities, visual resources, and waste management resource areas are not expected to have cumulative impacts with past actions or RFFAs due to their limited and local impact to the Project area.

## CHAPTER 4 – LIST OF PREPARERS

### 4.1 List of Preparers

Table 4-1 presents the members of the Project team and summarizes the expertise of each member and their contributions to this EA.

<b>Name/Education</b>	<b>Experience</b>	<b>Project Role</b>
<b>TVA</b>		
<i>Erica McLamb</i> B.S., Marine Biology	23 years in ecological evaluations, environmental permitting, and regulatory and NEPA compliance	NEPA Project Manager
<i>Jesse Troxler</i> M.S. and B.S., Wildlife and Fisheries Science	19 years conducting field biology, 10 years technical writing, 8 years NEPA and ESA compliance	Terrestrial Ecology, Threatened and Endangered Species (Animals)
<i>Michaelyn Harle</i> Ph.D., M.A., and B.A., Anthropology	22 years in archaeology and cultural resources management	Cultural Resources, NHPA Section 106 compliance
<i>Emily Kathryn McCann</i> M.S. and B.S., Biology	7 years in field biology, environmental reviews, NEPA and ESA compliance, and consulting with federal agencies	Biological compliance
<i>David Mitchell</i> M.S., Soil and Water Science and B.S., Environmental Horticulture	18 years in botany, ecosystem restoration, and land management, 6 years in project/program management in environmental research	Vegetation, Threatened and Endangered Species (Plants)
<i>Fallon Parker Hutcheon</i> M.S., Environmental Studies and B.S., Environmental Horticulture	5 years in wetland delineation, wetland impact analysis, and NEPA and CWA compliance	Wetland Biologist
<i>Matthew Reed</i> M.S. Wildlife and Fisheries Science; QHP	14 years working with threatened and endangered aquatic species in the Southeastern United States; 10 years in ESA, NEPA, and CWA compliance and stream assessments	Aquatic Ecology, Aquatic T&E Species
<i>Cory Chapman</i> B.S., Wildlife and Fisheries Science	6 years working with aquatic fauna, 2 years in environmental reviews	Aquatic Ecologist
<i>Carrie Williamson, P.E., CFM</i> M.S. and B.S., Civil Engineering	11 years in floodplains and flood risk, 3 years in river forecasting, 11 years in compliance monitoring	Floodplains and Flood Risk

<b>Name/Education</b>	<b>Experience</b>	<b>Project Role</b>
<b>HDR</b>		
<i>Nicole Guigou</i> Ph.D., Aquatic Resources and Integrative Biology M.S. and B.S., Biology	15 years in wetland delineations and endangered species management, 11 years in environmental permitting and regulatory compliance	EA Project Manager (former)
<i>Karsen Williams</i> M.S., Coastal, Marine, and Wetland Studies B.S., Environmental Science	4 years in environmental consulting	EA Project Manager (current)
<i>Harriet Richardson Seacat</i> M.A. and B.A., Anthropology	22 years in anthropology, archaeology, history, and NHPA and NEPA documentation	EA Project Principal, NEPA lead and technical advisor
<i>Charles P. Nicholson</i> Ph.D., Ecology and Evolutionary Biology M.S., Wildlife Management B.S., Wildlife and Fisheries Science	17 years in wildlife and endangered species research and management, 27 years in NEPA compliance	QA/QC Lead
<i>Miles Spenrath</i> B.S., Environment and Natural Resources	12 years in NEPA compliance and documentation	Land Use; Soils; Prime Farmland; Visual Resources; Noise; Air Quality and Climate Change; Natural Areas, Parks, and Recreation; Utilities; Public and Occupational Health and Safety; Transportation; Socioeconomics; Environmental Justice; GIS Mapping; Draft EA comment management and resolution; Administrative record
<i>Mark Filardi</i> M.S. and B.S., Geology	24 years in hydrogeology and contaminated site assessment and remediation	Geology, Groundwater, Waste Management
<i>Kylie Gambrell</i> B.S., Earth and Environmental Sciences and B.A., Anthropology	1 year in NEPA compliance and documentation	Draft EA comment management and resolution, administrative record
<i>Ivan Maldonado</i> B.S., Natural Resource and Environmental Economics	10 years in wetland delineations and environmental permitting	Water Resources, Biological Resources
<i>Al Myers</i> Completed credits toward B.S., Business Administration	24 years in administration	Overall formatting, appendices compilation, PDF creation



<b>Name/Education</b>	<b>Experience</b>	<b>Project Role</b>
<i>Kristi Nichols, RPA</i> M.A. and B.A., Anthropology	26 years in archaeology, cultural resource management, and NHPA Section 106 compliance	Cultural Resources
<i>Caroline Ryciuk</i> M.A., Anthropology	3 years in anthropology and ethnography	Socioeconomics, Environmental Justice
<i>Erin Settevendemio</i> M.S., Fisheries and Aquatic Sciences	14 years in fisheries, wetland science, and USACE and FERC documentation	Biological Resources
<i>Brian Spillane</i> B.S., Geology	10 years in hydrogeology and environmental site assessment and remediation	Geology, Groundwater, Waste Management
<i>Lyranda Thiem</i> M.S. and B.S., Biology	4 years in ecology and biology, 2 years in stream and wetland delineations, permitting, and habitat evaluation	Water Resources, Biological Resources

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**Appendix A – Geological Resources-Related Supporting  
Information**

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**Appendix B – Water Resources-Related Supporting Information**  
**(Provided under separate cover)**

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**Appendix C – Biological Resources-Related Correspondence and  
Supporting Information**

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# Wildlife and Vegetation Assessment

SR Ripley II

*Lauderdale County, Tennessee*

March 2024



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- Appendix D – Federal and State Protected Plant Species and Habitat Report
- Appendix E – Bat Habitat Assessment Data Sheets
- Appendix F – Environmental Solutions & Innovations, Inc. Bat Survey Report



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# Acronyms and Abbreviations

<b>BCC</b>	Birds of Conservation Concern
<b>BGEPA</b>	Bald and Golden Eagle Protection Act
<b>DBH</b>	diameter at breast height
<b>ESA</b>	Endangered Species Act
<b>ESI</b>	Environmental Solutions and Innovations, Inc.
<b>HDR</b>	HDR Engineering, Inc.
<b>IPaC</b>	Information for Planning and Consultation
<b>MBTA</b>	Migratory Bird Treaty Act
<b>NEPA</b>	National Environmental Policy Act
<b>NLEB</b>	northern long-eared bat
<b>Project</b>	Ripley II Solar
<b>Project Site</b>	Ripley II Solar Project Site
<b>RNHD</b>	Regional Natural Heritage Database
<b>TDEC</b>	Tennessee Department of Environment and Conservation
<b>TN-QHP</b>	Tennessee Qualified Hydrologic Professional
<b>TN-QHP-IT</b>	Tennessee Qualified Hydrologic Professional in Training
<b>TVA</b>	Tennessee Valley Authority
<b>TWRA</b>	Tennessee Wildlife Resources Agency
<b>USFWS</b>	U.S. Fish and Wildlife Service



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# 1 Introduction

On behalf of Silicon Ranch Corporation, HDR Engineering, Inc (HDR) conducted a vegetation and wildlife assessment for SR Ripley II (Project), a proposed solar facility located on approximately 490 acres in Lauderdale County, Tennessee (Project Site).

The Project would sell power to Tennessee Valley Authority (TVA) and, therefore, is subject to review under the National Environmental Policy Act (NEPA) and must obtain applicable permitting. To facilitate compliance with NEPA, the Endangered Species Act (ESA) (1973) and Executive Order 13571, and in accordance with TVA's *Guidelines for Conducting Biological and Cultural Surveys and Impact Analyses* (TVA 2023a), HDR mapped vegetation and identified potential habitat for federally and state-listed species within the Project Site; the results of this wildlife and vegetation assessment are presented herein. Supporting documents included as appendices are as follows:

Appendix A – Figures;

Appendix B – Site Photographs

Appendix C –U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database, the Tennessee Valley Authority Regional Natural Heritage Database (TVA RNHD), and the Tennessee Department of Environment and Conservation database search results;

Appendix D – Federal and State Protected Plant Species and Habitat Report;

Appendix E – Bat Habitat Assessment Data Sheets;

Appendix F – Environmental Solutions & Innovations, Inc. Bat Survey Report

Between September 19-22, 2022, and November 1-3, 2023, HDR conducted field surveys following TVA's Contractor *Guidelines for Conducting Biological and Cultural Surveys and Impact Analyses* (TVA 2023a) to map vegetation and identify potential habitat for federally and state-listed threatened and endangered species on the Project Site. Environmental consultant Dan Spaulding conducted a Federal and State Protected Plant Species and Habitat survey on the Project Site on October 23-24, 2023. Bat mist netting surveys targeting federally listed bat species were conducted by Environmental Solutions and Innovations, Inc. (ESI) by Darwin Brack on June 27-30, 2023. The results of the bat survey are included in Appendix F.

## 1.1 Project Site

The Project Site is located in Lauderdale County, Tennessee, partially within the city limits of Ripley (Appendix A, Figure 1). The Project Site is located within the Cane Creek Upper Watershed (Hydrologic Unit Code 10: 0801020807). Hyde Creek runs along the southern border of the Project Site, flowing towards the northwest. A transmission line crosses the western portion of the Project Site from northeast to southwest and Highway 19 bisects the Project Site. The Project Site consists of mostly active agriculture fields of cotton (*Gossypium hirsutum*), corn (*Zea mays*), and soybeans (*Glycine max*) (Appendix A, Figure 2).

## 1.2 Qualifications

HDR vegetation and wildlife surveys were conducted by environmental scientists Lyranda Thiem (terrestrial zoology and wetlands-qualified; Tennessee Qualified Hydrologic Professional in Training [TN QHP-IT]), Ivan Maldonado (aquatic ecology and wetlands-qualified; Tennessee Qualified Hydrologic Professional [TN-QHP]), Ben Burdette (TN-QHP), and Jake Irvin. These HDR staff have undergone appropriate training and have prior experience in identifying and assessing vegetation communities, as well as endangered animal species and habitat, in the region. Dan Spaulding, a TVA-approved, qualified botanist, conducted all vegetation surveys. ESI conducted the mist netting survey with the terrestrial zoology-qualified, Section 10 permitted bat biologist Darwin Brack.

# 2 Vegetation Field Survey

## 2.1 Methods

A portion of the site was surveyed by HDR on September 19-22, 2022. An additional parcel was investigated on November 1-3, 2023. Surveys were conducted to document plant communities and invasive plants and evaluate habitat for rare plant species and other state- and federally listed species on the Project Site. Environmental consultant Dan Spaulding conducted a rare plant species survey on the Project Site on October 23-24, 2023. Following TVA (2023a) guidelines, HDR reviewed the TVA Regional Natural Heritage Database (RNHD) for all state and federally listed plants, including sensitive plant species, within a surrounding five-mile vicinity of the Project Site; the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) database for federally threatened and endangered plants within the Lauderdale County; and the Tennessee Department of Environment and Conservation (TDEC) Rare Species Data Viewer for state-protected species with potential to occur in the Cane Creek Upper Watershed. Species lists compiled for the 2023 site visits are included in Appendix C.

Plant communities observed on the Project Site were classified using the National Vegetation Classification System (Grossman et al. 1998). Plant communities were delineated using ArcMap, aerial imagery, and field notes, and the area of each plant community type was calculated as a percentage of the total Project Site. The general location and abundance of non-native invasive plants present within the Project Site were also noted.

## 2.2 Results

### 2.2.1 Vegetation Communities

The majority of the Project Site comprises agricultural fields (87.7 percent) with smaller amounts of forested areas (10.1 percent, total), herbaceous (1.3 percent) and shrubland habitats (0.25 percent) (Table 1). Current land use activities on the Project Site are focused on production of cotton, soybean, and corn. Crop harvesting was underway at the time of the surveys. Photographs of typical agricultural land on the Project Site are provided in Appendix B and denoted on Figure 3 in Appendix A. Vegetation communities across the Project Site are also shown on Figure 4 in Appendix A.

Most of the large, contiguous forest stands are located in the central and southeastern sections of the Project Site with an average diameter at breast height (DBH) of 20-40 inches. Other small, forested areas are located along streams and fields with an average DBH of 15-20 inches. No old growth forest was found on the Project Site. Photographs 3 and 4 are representative of forested areas on the Project Site (Appendix A, Appendix B).

Common overstory and midstory plants found in the forested areas consisted of the following: Willow oak (*Quercus phellos*), cherry-bark oak (*Quercus pagoda*), black walnut (*Juglans nigra*), tulip-poplar (*Liriodendron tulipifera*), black locust (*Robinia pseudoacacia*), mockernut hickory (*Carya tomentosa*), American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), red cedar (*Juniperus virginiana*), and American sycamore (*Platanus occidentalis*).

Common shrub plants found in the shrub layer included highbush blueberry (*Vaccinium corymbosum*) and sassafras (*Sassafras albidum*).

Common herbaceous plants found in the herb layer includes the following species: cinnamon fern (*Osmundastrum cinnamomeum*), proso millet (*Panicum miliaceum*), royal fern (*Osmunda spectabilis*), valley redstem (*Ammannia coccinea*), nutgrass (*Cyperus rotundus*), and redtop panic grass (*Coleataenia rigidula*).

Common vine plants found in the forested areas include poison ivy (*Toxicodendron radicans*), crossvine (*Bignonia capreolata*), greenbriers (*Smilax* spp.), and Virginia creeper (*Parthenocissus quinquefolia*).

At several locations within forest habitat, the forest surrounds open ponds which support species like black willow (*Salix nigra*) and black alder (*Alnus glutinosa*).

Several emergent wetlands on the Project Site are dominated by herbaceous vegetation, primarily proso millet due to the disturbed nature of the area. Forested wetlands on site include hydrophytic species listed above such as American sycamore, black willow, and American elm.

No federal-noxious weeds as defined by the U.S. Department of Agriculture Natural Resources Conservation Service (2012) were observed. However, many non-native invasive plant species were observed throughout the Project Site. Invasive species noted include autumn-olive (*Elaeagnus umbellata*), Japanese honeysuckle (*Lonicera japonica*), Japanese stiltgrass (*Microstegium vimineum*), Johnson grass (*Sorghum halepense*), Chinese privet (*Ligustrum sinense*), and multiflora rose (*Rosa multiflora*). These species are most often found in ruderal forested areas, along field edges, and in areas prone to disturbance. Japanese honeysuckle, Japanese stiltgrass, Chinese privet, and multiflora rose were found in some of the forested stands. These species occur on about 15 percent of the Project Site and in both forest and herbaceous vegetation areas.

**Table 1. Vegetation Communities in the Study Area**

<b>Plant Community</b>	<b>Area (acres)</b>	<b>Percentage of Project Site<sup>1</sup></b>
Row Crop (corn, soybean, and cotton)	429.9	87.7
Dry Deciduous Forest	30.0	6.1
Mesic Deciduous Forest	15.9	3.2
Herbaceous	6.6	1.3
Wet Deciduous Forest	3.8	0.8
Deciduous Shrubland	1.2	0.25
<b>Total</b>	<b>487.4</b>	<b>99.35</b>

<sup>1</sup> Table does not include area of open water 2.9 acres

### **Notable Plant Communities**

No notable plant communities were observed on the Project Site.

### **Listed and Protected Plant Species**

No changes to the USFWS IPaC, TVA RNHD, or TDEC species lists were noted between 2022 and 2023 except for the addition of American ginseng (*Panax quinquefolius*), a state species of concern due to commercial exploitation (USFWS 2023; TVA 2022, 2023b; TDEC 2024).

Species lists are provided in Appendix C. Listed rare species found in Lauderdale County include featherfoil (*Hottonia inflata*), ovate-leaved arrowhead (*Sagittaria platyphylla*), cedar elm (*Ulmus crassifolia*), tissue sedge (*Carex hyalina*), butternut (*Juglans cinerea*), red starvine (*Schisandra glabra*), and lake cress (*Neobeckia aquatica*) (TDEC 2024).

No listed and protected plant species or suitable habitats for listed and protected plants were observed during the field surveys.

## **3 Wildlife Survey**

### **3.1 Methods**

Pedestrian surveys of the Project Site for terrestrial wildlife were conducted on September 19-22, 2022 and November 1-3, 2023. The surveys were focused on woodlands, forested edges, roadside edges, recently disturbed areas, culverts, and areas of former human use. The Project Site was also traversed by vehicle via roads. Spot checks were performed in forested stands and along streams, drainageways, and the perimeters of crops fields. Isolated pockets of woodlands were inspected, and larger woodland blocks within the Project Site were also traversed for the bat habitat assessment.

Following TVA (2023a) guidelines, HDR reviewed the TVA RNHD (TVA 2023b) for state or federal species of conservation concern with potential to occur on the Project Site and within a three-mile radius of the Project Site. In conjunction with the TVA RNHD, the USFWS IPaC for



federal species of conservation concern was examined for species with potential to occur on the Project Site and Lauderdale County (USFWS 2023). Lastly, the TDEC Rare Species Data Viewer (TDEC 2024) was utilized to generate a list of state-protected species with potential to occur in the Cane Creek Upper watershed. The compiled animal species lists are included in Appendix C.

Bat mist netting surveys were completed to identify bat species, including protected bat species, that may be present on the Project Site. A total of ten net-nights were completed across two mist net sites. Nets were placed in bat flight path areas suitable for travel and foraging. More details regarding methodology and appropriate permits for handling of protected species is provided in the report (ESI 2023; Appendix F).

## 3.2 Results

### 3.2.1 Wildlife

Wildlife observed on the Project Site included a variety of common birds, amphibians, reptiles, insects, and mammals (Table 2). Species were either directly observed on the Project Site, or evidence (e.g., tracks, scat, remains) was noted during the field survey.

**Table 2. Wildlife Species Observed in Project Site**

<b>Species Observed (Common Name)</b>	<b>Notes/Habitat Observed in Study Area</b>
<b>Birds</b>	
Woodpecker species	Flying around a tree and pecking at tree within an upland forested habitat
Northern Cardinal	Flying around low-hanging branches within scrub/shrub habitat
American Crow	Flying overhead
Red-tailed Hawk	Flying overhead
Killdeer	In agricultural fields and roadbeds in open areas
Black Vulture	Flying overhead
Blue Jay	Flying overhead
European Starling	Flying overhead
Carolina Wren	Flying overhead
<b>Amphibians</b>	
Spring Peeper	Heard near pond
Leopard Frog	In multiple streams throughout the site
Green Frog	In multiple streams throughout the site
American Toad	In damper forested areas throughout the site
Cricket Frog	In streams and ponded areas throughout the site
Green Treefrog	Within a small wetland
Unidentified Tadpoles	In many puddles and streams throughout the site.
<b>Reptiles</b>	
Pond Sliders	In pond on site
Five-Lined Skinks	In forested areas
<b>Fish</b>	
Western Mosquito Fish	In Hyde Creek
<b>Insects</b>	
Unidentified Grasshopper	Flying through cotton and soybean fields
Paper wasp	In nest near forested wetland
<b>Macroinvertebrates</b>	
Caddisflies	In many drainages throughout the site
Midges	In many drainages throughout the site



<b>Species Observed (Common Name)</b>	<b>Notes/Habitat Observed in Study Area</b>
Mayflies	In many drainages throughout the site
Scuds	In many drainages throughout the site
Fly Larva Species	In many drainages throughout the site
<b>Mammals</b>	
White-tailed deer	In forested area
<b>Tracks/Scat/Remains</b>	
Turtle Remains	Near a dry pond
Deer Tracks and Scat	In several locations across the site
Raccoon Tracks	In several of the creek beds throughout the site

### 3.2.2 Migratory Birds

Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to take certain actions to further implement the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §§ 703-712). The MBTA prohibits the “take” of migratory birds. The regulatory definition of “take” as defined by 50 CFR § 10.12, “means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue hunt, shoot, wound, kill, trap, capture, or collect.” The following prohibitions apply to migratory bird nests: “possession, sale, purchase, barter, transport, import and export, take, and collect.” The MBTA is executed and enforced by USFWS.

Approximately 290 birds have been identified in Lauderdale County (eBird 2023), and additional species may occur regularly. The USFWS maintains a list of migratory birds of conservation concern (USFWS 2021). These species are not listed under the ESA but are a high conservation priority of the USFWS and without additional conservation action are likely to become candidates for listing under the ESA. Thirty-nine species of birds of conservation concern are listed for Bird Conservation Region 27 (BCR 27), Southeastern Coastal Plain, which encompasses the Project Site. Of these 39 species, a habitat survey determined that at least 18 potentially occur with some regularity on or in the immediate vicinity of the Project Site (Table 3).



**Table 3. Migratory Bird Species of Conservation Concern Potentially Occurring in the Project Site**

<b>Scientific Name</b>	<b>Common name</b>	<b>Season of Occurrence</b>	<b>Likelihood<sup>1</sup> of Presence on Project Site</b>	<b>Habitat Description</b>
<i>Antrostomus vociferus</i>	Eastern Whip-poor-will	Spring through fall	Likely	Inhabits deciduous and mixed forests with open understory and forest edges; reported from vicinity
<i>Antrostomus carolinensis</i>	Chuck-will's-widow	Spring through fall	Possible	Inhabits oak and pine woodlands and edges of swamps
<i>Chaetura pelagica</i>	Chimney Swift	Spring through fall	Likely	Inhabits nests in chimneys and less frequently large, open-topped hollow trees; reported from vicinity and likely forages over Project Site
<i>Tringa flavipes</i>	Lesser Yellowlegs	Spring and fall	Possible	Inhabits extensive emergent wetlands and seasonally flooded agricultural fields with sparse, low vegetation
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	Year-round	Likely	Inhabits open forests and pine savannahs, reported from vicinity
<i>Hylocichla mustelina</i>	Wood Thrush	Spring through fall	Likely	Inhabits deciduous and mixed forests with shrubs in understory; reported from vicinity
<i>Thryomanes bewickii</i>	Bachman's Sparrow	Spring through fall	Possible	Inhabits brushy areas, thickets and scrub in open country, open and riparian woodland, and chaparral; reported from vicinity
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	Spring through fall	Possible	Inhabits grasslands of intermediate height and are often associated with clumped vegetation interspersed with patches of bare ground; reported from vicinity
<i>Centronyx henslowii</i>	Henslow's Sparrow	Spring	Possible	Inhabits open fields and meadows with grass interspersed with weeds or shrubby vegetation, especially in damp or low-lying areas; reported from vicinity



Scientific Name	Common name	Season of Occurrence	Likelihood <sup>1</sup> of Presence on Project Site	Habitat Description
<i>Spizella pusilla</i>	Field Sparrow	Year-round	Likely	Inhabits grasslands with scattered shrubs and saplings, recently clear-cut areas; reported from vicinity
<i>Euphagus carolinus</i>	Rusty Blackbird	Winter	Possible	Inhabits forested wetlands
<i>Protonotaria citrea</i>	Prothonotary Warbler	Spring through fall	Possible	Inhabits forested wetlands with areas of standing water
<i>Geothlypis formosa</i>	Kentucky Warbler	Spring through fall	Possible	Inhabits moist deciduous forest with shrubby understory
<i>Setophaga cerulea</i>	Cerulean Warbler	Spring through fall	Unlikely	Inhabits extensive mature deciduous forest with scattered canopy gaps
<i>Setophaga discolor</i>	Prairie Warbler	Spring through fall	Likely	Inhabits brushy fields and recently harvested, regenerating woodlands
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Year-round	Unlikely	Inhabits coasts, rivers, large lakes; in migration, also mountains, open country. Typically close to water, also locally in open dry country.
<i>Aquila chrysaetos</i>	Golden Eagle	Rare	Unlikely	Inhabits open mountains, foothills, plains, open country.
<i>Pandion haliaetus</i>	Osprey	Spring through fall	Possible	Large, forested areas near large bodies of water, may nest on transmission lines

Source: NatureServe Explorer 2023

<sup>1</sup>“Possible” indicates that species presence is possible due to having habitat on the Project Site, but the species was not observed. “Known” indicates that the species was observed on the Project Site. “Unlikely” indicates that species presence is unlikely due to not having habitat on the Project Site.

A large portion of forested and agricultural habitat on the Project Site provides suitable habitat for some of the birds listed in Table 3. Additional migratory bird species not listed as a BCC may occur on the Project Site. Table 2 lists a few of these species whose presence has been confirmed. Other species likely to be observed include wood ducks and other waterfowl, additional species of hawks and owls, woodpeckers, flycatchers, vireos, thrushes, and warblers. These habitats may also provide habitat for migratory birds with declining populations that are not listed as BCC by the USFWS (2021).

Both bald and golden eagles are protected by the MBTA and the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668d). Under the BGEPA, it is illegal to kill, harass, possess (without a permit), or sell bald and golden eagles and their parts.

Bald eagles typically utilize forested areas adjacent to large bodies of water for nesting habitat. Tall, mature coniferous or deciduous trees that afford a wide view of the surroundings are used as nest and roost trees. Bald eagles typically avoid heavily developed areas. Suitable summer nesting habitat for bald eagles generally consists of prominent trees along riparian corridors on large bodies of water. Winter habitat in Tennessee includes reservoirs and large rivers. Bald eagles are known to nest in Tennessee, with 175 nesting pairs as of 2012 (more recent information is unavailable) (TWRA 2023). The suitability of the Project Site as habitat for the bald eagle is low due to the absence of large water bodies on the Project Site or in the vicinity.

The golden eagle is a rare winter resident in Tennessee and most reports have been in the vicinity of reservoirs. Wintering habitat includes both forest and open habitats for foraging. The golden eagle has been reported in adjacent counties; however, it is unlikely to be present on the Project Site due to the absence of large water bodies on the Project Site or in the vicinity.

Osprey typically inhabit areas along large rivers, lakes, and reservoirs and seven observations were made in Hardeman County (eBird 2023). While osprey are no longer listed as endangered in the state of Tennessee, they are a species of interest to the TVA. In Tennessee, osprey arrive in March to begin their breeding season, building nests and raising young from April through July. Osprey build nests in trees and man-made structures (e.g., transmission structures) near or over water. Forested areas located along streams and open water features may provide suitable habitat for osprey on the Project site. The osprey could occur due to observations of nests along transmission lines within three miles of the Project Site (TVA 2022, 2023). Typically, osprey occur along large rivers, lakes, and reservoirs (TWRA 2022b), however the Project Site provides no foraging habitat and limited potential for nesting habitat (consisting of less than 0.5 mile of transmission line right-of-way along Highway 19). No osprey were observed during the field survey.

### **3.2.3 Listed and Protected Wildlife Species**

“Listed” species are recognized by federal, state, or other agencies in an effort to protect them and their habitat under the federal ESA, as well as under state laws and per local policies. These species are vulnerable to habitat loss and population decline because of their rarity.



### 3.2.3.1 FEDERALLY AND STATE-LISTED ANIMAL SPECIES

Table 4 provides a summary of the federally and state-listed species that were identified in the USFWS IPaC (USFWS 2023), the TVA RNHD (TVA 2022, 2023b), and the TDEC Rare Species Data Viewer (TDEC 2024) for the Project Site (see Appendix C). State-protected species with a state rank of S1 to S3<sup>1</sup> are included in the table below. No designated critical habitat for federally listed species occurs on or in the vicinity of the Project Site.

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<sup>1</sup> State Ranks: S1 = Extremely rare and critically imperiled in the state with five or fewer occurrences, or very few remaining individuals, or because of some special condition where the species is particularly vulnerable to extinction; S2 = Very rare and imperiled within the state, six to twenty occurrences, or few remaining individuals, or because of some factor(s) making it vulnerable to extinction; S3 = Rare and uncommon in the state, from 21 to 100 occurrences.



**Table 4. Federally and State-Listed Animal Species in the Cane Creek Upper Watershed, Tennessee, and Likelihood of Occurrence in the Project Site**

Scientific Name	Common Name	State Status	Federal Status	Likelihood <sup>1</sup> of Presence on Project Site	Habitat Description
<b>Mammals</b>					
<i>Myotis austroriparius</i>	Southeastern Bat	Rare	--	Possible	Inhabits caves, but especially hollow trees & abandoned buildings, usually near water
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Threatened	Endangered	Possible	Inhabits a variety of habitats including wet meadows, damp woods, uplands, abandoned structures, and sinkhole fissures/karst features
<i>Myotis sodalis</i>	Indiana Bat	Endangered	Endangered	Possible	Inhabits various habitats including wet meadows, damp woods, and uplands, including abandoned structures
<i>Perimyotis subflavus</i>	Tricolored Bat	Threatened	Proposed Endangered	Possible	Inhabits open-grassy fields, hayfields, shrubby fields, fence rows, and edges of woods
<i>Neotoma floridana illinoensis</i>	Eastern Woodrat	In Need of Management	--	Possible	Inhabits forested areas
<b>Reptiles</b>					
<i>Macrochelys temminckii</i>	Alligator Snapping Turtle	Threatened	Proposed Threatened	Unlikely	Inhabits deep pools in large rivers, lakes and swamps
<b>Fish</b>					
<i>Atractosteus spatula</i>	Alligator Gar	In Need of Management	--	Unlikely	Inhabits sluggish pools of large rivers, oxbows, swamps, and backwaters
<i>Cycleptus elongatus</i>	Blue Sucker	Threatened	--	Unlikely	Inhabits swift waters over firm substrates in big rivers
<i>Hybognathus placitus</i>	Plains Minnow	In Need of Management	--	Unlikely	Inhabits clear to highly turbid rivers and creeks with sandy bottoms
<b>Insects</b>					
<i>Danaus plexippus</i>	Monarch Butterfly	--	Candidate	Possible	Inhabits flowering plants - especially milkweed ( <i>Asclepias</i> spp.), open areas with little canopy. Milkweed observed onsite and several monarchs observed flying near these large clusters



Scientific Name	Common Name	State Status	Federal Status	Likelihood <sup>1</sup> of Presence on Project Site	Habitat Description
<b>Mollusks</b>					
<i>Obovaria arkansasensis</i>	Southern Hickorynut	Rare	--	Unlikely	Inhabits rivers with medium-sized gravel substrates and low-moderate current
<i>Webbhelix multilineata</i>	Striped Whitelip	Rare	--	Possible	Inhabits marshes and floodplains
<i>Villosa vibex</i>	Southern Rainbow	Rare	--	Possible	Inhabits small rivers and creeks with muddy substrates
<b>Birds</b>					
<i>Egretta cerulea</i>	Little Blue Heron	In Need of Management	--	Possible	Forages in wetlands and along shorelines, nests in forest near water bodies
<i>Setophaga cerulea</i>	Cerulean Warbler	In Need of Management	--	Unlikely	Inhabits extensive mature deciduous forest with scattered canopy gaps
<i>Limnothlypis swainsonii</i>	Swainson's Warbler	In Need of Management	--	Unlikely	Inhabits bottomland forests with thick shrub, cane, and/or sapling understory
<i>Pandion haliaetus</i>	Osprey	--	---	Possible	Inhabits areas along large rivers, lakes, and reservoirs; may nest on transmission lines
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Threatened	BGEPA	Unlikely	Inhabits in forested areas near large bodies of water
<i>Aquila chrysaetos</i>	Golden Eagle	In Need of Management	BGEPA	Unlikely	Inhabits open country, open wooded country, and barren areas, especially in hilly or mountainous regions.

Source: USFWS 2023; TDEC 2024; TVA 2022, 2023b. BGEPA-Bald and Golden Eagle Protection Act.

<sup>1</sup>“Possible” indicates that species presence is possible due to having habitat on the Project Site, but the species was not observed. “Known” indicates that the species was observed on the Project Site. “Unlikely” indicates that species presence is unlikely due to not having habitat on the Project Site.

Concurrent to the vegetation and general wildlife surveys, HDR also focused on the general characteristics of the land cover, vegetation communities, and wildlife habitats currently present within and immediately adjacent to the Project Site for potential presence of habitat suitable for state- and federally listed species listed in Table 4.

HDR's desktop database search and pedestrian survey indicate that the Project Site contains potential suitable habitat for three federally listed bats, one insect (federal candidate), and five species of state concern (threatened, in need of management or rare). The remaining species in Table 4 either are unlikely to have suitable habitat on site or are not found in the region of the Project Site.

### **Mammals**

Three species of federally listed mammals potentially occur on the Project Site: the northern long-eared bat (NLEB) (*Myotis septentrionalis*), the Indiana bat (*Myotis sodalis*), and the tricolored bat (*Perimyotis subflavus*). During the winter period, these species are found in habitats such as caves, rock crevices, and mines (Tennessee Wildlife Resources Agency [TWRA] 2022a; USFWS 2006, 2015). No caves were observed on the Project Site and according to the TVA RNHD (2022, 2023a), no caves are within three miles of the Project Site. According to the Tennessee Cave Survey (TCS 2021), there are no caves, "defined as any natural cavity with a horizontal length of 50 feet, total vertical extent of 40 feet or a pit depth of 30 feet", in Lauderdale County or any of the immediately surrounding counties. Therefore, no supportive winter habitat is present for the NLEB, Indiana bat, or tricolored bat.

During summer, the NLEB, Indiana bat, and the tricolored bat roost singly or in colonies underneath bark, in cavities, or crevices of both live and dead trees (snags) of varying size, age, and species (USFWS 2006, 2015). The tricolored bat also roosts in the summer on cliffs and buildings (TWRA 2022a). A total of approximately 42 acres of moderately to highly suitable summer roost habitat has been found on the Project Site (Appendix A, Figure 5). Additional details on potential summer bat roosting habitat are provided in the following section. The southeastern bat, considered rare in Tennessee, could occupy some of the same habitats as the federally listed bats.

Foraging habitat for the NLEB, Indiana bat, and the tricolored bat is present on the Project Site over ponds, wetlands, and streams. Additional foraging habitat for these bat species occurs within forested habitat, forest edges, and tree lines. Water resources for the three bat species include a pond, wetlands, and stream channels located on the site.

#### *Potential Summer Bat Roosting Habitat Assessment*

Forested areas were assessed for the presence of live trees that exhibit exfoliating bark and dead trees (snags) with cracks or crevices that could serve as suitable roosting habitat for the NLEB, Indiana bat, and tricolored bat. Buildings on the Project Site were also evaluated for potential as suitable habitat for these three federally listed bat species. Nine forest stands were evaluated on site and photographs were taken to visually document the assessment areas; photographs of the forest stands are provided in Appendix B and denoted on Figure 3 in Appendix A. Habitat data forms are provided in Appendix E. In addition to the forest stands, a large tree, singly located in the southeastern portion of the site, was also noted to provide



potential bat roosting habitat. The tree is a large (60-inch DBH) water oak (*Quercus nigra*) with multiple cavities and large limbs, some of which appear to be dead (see photos 23 and 24 in Appendix B). An intermittent stream/agricultural ditch nearby provides a water source.

Agricultural buildings were found near the center of the Site and in current use at the time of the field survey. Heavy machinery was located around the buildings and was being used to cultivate and manage the corn fields. The buildings and culverts were observed for bat habitat, but none were deemed as suitable habitat due to active use (see photos 25 and 26 in Appendix B).

**Table 5. Summary of Forest Stands with Potential Bat Roosting Habitat**

<b>Stand Number</b>	<b>Habitat Suitability</b>	<b>Area (acres)</b>
Stand 1	High	3.7
Stand 2	High	2.6
Stand 3	High	13.5
Stand 4	Low/Moderate	6.3
Stand 5	High/Moderate	9.6
Stand 6	Moderate	3.1
Stand 7	High	1.1
Stand 8	Low/Moderate	6.0
Stand 9	Low	6.6

**Forest Stand 1**

Stand 1 consists of a mixed deciduous tree forest line, separating agriculture fields of corn and cotton to the west and east. Stand 1 is located on the western property line of the Project Site. The dominant canopy and understory include black willow, American sycamore, and chinquapin oak (*Quercus muehlenbergii*). Approximately 20 percent of trees in the stand were small with diameter at breast height (DBH) of 3 to 8 inches, 60 percent of trees were medium in size (DBH 9 to 15 inches), and 20 percent were considered large (greater than 15 inches DBH). At least eight snags were present at the time of survey. Stand 1 was determined to have high habitat quality due to the presence of multiple snags and several large trees with exfoliating bark (see photos 5 and 6 in Appendix B). The surrounding agricultural fields could act as foraging area for a potential bat population and a local connection to an intermittent stream could act as a water source.

**Forest Stand 2**

Stand 2 consists of a mixed deciduous forested wetland on the northern property boundary north of Highway 19. The dominant canopy and understory include American beech (*Fagus grandifolia*), black maple (*Acer nigrum*), American elm, white oak (*Quercus alba*), mockernut hickory, and sweetgum (*Liquidambar styraciflua*). The stand consisted of 10 percent of small trees, 60 percent of medium trees, and 30 percent of large trees based on DBH. At least two snags were present at the time of survey. Stand 2 was determined to have high habitat quality due the presence of trees with exfoliating bark, tree diversity, and proximity to foraging habitat and water resources (see photos 7 and 8 in Appendix B).

**Forest Stand 3**

Stand 3 consists of a mixed deciduous tree forest line, separating agriculture fields of corn and cotton to the west and east. Stand 3 is located on the eastern portion of the Project Site. The



dominant canopy and understory include white oak and black oak (*Quercus nigra*). The stand consisted of 20 percent of small trees, 10 percent of medium trees, and 70 percent of large trees based on DBH. Stand 3 was determined to have high habitat quality due to presence of trees with exfoliating bark and tree diversity (see photos 9 and 10 in Appendix B). The surrounding agricultural fields may act as a foraging area and the near intermittent stream could act as a water source.

#### Forest Stand 4

Stand 4 consists of a riparian mixed deciduous tree forest line, separating agriculture fields of corn and cotton to the southeast and northwest. Stand 4 is located on the southwestern portion of the Project Site. The dominant canopy and understory consist of cottonwood (*Populus deltoides*), mockernut hickory, and white oak. The stand consisted of 20 percent of small trees, 50 percent of medium trees, and 30 percent of large trees based on DBH. At least two snags were present at the time of survey. Stand 4 was determined to have low to moderate habitat quality due to presence of trees with exfoliating bark and proximity to water sources (see photos 11 and 12 in Appendix B). The surrounding agricultural fields could act as a foraging area for a potential bat population and Hyde Creek runs directly through the forest line acting as a steady water source.

#### Forest Stand 5

Stand 5 consists of a mixed deciduous riparian tree stand surrounding a 3.3-acre pond. Stand 5 is located on the central-western portion of the Project Site. The dominant canopy and understory consist of black willow, sweetgum, American sycamore, and mockernut hickory. The stand consisted of 40 percent of small trees, 40 percent of medium trees, and 20 percent of large trees based on DBH. At least 10 snags were present at the time of survey. Stand 5 was determined to have two sections of bat habitat with different quality. The first on the western property boundary, was determined to have high quality due to presence of several snags, tree diversity, and trees with exfoliating bark. The second portion was determined to have moderate habitat quality due to low diversity, few snags, but a good connection to a water source (see photos 13 and 14 in Appendix B). The surrounding agricultural fields could act as a foraging area for a potential bat population and a 3.3-acre pond with a perennial stream connection serves as a steady water source.

#### Forest Stand 6

Stand 6 consists of a mixed deciduous tree stand on the southern portion of the Project Site parcel north of Highway 19. The dominant canopy consists of black walnut, black willow, American sycamore, sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*), and osage orange (*Maclura pomifera*). The dominant understory consists of eastern red cedar (*Juniperus virginiana*), winged elm (*Ulmus alata*), sugarberry (*Celtis laevigata*), and *Rubus* sp. The stand consisted of 20 percent of small trees, 40 percent of medium trees, and 40 percent of large trees based on DBH. At least four snags were present at the time of survey. While trees with exfoliating bark, snags, and forest diversity are supportive of bat roosting habitat, Stand 6 was determined to have moderate habitat quality due a lack of connection to a larger, contiguous forested area (see photos 15 and 16 in Appendix B). The surrounding agricultural field may

serve as a foraging habitat for a potential bat population and an intermittent stream running through the stand could serve as a water source.

#### Forest Stand 7

Stand 7 consists of a mixed deciduous tree stand on the northern portion of the Project Site parcel north of Highway 19. The dominant canopy consists of sugarberry, black walnut, and winged elm. The dominant understory includes sugarberry, black walnut, and winged elm. The stand consisted of 30 percent of small trees, 50 percent of medium trees, and 20 percent of large trees based on DBH. No snags were observed. Stand 7 was determined to have high bat habitat quality due to tree diversity and presence of trees with exfoliating bark (see photos 17 and 18 in Appendix B). The surrounding agriculture field may serve as foraging habitat for a potential bat habitat; however, no water source was found connected to the stand.

#### Forest Stand 8

Stand 8 consists of a mixed deciduous tree stand on the southeastern portion of the Project Site parcel north of Highway 19. The dominant canopy consists of sugarberry, black walnut, red maple (*Acer rubrum*), red oak (*Quercus rubra*), paper mulberry (*Broussonetia papyrifera*), and winged elm. The stand consisted of 30 percent of small trees, 60 percent of medium trees, and 10 percent of large trees based on DBH. No snags were observed at the time of survey. Stand 8 was determined to have two sections of habitat with different quality. One area was determined to have moderate bat habitat quality due to tree diversity and moderately open canopy. The second area in the southeastern corner of stand was determined to have low quality because of lack of diversity and no snags (see photos 19 and 20 in Appendix B). The surrounding agriculture field may serve as foraging habitat for a potential bat habitat; a small stream found running through the stand just north of Highway 19 could serve as a water source.

#### Forest Stand 9

Stand 9 consists of a mixed deciduous tree stand on the northern portion of the Project Site but south of Highway 19, adjacent to a transmission line right-of-way. The dominant canopy consists of mostly saplings of honey locust (*Gleditsia triacanthos*), tulip poplar, white ash (*Fraxinus americana*), black walnut, and black maple. The stand consisted of 40 percent of small trees, 40 percent of medium trees, and 20 percent of large trees based on DBH. Stand 9 was considered low bat habitat quality due to low tree diversity, dense understory, and lack of snags (see photos 21 and 22 in Appendix B). The near agriculture field could serve as foraging habitat and streams found in the stand could serve as a water source.

#### Mist Netting Results

Mist netting surveys were conducted by ESI from June 27-30, 2023. The survey resulted in the capture of eight eastern red bats (*Lasiurus borealis*), a common species found across Tennessee. One adult male and four lactating adult females were captured and three escaped. Of the bats evaluated, none had symptoms of White Nose Syndrome, and none displayed wing damage or injury. No threatened, endangered, or proposed species were captured. Results of the mist netting surveys are included in Appendix F.

### **Insects**

The monarch butterfly (*Danaus plexippus*) is a candidate species for listing under the ESA. This species requires milkweed species as caterpillars but will feed on a variety of wildflowers as adults. Due to the time of year the survey was performed, milkweed was not in bloom and not easily identified. Flowering plants were present throughout the Project Site, specifically in the transmission line. Blooming milkweed was not observed at the time of survey.

### **Birds**

The little blue heron (*Egretta cerulea*) could forage in wetlands on the site. This species forages in wetlands and nests near water bodies. The little blue heron could be possible on the Project Site, but no individuals were observed during surveys.

### **3.2.4 Results Summary**

Approximately 87.7 percent of the Project Site is comprised of agricultural fields and approximately 10.1 percent consists of forest communities. The boundary of the Project Site is made of forested tree lines dividing agricultural fields, along with Hyde Creek along the southernmost border.

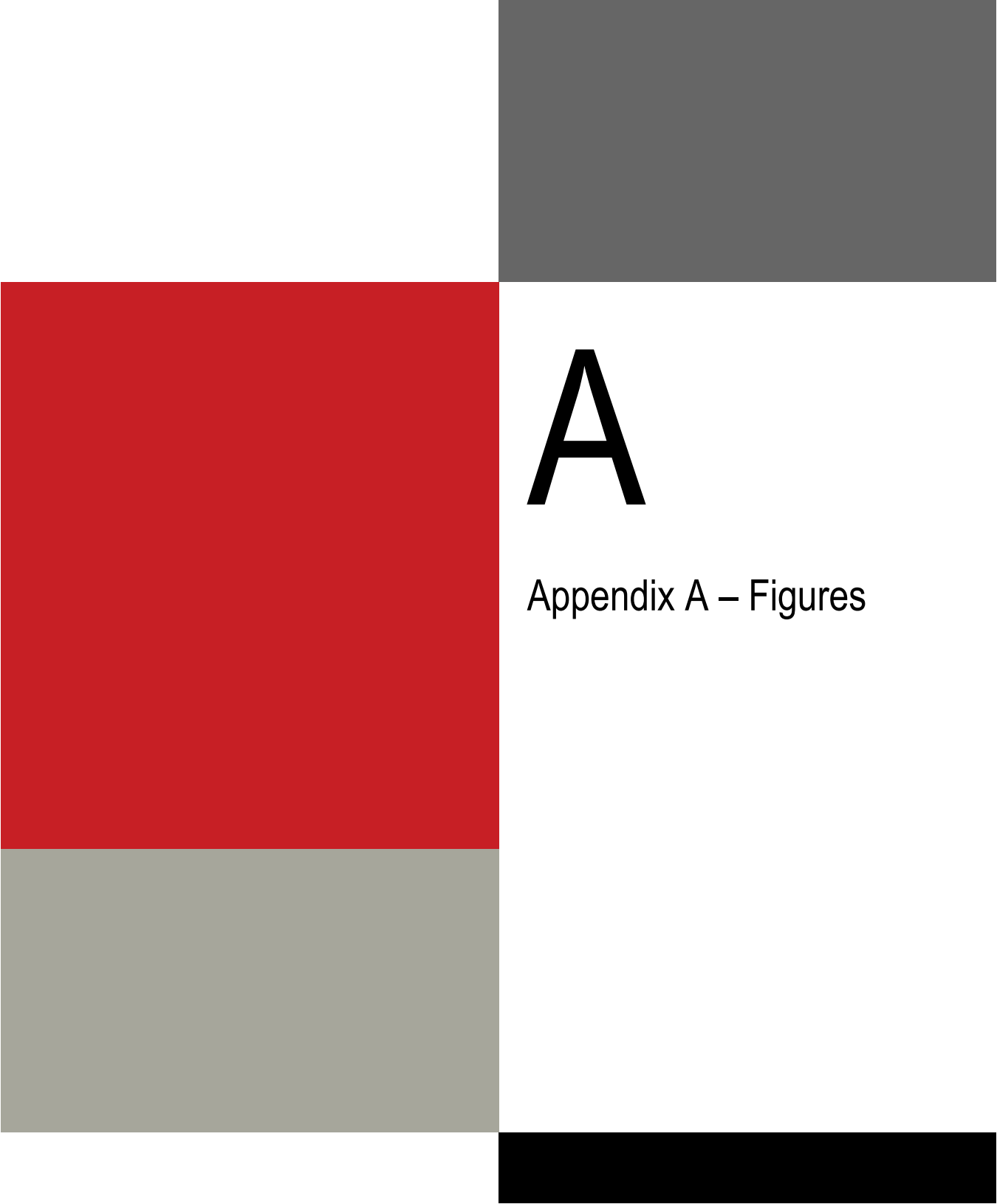
Forested areas within the Project Site provide potential bat roosting and foraging habitat for federally listed bat species, as well as other bat species, however no protected bat species were captured during mist netting surveys. The osprey (not listed), the state-listed little blue heron, and a federal candidate species (monarch butterfly) have potential to occur on the Project Site, however areas of potential suitable habitat to support these species is limited. Several migratory bird species were observed or are likely to have suitable habitat on the Project Site.



- U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS). 2012. Federal noxious weed list [Online] URL: <https://plantsorig.sc.egov.usda.gov/java/noxious?rptType=Federal> (Accessed October 20, 2022).
- U.S. Fish and Wildlife Service (USFWS). 2006. Indiana Bat (*Myotis sodalis*) Fact Sheet. USFWS Ecological Services Field Offices-Midwest Region. [Online] URL: <https://www.fws.gov/midwest/endangered/mammals/inba/pdf/inbafactsht.pdf> (Accessed on October 12, 2022).
- \_\_\_\_\_. 2015. Threatened Species Status for the Northern Long-eared Bat with 4(d) Rule. [Online] URL: <https://www.gpo.gov/fdsys/pkg/FR-2015-04-02/pdf/2015-07069.pdf> (Accessed on October 12, 2022).
- \_\_\_\_\_. 2021. Birds of Conservation Concern 2021. Migratory Birds Program, U.S. Fish and Wildlife Service. [Online] URL: <https://www.fws.gov/migratorybirds/pdf/management/birds-of-conservation-concern-2021.pdf> (Accessed October 12, 2022).
- \_\_\_\_\_. 2024. Information for Planning and Conservation (IPaC) Resource List. [Online] URL: <http://ecos.fws.gov/ipac/> (Accessed on February 16, 2024), .



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# A


## Appendix A – Figures



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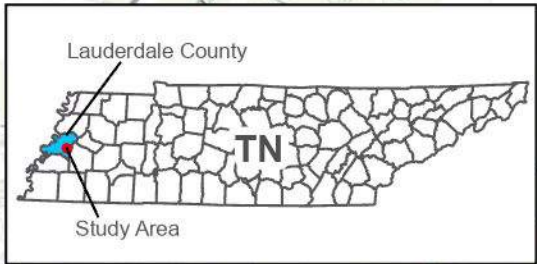
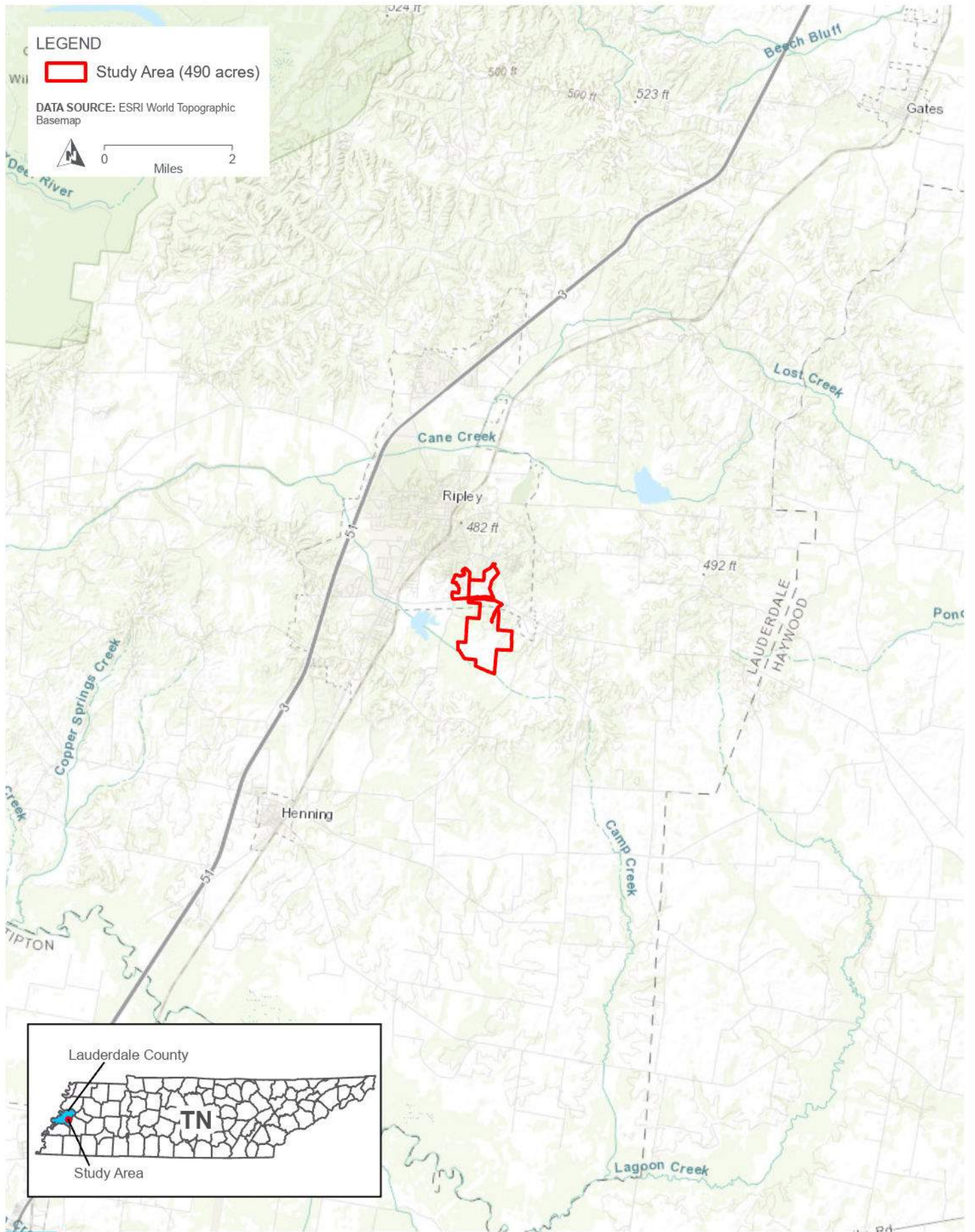
LEGEND

 Study Area (490 acres)

DATA SOURCE: ESRI World Topographic Basemap



0 2  
Miles



SR RIPLEY II  
PROJECT VICINITY

FIGURE 1

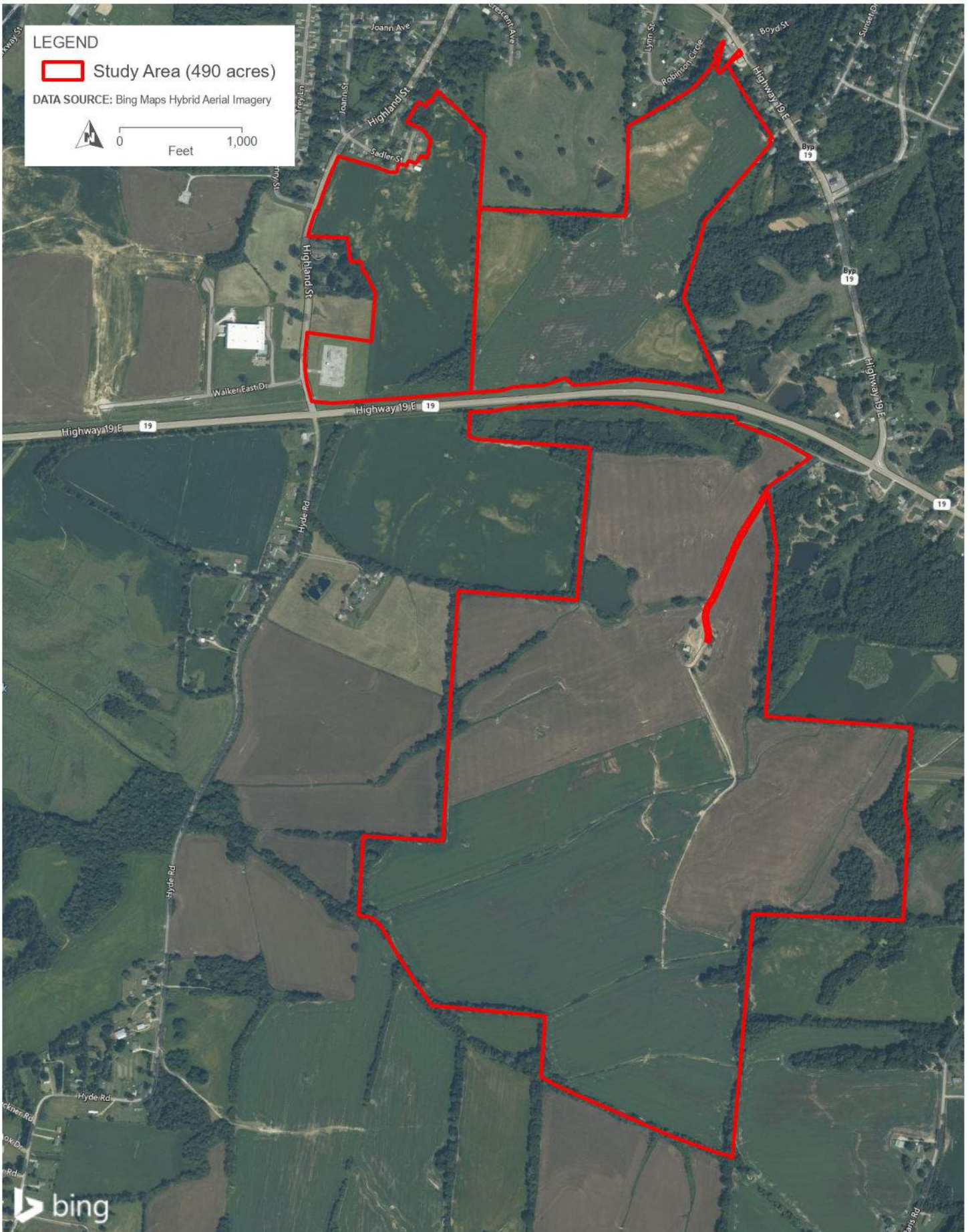
LEGEND

 Study Area (490 acres)

DATA SOURCE: Bing Maps Hybrid Aerial Imagery

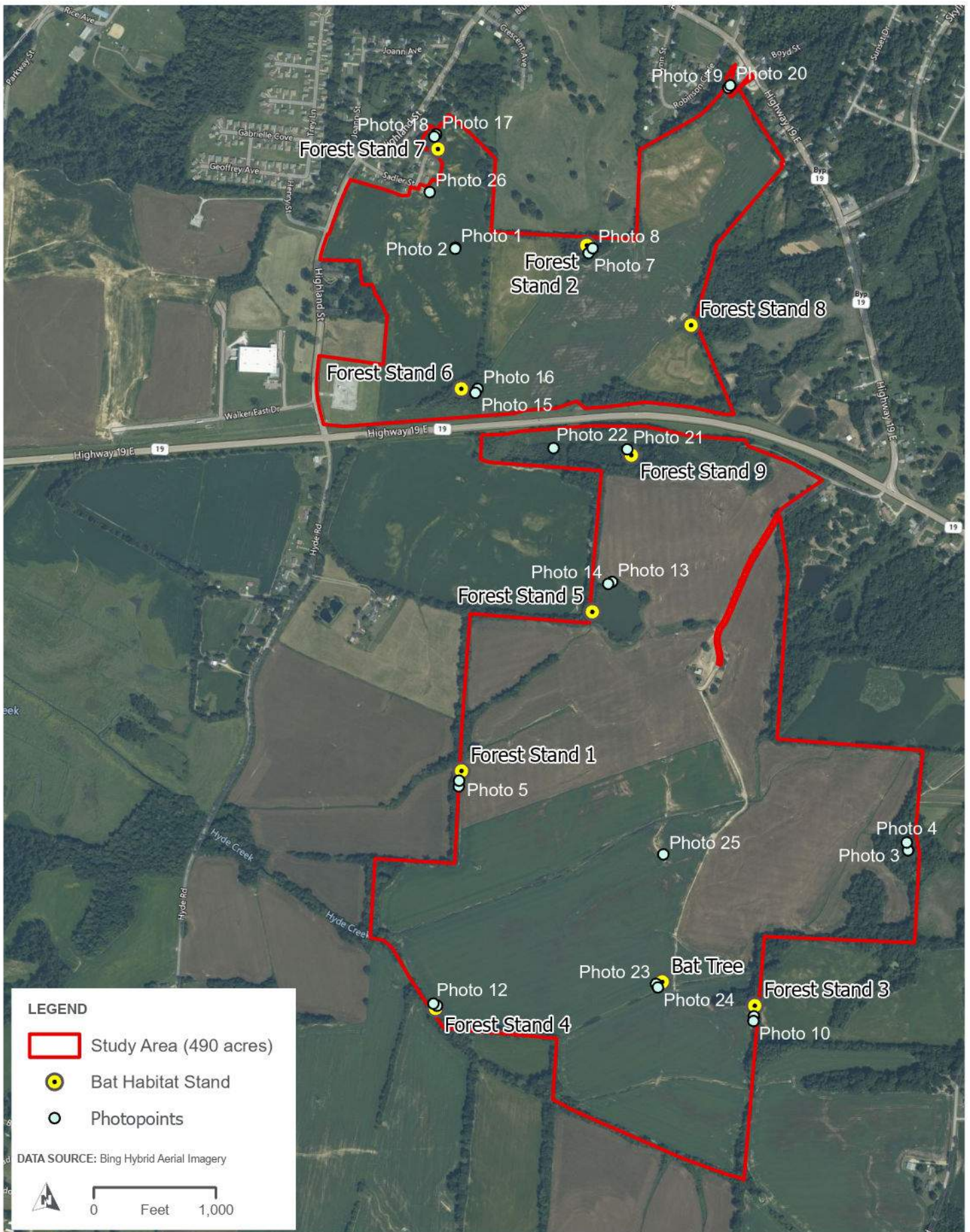


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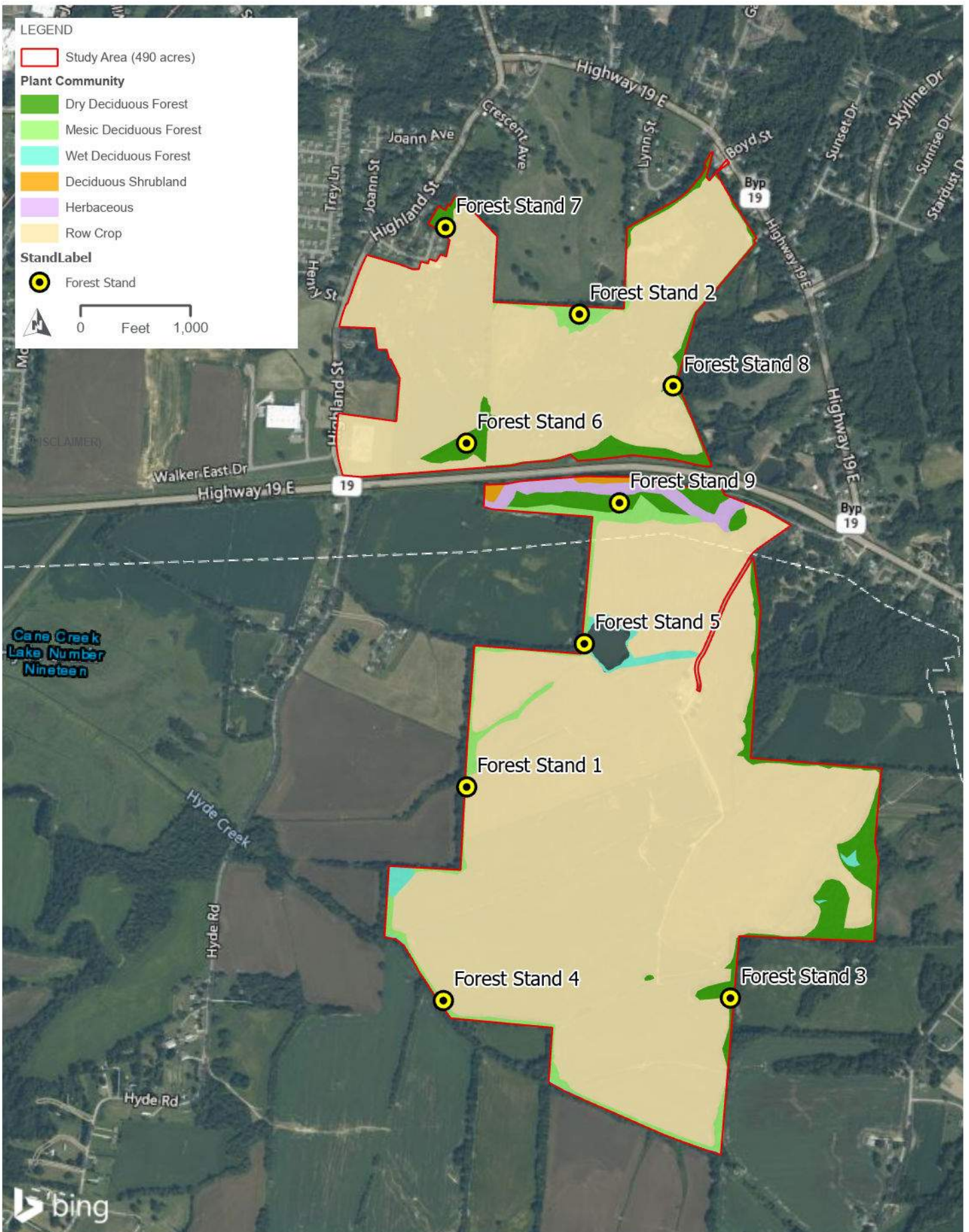


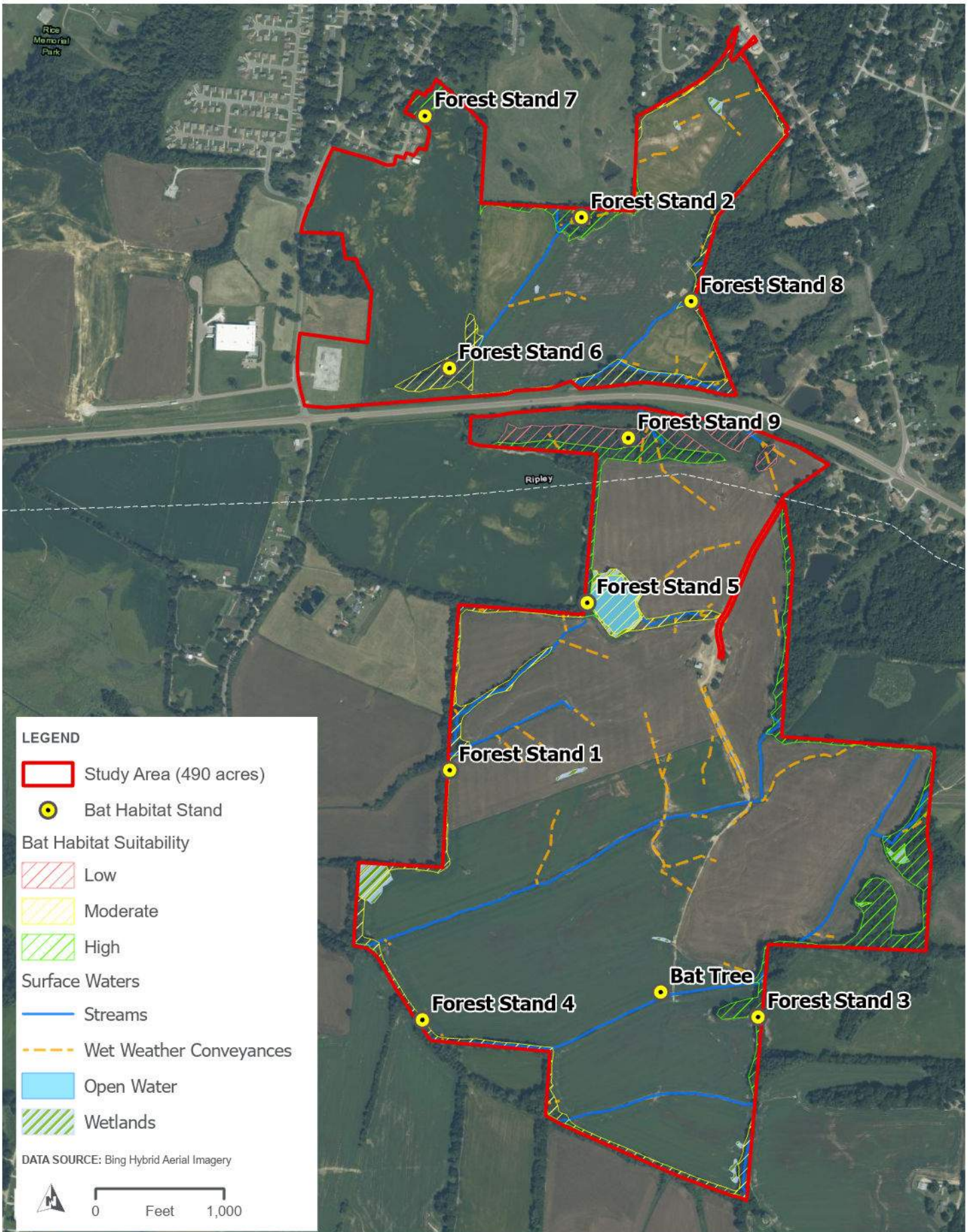
SR RIPLEY II  
PROJECT AERIAL  
FIGURE 2

VEGETATION AND WILDLIFE ASSESSMENT



**SR RIPLEY II  
PHOTO LOCATIONS  
FIGURE 3**

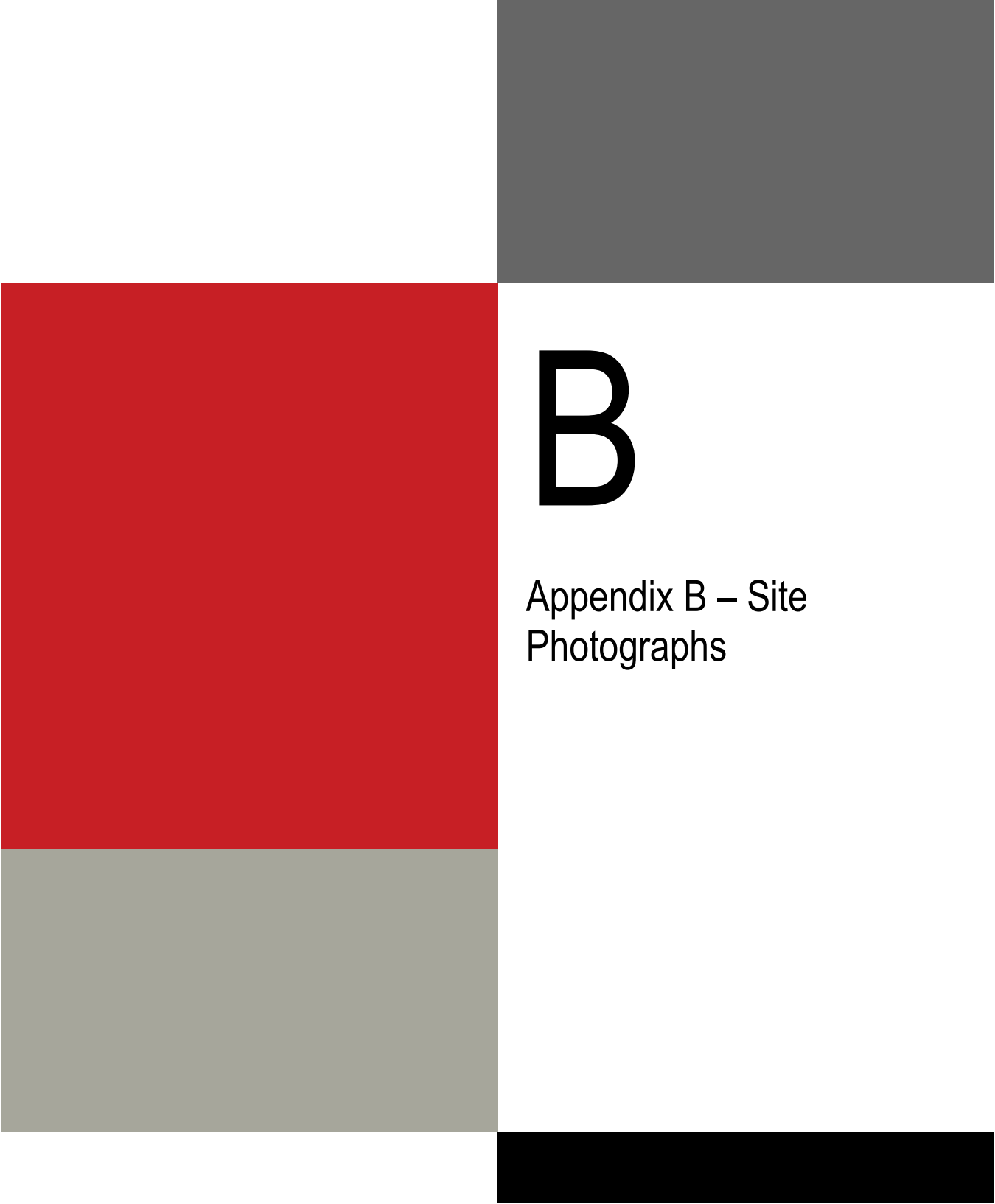




SR RIPLEY II  
 POTENTIAL BAT HABITAT  
 FIGURE 5



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# B

## Appendix B – Site Photographs



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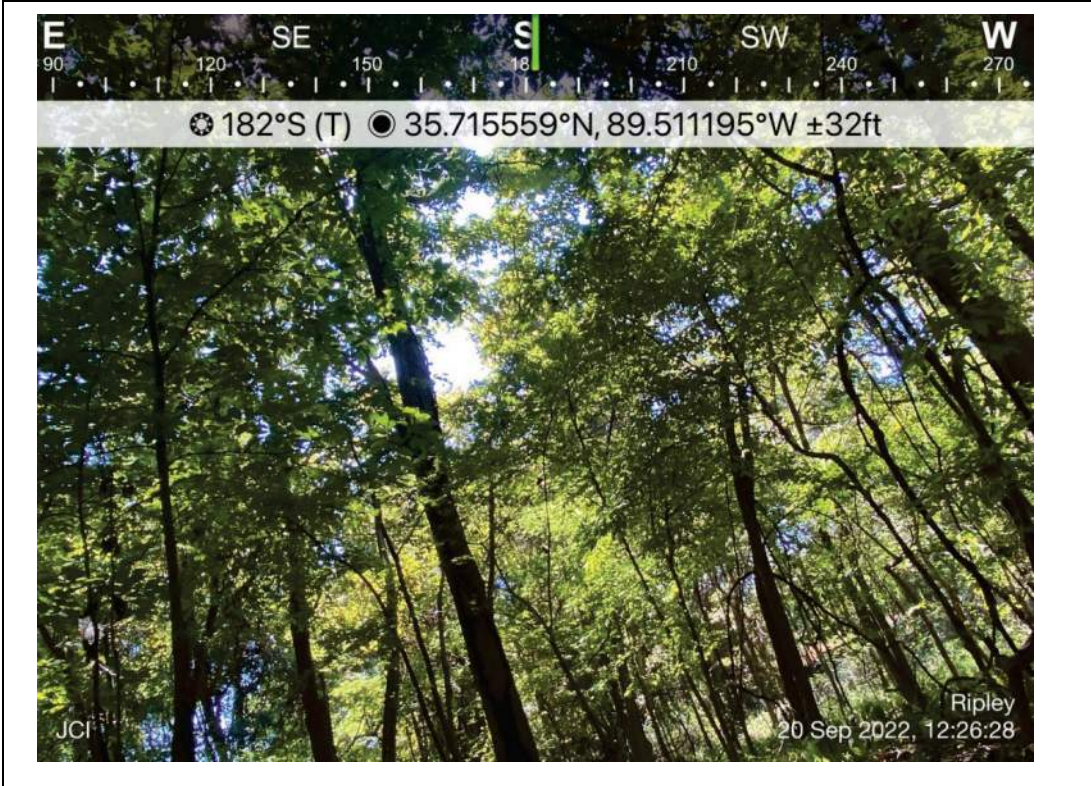




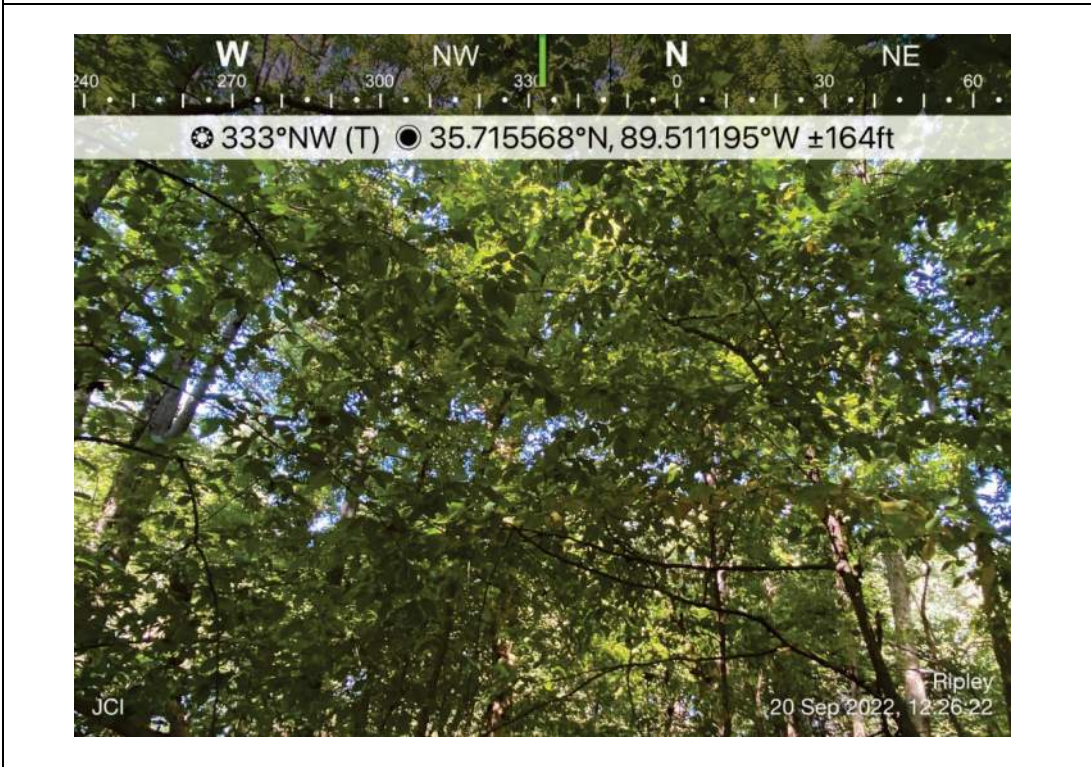
**Photo 1:** Typical agriculture field.



**Photo 2:** Typical agriculture field.



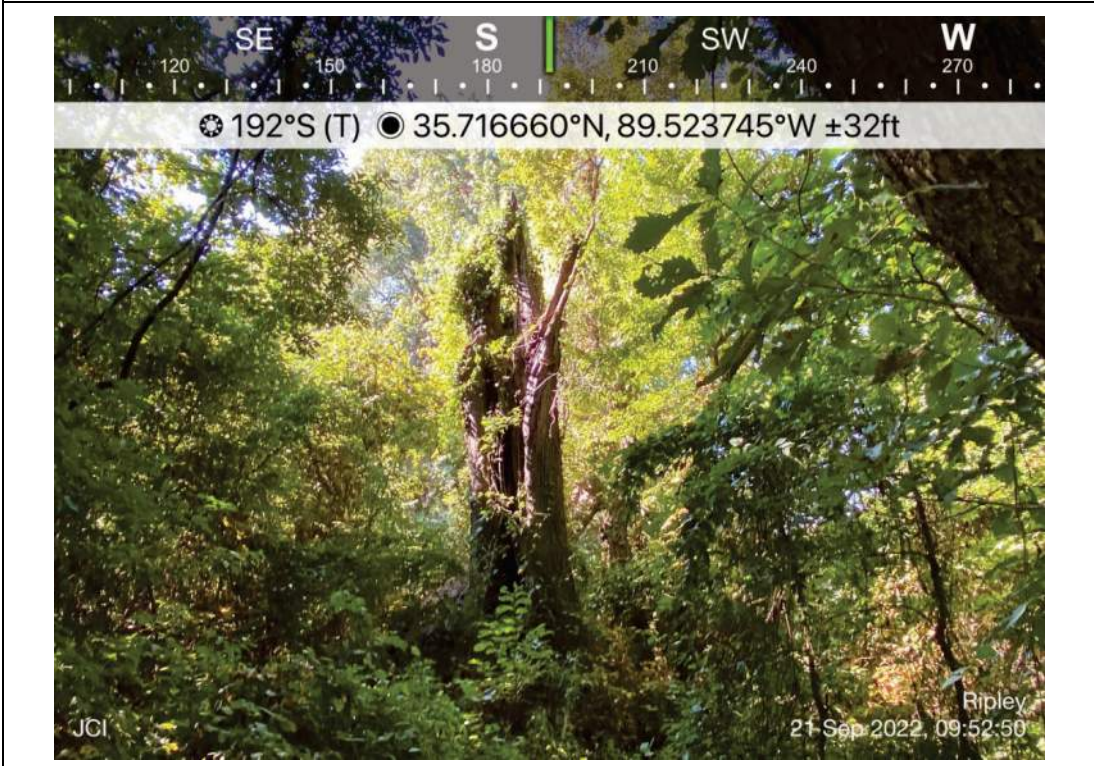
**Photo 3:** Typical forested area.



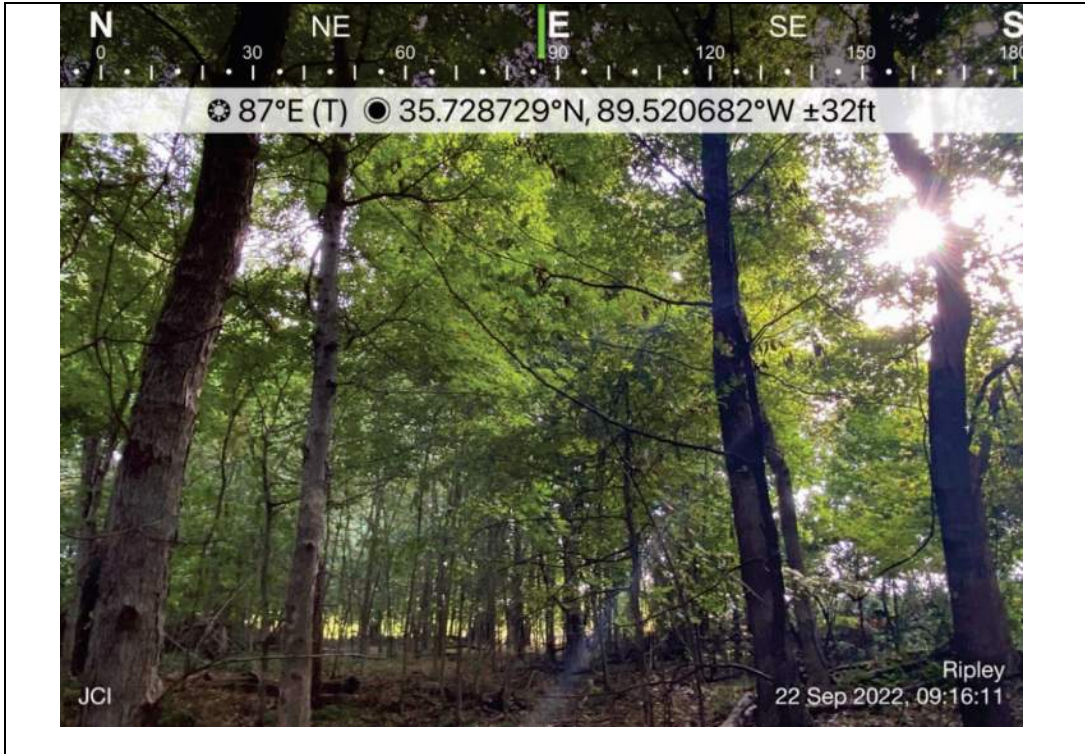
**Photo 4:** Typical forested area.



**Photo 5:** Forest Stand 1



**Photo 6:** Forest Stand 1



**Photo 7: Forest Stand 2**



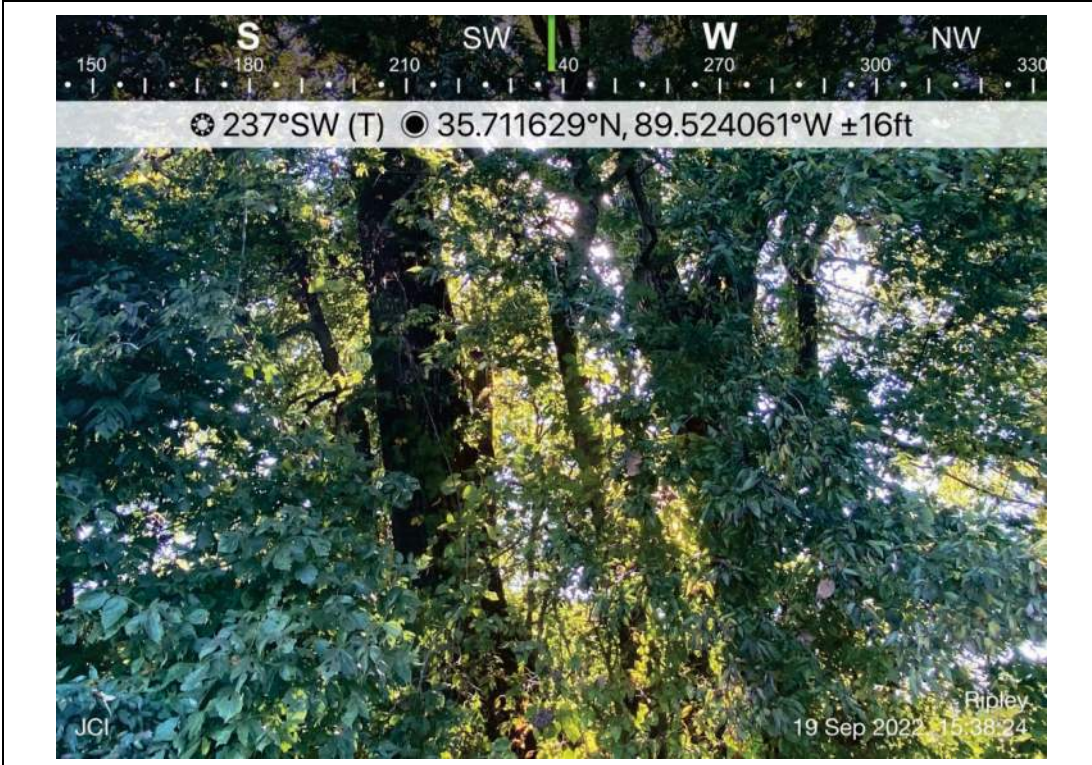
**Photo 8: Forest Stand 2**



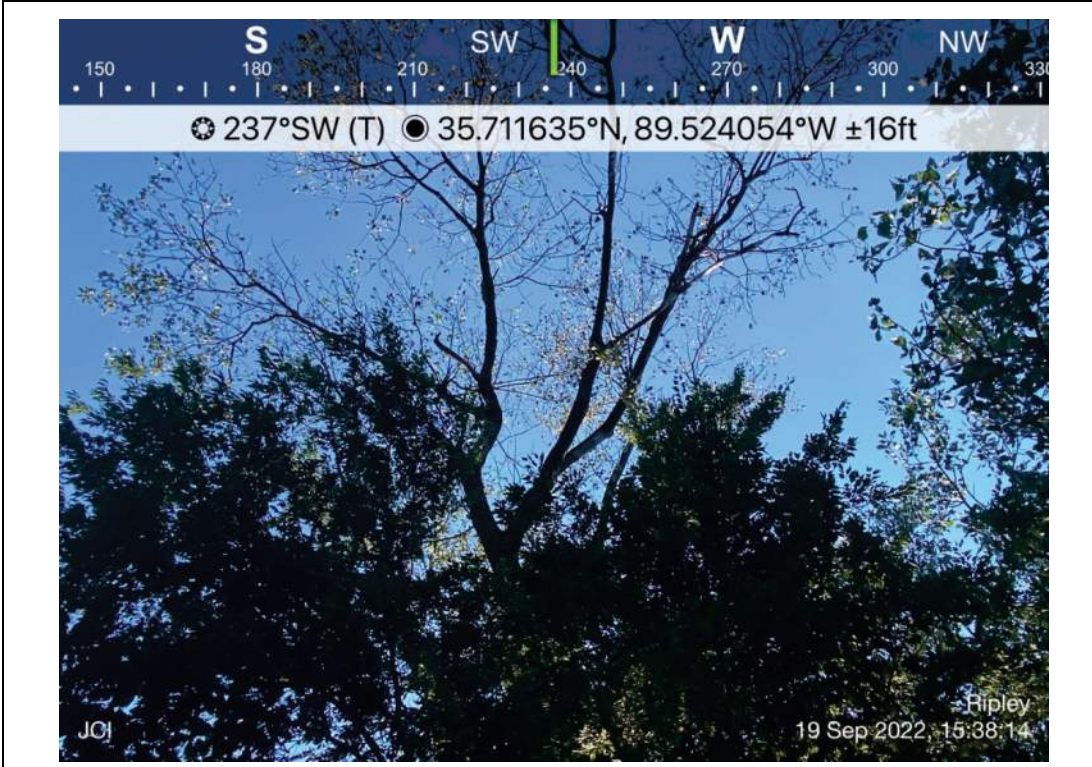
**Photo 9:** Forest Stand 3



**Photo 10:** Forest Stand 3



**Photo 11:** Forest Stand 4



**Photo 12:** Forest Stand 4



**Photo 13: Forest Stand 5**



**Photo 14: Forest Stand 5**



**Photo 15:** Forest Stand 6

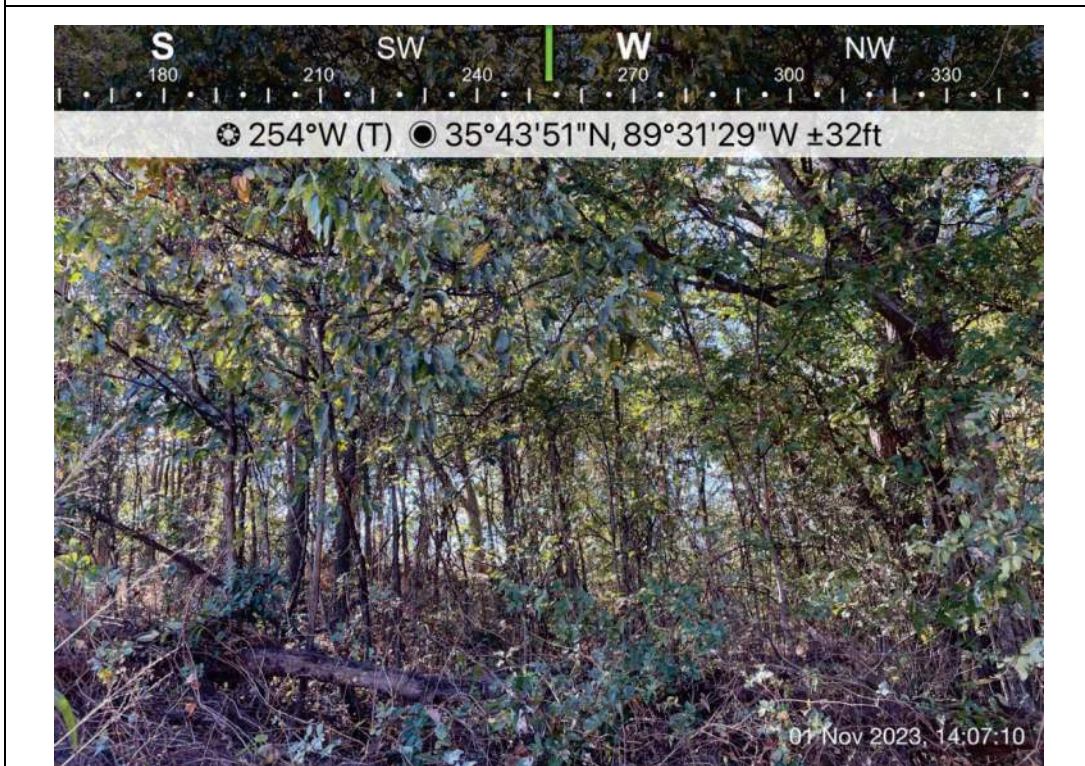


**Photo 16:** Forest Stand 6





**Photo 17:** Forest Stand 7



**Photo 18:** Forest Stand 7



**Photo 19:** Forest Stand 8



**Photo 20:** Forest Stand 8



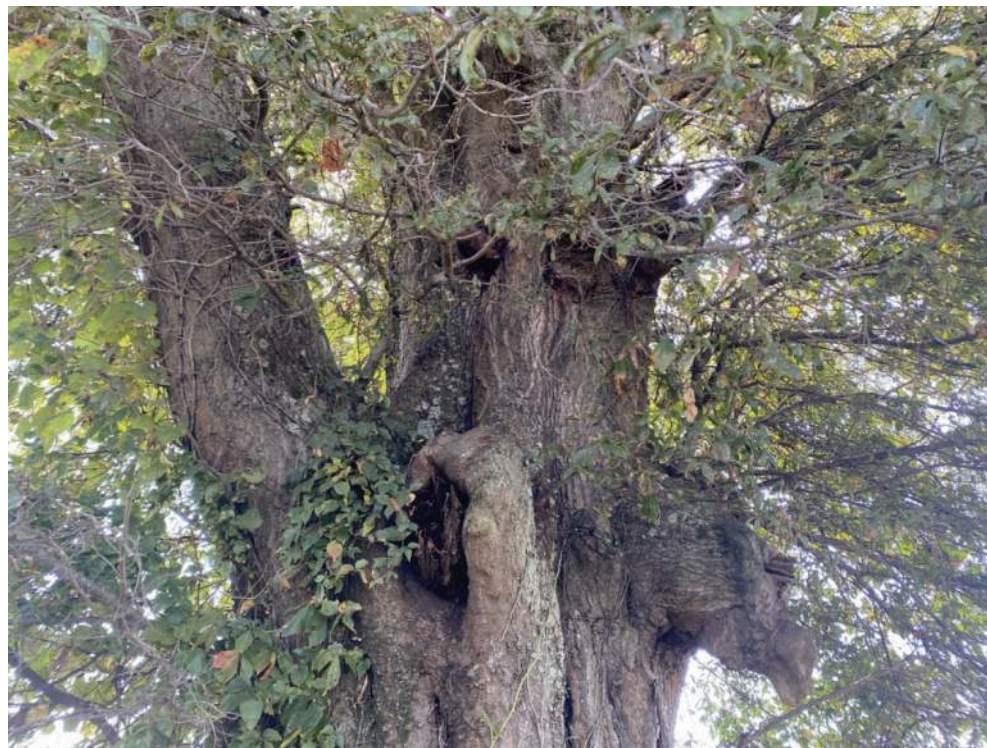
**Photo 21:** Forest Stand 9



**Photo 22:** Forest Stand 9



**Photo 23:** Bat tree, not located within a forest stand.  
35.7123441, -89.5178700



**Photo 24:** Bat tree, not located within a forest stand.  
35.7123441, -89.5178700



**Photo 25:** Typical culvert.



**Photo 26:** Typical building.

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Appendix C – USFWS IPaC,  
TVA RNHD, TDEC Rare  
Species Data Viewer Results



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# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Lauderdale County, Tennessee



## Local office

Tennessee Ecological Services Field Office

☎ (931) 528-6481

📅 (931) 528-7075

446 Neal Street  
Cookeville, TN 38501-4027

NOT FOR CONSULTATION

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

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1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME	STATUS
<b>Indiana Bat</b> <i>Myotis sodalis</i> Wherever found There is <b>no</b> critical habitat for this species. Your location does not overlap the critical habitat. <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a>	Endangered
<b>Northern Long-eared Bat</b> <i>Myotis septentrionalis</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Endangered
<b>Tricolored Bat</b> <i>Perimyotis subflavus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

## Reptiles

NAME	STATUS
<b>Alligator Snapping Turtle</b> <i>Macrochelys temminckii</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/4658">https://ecos.fws.gov/ecp/species/4658</a>	Proposed Threatened

## Insects

NAME	STATUS
<b>Monarch Butterfly</b> <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

# Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

# Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds  
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds  
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC  
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

**What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?**

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to onshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats<sup>3</sup> should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this

list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur on the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<p>American Kestrel <i>Falco sparverius paulus</i>            This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA  <a href="https://ecos.fws.gov/ecp/species/9587">https://ecos.fws.gov/ecp/species/9587</a></p>	Breeds Apr 1 to Aug 31
<p>Chimney Swift <i>Chaetura pelagica</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Mar 15 to Aug 25
<p>Prairie Warbler <i>Dendroica discolor</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Jul 31
<p>Wood Thrush <i>Hylocichla mustelina</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Aug 31

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### **Breeding Season (■)**

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### **Survey Effort (|)**

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

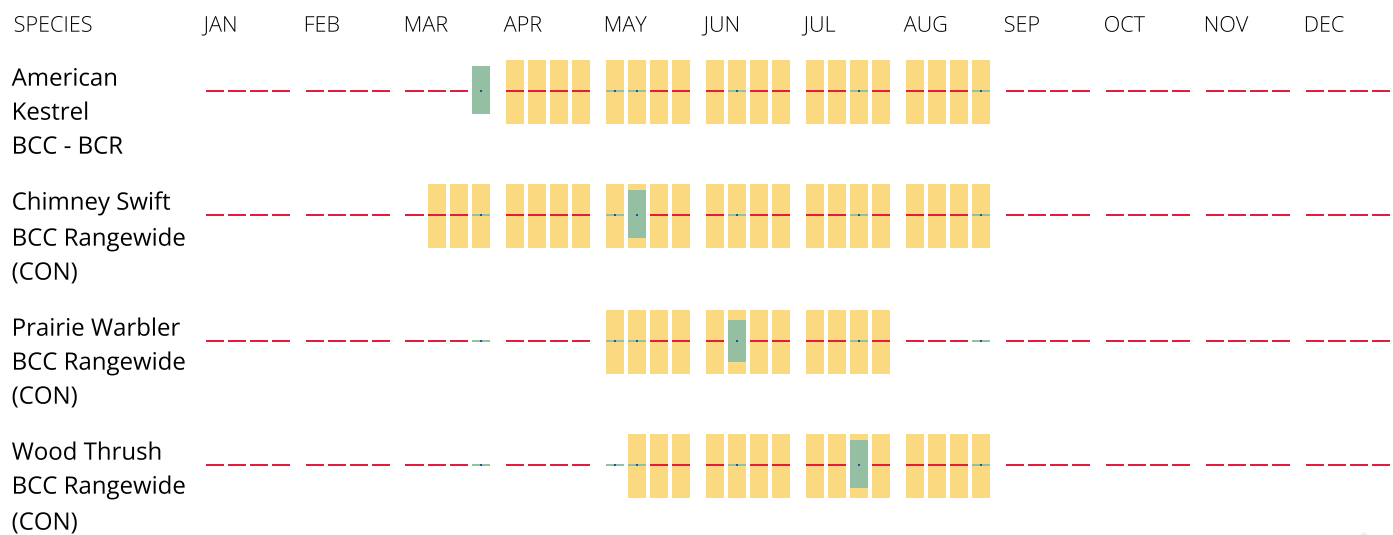
### **No Data (—)**

A week is marked as having no data if there were no survey events for that week.

### **Survey Timeframe**

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to onshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

## Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

### Fish hatcheries

There are no fish hatcheries at this location.

# Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

## Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies.

Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

**TVA Natural Heritage database queried by jhterrel on 07/15/2022 for the heritage review for ESCS 41225 Ripley II HDB Query Feature, Selection Map\_Selection, (1\*)**

Records of state- and federal-listed Aquatic Animals points located within the HUC boundary of ESCS 41225 Ripley II HDB Query Feature, Selection Map\_Selection

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
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Records of state- and federal-listed Plants and Champion Trees points located within a 5 Mile radius search of ESCS 41225 Ripley II HDB Query Feature, Selection Map\_Selection

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
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Records of state- and federal-listed Caves points located within a 3 Mile radius search of ESCS 41225 Ripley II HDB Query Feature, Selection Map\_Selection

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
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Records of state- and federal-listed Terrestrial Animals points located within a 3 Mile radius search of ESCS 41225 Ripley II HDB Query Feature, Selection Map\_Selection

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
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AC - Excellent, good, or fair

Buteo jamaicensis	Red-tailed Hawk	estimated viability	TN	S5		
Pandion haliaetus	Osprey	Not ranked	TN	S3		
Pandion haliaetus	Osprey	Not ranked	TN	S3		
Pandion haliaetus	Osprey	Not ranked	TN	S3		
Pandion haliaetus	Osprey	Not ranked	TN	S3		
Pandion haliaetus	Osprey	Not ranked	TN	S3		

Records of Heritage Natural Areas points located within a 3 Mile radius search of ESCS 41225 Ripley II HDB Query Feature, Selection

MA Name	MA Type	MA Unit Code	State	Acres	Status	Key ID No
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1\* Source: TVA Regional Natural Heritage Database; USFWS Information for Planning and Consultation (IPaC) resource list (<https://ecos.fws.gov/ipac/>) -If Relevant

2\* EO = Element Occurrence; Common ranks: A= Excellent est. viability/ecol. Integrity; B= Good est. viability/ecol. Integrity; C= Fair est. viability/ecol. Integrity; E= Verified extant (viability/ecological integrity not assessed); H= Historical; X= Extirpated; NR= Not ranked. See Heritage Data Viewer Handbook for more ranks.

3\* State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S5 = Secure; SX = Presumed Extirpated. See Heritage Data Viewer Handbook for more ranks.

4\* Status Codes: D= Deemed in Need of Management; DM= Delisted, still being monitored; E= Endangered; LE= Listed Endangered; LT= Listed Threatened; C=Candidate; PS= Partial Status; T= Threatened; E-P= Endangered/Possibly Extirp.; E-PT= Endangered/Proposed Threatened; RARE= Rare; SLNS= State listed, no status; S= Special Concern; S-P= Special Concern/Possibly Extirp.; S-CE= Special Concern/Commerc. Exploited; T-CE= Threatened/Commerc. Exploited

5\* See Heritage Data Viewer Handbook for full scope of Natural Areas as well as definitions of Natural Area types and units.

<b>TVA Natural Heritage database queried by jhterrel on 10/20/2023 for the HDB Query for TVA ESCS Activity 41215 Ripley II Mod3</b>	
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Records of state- and federally-listed Aquatic Animals points located within the HUC boundary of RipleyII Mod3, OBJECTID 1

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
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Records of state- and federally-listed Plants and Champion Trees points located within a 5 Mile radius search of RipleyII Mod3, OBJECTID 1

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
-----------------	-------------	--------------	-------	-----------------	-------------------	---------------------

Records of Caves points located within a 3 Mile radius search of RipleyII Mod3, OBJECTID 1

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
-----------------	-------------	--------------	-------	-----------------	-------------------	---------------------

Records of Terrestrial Animals points located within a 3 Mile radius search of RipleyII Mod3, OBJECTID 1

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
-----------------	-------------	--------------	-------	-----------------	-------------------	---------------------

AC - Excellent, good, or fair

Buteo jamaicensis	Red-tailed Hawk	estimated viability	TN	S5		
Pandion haliaetus	Osprey	Not ranked	TN	S3B		
Pandion haliaetus	Osprey	Not ranked	TN	S3B		
Pandion haliaetus	Osprey	Not ranked	TN	S3B		
Pandion haliaetus	Osprey	Not ranked	TN	S3B		
Pandion haliaetus	Osprey	Not ranked	TN	S3B		

Records of Heritage Natural Areas points located within a 3 Mile radius search of RipleyII Mod3, OBJECTID 1

MA Name	MA Type	MA Unit Code	State	Acres	Status	Key ID No
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1\* Source: TVA Regional Natural Heritage Database; USFWS Information for Planning and Consultation (IPaC) resource list (<https://ecos.fws.gov/ipac/>) -If Relevant

viability/ecol. Integrity; E= Verified extant (viability/ecological integrity not assessed); H= Historical; X= Extirpated; NR= Not ranked. See Heritage Data Viewer Handbook for more ranks.

3\* State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S5 = Secure; SX = Presumed Extirpated. See Heritage Data Viewer Handbook for more ranks.

4\* Status Codes: D= Deemed in Need of Management; DM= Delisted, still being monitored; E= Endangered; LE= Listed Endangered; LT= Listed Threatened; C=Candidate; PS= Partial Status; T= Threatened; E-P= Endangered/Possibly Extirp.; E-PT= Endangered/Proposed Threatened; RARE= Rare; SLNS= State listed, no status; S= Special Concern; S-P= Special Concern/Possibly Extirp.; S-CE= Special Concern/Commerc. Exploited; T-CE= Threatened/Commerc. Exploited

5\* See Heritage Data Viewer Handbook for full scope of Natural Areas as well as definitions of Natural Area types and units.

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Lauderdale County, Tennessee



## Local office

Tennessee Ecological Services Field Office

☎ (931) 528-6481

📅 (931) 528-7075

446 Neal Street  
Cookeville, TN 38501-4027

NOT FOR CONSULTATION

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

- 
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME	STATUS
<b>Indiana Bat</b> <i>Myotis sodalis</i> Wherever found There is <b>no</b> critical habitat for this species. Your location does not overlap the critical habitat. <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a>	Endangered
<b>Northern Long-eared Bat</b> <i>Myotis septentrionalis</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Endangered
<b>Tricolored Bat</b> <i>Perimyotis subflavus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

## Reptiles

NAME	STATUS
<b>Alligator Snapping Turtle</b> <i>Macrochelys temminckii</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/4658">https://ecos.fws.gov/ecp/species/4658</a>	Proposed Threatened

## Insects

NAME	STATUS
<b>Monarch Butterfly</b> <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

# Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

## Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds  
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds  
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC  
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

**What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?**

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to onshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats<sup>3</sup> should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur on the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<p>American Kestrel <i>Falco sparverius paulus</i>            This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA  <a href="https://ecos.fws.gov/ecp/species/9587">https://ecos.fws.gov/ecp/species/9587</a></p>	Breeds Apr 1 to Aug 31
<p>Chimney Swift <i>Chaetura pelagica</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Mar 15 to Aug 25
<p>Prairie Warbler <i>Dendroica discolor</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Jul 31
<p>Wood Thrush <i>Hylocichla mustelina</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Aug 31

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read



["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

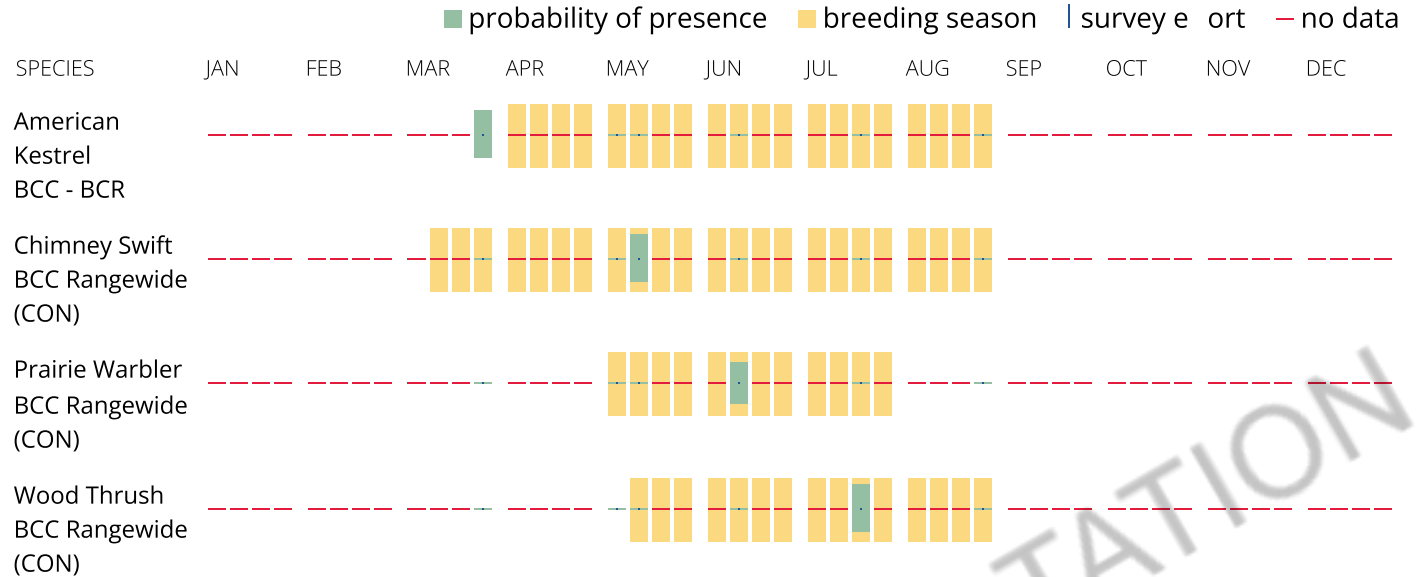
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (—)

A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas of the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to onshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

## What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

## How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

## What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

## Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact

[Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

### Fish hatcheries

There are no fish hatcheries at this location.

# Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

## Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies.

Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Help   • [Download Status and Ranks](#)

Key to Status and Ranks

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ORA-00942: table or view does not exist

Rare Species by County

Data is refreshed on or around January and July each year.

Rows

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County	Type	Category	Scientific Name	Common Name	Global Rank	State Rank	Fed. Status	State Status	Habitat	Wet Habitat Flag
Lauderdale	Vertebrate Animal	Fish	<a href="#">Atractosteus spatula</a>	Alligator Gar	G3G4	S1	--	D	Sluggish pools of large rivers, oxbows, swamps, and backwaters; west Tennessee.	Aquatic
Lauderdale	Invertebrate Animal	Mollusc	<a href="#">Obovaria arkansasensis</a>	Southern Hickorynut	GNR	S1	--	Rare, Not State Listed	Rivers with medium-sized gravel substrates and low-mod current; Wolf & Hatchie rivers; Mississippi River watershed; west Tennessee.	Aquatic
Lauderdale	Vertebrate Animal	Bird	<a href="#">Egretta caerulea</a>	Little Blue Heron	G5	S2B,S3N	--	D	Bodies of calm shallow water; colonial nester.	Possible
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Hottonia inflata</a>	Featherfoil	G4	S2	--	S	Wet Sloughs And Ditches	Aquatic
Lauderdale	Vertebrate Animal	Fish	<a href="#">Hybognathus placitus</a>	Plains Minnow	G4	S1	--	D	Clear to highly turbid rivers and creeks with sandy bottoms; Mississippi River & imm. environs.	Aquatic
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Carex hyalina</a>	Tissue Sedge	G4	S1	--	S	Forested Bottomland Swamps	Possible
Lauderdale	Invertebrate Animal	Mollusc	<a href="#">Villosa vibex</a>	Southern Rainbow	G5	S2	--	Rare, Not State Listed	Mud or soft sand in small rivers & creeks in areas with moderate current; Conasauga, Hatchie, and Wolf (Miss. R.) river systems.	Aquatic
Lauderdale	Vertebrate Animal	Bird	<a href="#">Setophaga cerulea</a>	Cerulean Warbler	G4	S3B	--	D	Mature deciduous forest, particularly in floodplains or mesic conditions.	Upland
Lauderdale	Animal Assemblage	No Data	<a href="#">Rookery</a>	Heron Rookery	G5	SNR	--	Rare, Not State Listed	No Data	No Data
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Ulmus crassifolia</a>	Cedar Elm	G5	S2	--	S	Swamps	Possible
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Juglans cinerea</a>	Butternut	G3	S3	--	T	Rich Woods And Hollows	Possible
Lauderdale	Vertebrate Animal	Mammal	<a href="#">Neotoma floridana illinoensis</a>	Eastern Woodrat	G5T5	S3	--	D	Forested areas, caves & outcrops; west Tennessee generally.	Upland
Lauderdale	Vertebrate Animal	Mammal	<a href="#">Myotis austroriparius</a>	Southeastern Myotis	G4	S3	--	Rare, Not State Listed	Caves, but especially hollow trees & abandoned buildings, usually near water.	Possible
Lauderdale	Invertebrate Animal	Mollusc	<a href="#">Webbhelix multilineata</a>	Striped Whitelip	G5	S2	--	Rare, Not State Listed	Low wet habitats, marshes, floodplains, meadows; lake margins; under leaf litter or drift; Mississippi River floodplain.	Possible
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Sagittaria platyphylla</a>	Ovate-leaved Arrowhead	G5	S2S3	--	S	Swamps, Emergent	Possible

Lauderdale	Vascular Plant	Flowering Plant	<u><a href="#">Schisandra glabra</a></u>	Red Starvine	G3	S2	--	T	Rich Mesic Woods, Bluffs	Possible
Lauderdale	Vascular Plant	Flowering Plant	<u><a href="#">Neobeckia aquatica</a></u>	Lake Cress	G4?	S2	--	S	Gum Or Cypress Swamps	Possible
Lauderdale	Vertebrate Animal	Bird	<u><a href="#">Limnothlypis swainsonii</a></u>	Swainson's Warbler	G4	S3	--	D	Mature, rich, damp, deciduous floodplain and swamp forests.	Possible
Lauderdale	Vertebrate Animal	Fish	<u><a href="#">Cypleptus elongatus</a></u>	Blue Sucker	G3G4	S2	--	T	Swift waters over firm substrates in big rivers.	Aquatic

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If you have any questions or comments, Email [ask.tdec@tn.gov](mailto:ask.tdec@tn.gov) or call at (888) 891-TDEC (8332).





Go Rows 25 Actions


Row text contains 'lauderdale'

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County	Type	Category	Scientific Name	Common Name	Global Rank	State Rank	Fed. Status	State Status	Habitat	Wet Habitat Flag
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Ulmus crassifolia</a>	Cedar Elm	G5	S2	--	S	Swamps	Possible
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Sagittaria olatovhyla</a>	Ovate-leaved Arrowhead	G5	S2S3	--	S	Swamps, Emergent	Possible
Lauderdale	Vertebrate Animal	Fish	<a href="#">Cycloptus elongatus</a>	Blue Sucker	G3G4	S2	--	T	Swift waters over firm substrates in big rivers.	Aquatic
Lauderdale	Vertebrate Animal	Bird	<a href="#">Egretta caerulea</a>	Little Blue Heron	G5	S2B, S3N	--	D	Bodies of calm shallow water, colonial nester.	Possible
Lauderdale	Vertebrate Animal	Fish	<a href="#">Hybognathus placitus</a>	Plains Minnow	G4	S1	--	D	Clear to highly turbid rivers and creeks with sandy bottoms; Mississippi River & imm. environs.	Aquatic
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Juglans cinerea</a>	Butternut	G3	S3	--	T	Rich Woods And Hollows	Possible
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Neobekia aquatica</a>	Lake Cress	G4?	S2	--	S	Gum Or Cypress Swamps	Possible
Lauderdale	Invertebrate Animal	Mollusc	<a href="#">Webbhelix multilineata</a>	Striped Whitelip	G5	S2	--	Rare, Not State Listed	Low wet habitats, marshes, floodplains, meadows; lake margins; under leaf litter or drift, Mississippi River floodplain.	Possible
Lauderdale	Vertebrate Animal	Fish	<a href="#">Atractosteus spatula</a>	Alligator Gar	G3G4	S1	--	D	Sluggish pools of large rivers, oxbows, swamps, and backwaters; west Tennessee.	Aquatic
Lauderdale	Vertebrate Animal	Mammal	<a href="#">Neotoma floridana illinoensis</a>	Eastern Woodrat	G5T5	S3	--	D	Forested areas, caves & outcrops; west Tennessee generally.	Upland
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Carex hyalina</a>	Tissue Sedge	G4	S1	--	S	Forested Bottomland Swamps	Possible
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Schisandra glabra</a>	Red Starvine	G3	S2	--	T	Rich Mesic Woods, Bluffs	Possible
Lauderdale	Vascular Plant	Flowering Plant	<a href="#">Hottonia inflata</a>	Featherfoil	G4	S2	--	S	Wet Sloughs And Ditches	Aquatic
Lauderdale	Vertebrate Animal	Bird	<a href="#">Setophaga cerulea</a>	Cerulean Warbler	G4	S3B	--	D	Mature deciduous forest, particularly in floodplains or mesic conditions.	Upland
Lauderdale	Invertebrate Animal	Mollusc	<a href="#">Obovaria arkansasensis</a>	Southern Hickorynut	GNR	S1	--	Rare, Not State Listed	Rivers with medium-sized gravel substrates and low-mod current; Wolf & Hatchie rivers; Mississippi River watershed; west Tennessee.	Aquatic
Lauderdale	Invertebrate Animal	Mollusc	<a href="#">Villosa vibex</a>	Southern Rainbow	G5	S2	--	Rare, Not State Listed	Mud or soft sand in small rivers & creeks in areas with moderate current, Conasauga, Hatchie, and Wolf (Miss. R.) river systems.	Aquatic
Lauderdale	Animal Assemblage	No Data	<a href="#">Rookery</a>	Heron Rookery	G5	SNR	--	Rare, Not State Listed	No Data	No Data
Lauderdale	Vertebrate Animal	Mammal	<a href="#">Myotis austroriparius</a>	Southeastern Myotis	G4	S3	--	Rare, Not State Listed	Caves, but especially hollow trees & abandoned buildings, usually near water.	Possible
Lauderdale	Vertebrate Animal	Bird	<a href="#">Limnothlypis swainsonii</a>	Swainson's Warbler	G4	S3	--	D	Mature, rich, damp, deciduous floodplain and swamp forests.	Possible

1 - 19 of 19

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# D

## Appendix D – Federal and State Protected Plant Species and Habitat Report



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## **DAN SPAULDING** Environment Consultant

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4566 COUNTY ROAD 13, HEFLIN, ALABAMA 36264

CELL: 256-458-0422 OFFICE: 256-237-6766

25 October 2023

Harriet L. Richardson Seacat, M.A.

South Atlantic NEPA/Environmental Planning Lead, Resources Business Group\

HDR

440 S. Church Street, Suite 1200

Charlotte, NC 28202-2075

Ms. Harriet:

This letter is my report of findings from a study to determine if any species or habitat for federal or state-protected plants occur on +/- 500 acres in Lauderdale County, Tennessee. TVA proposes to remove overhead ground wire (OHGW) and install OPGW on the Covington-Ripley 161-kV Transmission Line (Line 5061-5) Tap to East Industrial Park Substation. The site is in a rural setting within agricultural and fallow fields in Ripley, Tennessee. The area is bisected by SR-19 and is south of Eastland Avenue. It is in the East Gulf Coastal Plain physiographic province.

As requested, I conducted a habitat survey on October 23–24, 2023, for the following listed species known from the Cane Creek Upper Watershed in Hardeman County (all are state listed except for *Platanthera integrilabia*): **Liverworts-** Ornate Cololejeunea (*Cololejeunea ornata*), Metzgeria (*Metzgeria uncigera*), Spotty Featherwort (*Plagiochila punctata*). **Vascular Plants-** Horse-tail Spike-rush (*Eleocharis equisetoides*), Hairy Fimbristylis (*Fimbristylis puberula*), American Pillwort (*Pilularia americana*), White Fringeless Orchid (*Platanthera integrilabia*), Drooping Bluegrass (*Poa saltuensis*), Nuttall's Pondweed (*Potamogeton epihydrus*), American Water-pennywort (*Hydrocotyle americana*).

### **Habitat Description**

The areas surveyed were primarily agricultural (corn), fallow, and old fields (Row & Close Grain Crop Cultural and Fallow Field & Weed Vegetation formations). There were small

patches of hardwood forests (Southeastern and Eastern Native Ruderal Forest groups). These were upland woods occur along drainages (riparian areas) or bordering agricultural and fallow fields (mostly fence rows). They are classified as the Ruderal Sweetgum-Sugarberry-Water Oak Forest and Ruderal Tuliptree-Black Walnut-Black Locust Forest alliances. These forests often develop after cropping or in areas that were once clear-cut or from old fields. One stagnant farm pond was encountered in the survey, with black willow (*Salix nigra*) being common along the margin. A mowed lawn encircled the 5-acre sub-station.

The dominant plants of the forested areas were water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), sugarberry (*Celtis laevigata*), black walnut (*Juglans nigra*), tulip-poplar (*Liriodendron tulipifera*), black locust (*Robinia pseudoacacia*), cherry-bark oak (*Quercus pagoda*), mockernut hickory (*Carya tomentosa*), slippery elm (*Ulmus serotina*), green ash (*Fraxinus pensylvanica*), sycamore (*Platanus occidentalis*), black cherry (*Prunus serotina*), red maple (*Acer rubrum*), box-elder (*Acer negundo*), American hornbeam (*Carpinus caroliniana*), Bradford pear (*Pyrus calleryana*), mimosa (*Albizia julibrissin*), smooth sumac (*Rhus glabra*), red cedar (*Juniperus virginiana*), Chinese privet (*Ligustrum sinense*), muscadine grape (*Vitis rotundifolia*), trumpet-creeper (*Campsis radicans*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), greenbriers (*Smilax* spp.) and Japanese honeysuckle (*Lonicera japonica*). The forest ground cover was somewhat sparse under the canopy.

The vegetation of the old fields were dominated by fall panic grass (*Panicum dichotomiflorum*), Johnson grass (*Sorghum halepense*), smartweeds (*Persicaria* spp.), fanpetals (*Sida rhombifolia*), burnweed (*Erechtites hieraciifolia*), cocklebur (*Xanthium strumarium*), common wood-sorrel (*Oxalis dillenii*), beefsteak-plant (*Perilla frutescens*), frost aster (*Symphyotrichum pilosum*), beggar's-lice (*Desmodium* spp.), sicklepod (*Cassia obtusifolia*), white snakeroot (*Ageratina altissima*), liverseed grass (*Urochloa platyphylla*), crab grass (*Digitaria ciliaris*), morning-glories (*Ipomoea* spp.), wheat (*Triticum aestivum*), ground-cherry (*Physalis angulata*), cut-leaf evening-primrose (*Oenothera laciniata*), broom-sedge (*Andropogon virginicus*), goose grass (*Eleusine indica*), daisy fleabanes (*Erigeron* spp.), three-seeded mercury (*Acalypha ostryifolia*), common ragweed (*Ambrosia artemisiifolia*), common goldenrod (*Solidago altissima*), curly dock (*Rumex crispus*),

horseweed (*Conyza canadensis*), dog-fennel (*Eupatorium capillifolium*), common bristle grass (*Setaria pumila*), spiny pigweed (*Amaranthus spinosus*), cudweed (*Gamochaeta* spp.), barnyard grass (*Echinochloa crus-galli*), giant ragweed (*Ambrosia trifida*), horse-nettle (*Solanum carolinense*), fall panicgrass (*Panicum anceps*), Bermuda grass (*Cynodon dactylon*), and purple-top grass (*Tridens flavus*).

### **Threatened and Endangered Species**

No threatened or endangered species were observed in the area surveyed, and no viable habitat was available.

Drooping Blue grass inhabits calcareous or ultramafic outcrop woodlands, barrens, and glades. The remainder of the vascular plants all occur in wetlands. The federally threatened White Fringeless Orchid inhabits seeps or bogs. The rest of the wetland species were state-listed. Horse-tail Spikerush is easily identified by its quadrangular stems; it grows along quiet waters of limesink ponds and natural lakes. American Pillwort, a grass-like fern ally, is found in vernal pools and seepage areas on flatrocks and drawdown shores of lakes. Hairy Fimbristylis prefers wet habitats such as pine savannas, pine flatwoods, bogs, meadows, prairie-like areas, and calcareous glades. American Water-pennywort occurs in bogs, marshes, seepages, cliffs, and ledges wet by outflow or spray from waterfalls. Nuttall's or Ribbonleaf Pondweed superficially resembles some species of *Potamogeton*. Still, it can be distinguished from other pondweeds by its flattened stems and linear submersed leaf blades (< 6 mm wide) with prominent lacunar bands on each side of the midrib. It typically inhabits clear, unpolluted ponds, lakes, streams, and rivers.

No species of liverworts were observed, and the preferred haunts of the state-listed plants were absent. *Cololejeunea ornata* is found in high-humidity areas on limestone, such as in sinks; *Metzgeria uncigera* grows on the bark of American Holly (*Ilex americana*), and *Plagiochila punctata* occurs on shaded sandstone cliffs and bluffs.

### **Additional Studies and Recommendations**

Based on a literature review and a field survey of the project site, no additional studies are required to comply with state and federal endangered species laws associated with project impacts on threatened & endangered species.

Sincerely,

A handwritten signature in black ink that reads "Daniel D. Spaulding". The signature is written in a cursive style with a large, stylized 'D' at the beginning.

Daniel D. Spaulding  
Environmental Consultant  
[dspaulding@annistonmuseum.org](mailto:dspaulding@annistonmuseum.org)  
Attachments

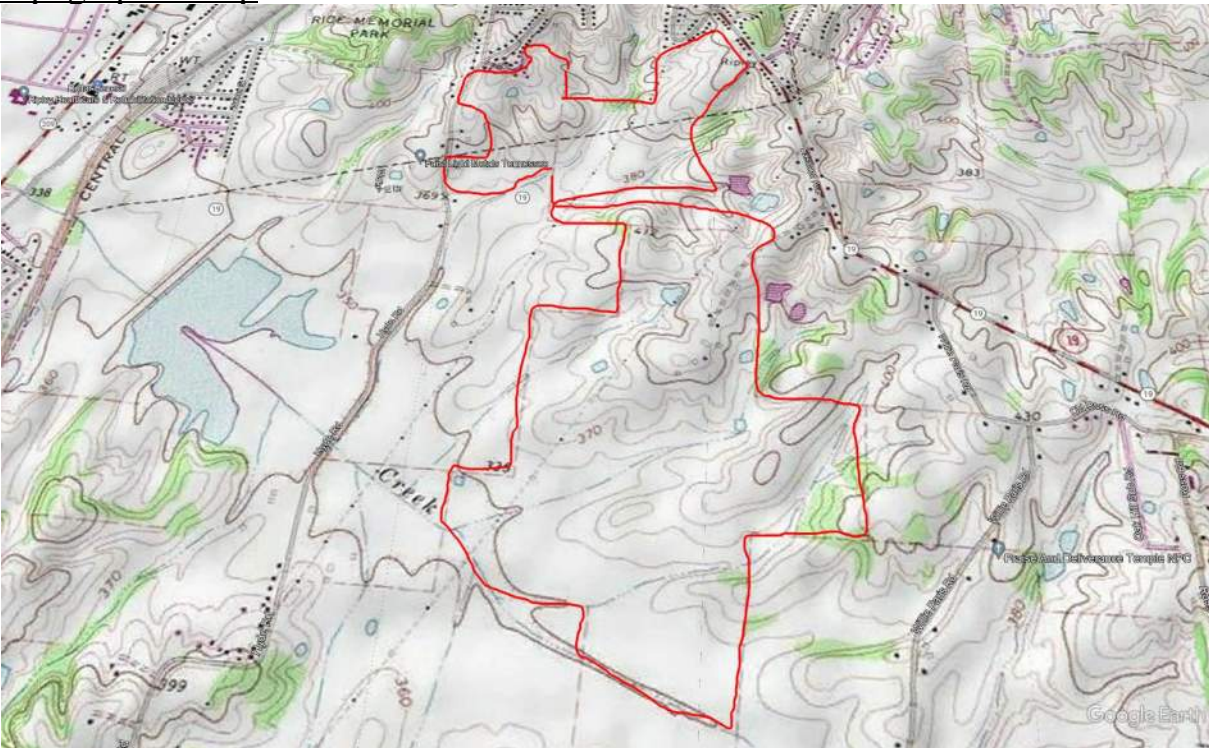


# IMAGES OF SITE

Google Earth Image



Topographic Map



# SITE PHOTOS




























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# E

## Appendix E – Bat Habitat Assessment Data Sheets



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**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 09/18/2022  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone 35.71234/-89.51790 Surveyor: B. Burdette and J. Irvin

**Brief Project Description**

SR Ripley is proposed to be a solar site located in Lauderdale County, Tennessee. The site is mostly fields of corn, soy, and cotton.

**Project Area**

Project	Total Acres	Forest Acres		Open Acres
Project	435 acres	54 acres		381 acres
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	
		TBD		

**Vegetation Cover Types**

Pre-Project	Post-Project
Agricultural field (Corn/Soy/Cotton) Dry Deciduous Wet Deciduous Open Water	TBD

**Landscape within 5 mile radius**

**Flight corridors to other forested areas?**  
 Yes

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**  
 Agricultural fields with riparian deciduous forests.

**Proximity to Public Land**

**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**

Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): Bat Tree

<b>Water Resources at Sample Site</b>				
<b>Stream Type (# and length)</b>	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:  An intermittent stream/major ditch divides two ag fields. Flowing water was present.
	0	181	0 if	
<b>Pools/Ponds (# and size)</b>	Open and accessible to bats?			
	NA			
<b>Wetlands (approx. ac.)</b>	Permanent	Seasonal		
	0	0		

<b>Forest Resources at Sample Site</b>				
<b>Closure/Density</b>	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	0	1	0	
<b>Dominant Species of Mature Trees</b>	One large water oak with approximately 60 dbh.			
<b>% Trees w/ Exfoliating Bark</b>	0	0	0	0
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	0	0	100	
<b>No. of Suitable Snags</b>	0			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

**IS THE HABITAT SUITABLE FOR INDIANA BATS?** Yes, and NLEB \_\_\_\_\_

<b>Additional Comments:</b>
Isolated tree which has been left alongside an intermittent stream/major ditch. The water oak is approximately 60 DBH, has multiple cavities and large limbs, some of which appear to be dead.

**Attach aerial photo of project site with all forested areas labeled and a general description of the habitat**

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 09/18/2022  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone: 35.71663/ -89.5237 Surveyor: B. Burdette and J. Irvin

**Brief Project Description**  
 SR Ripley is proposed to be a solar site located in Lauderdale County, Tennessee. The site is mostly fields of corn and cotton.

Project Area				
Project	Total Acres	Forest Acres		Open Acres
Project	435 acres	54 acres		381 acres
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	
		TBD		

Vegetation Cover Types	
Pre-Project	Post-Project
Agricultural field (Corn/Cotton) Dry Deciduous Wet Deciduous Open Water	TBD

**Landscape within 5 mile radius**  
 Flight corridors to other forested areas?  
 Yes

Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)  
 Agricultural fields with riparian deciduous forests.

**Proximity to Public Land**  
 What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?  
 Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>  1  </u>

Water Resources at Sample Site				
<b>Stream Type (# and length)</b>	Ephemeral 111	Intermittent 0	Perennial 0 if	Describe existing condition of water sources:  An ephemeral drainage feature connects a PFO wetland to an intermittent stream located in a corn field.
<b>Pools/Ponds (# and size)</b>	NA Open and accessible to bats?			
<b>Wetlands (approx. ac.)</b>	Permanent 0.53	Seasonal 0		

Forest Resources at Sample Site				
<b>Closure/Density</b>	Canopy (> 50') 0	Midstory (20-50') 5	Understory (<20') 1	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
<b>Dominant Species of Mature Trees</b>	Chinquapin oaks, black willow, sycamore.			
<b>% Trees w/ Exfoliating Bark</b>	0	1	0	0
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in) 20	Med (9-15 in) 60	Large (>15 in) 20	
<b>No. of Suitable Snags</b>	8			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

**IS THE HABITAT SUITABLE FOR INDIANA BATS?** Yes, and NLEB \_\_\_\_\_

<b>Additional Comments:</b>
Forest Stand 1 is a small mixed deciduous forested wetland; trees with exfoliating bark; multiple snags. The open agricultural land could act as a foraging area for bats.

**Attach aerial photo of project site with all forested areas labeled and a general description of the habitat**

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 09/18/2022  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone: 35.72872/-89.5207 Surveyor: B. Burdette and J. Irvin

**Brief Project Description**  
 SR Ripley is proposed to be a solar site located in Lauderdale County, Tennessee. The site is mostly fields of corn and cotton.

Project Area				
Project	Total Acres	Forest Acres		Open Acres
Project	435 acres	54 acres		381 acres
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	
		TBD		

Vegetation Cover Types	
Pre-Project	Post-Project
Agricultural field (Corn/Cotton) Dry Deciduous Wet Deciduous Open Water	TBD

**Landscape within 5 mile radius**  
 Flight corridors to other forested areas?  
 Yes  
 Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)  
 Agricultural fields with riparian deciduous forests.

**Proximity to Public Land**  
 What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?  
 Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>2</u>

Water Resources at Sample Site				
<b>Stream Type (# and length)</b>	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:  An intermittent stream feature connects an offsite PEM wetland to a perennial stream located in a corn field.
	0	303	0 if	
<b>Pools/Ponds (# and size)</b>	Open and accessible to bats?			
	NA			
<b>Wetlands (approx. ac.)</b>	Permanent	Seasonal		
	0	0		

Forest Resources at Sample Site				
<b>Closure/Density</b>	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	0	6	1	
<b>Dominant Species of Mature Trees</b>	Am. Beach, black maple, american elm, white oak, mockernut, sweet gum			
<b>% Trees w/ Exfoliating Bark</b>	0	3	0	0
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	10	60	30	
<b>No. of Suitable Snags</b>	2			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

**IS THE HABITAT SUITABLE FOR INDIANA BATS?** Yes, and NLEB \_\_\_\_\_

<b>Additional Comments:</b>
Forest Stand 2 is a small mixed deciduous forested wetland; trees with exfoliating bark such as white oak; few snags. The open agricultural land could act as a foraging area for bats. Very little water was present in the stream, however it directly connects to a perennial stream offsite.

**Attach aerial photo of project site with all forested areas labeled and a general description of the habitat**

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 09/18/2022

Township/Range/Section: \_\_\_\_\_

Lat Long/UTM/ Zone 35.71162/-89.5153

Surveyor: B. Burdette and J. Irvin

**Brief Project Description**

SR Ripley is proposed to be a solar site located in Lauderdale County, Tennessee. The site is mostly fields of corn and cotton.

**Project Area**

	Total Acres	Forest Acres		Open Acres
<b>Project</b>	435 acres	54 acres		381 acres
<b>Proposed Tree Removal (ac)</b>	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	
		TBD		

**Vegetation Cover Types**

Pre-Project	Post-Project
Agricultural field (Corn/Cotton) Dry Deciduous Wet Deciduous Open Water	TBD

**Landscape within 5 mile radius**

**Flight corridors to other forested areas?**  
Yes

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**  
Agricultural fields with riparian deciduous forests.

**Proximity to Public Land**

**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**

Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>3</u>

Water Resources at Sample Site			
<b>Stream Type (# and length)</b>	Ephemeral 0	Intermittent 1958	Perennial 0 if
<b>Pools/Ponds (# and size)</b>	NA Open and accessible to bats?		
<b>Wetlands (approx. ac.)</b>	Permanent 0	Seasonal 0	
Describe existing condition of water sources: An intermittent stream which follows a forested divide between two agricultural fields.			

Forest Resources at Sample Site			
<b>Closure/Density</b>	Canopy (> 50') 0	Midstory (20-50') 5	Understory (<20') 0
<b>Dominant Species of Mature Trees</b>	One large water oak with approximately 60 dbh.		
<b>% Trees w/ Exfoliating Bark</b>	0	60	0
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in) 20	Med (9-15 in) 10	Large (>15 in) 70
<b>No. of Suitable Snags</b>	4		

1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

**IS THE HABITAT SUITABLE FOR INDIANA BATS?** Yes, and NLEB \_\_\_\_\_

<b>Additional Comments:</b>
Forest Stand 3 is a large riparian stand which follows an intermittent stream nearly 2,000', connecting to a perennial stream which is just off site. Trees consisted primarily of white and black oaks with exfoliating bark.

**Attach aerial photo of project site with all forested areas labeled and a general description of the habitat**

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources



**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 09/18/2022

Township/Range/Section: \_\_\_\_\_

Lat Long/UTM/ Zone 35.71162/-89.52400

Surveyor: B. Burdette and J. Irvin

**Brief Project Description**

SR Ripley is proposed to be a solar site located in Lauderdale County, Tennessee. The site is mostly fields of corn and cotton.

**Project Area**

	Total Acres	Forest Acres		Open Acres
<b>Project</b>	435 acres	54 acres		381 acres
<b>Proposed Tree Removal (ac)</b>	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	
		TBD		

**Vegetation Cover Types**

Pre-Project	Post-Project
Agricultural field (Corn/Cotton) Dry Deciduous Wet Deciduous Open Water	TBD

**Landscape within 5 mile radius**

**Flight corridors to other forested areas?**

Yes

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**

Agricultural fields with riparian deciduous forests.

**Proximity to Public Land**

**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**

Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>4</u>

Water Resources at Sample Site				
<b>Stream Type (# and length)</b>	Ephemeral 0	Intermittent 0	Perennial 1305 lf	Describe existing condition of water sources:  An intermittent stream which follows a forested divide between two agricultural fields.
<b>Pools/Ponds (# and size)</b>	NA Open and accessible to bats?			
<b>Wetlands (approx. ac.)</b>	Permanent 1	Seasonal 0		

Forest Resources at Sample Site				
<b>Closure/Density</b>	Canopy (> 50') 0	Midstory (20-50') 5	Understory (<20') 2	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
<b>Dominant Species of Mature Trees</b>	Large cottonwoods, mockernut hickory, white oak.			
<b>% Trees w/ Exfoliating Bark</b>	0	50	0	0
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in) 20	Med (9-15 in) 50	Large (>15 in) 30	
<b>No. of Suitable Snags</b>	2			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

**IS THE HABITAT SUITABLE FOR INDIANA BATS?** Yes, and NLEB \_\_\_\_\_

<b>Additional Comments:</b>
Forest Stand 4 is a large riparian stand which follows a perennial stream 1,300' on site which is continues off site. Trees consisted primarily of cottonwoods and mockernut hickory.

**Attach aerial photo of project site with all forested areas labeled and a general description of the habitat**

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 09/18/2022  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone 35.720624/ -89.520259 Surveyor: B. Burdette and J. Irvin

**Brief Project Description**  
 SR Ripley is proposed to be a solar site located in Lauderdale County, Tennessee. The site is mostly fields of corn and cotton.

Project Area				
	Total Acres	Forest Acres		Open Acres
<b>Project</b>	435 acres	54 acres		381 acres
<b>Proposed Tree Removal (ac)</b>	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	
		TBD		

Vegetation Cover Types	
Pre-Project	Post-Project
Agricultural field (Corn/Cotton) Dry Deciduous Wet Deciduous Open Water	TBD

**Landscape within 5 mile radius**  
**Flight corridors to other forested areas?**  
 Yes

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**  
 Agricultural fields with riparian deciduous forests.

**Proximity to Public Land**  
**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**  
 Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>5</u>

Water Resources at Sample Site				
<b>Stream Type (# and length)</b>	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:  A pond which is just over 3.3 acres is connected via a culvert that flows offsite.
	0	1321 lf	0 lf	
<b>Pools/Ponds (# and size)</b>	Open and accessible to bats?			
	1 pond 3.37 ac			
<b>Wetlands (approx. ac.)</b>	Permanent	Seasonal		
	0	0		

Forest Resources at Sample Site				
<b>Closure/Density</b>	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	0	5	2	
<b>Dominant Species of Mature Trees</b>	Black willow, mockernut hickory, sweetgum, sycamore			
<b>% Trees w/ Exfoliating Bark</b>	0	20	0	0
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	40	40	20	
<b>No. of Suitable Snags</b>	10			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

**IS THE HABITAT SUITABLE FOR INDIANA BATS?** Yes, and NLEB \_\_\_\_\_

<b>Additional Comments:</b>
Forest Stand 6 is a large riparian stand which surrounds a 3.3 acre pond and follows an intermittent stream approximately 1,321' on site which is continues off site. Trees consisted primarily of black willow, sweetgum, sycamore and mockernut hickory.

**Attach aerial photo of project site with all forested areas labeled and a general description of the habitat**

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 11/1/23  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone: 35.725449, -89.523953 Surveyor: Lyranda Thiem

**Brief Project Description**

The Project Site is located in Lauderdale County, Tennessee, partially within the city limits of Ripley and is approximately 554.6 acres in extent. Approximate center coordinates of the Project Site are: latitude 35.723829°; longitude -89.517959°. The Project Site is located within the Upper Cane Creek Watershed (Hydrologic Unit Code [HUC] 12: 080102080701).

Project Area				
	Total Acres	Forest Acres		Open Acres
<b>Project</b>	554.6	53.48		open- 429.87 water- 2.90
<b>Proposed Tree Removal (ac)</b>	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	

Vegetation Cover Types	
Pre-Project	Post-Project
Cropland Dry Deciduous Maintained Lawn	TBD

**Landscape within 5 mile radius**

**Flight corridors to other forested areas?**  
 No.

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**  
 Agricultural fields for corn, dry deciduous forests with eastern red cedar, black walnut, American sycamore, winged elm, muscadine, rubus maintained lawn areas near the highway areas

**Proximity to Public Land**

**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**

Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project including Ripley City Park

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
 A single sheet can be used for multiple sample sites if habitat is the same

<b>Sample Site Description</b>
Sample Site No.(s): <u>6</u>

Water Resources at Sample Site				
<b>Stream Type (# and length)</b>	Ephemeral 1	Intermittent 1	Perennial	Describe existing condition of water sources:  1 intermittent stream and 1 ephemeral stream run through the stand
<b>Pools/Ponds (# and size)</b>	N/A Open and accessible to bats?			
<b>Wetlands (approx. ac.)</b>	Permanent	Seasonal		

Forest Resources at Sample Site				
<b>Closure/Density</b>	Canopy (> 50') 3	Midstory (20-50') 4	Understory (<20') 1	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
<b>Dominant Species of Mature Trees</b>	black walnut, black willow, American sycamore, sugar maple, white oak, sugarberry, black cherry, osage orange			
<b>% Trees w/ Exfoliating Bark</b>	0	5	8	
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in) 20	Med (9-15 in) 40	Large (>15 in) 40	
<b>No. of Suitable Snags</b>	4			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Moderate quality

<b>Additional Comments:</b>
Open under story, no connection to larger forested stand, diversity in trees Trees DBH ranged in size from 10 inches DBH to 35 inches DBH

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 11/1/23  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone: 35.731100, -89.524855 Surveyor: Lyranda Thiem

**Brief Project Description**

The Project Site is located in Lauderdale County, Tennessee, partially within the city limits of Ripley and is approximately 554.6 acres in extent. Approximate center coordinates of the Project Site are: latitude 35.723829°; longitude -89.517959°. The Project Site is located within the Upper Cane Creek Watershed (Hydrologic Unit Code [HUC] 12: 080102080701).

**Project Area**

	Total Acres	Forest Acres		Open Acres
<b>Project</b>	554.6	53.48		open- 429.87 water- 2.90
<b>Proposed Tree Removal (ac)</b>	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	

**Vegetation Cover Types**

Pre-Project	Post-Project
Cropland Dry Deciduous Maintained Lawn	TBD

**Landscape within 5 mile radius**

**Flight corridors to other forested areas?**  
 No.

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**  
 Agricultural fields for corn, dry deciduous forests with eastern red cedar, black walnut, American sycamore, winged elm, muscadine, rubus maintained lawn areas near the highway areas

**Proximity to Public Land**

**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**

Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project including Ripley City Park.

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>7</u>

Water Resources at Sample Site				Describe existing condition of water sources:  No water system exists in this stand
Stream Type (# and length)	Ephemeral 0	Intermittent 0	Perennial 0	
Pools/Ponds (# and size)	N/A Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent 0	Seasonal 0		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50') 3	Midstory (20-50') 4	Understory (<20') 2	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees	sugarberry, black walnut, winged elm			
% Trees w/ Exfoliating Bark	0	2	0	
Size Composition of Live Trees (%)	Small (3-8 in) 30	Med (9-15 in) 50	Large (>15 in) 20	
No. of Suitable Snags	0			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? high quality

<b>Additional Comments:</b>
Trees ranged from 5 inches to 25 inches DBH Tree diversity and presence of trees with exfoliating bark

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources



**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 11/1/23  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone: 35.731100, -89.524855 Surveyor: Lyranda Thiem

**Brief Project Description**

The Project Site is located in Lauderdale County, Tennessee, partially within the city limits of Ripley and is approximately 554.6 acres in extent. Approximate center coordinates of the Project Site are: latitude 35.723829°; longitude -89.517959°. The Project Site is located within the Upper Cane Creek Watershed (Hydrologic Unit Code [HUC] 12: 080102080701).

**Project Area**

Project	Total Acres	Forest Acres		Open Acres
	554.6	53.48		open- 429.87 water- 2.90
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	

**Vegetation Cover Types**

Pre-Project	Post-Project
Cropland Dry Deciduous Maintained Lawn	TBD

**Landscape within 5 mile radius**

**Flight corridors to other forested areas?**

No.

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**

Agricultural fields for corn, dry deciduous forests with eastern red cedar, black walnut, American sycamore, winged elm, muscadine, rubus maintained lawn areas near the highway areas

**Proximity to Public Land**

**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**

Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project including Ripley City Park.

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>8</u>

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: 2 intermittent 5 ephemeral (WWC's) streams run through the stand
	1050	2148	0	
Pools/Ponds (# and size)	Open and accessible to bats?			
	N/A			
Wetlands (approx. ac.)	Permanent	Seasonal		
	0	0		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	3	4	1	
Dominant Species of Mature Trees	sugarberry, black walnut, red maple, red oak, paper mulberry and winged elm			
% Trees w/ Exfoliating Bark	0	2	0	
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	30	60	10	
No. of Suitable Snags	0			

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? low/moderate quality

<b>Additional Comments:</b>
Trees ranged from approximately 5 inches to 25 inches DBH One area was determined to have moderate bat habitat quality due to tree diversity and moderately open canopy. The second area in the southeastern corner of stand was determined to have low quality because of lack of diversity and no snags.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

**INDIANA BAT HABITAT ASSESSMENT DATASHEET**

Project Name: SR Ripley Date: 11/1/23  
 Township/Range/Section: \_\_\_\_\_  
 Lat Long/UTM/ Zone: 35.731100, -89.524855 Surveyor: Lyranda Thiem

**Brief Project Description**

The Project Site is located in Lauderdale County, Tennessee, partially within the city limits of Ripley and is approximately 554.6 acres in extent. Approximate center coordinates of the Project Site are: latitude 35.723829°; longitude -89.517959°. The Project Site is located within the Upper Cane Creek Watershed (Hydrologic Unit Code [HUC] 12: 080102080701).

**Project Area**

Project	Total Acres	Forest Acres		Open Acres
	554.6	53.48		open- 429.87 water- 2.90
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	

**Vegetation Cover Types**

Pre-Project	Post-Project
Cropland Dry Deciduous Maintained Lawn	TBD

**Landscape within 5 mile radius**

**Flight corridors to other forested areas?**

No.

**Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)**

Agricultural fields for corn, dry deciduous forests with eastern red cedar, black walnut, American sycamore, winged elm, muscadine, rubus maintained lawn areas near the highway areas

**Proximity to Public Land**

**What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?**

Several public parks are located within Ripley Town limits approximately 2 miles to the northeast of the project including Ripley City Park.

**Use additional sheets to assess discrete habitat types at multiple sites in a project area**

*Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area  
A single sheet can be used for multiple sample sites if habitat is the same*

<b>Sample Site Description</b>
Sample Site No.(s): <u>  9  </u>

Water Resources at Sample Site				Describe existing condition of water sources:  2 intermittent and 2 ephemeral (WWC) streams run through the stand
<b>Stream Type (# and length)</b>	Ephemeral 1133	Intermittent 515	Perennial 0	
<b>Pools/Ponds (# and size)</b>	N/A Open and accessible to bats?			
<b>Wetlands (approx. ac.)</b>	Permanent 0	Seasonal 0		

Forest Resources at Sample Site				1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
<b>Closure/Density</b>	Canopy (> 50') 20	Midstory (20-50') 60	Understory (<20') 20	
<b>Dominant Species of Mature Trees</b>	honey locust, tulip poplar, white ash, black walnut, and black maple.			
<b>% Trees w/ Exfoliating Bark</b>	0	2	0	
<b>Size Composition of Live Trees (%)</b>	Small (3-8 in) 40	Med (9-15 in) 40	Large (>15 in) 20	
<b>No. of Suitable Snags</b>	0			


Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS?   low quality  

<b>Additional Comments:</b>
Trees ranged from approximately 5 inches in diameter at breast height (DBH) to 20 inches DBH. Low tree diversity, thick understory, and lack of snags

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

**Photographic Documentation:** habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources



# F

## Appendix F – Environmental Solutions & Innovations, Inc. Bat Survey Report



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LISTED BAT SURVEYS ON THE RIPLEY II SOLAR PROJECT IN  
LAUDERDALE COUNTY, TENNESSEE

29 September 2023

*Submitted to:*

Mr. Robbie Sykes  
U.S. Fish and Wildlife Service,  
Tennessee Field Office  
446 Neal Street  
Cookeville, TN

Mr. Russell Boles  
Tennessee Wildlife Resources Agency  
312 Rosa L. Parks Ave,  
William R. Snodgrass Tower Fl 25  
Nashville, TN 37243

*Prepared for:*



Ms. Nicole Morgan  
Project Manager  
HDR Inc.  
1201 Market Street, Suite C  
Chattanooga, TN 37402

*Prepared by:*



Environmental Solutions & Innovations, Inc.

4525 Este Avenue  
Cincinnati, Ohio 45232  
Phone: (513) 451-1777  
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Ravenna, OH • Indianapolis, IN • Orlando, FL • Pittsburgh, PA • Teays Valley, WV

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## 1.0 Introduction

HDR Inc. (HDR) retained Environmental Solutions & Innovations, Inc. (ESI) to conduct mist net surveys to determine presence/absence of listed bats for the proposed Silicon Ranch (SR) and the Tennessee Valley Authority (TVA) Ripley II Solar Project (Project) in Lauderdale County, Tennessee. The proposed Project Area, totaling 513 acres (208 ha), will require 55 acres (22 ha) of tree clearing. On 26 September 2023, SR acquired an additional parcel, totaling 41.6 acres (16.8 ha), of which 0.03 acres (0.01 ha) of additional tree clearing would be required, to the Project Area, for an updated Project Area total of 554.6 acres (224.4 ha), requiring 55.03 acres (22.27 ha) of tree clearing (Figure 1).

The Project occurs within range of the federally endangered Indiana (*Myotis sodalis*), and northern long-eared bats (*Myotis septentrionalis*), the tricolored bat (*Perimyotis subflavus*; recently proposed for listing as federally endangered), and the little brown bat (*Myotis lucifugus*; currently undergoing U.S. Fish and Wildlife Service (USFWS) review for inclusion under the Endangered Species Act [ESA]).

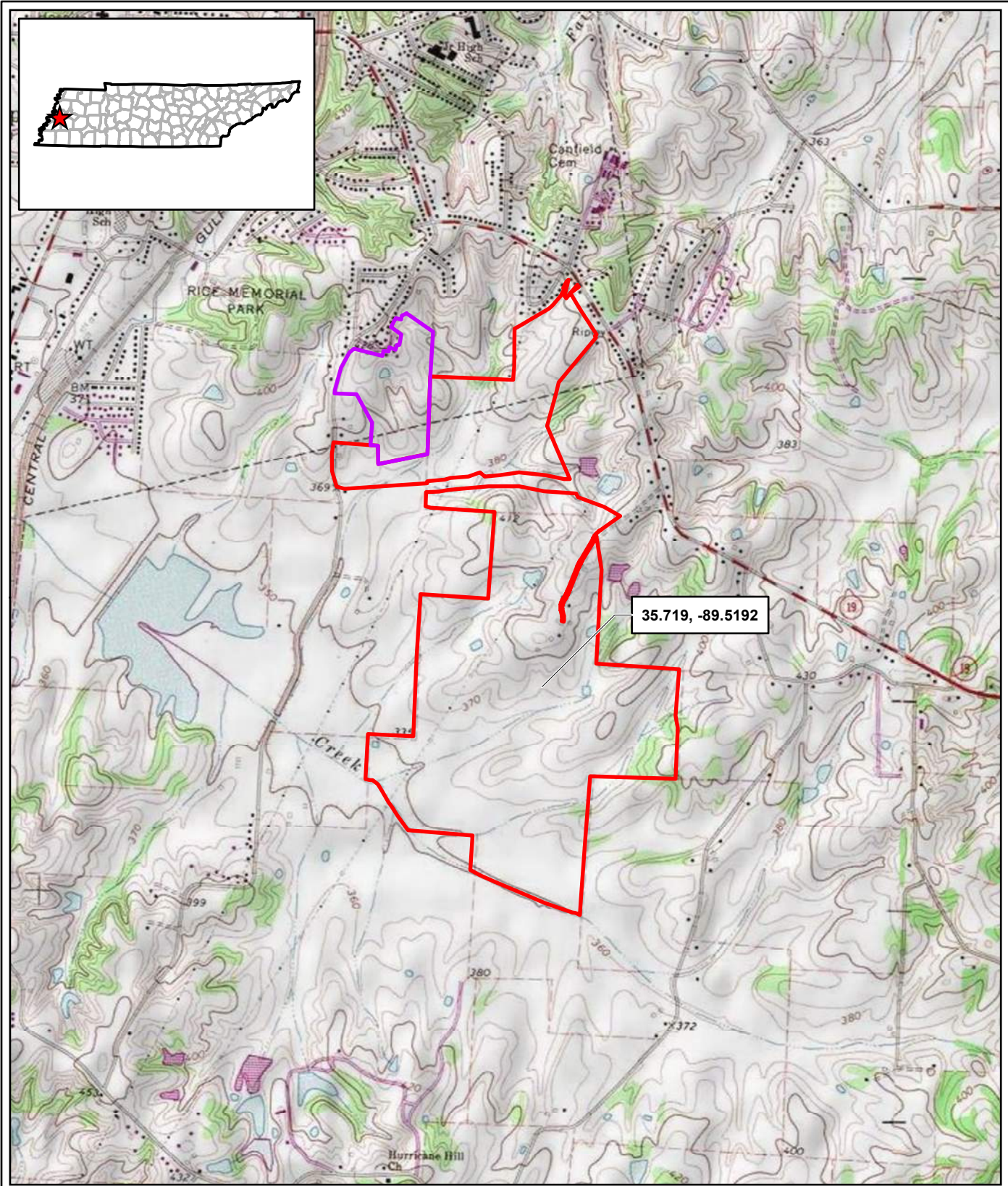
This report details methods and results of mist netting surveys completed 27 through 30 June 2023. Surveys were completed under federal permit number ES02373A-16 and Tennessee Wildlife Resources Agency (TWRA) Special Use Permit Studies-Scientific number 5932.

## 2.0 Regulatory Setting

### 2.1 Endangered Species Act

The Federal ESA [16 U.S.C. 1531 et seq.] was codified into law in 1973. This law provides for the listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Under the ESA, the USFWS is mandated to monitor and protect listed species.

Section 9 of the ESA prohibits the “take” of listed species unless otherwise specifically authorized by regulation. “Take” is defined by the ESA as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect” [16 U.S.C. 1532(19)]. ESA further defines “harm” to include significant habitat modification or degradation [50 CFR §17.3]. Section 7(a)(2) of the ESA states that each federal agency shall insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of designated critical habitat. Federal actions include (1) expenditure of federal funds for



Project Area
 
 September 2023 Additional Study Area

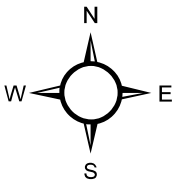
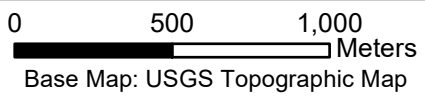


Figure 1. Location of the Ripley II Solar Project in Lauderdale County, Tennessee.

Project No.  
2093



ESI

**ENVIRONMENTAL SOLUTIONS  
& INNOVATIONS, INC.**

G:\Current\2093\_Ripley\SolarMaps\Bat\_Survey\Report\_Figures\Figure 1\_Location\_Topo\_20230929.mxd; creator: jpapalia

roads, buildings, or other construction projects, and (2) approval of a permit or license, and the activities resulting from such permit or license. Compliance is required regardless of whether involvement is apparent, such as issuance of a federal permit, or less direct, such as federal oversight of a state-operated program. Actions of federal agencies that do not result in jeopardy or adverse modification, but that could result in a take, must also be addressed under Section 7. Take by a federal agency can be authorized through the Section 7 consultation process, culminating in an Incidental Take Statement (ITS) by the USFWS. The take must be incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

In 1982, amendments to the ESA, Congress established a provision in Section 10(a)(1)(B) that authorizes incidental take by nonfederal entities. To obtain an Incidental Take Permit (ITP), an applicant must submit a conservation plan specifying impacts that result in take and measures to minimize and mitigate those impacts.

## **2.2 Study Plan Submission and Approval**

A study plan detailing methods and survey level of effort was submitted to the USFWS Cookeville, TN Field Office on 25 May 2023. USFWS concurred and provided site-specific authorization on 4 June 2023 (Appendix A).

# **3.0 Methods**

## **3.1 Summer Habitat**

Mist net surveys follow the USFWS 2023 *Range-wide Indiana Bat Survey Guidelines* (Guidelines; Table 1) specific to the northern long-eared bat level of effort (LOE) (USFWS 2023).

## **3.2 Level of Effort**

For non-linear projects a minimum sampling effort of ten net nights is completed for every 123 acres (49.8 ha) of impacted suitable habitat (Table 1). Net site locations are provided in Figure 2 and coordinates are provided in Table 2. Habitat and netting datasheets are provided in Appendix B and photographs are provided in Appendix C.

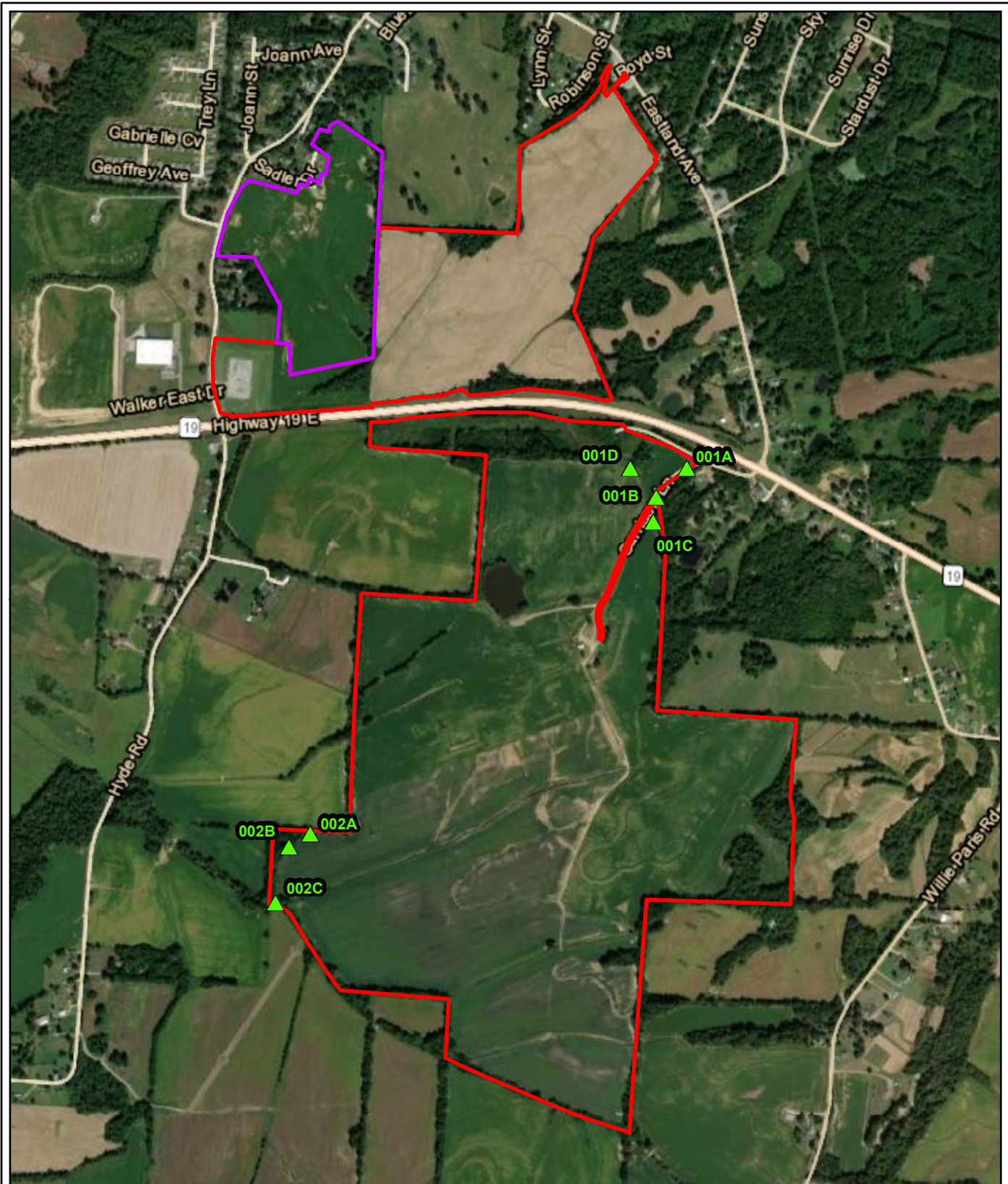
Table 1. USFWS Northern Long-eared Bat Mist Net Survey Guidelines.

<b>2023 USFWS NLEB MIST NET GUIDELINES</b>	
1.	Netting Season: 15 May to 15 August.
2.	Equipment (Mist Nets): Constructed of the finest, lowest visibility mesh commercially available – monofilament or black nylon – with the mesh size approximately 1½ inch (1¼ – 1¾) (38 mm).
3.	Net Placement: Mist nets extend approximately from water or ground level to tree canopy and are bounded by foliage on the sides. Net width and height are adjusted for the fullest coverage of the flight corridor at each site. A “typical” net set consists of two (or more) nets “stacked” on top of one another; width may vary up to 60 feet (20 m).
4.	Level of Effort: <ul style="list-style-type: none"><li>◆ Linear Projects – minimum of 4 net nights per 0.6 mile (1 km); 1 net night = 1 net set deployed for 1 night.</li><li>◆ Non-linear Projects – minimum of 10 net nights per 123 acres (49.8 ha).</li></ul>
5.	Minimum Effort Per Net Site: <ul style="list-style-type: none"><li>◆ At least 2 net locations (set) per net site.</li><li>◆ At least 2 (calendar) nights of netting per net site with maximum of 3 nights of consecutive netting at any given location.</li><li>◆ After 2 consecutive nights at same location without capture of target species, must change net locations or wait at least 2 calendar nights before resuming netting at same location.</li><li>◆ Sample Period: begin at sunset and continue for at least 5 hours.</li><li>◆ Nets are monitored at 10-minute intervals.</li><li>◆ No disturbance near the nets or between checks.</li></ul>
6.	Weather: Negative surveys combined with any of the following conditions throughout all or most of a sampling period are likely to require an additional night of mist-netting: <ul style="list-style-type: none"><li>◆ Precipitation (rain and/or heavy fog) lasting &gt;30 minutes or continuing intermittently during the survey period.</li><li>◆ Temperatures &lt;10°C (50°F).</li><li>◆ Sustained wind &gt;9 mi/hr (4 m/sec) (3 on Beaufort scale).</li></ul>

Source: U.S. Fish and Wildlife Service 2023

### 3.2.1 Net Placement

Nets are set to maximize coverage of flight paths used by bats along suitable travel corridors, foraging areas, and/or drinking areas. Riparian corridors are often used for travel or foraging; however, upland corridors (e.g., trails or logging roads) and field edges also provide suitable sites. In upland areas, net sites in the vicinity of road ruts holding water resulted in capture of Indiana and northern long-eared bats. Site selection is based upon the extent of canopy cover, presence of an open flyway, and forest conditions near the site. The actual location and orientation of each net set is determined in the field. Coordinates of each net set are recorded via a combination of available technology including GIS systems (ESRI ArcMap), handheld GPS units, tablet computers, and customized software to ensure a high quality, easily interpreted, and universal standard of mapping for field studies and reporting for all target species.



▲ Mist Net Location    □ Project Area    □ September 2023 Additional Study Area

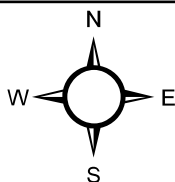
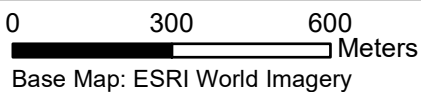


Figure 2. Mist Net Locations for the Ripley II Solar Project in Lauderdale County, Tennessee.

Project No.  
2093



ENVIRONMENTAL SOLUTIONS  
& INNOVATIONS, INC.

Table 2. Mist Net Site Coordinates on the Ripley II Solar Project in Lauderdale County, Tennessee.

Site	Date (2023)	Net	Latitude	Longitude
1	27, 28 June	A	35.723621	-89.514266
		B	35.722932	-89.515132
		C	35.722344	-89.515192
		D*	35.723547	-89.515938
2	30 June	A	35.714804	-89.524840
		B	35.714495	-89.525446
		C	35.713176	-89.525791

\*Surveyed on June 28 only.

### 3.2.2 Bat Capture

Bats are live caught in mist nets and released unharmed near the point of capture. Captured bats are identified to species, sex, age class, and reproductive condition. Weight and right forearm length of are also recorded. Age is determined by examining the epiphyseal-diaphyseal fusion of long bones in the wing. Reproductive condition of female bats is recorded as pregnant (based on gentle abdominal palpation), lactating, post lactating, or non-reproductive. Time and location/net site of captured bats is recorded. Processing is typically completed within 30 minutes of the time each bat is removed from the net. Listed bat species captured and identified are photographed and recorded on standardized data sheets (Appendix B). USFWS and TWRA contacted within 48 hours if any listed bats are captured.

### 3.2.3 Protocol for Addressing Covid-19

In response to the U.S. Geological Survey and other non-governmental studies, USFWS recommends all employees and persons conducting activities on lands subject to USFWS oversight follow the Centers for Disease Control’s (CDC) guidelines for interacting with wildlife to minimize risks associated with potential COVID-19 transmission while handling bats and other potentially susceptible taxa. As such, ESI employs the CDC’s guidelines, currently not requiring use of N95 or equivalent, non-vented facemasks. Single-use nitrile gloves are already used to mitigate spread of WNS and nets are decontaminated using WNS protocols for disinfecting, such as Covid-killing disinfectants and heating porous equipment at 131°F (55°C) for at least 20 minutes.

### 3.2.4 Protocol for Addressing White-Nose Syndrome

In response to the current WNS issue, state and federal guidelines for WNS decontamination, containment, and avoidance are implemented in conjunction with the latest WNS protocols as provided on the USFWS-updated website [whitenosesyndrome.org](http://whitenosesyndrome.org). Wing damage is categorized using the Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome

(Reichard 2008, Reichard and Kunz 2009), as applied, tested, and evaluated by ESI on similar projects (Francl et al. 2011).

### **3.3 Habitat Characterization of Sites**

Wooded habitat near net sites and immediate surroundings are assessed for quality for Indiana and northern long-eared bat use. Formal habitat evaluations are not completed for tricolored or little brown bats, although both species use similar woodlands. The emphasis of this description is on habitat form and function: size and relative abundance of large trees and snags that potentially serve as roost trees, canopy closure, understory clutter/openness, distance to water, and flight corridors. Habitat form is emphasized because both bat species roost in a variety of tree species.

Habitat characterization identifies components of both the canopy and subcanopy layers. All trees that reach into the canopy are canopy trees, regardless of diameter/size. As defined in the Indiana Bat Habitat Suitability Index Model (3D/Environmental 1995), dominant trees are the large trees in the canopy (16 inches [ $>40$  cm] dbh). Current literature suggests these trees have the greatest likelihood of being used by bat maternity colonies. Many smaller trees are often also found in the canopy, and in some situations, the canopy can be entirely composed of small-diameter trees. ESI's habitat characterization identifies both dominant and subdominant elements of the canopy.

The subcanopy vegetation layer is well defined in classical ecological literature. It is that portion of the forest structure between the ground vegetation (to approximately 0.2 feet [0.6 m]) and the canopy layers, usually beginning at about 25 feet (7.6 m). The amount of vegetation in the understory is termed clutter, and may come from:

- Lower branches of overstory trees;
- Small trees that will grow into the overstory;
- Small trees and shrubs confined to the understory.

Many species of bats, including the Indiana bat, tend to avoid areas of high clutter. Conversely, the northern long-eared bat is more tolerant of clutter. Habitat data are recorded on standardized data sheets (Appendix B).

### **3.4 Weather and Temperature**

Weather conditions are monitored during mist netting to ensure compliance with 2023 USFWS mist netting Guidelines (Table 1). Conditions recorded include temperature, wind speed and direction, precipitation, and percent cloud cover. A standard digital thermometer is used to record temperature; wind speed is determined by use of the Beaufort wind scale; and cloud cover is visually estimated. Information is recorded on standardized data sheets and provided in Appendix B.



## 4.0 Results

### 4.1 Mist Netting

Mist netting was conducted at two sites from 27 through 30 June 2023, totaling 10 complete net nights of effort (Table 2). Data sheets are provided in Appendix B, and photos are included in Appendix C.

#### 4.1.1 Bat Capture

Mist netting efforts included 10 complete net nights and capture of 8 eastern red bats (*Lasiurus borealis*). Representative photographs of eastern red bats are provided in Appendix C.

Table 3. Bat Captures on the Ripley II Solar Project in Lauderdale County, Tennessee.

Species	Adult Lactating		Escaped Net	Total
	Adult Male	Female		
Eastern red bat	1	4	3	8

#### 4.1.2 White Nose Syndrome Scores

No bats displayed signs of wing damage (Wing Index Score = 0) indicating fewer than five small scar spots were present on membranes (Appendix B).

### 4.2 Habitat Characterization of Net Sites

Nets were primarily placed in gaps in fencerows / tree lines (remnants of a mature lowland forest) in an area now dominated by agriculture. Common dominant canopy tree species included sweetgum (*Liquidambar styraciflua*), southern red oak (*Quercus falcata*), and sugarberry (*Celtis laevigata*). The subdominant canopy was comprised of sugarberry, sweetgum, southern red oak, and shingle oak (*Q. imbricaria*). The understory, or subcanopy, included lower branches of canopy trees and saplings.

Roosting potential for Indiana and northern long-eared bats was rated low for both species at both sites. Habitat assessment datasheets are provided in Appendix B, and photographs of mist net sites are provided in Appendix C.

### 4.3 Weather

Precipitation on 29 June precluded mist net surveys. All other survey nights between 27 and 30 June 2023 were within acceptable limits based on USFWS Guidelines, resulting in 10 complete survey nights. Survey temperatures ranged from 88° to 69° Fahrenheit (31° to 21° C) (Appendix A).

## **5.0 Discussion**

Mist net surveys for listed bats were completed from 27 to 30 June 2023 following the 2023 Guidelines. Ten net nights were completed across two mist net sites. Eight eastern red bats were captured.

ESI requests results of these mist net surveys remain valid for a period of five complete summer maternity seasons following conclusion of the current maternity season.

## 6.0 Literature Cited

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- USFWS. 2019. 2019 Indiana bat (*Myotis sodalis*) population status update. U.S. Department of the Interior, Fish and Wildlife Service, Indiana Ecological Services Field Office, Bloomington, Indiana. 9 pp.
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**APPENDIX A**  
**AGENCY CORRESPONDENCE**



## John Timpone

---

**From:** Sykes, Robbie <robbie\_sykes@fws.gov>  
**Sent:** Sunday, June 4, 2023 10:11 PM  
**To:** John Timpone  
**Cc:** Tennessee ES, FWS  
**Subject:** Bat Survey Plan for SR Ripley II in Lauderdale County, TN

**CAUTION:** This email originated from outside of our organization. DO NOT click links or open attachments unless you recognize the sender and know the content is safe!

John,

We have reviewed the mist net survey proposal for the proposed SR Ripley II Solar Site in Lauderdale County, Tennessee, and the plan appears to be appropriate in terms of documenting presence/probable absence of the Indiana bat, northern long-eared bat, and tricolored bat. We approve the survey plan, and look forward to reviewing the results of the survey.

Sincerely,

Robbie Sykes  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
446 Neal Street  
Cookeville, TN 38501  
(tele. 931/525-4979)

**APPENDIX B  
DATA SHEETS**



SURVEY YEAR \_\_\_\_\_

Property of: Environmental Solutions & Innovations, Inc.  
4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

### HABITAT ASSESSMENT

Project #: \_\_\_\_\_ Project Name: \_\_\_\_\_ State: \_\_\_\_\_ County: \_\_\_\_\_  
Date: \_\_\_\_\_ Lead Biologist: \_\_\_\_\_ Other Staff: \_\_\_\_\_  
Site ID: \_\_\_\_\_ Federal Permit: \_\_\_\_\_ State Permit: \_\_\_\_\_

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Photographs

Distance to closest water source (m): \_\_\_\_\_ Type of water source: \_\_\_\_\_  
Name of water source: \_\_\_\_\_

#### ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height (m): \_\_\_\_\_ Channel Width (m): \_\_\_\_\_ Stream Width (m): \_\_\_\_\_  
Substratum:  Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay  Unknown  
Still Water Present Y/N: \_\_\_\_\_ Average Water Depth: \_\_\_\_\_ m or cm Water Clarity (H,M,L) \_\_\_\_\_

#### VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Subdominant Canopy Species (< 40 cm/16" dbh)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Estimated dbh range (cm): Lg: \_\_\_\_\_ Sm: \_\_\_\_\_ Estimated dbh range (cm): Lg: \_\_\_\_\_ Sm: \_\_\_\_\_

Relative abundance of dominant vs. subdominant (ratio): \_\_\_\_\_

Estimated canopy closure:  Closed  Moderate  Open  
Roost tree potential consists of:  Hollow  Large Trees  Snags  None  
*M. sodalis* roost tree potential is:  High  Moderate  Low

Roost potential comments: \_\_\_\_\_

*M. septentrionalis* roost tree potential is:  High  Moderate  Low

Roost potential comments: \_\_\_\_\_

Subcanopy clutter:  Closed  Moderate  Open  
Subcanopy consists largely of:  Lower Branches of Canopy Trees  Saplings  Shrubs

Common Subcanopy Species: \_\_\_\_\_

#### Check all that apply:

- Mature Upland Forest
- Young Upland Forest
- Mature Lowland Forest
- Young Lowland Forest
- Recently Logged Forest
- Pine Plantation
- Woodlot/Forest Edge
- Old Field
- Crop/Pasture Land
- Stream/River
- Emergent Wetland
- Forested Swamp
- Shrub/scrub Swamp
- Vernal Pool
- Deepwater Lake/Pond
- Developed Land
- Other: \_\_\_\_\_

Herbaceous Cover:  Sparse  Moderate  Dense





SURVEY YEAR \_\_\_\_\_

Property of: Environmental Solutions & Innovations, Inc.  
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

### HABITAT ASSESSMENT (continued)

Project #:	State/County:	Site Name/#:	Initials:
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LEGEND	DETAILED HABITAT DESCRIPTION & COMMENTS
Net: ● — ●	
Detector: □ ▽	
— Road	







SURVEY YEAR \_\_\_\_\_

Property of: Environmental Solutions & Innovations, Inc.  
4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

### HABITAT ASSESSMENT

Project #: \_\_\_\_\_ Project Name: \_\_\_\_\_ State: \_\_\_\_\_ County: \_\_\_\_\_  
Date: \_\_\_\_\_ Lead Biologist: \_\_\_\_\_ Other Staff: \_\_\_\_\_  
Site ID: \_\_\_\_\_ Federal Permit: \_\_\_\_\_ State Permit: \_\_\_\_\_

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Photographs

Distance to closest water source (m): \_\_\_\_\_ Type of water source: \_\_\_\_\_  
Name of water source: \_\_\_\_\_

#### ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height (m): \_\_\_\_\_ Channel Width (m): \_\_\_\_\_ Stream Width (m): \_\_\_\_\_  
Substratum:  Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay  Unknown  
Still Water Present Y/N: \_\_\_\_\_ Average Water Depth: \_\_\_\_\_ m or cm Water Clarity (H,M,L) \_\_\_\_\_

#### VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Subdominant Canopy Species (< 40 cm/16" dbh)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Estimated dbh range (cm): Lg: \_\_\_\_\_ Sm: \_\_\_\_\_ Estimated dbh range (cm): Lg: \_\_\_\_\_ Sm: \_\_\_\_\_

Relative abundance of dominant vs. subdominant (ratio): \_\_\_\_\_

Estimated canopy closure:  Closed  Moderate  Open  
Roost tree potential consists of:  Hollow  Large Trees  Snags  None  
*M. sodalis* roost tree potential is:  High  Moderate  Low

Roost potential comments: \_\_\_\_\_

*M. septentrionalis* roost tree potential is:  High  Moderate  Low

Roost potential comments: \_\_\_\_\_

Subcanopy clutter:  Closed  Moderate  Open  
Subcanopy consists largely of:  Lower Branches of Canopy Trees  Saplings  Shrubs

Common Subcanopy Species: \_\_\_\_\_

#### Check all that apply:

- |  |   |  |  |
|--|---|--|--|
| <input type="checkbox"/> Mature Upland Forest  | <input type="checkbox"/> Recently Logged Forest | <input type="checkbox"/> Crop/Pasture Land | <input type="checkbox"/> Shrub/scrub Swamp   |
| <input type="checkbox"/> Young Upland Forest   | <input type="checkbox"/> Pine Plantation        | <input type="checkbox"/> Stream/River      | <input type="checkbox"/> Vernal Pool         |
| <input type="checkbox"/> Mature Lowland Forest | <input type="checkbox"/> Woodlot/Forest Edge    | <input type="checkbox"/> Emergent Wetland  | <input type="checkbox"/> Deepwater Lake/Pond |
| <input type="checkbox"/> Young Lowland Forest  | <input type="checkbox"/> Old Field              | <input type="checkbox"/> Forested Swamp    | <input type="checkbox"/> Developed Land      |
|  |   |  | <input type="checkbox"/> Other: _____        |

Herbaceous Cover:  Sparse  Moderate  Dense



SURVEY YEAR \_\_\_\_\_

Property of: Environmental Solutions & Innovations, Inc.  
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

# HABITAT ASSESSMENT (continued)

Project #:	State/County:	Site Name/#:	Initials:
------------	---------------	--------------	-----------

N



**SKETCH NETS and/or DETECTORS**  
(use this to illustrate things we cannot see on a photo-map)



LEGEND	<u>DETAILED HABITAT DESCRIPTION &amp; COMMENTS</u>
<b>Net:</b> ● — ●	
<b>Detector:</b> □	



SURVEY YEAR \_\_\_\_\_

Property of: Environmental Solutions & Innovations, Inc.  
4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

## BAT CAPTURE DATA

Project #: \_\_\_\_\_ Date: \_\_\_\_\_

Project Name: \_\_\_\_\_ Site Name/ #: \_\_\_\_\_

State: \_\_\_\_\_ County: \_\_\_\_\_

Device ID #: \_\_\_\_\_

Permitted \_\_\_\_\_ Other Field Staff: \_\_\_\_\_

Biologist: \_\_\_\_\_ (full name) \_\_\_\_\_ (full name)

State Permit #: \_\_\_\_\_ Federal Permit #: \_\_\_\_\_

WEATHER DATA				
Time (xxxx h)	Temp (°C)	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments

Net/Trap/Detector	Net/Trap/Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up	Time Down	Picture #	Waypoint #

Net Placement/Site Description: \_\_\_\_\_

Capt #	Net/Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro. <sup>1</sup>	Wt (g)	RFA (mm)	Belly <sup>2</sup> (F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample/Band #

<sup>1</sup> Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ (NR=Non-reproductive, PG=Pregnant, L=Lactating, PL=Post-Lactating; ↑=Ascended testes, ↓ Descende testes)

<sup>2</sup> F=Full, M=Moderate, E=Empty

\* Refer to table on the back

**APPENDIX C  
PHOTOGRAPHS**



Site 1 Net A

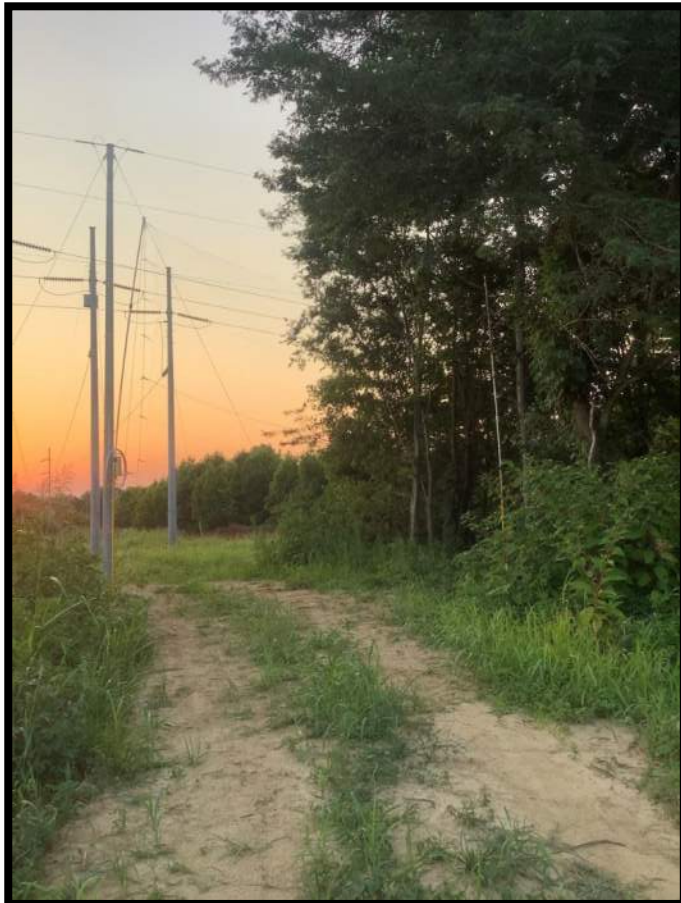


Site 1-Net B





Site 1 Net C



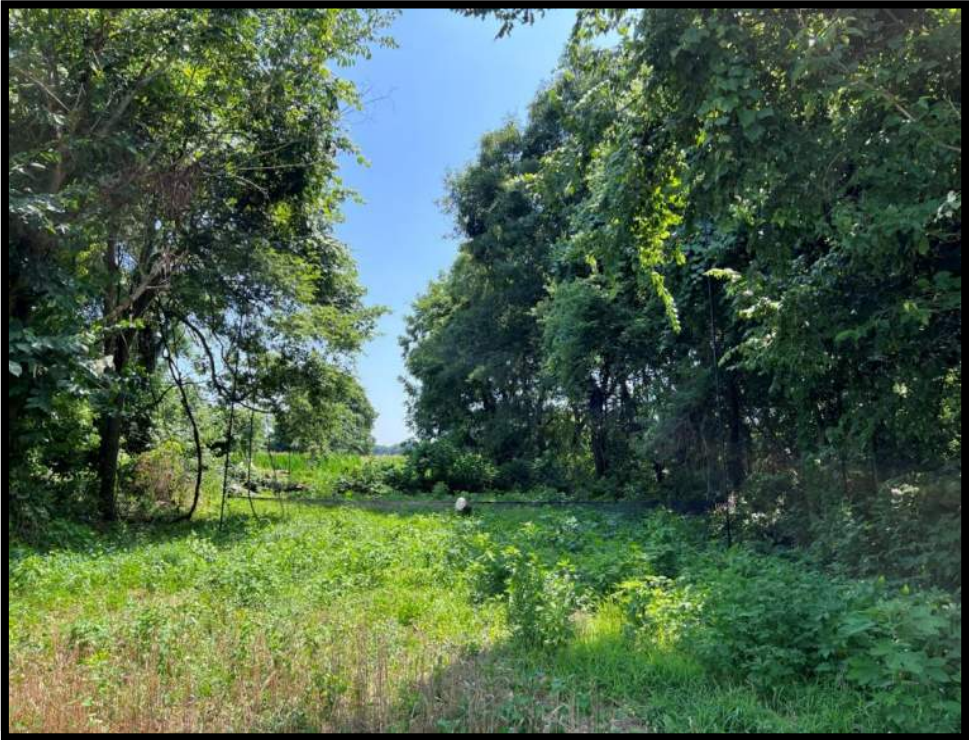
Site 1 Net D



Site 2 Net A



Site 2 Net B



Site 2 Net C



Eastern red bat (*Lasiurus borealis*)

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Chattanooga, TN 37402-2714  
423.414.3551

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400 West Summit Hill Drive, Knoxville, Tennessee 37902

July 15, 2024

Mr. Daniel Elbert  
U.S. Fish and Wildlife Service  
Tennessee Field Office  
446 Neal Street  
Cookeville, Tennessee 38501

Dear Mr. Elbert:

TENNESSEE VALLEY AUTHORITY (TVA) – RIPLEY II SOLAR PROJECT – REQUEST FOR CONCURRENCE – PROJECT CODE: 2024-0096627

The Tennessee Valley Authority (TVA) entered into a power purchase agreement (PPA) with SR Ripley II, LLC, a wholly owned subsidiary of Silicon Ranch Corporation (SRC), in December 2022, to purchase the electric power generated by a proposed solar photovoltaic (PV) facility in Lauderdale County, Tennessee. The solar facility, known as SR Ripley II, would be owned by SRC and operated by SR Ripley II, LLC. The facility would have a generating capacity of 30 megawatts (MW) alternating current (AC). Ripley Power and Light would connect the solar facility to TVA's existing Ripley–Covington 161-kilovolt (kV) transmission line (TL) via a new approximately 0.3-mile-long 34.5-kV dedicated TL called a generation tie (gen-tie) line from a proposed on-site switchgear to the existing on-site Ripley Power and Light East Industrial Park Station (substation). Under the terms of the PPA, TVA would purchase the electricity generated by the solar facility for a term of 20 years, subject to satisfactory completion of all applicable environmental reviews.

In addition to purchasing the electric output under the PPA with SR Ripley II, LLC, TVA also proposes to install fiber-optic overhead ground wire (OPGW) on a 0.75-mile length of the Ripley–Covington 161- kV TL, on portions of the TL that are on the Project Site. Approximately 194 acres of the 490-acre property will be directly impacted by the placement of fencing, panels, roads, and other project components, with approximately four acres of the 194-acre total developed as interior access roads. Approximately 159 additional acres would be cleared outside of this area to reduce shading of solar panels, including the removal of 53 acres of forested habitat. The remaining areas (approximately 137 acres) would be undeveloped, while allowing for related agricultural or vegetation management activities. Specific details about the scope of this project can be found in the draft Environmental Assessment (EA) available online at: <https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/ripley-ii-solar-environmental-assessment>. Threatened and endangered species survey reports can also be found in the appendices at the link provided.

Review of the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) website identified five species listed as federally endangered, proposed endangered, proposed threatened, or candidate for listing under the Endangered Species Act (ESA) that have the potential to occur within the Project Area in Lauderdale County, Tennessee. These species include one insect (monarch butterfly), three mammals (northern long-eared bat (NLEB), Indiana bat, and tricolored bat), and one reptile (alligator snapping turtle) that have the potential to occur within the project boundary based on historic range, proximity to known occurrence records, biological characteristics, and/or physiographic characteristics. No records of these species are known from Lauderdale County according to the TVA Regional Natural Heritage database. No federally designated critical habitats for these species are present within or adjacent to the Project Area, therefore no adverse modification of critical habitats would occur.

Field-based delineations were conducted by HDR in September 2022 and November 2023 and identified 12 wetlands (4.06 acres) and 1 open water body (2.9 acres) within the Project Site. A total of 65 ephemeral stream reaches (23,250 linear feet), 17 intermittent streams (19,932 linear feet), and 1 perennial stream reach (819 linear feet) were also identified. While final site design has not yet been determined, the current design estimates that up to 0.56 acre of forested wetland would be converted to emergent or scrub/shrub wetland to reduce shading of panels. Due to the construction of road crossings using culverts, three intermittent streams totaling an estimated 82 LF and 11 ephemeral streams totaling an estimated 377 linear feet (LF) would be permanently affected. Additionally, the Project would affect 30 ephemeral streams totaling an estimated 8,903 LF due to the placement of solar panels and/or other project components. With the use of proper best management practices (BMPs), Clean Water Act (CWA) Sections 404 and 401 permitting, and compliance with all federal, state, and local regulations, surface water and wetland impacts are expected to be minor.

HDR conducted Phase 1 Habitat Assessments on September 19-22, 2022 and November 1-3, 2023 according to the 2023 Range-Wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines (USFWS, 2023) to determine presence of habitat for Indiana bat, northern long-eared bat, and tricolored bat. No suitable caves or potential winter roosting hibernacula sites were identified within the Project Site. Buildings and culverts on site were surveyed for bat habitat, but none were deemed suitable. The quality of summer roosting bat habitat within the Project Site was based on the presence of potential bat roost trees, solar exposure of those roost trees, density and maturity of the woodland, and proximity to aquatic foraging habitat. There are approximately 53 acres of forested land within the Project Site. Summer roosting habitat ranged from poor to good quality. Dominant tree species within the forested areas along the project boundary include black walnut, black willow, American sycamore, sugar maple, white oak, sugarberry, black cherry, and Osage orange. Thirty-one acres of the total forested habitat was determined to be “good” quality summer roosting habitat and was comprised of mature forests with low density understory. Approximately 15 acres was determined to be “marginal” quality habitat comprised of mixed deciduous forest and had few trees with exfoliating bark. Approximately 7 acres are considered “poor” habitat and were comprised of early successional forests that were too dense for bat travel. Of the forested habitat identified, only the habitat characterized as “good” and “marginal” quality would be considered suitable for summer roosting Indiana bats, northern long-eared bats, and tricolored bats. The wetlands and streams on site offer suitable foraging habitat for all three federally listed bat species. The proposed Project would remove all of the forested habitat within the Project Site. See Appendix C at the aforementioned link for the Bat Habitat Assessment.

Phase 2 Presence/Absence Mist Net Surveys were conducted by Environmental Solutions & Innovations, Inc. (ESI) from June 27-30, 2023, according to the 2023 Range-Wide Indiana Bat



and Northern Long-Eared Bat Survey Guidelines (USFWS, 2023). Based on the amount of forested habitat within the Project Area, two net sites were established. Net site locations were selected by a permitted bat biologist in the field and were based on the best possible net locations (e.g., streams, trails, corridors) that are typically the most effective places to survey. The surveys were conducted at two net sites for a total of 10 net-nights of survey effort. Proposed netting plans were approved by USFWS, Cookeville on June 4, 2023. A total of eight bats were captured during the survey effort. The only species captured was the eastern red bat (*Lasiurus borealis*). No threatened or endangered bats were captured during survey efforts. See Appendix C at the aforementioned link for the Bat Survey Report. In addition, there are no known records of Indiana bats, northern long-eared bats, tricolored bats, or caves within Lauderdale County, Tennessee or within 10 miles of the Project Area. Therefore, ***TVA has determined that proposed actions may affect but are not likely to adversely affect Indiana bat and northern long-eared bat. Also, due to relatively small amount of habitat removal, TVA has determined that the proposed project would not jeopardize the continued existence of the tricolored bat as it is currently listed as a Proposed Endangered species. In anticipation of the expected listing of the tricolored bat as Endangered under the ESA, TVA has also evaluated the potential to impact the species at the individual level. Due to the negative survey results indicating this species is not likely to occur in the project action area, in addition to the relatively small amount of habitat to be removed, TVA has determined that the proposed actions may affect but are not likely to adversely affect the tricolored bat upon its formal listing as Endangered.***

Alligator snapping turtles were not observed on site. The Project Site lacks their preferred habitat of deep water in rivers, sloughs, oxbows, swamps, and lakes and this species is not found in isolated ponds or wetlands. No records of alligator snapping turtle are known within Lauderdale County, Tennessee. Potential project impacts to surface waters are expected to be minimal (up to 0.56 acres of wetlands that may converted from forest to emergent or scrub-shrub wetland to reduce panel shading). Buffers around streams and wetlands as well as other BMPs would be used to protect these features during construction. Due to low likelihood of presence and minimal impacts to marginal habitat, ***TVA has determined that the proposed actions would not jeopardize the continued existence of the alligator snapping turtle.***

Monarch butterflies were not observed within the site during field reviews. No caterpillars or eggs were observed. Proposed impacts may remove small amounts of habitat for this species. Similarly suitable habitat is available across the area, thus loss of the small amounts of habitat on the Project Site would not be significant. Therefore, ***TVA has determined that the proposed actions would not jeopardize the continued existence of monarch butterfly.***

We respectfully request concurrence with our determinations. Should you have any questions or wish to discuss the Project in more detail, please contact Jesse Troxler at @tva.gov.

Sincerely,



W. Douglas White  
Senior Manager  
Biological Compliance

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### Tennessee Ecological Services Field Office

FWS Log No:2024-0096627

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act. If project design changes are made or new information becomes available, please submit new plans for review.

Field Supervisor

Date



400 West Summit Hill Drive, Knoxville, Tennessee 37902

July 15, 2024

Mr. Daniel Elbert  
U.S. Fish and Wildlife Service  
Tennessee Field Office  
446 Neal Street  
Cookeville, Tennessee 38501

Dear Mr. Elbert:

TENNESSEE VALLEY AUTHORITY (TVA) – RIPLEY II SOLAR PROJECT – REQUEST FOR CONCURRENCE – PROJECT CODE: 2024-0096627

The Tennessee Valley Authority (TVA) entered into a power purchase agreement (PPA) with SR Ripley II, LLC, a wholly owned subsidiary of Silicon Ranch Corporation (SRC), in December 2022, to purchase the electric power generated by a proposed solar photovoltaic (PV) facility in Lauderdale County, Tennessee. The solar facility, known as SR Ripley II, would be owned by SRC and operated by SR Ripley II, LLC. The facility would have a generating capacity of 30 megawatts (MW) alternating current (AC). Ripley Power and Light would connect the solar facility to TVA's existing Ripley–Covington 161-kilovolt (kV) transmission line (TL) via a new approximately 0.3-mile-long 34.5-kV dedicated TL called a generation tie (gen-tie) line from a proposed on-site switchgear to the existing on-site Ripley Power and Light East Industrial Park Station (substation). Under the terms of the PPA, TVA would purchase the electricity generated by the solar facility for a term of 20 years, subject to satisfactory completion of all applicable environmental reviews.

In addition to purchasing the electric output under the PPA with SR Ripley II, LLC, TVA also proposes to install fiber-optic overhead ground wire (OPGW) on a 0.75-mile length of the Ripley–Covington 161- kV TL, on portions of the TL that are on the Project Site. Approximately 194 acres of the 490-acre property will be directly impacted by the placement of fencing, panels, roads, and other project components, with approximately four acres of the 194-acre total developed as interior access roads. Approximately 159 additional acres would be cleared outside of this area to reduce shading of solar panels, including the removal of 53 acres of forested habitat. The remaining areas (approximately 137 acres) would be undeveloped, while allowing for related agricultural or vegetation management activities. Specific details about the scope of this project can be found in the draft Environmental Assessment (EA) available online at: <https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/ripley-ii-solar-environmental-assessment>. Threatened and endangered species survey reports can also be found in the appendices at the link provided.

Review of the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) website identified five species listed as federally endangered, proposed endangered, proposed threatened, or candidate for listing under the Endangered Species Act (ESA) that have the potential to occur within the Project Area in Lauderdale County, Tennessee. These species include one insect (monarch butterfly), three mammals (northern long-eared bat (NLEB), Indiana bat, and tricolored bat), and one reptile (alligator snapping turtle) that have the potential to occur within the project boundary based on historic range, proximity to known occurrence records, biological characteristics, and/or physiographic characteristics. No records of these species are known from Lauderdale County according to the TVA Regional Natural Heritage database. No federally designated critical habitats for these species are present within or adjacent to the Project Area, therefore no adverse modification of critical habitats would occur.

Field-based delineations were conducted by HDR in September 2022 and November 2023 and identified 12 wetlands (4.06 acres) and 1 open water body (2.9 acres) within the Project Site. A total of 65 ephemeral stream reaches (23,250 linear feet), 17 intermittent streams (19,932 linear feet), and 1 perennial stream reach (819 linear feet) were also identified. While final site design has not yet been determined, the current design estimates that up to 0.56 acre of forested wetland would be converted to emergent or scrub/shrub wetland to reduce shading of panels. Due to the construction of road crossings using culverts, three intermittent streams totaling an estimated 82 LF and 11 ephemeral streams totaling an estimated 377 linear feet (LF) would be permanently affected. Additionally, the Project would affect 30 ephemeral streams totaling an estimated 8,903 LF due to the placement of solar panels and/or other project components. With the use of proper best management practices (BMPs), Clean Water Act (CWA) Sections 404 and 401 permitting, and compliance with all federal, state, and local regulations, surface water and wetland impacts are expected to be minor.

HDR conducted Phase 1 Habitat Assessments on September 19-22, 2022 and November 1-3, 2023 according to the 2023 Range-Wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines (USFWS, 2023) to determine presence of habitat for Indiana bat, northern long-eared bat, and tricolored bat. No suitable caves or potential winter roosting hibernacula sites were identified within the Project Site. Buildings and culverts on site were surveyed for bat habitat, but none were deemed suitable. The quality of summer roosting bat habitat within the Project Site was based on the presence of potential bat roost trees, solar exposure of those roost trees, density and maturity of the woodland, and proximity to aquatic foraging habitat. There are approximately 53 acres of forested land within the Project Site. Summer roosting habitat ranged from poor to good quality. Dominant tree species within the forested areas along the project boundary include black walnut, black willow, American sycamore, sugar maple, white oak, sugarberry, black cherry, and Osage orange. Thirty-one acres of the total forested habitat was determined to be “good” quality summer roosting habitat and was comprised of mature forests with low density understory. Approximately 15 acres was determined to be “marginal” quality habitat comprised of mixed deciduous forest and had few trees with exfoliating bark. Approximately 7 acres are considered “poor” habitat and were comprised of early successional forests that were too dense for bat travel. Of the forested habitat identified, only the habitat characterized as “good” and “marginal” quality would be considered suitable for summer roosting Indiana bats, northern long-eared bats, and tricolored bats. The wetlands and streams on site offer suitable foraging habitat for all three federally listed bat species. The proposed Project would remove all of the forested habitat within the Project Site. See Appendix C at the aforementioned link for the Bat Habitat Assessment.

Phase 2 Presence/Absence Mist Net Surveys were conducted by Environmental Solutions & Innovations, Inc. (ESI) from June 27-30, 2023, according to the 2023 Range-Wide Indiana Bat

and Northern Long-Eared Bat Survey Guidelines (USFWS, 2023). Based on the amount of forested habitat within the Project Area, two net sites were established. Net site locations were selected by a permitted bat biologist in the field and were based on the best possible net locations (e.g., streams, trails, corridors) that are typically the most effective places to survey. The surveys were conducted at two net sites for a total of 10 net-nights of survey effort. Proposed netting plans were approved by USFWS, Cookeville on June 4, 2023. A total of eight bats were captured during the survey effort. The only species captured was the eastern red bat (*Lasiurus borealis*). No threatened or endangered bats were captured during survey efforts. See Appendix C at the aforementioned link for the Bat Survey Report. In addition, there are no known records of Indiana bats, northern long-eared bats, tricolored bats, or caves within Lauderdale County, Tennessee or within 10 miles of the Project Area. Therefore, ***TVA has determined that proposed actions may affect but are not likely to adversely affect Indiana bat and northern long-eared bat. Also, due to relatively small amount of habitat removal, TVA has determined that the proposed project would not jeopardize the continued existence of the tricolored bat as it is currently listed as a Proposed Endangered species. In anticipation of the expected listing of the tricolored bat as Endangered under the ESA, TVA has also evaluated the potential to impact the species at the individual level. Due to the negative survey results indicating this species is not likely to occur in the project action area, in addition to the relatively small amount of habitat to be removed, TVA has determined that the proposed actions may affect but are not likely to adversely affect the tricolored bat upon its formal listing as Endangered.***

Alligator snapping turtles were not observed on site. The Project Site lacks their preferred habitat of deep water in rivers, sloughs, oxbows, swamps, and lakes and this species is not found in isolated ponds or wetlands. No records of alligator snapping turtle are known within Lauderdale County, Tennessee. Potential project impacts to surface waters are expected to be minimal (up to 0.56 acres of wetlands that may converted from forest to emergent or scrub-shrub wetland to reduce panel shading). Buffers around streams and wetlands as well as other BMPs would be used to protect these features during construction. Due to low likelihood of presence and minimal impacts to marginal habitat, ***TVA has determined that the proposed actions would not jeopardize the continued existence of the alligator snapping turtle.***

Monarch butterflies were not observed within the site during field reviews. No caterpillars or eggs were observed. Proposed impacts may remove small amounts of habitat for this species. Similarly suitable habitat is available across the area, thus loss of the small amounts of habitat on the Project Site would not be significant. Therefore, ***TVA has determined that the proposed actions would not jeopardize the continued existence of monarch butterfly.***

We respectfully request concurrence with our determinations. Should you have any questions or wish to discuss the Project in more detail, please contact Jesse Troxler at @tva.gov.

Sincerely,



W. Douglas White  
Senior Manager  
Biological Compliance

**Appendix D – Cultural Resources-Related Correspondence and  
Supporting Information**

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PHASE I ARCHAEOLOGICAL SURVEY OF  
RIPLEY II SOLAR PROJECT  
LAUDERDALE COUNTY, TENNESSEE

PREPARED BY  
TERRAXPLORATIONS, INC.

PREPARED FOR  
HDR ENGINEERING, INC.  
AND  
SILICON RANCH CORPORATION



MARCH 2024

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Tuscaloosa, Alabama 35404  
[www.terraxplorations.com](http://www.terraxplorations.com)

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120 Brentwood Commons Way  
Suite 525, Brentwood, Tennessee, 37207

Silicon Ranch Corporation  
222 Second Ave S.  
Suite 1900, Nashville, Tennessee, 37201

A PHASE I ARCHAEOLOGICAL SURVEY OF RIPLEY II SOLAR PROJECT,  
LAUDERDALE COUNTY, TENNESSEE

BY

TERRY BARBOUR  
ELIZABETH SOUTHARD

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AND

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222 SECOND AVE S.  
SUITE 1900, NASHVILLE, TENNESSEE, 37201

CO-PRINCIPAL INVESTIGATORS  
TERRY BARBOUR



ELIZABETH SOUTHARD



TERRAX REPORT NO. 2022.153

MARCH 2024

FINAL REPORT

## MANAGEMENT SUMMARY

TerraXplorations, Inc. (TerraX) of Tuscaloosa, Alabama was contracted by HDR Engineering, Inc. (HDR) of Chattanooga, Tennessee to conduct a Phase I archaeological survey ahead of the Ripley II solar energy array project. The survey area is located in a rural setting southeast of Ripley, Tennessee. The primary purpose of the Phase I archaeological resources survey was to locate and evaluate the eligibility of any archaeological resources (artifacts or features  $\geq 50$  years old) within the survey area for nomination to the National Register of Historic Places (NRHP). The Area of Potential Effects (APE) is defined by Title 36 Code of Federal Regulations (CFR) § 800.16(d) as the geographic area or areas within which a project may directly or indirectly cause alterations in the character or use of historic properties. To encompass all potential improvements, the APE was defined to include the project footprint and a buffer of 0.5 mile. The project footprint, where potential direct impacts from the project would occur, includes the proposed 434.6 acres (ac) (175.87 hectares [ha]) solar facility footprint known as the Ripley II Site.

The archaeological survey was conducted between November 14 and December 23, 2022. The survey was directed by Principal Investigators Elizabeth Southard, RPA, and Terry Barbour, RPA. The survey crew included Wade Tidwell, RPA (Field Director), Christopher Rivers, Kevin Rowland, Michael Gonzalez, Cory Rice, Vincent Barbaretta, and Todd Cote. The field survey was completed with a total of approximately 984 person-hours. A search of the records maintained by the Tennessee Division of Archaeology (TDOA) conducted prior to fieldwork revealed three previously identified sites were within the project footprint (40LA216, 40LA217, and 40LA218). Each site is classified as a historic-rural domestic artifact scatter.

There were two components to the archaeological survey of the project footprint. The first consisted of a shovel testing regime at locations where GeoTech coring was to occur. The second was a visual inspection and systematic shovel testing regime of the project footprint. An archaeological survey of the proposed GeoTech bore hole locations was conducted on December 1<sup>st</sup>–2<sup>nd</sup>, 2022. The survey of bore hole locations was completed in approximately 24 person-hours. In coordination with the TDOA, a records search was conducted prior to fieldwork. The background research revealed no previously recorded archaeological sites intersected the 20 bore hole locations and no previously conducted cultural resource surveys intersected these locations. Each of the bore hole locations were investigated via a combination of visual inspection, shovel testing, and auger testing. Of the 20 investigated bore hole location areas, all were negative for cultural material. Furthermore, no cultural material was recovered during shovel testing or identified on the surface in the immediate area of each proposed bore hole location.

The entire project footprint was surveyed via pedestrian walk-over and shovel testing. Shovel testing consisted of 965 shovel tests, with an additional 189 delineation tests. Shovel tests produced 949 negative tests, 11 positives, and five no digs. No digs occurred in areas of standing water, roadbeds, and slopes greater than 15 percent rise where a 5-meter (m) offset was not possible. The delineation tests produced 156 negative tests, 22 positives, and 11 no digs. As a result of the survey, a total of three archaeological sites (40LA232, 40LA233, and 40LA231), five isolated finds (IF) (IF-1, IF-2, IF-3, IF-4, and IF-5), and three field loci (Field Locus [FL]-1, FL-6, and FL-15) were recorded within the survey area. Additionally, three previously recorded sites (40LA216, 40LA217, and 40LA218) within the project footprint were relocated by the current survey efforts. The historic artifacts from relocated sites during the current investigation are consistent with the historic artifact assemblages from the previous investigation (see Bradley and Mohr 2015). As a result, the findings from this investigation were incorporated into those previously identified sites. The site boundaries of 40LA217 and 40LA218 were slightly expanded through delineation efforts. TerraX recommends no change to the NRHP status of not eligible for these three resources. Sites 40LA216, 40LA217, and 40LA218 will be directly impacted physically by the Ripley II project. However, no further work is recommended at these sites since all lack integrity and significant data potential.

Of the three newly identified sites, 40LA232 and 40LA233 are multi-component artifact scatters. The historic components date to 1930 for 40LA232 and 1947 for 40LA233, based on the historic topographic map and aerial review, and artifactual analysis. Until the late-twentieth century, several structures were located within the 40LA232 and 40LA233 site areas. The Precontact components associated with these sites consist of

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PHASE I ARCHITECTURAL SURVEY  
OF RIPLEY II SOLAR PROJECT  
LAUDERDALE COUNTY, TENNESSEE

PREPARED BY  
TERRAXPLORATIONS, INC.

PREPARED FOR  
HDR ENGINEERING, INC. AND  
THE SILICON RANCH CORPORATION



✓ Helping our clients through  
the cultural resource process

★ Doing the best job  
in every situation

➔ Advancing  
our employees

APRIL 2024

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1096 16th Ave. N  
St. Petersburg, Florida 33704  
TerraXplorations.com

HDR Engineering, Inc.  
120 Bentwood Commons Way Suite 525  
Bentwood, Tennessee 37207

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Nashville, Tennessee 37201

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PHASE I ARCHITECTURAL RESOURCES SURVEY  
OF RIPLEY II SOLAR PROJECT  
LAUDERDALE COUNTY, TENNESSEE

BY

BRIANE SHANE, TERRY BARBOUR, ELIZABETH SOUTHARD,  
DAVID DOBBS, SAMUEL JOHNSON, AND MARGARET SCHULTZ

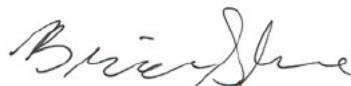
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PRINCIPAL INVESTIGATOR

BRIANE SHANE



TERRAX PROJECT NUMBER  
23200

APRIL 2024  
FINAL REPORT

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400 West Summit Hill Drive, Knoxville, Tennessee 37902

May 25, 2023

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

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA), RIPLEY SOLAR, PHASE I ARCHAEOLOGICAL SURVEY, LAUDERDALE COUNTY, TENNESSEE (35.7219600 -89.4849059) (TVA TRACKING - CRMS 32898998595)

In September 2022, TVA consulted with your office regarding the proposal to enter into a Power Purchase Agreement with SR Ripley II, LLC. for an approximately 30-megawatt solar photovoltaic (PV) generating facility in Lauderdale County, Tennessee. TVA considers the area of potential effects (APE) to be the footprint where the solar array is to be constructed, any associated infrastructure and access roads as well as a 0.5-mile radius surrounding the solar arrays footprint with unobstructed view to the project area. In order to provide flexibility in design, the survey area encompasses approximately 507 acres.

SR Ripley II, LLC contracted HDR Engineering, Inc. (HDR) to conduct an archaeological survey. Attached is the resulting report titled *Phase I Archaeological Survey of Ripley II Solar Project, Lauderdale County, Tennessee*. A separate report and letter will be to your office regarding the results of the architectural survey.

HDR identified six new archaeological sites (Field Site [FS]-1, 40LA232, 40LA233, FS-6, 40LA231, and FS-15) and five isolated finds within the APE. Of the six newly identified sites, three were assigned state site numbers from the Tennessee Department of Archaeology (Sites 40LA232, 40LA233, and 40LA231). Sites not given a state trinomial site number are referred to by their alpha-numeric field site (FS) designation. Additionally, three previously recorded sites (40LA216, 40LA217, and 40LA218), were revisited. HDR recommends two of the six newly identified archaeological sites, FS-1 and FS-6, and all five of the isolated finds are not eligible for the National Register of Historic Places (NRHP) due to lack of integrity and/or limited data potential. The surveyed portions of sites 40LA232 and 40LA233 lack sufficient integrity and research potential for NRHP eligibility as they have been extensively disturbed by construction and demolition episodes, as well as agricultural activities. Given that each site was not able to be fully delineated due to survey area constraints, HDR recommends these sites' eligibility be listed as unknown/unassessed for NRHP inclusion under Criterion D, however, the proposed undertaking would have no adverse effects to the portion of the sites within the APE. HDR

Mr. E. Patrick McIntyre, Jr.  
Page 2  
May 25, 2023

recommends no change to the NRHP status of not eligible for the three previously recorded resources.

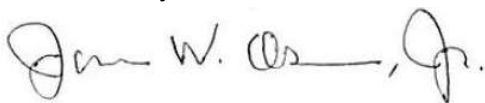
Site 40LA231 and the Wood Family Cemetery (FS-15) have been determined to possibly retain significant data potential and integrity to warrant eligibility for NRHP inclusion. Therefore, HDR has recommended that sites 40LA231 and the Wood Family Cemetery (FS-15) be avoided. TVA has read the enclosed report and agrees with the authors' recommendations. The boundaries of sites 40LA231 and FS-15, along with a 20-meter buffer, have been added to the "exclusion area" within the project boundary (see attached map). SR would avoid these exclusion areas and would not allow any development, disturbance, or other construction activities associated with the development of the project or future activities associated with the operation and maintenance of the solar array. In order to ensure avoidance of the site during the life of the project, SR and TVA would sign the attached draft legal agreement. TVA finds that, with the proposed avoidance plan, the undertaking would have no adverse effects to historic properties.

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(b) we are notifying you of TVA's finding of no adverse effect, providing the documentation specified in § 800.11(e); and inviting you to review the finding. Also, we are seeking your agreement with TVA's eligibility determinations and finding that the undertaking as currently planned will have no adverse effects on historic properties.

Please contact Michaelyn Harle by telephone (865) 632-2248 or by email, [mharle@tva.gov](mailto:mharle@tva.gov) with your comments.

Sincerely,



James W. Osborne, Jr.  
Manager  
Cultural Compliance

MSH:ERB

Enclosures

cc (Enclosures):

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



400 West Summit Hill Drive, Knoxville, Tennessee 37902

May 30, 2023

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

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA), RIPLEY SOLAR, PHASE I ARCHITECTURAL SURVEY, LAUDERDALE COUNTY, TENNESSEE (35.7219600 -89.4849059)(TVA TRACKING - CRMS 32898998595)

In September 2022, TVA consulted with your office regarding the proposal to enter into a Power Purchase Agreement with SR Ripley II, LLC. for an approximately 30-megawatt solar photovoltaic (PV) generating facility in Lauderdale County, Tennessee. TVA recommends that the area of potential effects (APE) be considered as the area of proposed ground-disturbance, where physical effects could occur, as well as areas within a half-mile radius of the project within which the project would be visible, where visual effects on above-ground resources could occur.

SR Ripley II, LLC. (SR) contracted TerraXplorations, Inc. (TerraX) to conduct an architectural survey. Attached is the resulting report titled *Phase I Architectural Resources Survey of Ripley II Solar Project, Lauderdale County, Tennessee*. A separate consultation letter was previously sent to your office regarding the results of the Phase I archaeological survey.

TerraX identified 114 primary historic-age architectural resources within the APE, all of which are newly recorded and include 111 individual buildings (HS-1 – HS-111), two historic districts (HS-113 and HS-114), and one cemetery (HS-112). TerraX recommends that HS-112 – HS-114 are eligible for listing in the National Register of Historic Places (NRHP). The Crescent Heights Historic District (HS-113), consisting of 18 contributing resources (HS-26 – HS-43), is recommended under Criteria A and C as it reflects the growth of public-funded housing in Ripley during the mid-century. The Robinson Subdivision Historic District (HS-114), with 22 contributing resources (HS-55 – HS-76), is recommended eligible under Criteria A and C as it reflects the growth and expansion of Ripley, specifically postwar suburban development design. As part of the undertaking, no property will be acquired from either of the historic districts and no historic fabric associated with the resources will be removed or altered by the project. Crescent Heights is located 0.23 mile to the southeast of the historic district with a line of trees between the proposed project area and the historic district creating a visual buffer between the proposed project area. Regarding the Robinson Subdivision, there is a visual buffer of trees along the southeast edge of the district and the northwest edge of the proposed project minimizing

Mr. E. Patrick McIntyre, Jr.  
Page 2  
May 30, 2023

viewshed effects. TerraX recommends that the proposed undertaking will have no adverse effect on the Crescent Heights or Robinson Subdivision Historic Districts.

TerraX determined the Wood Family Cemetery (FS-15) eligible for NRHP inclusion. In a previous letter regarding the results of the archaeological survey, TVA stated that SR will avoid the cemetery with a 20-meter buffer. This exclusion area would not allow any development, disturbance, or other construction activities associated with the development of the project or future activities associated with the operation and maintenance of the solar array. In our previous letter, TVA provided the draft legal agreement for avoidance of historic properties within the project footprint. TVA finds that, with the proposed avoidance plan, the undertaking would have no adverse effects to FS-15.

TerraX recommends the remaining 71 historic structures not eligible due to lack the historical significance and architectural distinction. TVA has read the enclosed report and agrees with the recommendations of the authors that HS-112 and HS-113 are eligible for the NRHP. TVA does not agree with TerraX that HS-114 (The Robinson Subdivision Historic District) is eligible for listing under Criteria A and C. The report did not provide enough information to conclusively state that the Robinson Subdivision was a planned development that met the Federal Housing Association (FHA) requirements. The Robinson Subdivision lacks features required by the FHA in a planned development. FHA developed subdivisions had detailed requirements that must be met. The guidelines set forth by the FHA created a subdivision with a sense of enclosure or a sequestered street system from existing roads by the means of one or at the most three ingress/egress for the purpose of a sense of security. FHA standards included a main entrance route, side streets that led off the main street, loop streets, curvilinear streets, and cul-de-sacs with consistent setbacks. The Robinson Subdivision features one loop street that carries two names, Robinson Drive and Lynn Street that merge. There are not side streets that merge unto the main entrance street in the Robinson Subdivision. Additionally, setbacks are not consistent. FHA required all subdivisions to have deed restrictions and covenants. Research has not confirmed this is an FHA planned subdivision or if the plat for the Robinson Subdivision references the required deed restrictions and covenants required by FHA. Thus, TVA finds the Robinson Subdivision is not meet the requirements for Criterion A, as it is not associated with significant events or patterns in the community history or a group of residents who have made significant contributions to the history of the town or county. The Robinson Subdivision is not significant for its architecture as a planned subdivision under Criterion C. There is no evidence to support the residential houses were designed by architects or developers which would lend the design significance in relation to a local context. Furthermore, for architecture to be significant as part of a planned subdivision the organization of space must be expressed as it is an essential element in subdivision planning. TVA finds Robinson Subdivision lacks historical and architectural integrity. The architectural changes to the residential houses occurred after the subdivision was fully developed and has a direct effect on the historical integrity. The cumulative effect of multiple dwelling alterations detracts from the overall integrity of the Robinson Subdivision.

Mr. E. Patrick McIntyre, Jr.  
Page 3  
May 30, 2023

TVA does agree with TerraX that the proposed undertaking would not adversely affect HS-113 (or HS-114 should it be considered eligible) due to the vegetation buffer that would minimize viewshed effects and that the proposed undertaking would not affect the location, design, materials, and workmanship conveyance of the property's significance under Criterion C.

Pursuant to 36 CFR Part 800.5(c) we are notifying you of TVA's finding of no adverse effect; providing the documentation specified in § 800.11(e); and inviting you to review the finding. Also, we are seeking your agreement with TVA's eligibility determinations and finding that the undertaking as currently planned will have no adverse effects on historic properties. TVA agrees that the proposed undertaking would have no effect to historic properties. Please contact Michaelyn Harle by telephone (865) 632-2248 or by email, [mharle@tva.gov](mailto:mharle@tva.gov) with your comments.

Sincerely,



Michaelyn Harle  
Supervisor, Cultural Projects Reviews  
Cultural Compliance

MSH:ERB

Enclosures

cc (Enclosures):

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

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---

**From:** TN Help <[tnhelp@service-now.com](mailto:tnhelp@service-now.com)>

**Sent:** Friday, June 16, 2023 1:49 PM

**To:** Beliles, Emily <[ebeliles@tva.gov](mailto:ebeliles@tva.gov)>

**Cc:** Harle, Michaelyn S <[mharle@tva.gov](mailto:mharle@tva.gov)>

**Subject:** Ripley Solar Project, CRMS 32898998595 - Project # SHPO0001869

---

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[www.tnhistoricalcommission.org](http://www.tnhistoricalcommission.org)

2023-06-16 07:43:49 CDT

Michaelyn Harle  
TVA

RE: Tennessee Valley Authority (TVA), Ripley Solar Project, CRMS 32898998595,

Project#: SHPO0001869, Lauderdale County, TN

Dear Michaelyn Harle:

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

Based on the information provided, we concur that the Crescent Heights Historic District (HS 113) is eligible for listing in the National Register of Historic Places. We further concur that the Robinson Subdivision (HS 114) is not eligible for listing in the National Register of Historic Places. Our office did not have enough information to make eligibility determinations on Forerunner Baptist Church (HS 99 and HS 100) or the Wood Family Cemetery (HS 112). The two properties associated with Forerunner Baptist Church should be more fully evaluated for potential significance under Criterion A. If this is an African American church, then the property should also be evaluated for National Register eligibility under the "Historic Rural African-American Churches in Tennessee, 1850-1970" Multiple Property Documentation Form. More context on the settlement history of this area and the family are needed to evaluate the eligibility of the Wood Family Cemetery.

To help assess effects please resubmit the avoidance area for the Wood Family Cemetery that shows both the buffer area and cemetery boundary. It would also be helpful to submit additional information about the solar project (ie. height of solar arrays and confirmation that no taller structures are planned for the project area and if there are, where they will be located and how tall they will be) since many of the historic resources or potential historic resources are close to the project boundary.

Include the Project # if you need to submit any additional information regarding this undertaking. Questions and comments may be directed to Casey Lee, who drafted this response, at [Casey.Lee@tn.gov](mailto:Casey.Lee@tn.gov), +16152533163. We appreciate your cooperation.

Sincerely,



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



**From:** [TN Help](#)  
**To:** [Beliles, Emily](#)  
**Cc:** [Harle, Michaelyn S](#)  
**Subject:** Ripley Solar Project, CRMS 32898998595 - Project # SHPO0001869  
**Date:** Tuesday, February 6, 2024 10:21:40 AM  
**Attachments:** [State Seal for TDEC.pngx](#)  
[patricksignature.pngx](#)

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[www.tnhistoricalcommission.org](http://www.tnhistoricalcommission.org)

2024-02-05 13:25:02 CST

Micahelyn Harle

RE: Tennessee Valley Authority (TVA), Architecture Review, Ripley Solar Project, CRMS 32898998595, Project#: SHPO0001869, , Lauderdale County, TN

Dear Micahelyn Harle:

We have reviewed the revised architectural survey report you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act.

We still require additional information before we can concur with the effects assessment for the Wood Family Cemetery. As previously requested, we require a map that shows the cemetery boundary as well as the 20 meter buffer. The map provided on page 525 of the report only shows an avoidance area. We require this additional information as the TVA is assuming the Wood Family Cemetery is eligible under Criterion A for settlement. Therefore, setting is an important aspect of integrity to consider when assessing effects. Our office needs to know how much vegetation cover is between the cemetery and the proposed undertaking.

Our office concurs that the Crescent Heights Historic District, Forerunner Baptist

Church, and Rice Park Office Building are eligible and will not be adversely affected by the proposed undertaking.

Upon receipt of this additional documentation, we will continue our review of this undertaking as quickly as possible. Please be advised that until this office has provided you a final written comment on this undertaking, you have not met your Section 106 obligation under federal law. Include the Project # when submitting additional information regarding this undertaking. Questions and comments may be directed to Casey Lee, who drafted this response, at + . We appreciate your cooperation.

Sincerely,



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

Ref:MSG12187456\_6ufxJMuI715tTTNQR8p

**From:** [Harle, Michaelyn S](#)  
**To:** [McLamb, Erica S](#); [Nichols, Kristi](#)  
**Subject:** FW: Ripley Solar Project, CRMS 32898998595 - Project # SHPO0001869  
**Date:** Friday, March 1, 2024 1:22:06 PM  
**Attachments:** [State Seal for TDEC.png](#)  
[patricksignature.png](#)

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FYI

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**From:** TN Help  
**Sent:** Friday, March 1, 2024 11:03 AM  
**To:** Beliles, Emily  
**Cc:** Harle, Michaelyn S  
**Subject:** Ripley Solar Project, CRMS 32898998595 - Project # SHPO0001869

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03-01-2024 10:02:12 CST

Micahelyn Harle  
TVA

RE: Tennessee Valley Authority (TVA), Ripley Solar Project, CRMS 32898998595,  
Project#: SHPO0001869, Lauderdale County, TN

Dear Micahelyn Harle:

In response to your request, we have reviewed the archaeological report of investigations and accompanying documentation submitted by you regarding the

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

Considering the information provided, we concur that no archaeological resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Complete and/or updated Tennessee Site Survey Forms should be submitted to the Tennessee Division of Archaeology for all sites recorded and/or revisited during the current investigation. Please provide your Project # when submitting any additional information regarding this undertaking. Questions or comments may be directed to Jennifer Barnett, who drafted this response, at

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Your cooperation is appreciated.

Sincerely,



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

Ref:MSG12675132\_NtHgknjthWli2IMoK1Z

March 26, 2024

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

Dear Mr. McIntyre:

REPLY: TENNESSEE VALLEY AUTHORITY (TVA), RIPLEY II SOLAR, WOOD FAMILY CEMETERY, LAUDERDALE COUNTY, TENNESSEE (35.7219600 -89.4849059) (TVA TRACKING - CRMS 32898998595) (Project#: SHPO0001869)

By this letter, TVA is responding to your February 5<sup>th</sup>, 2024, letter regarding TVA's finding that no historic architectural properties would be affected by TVA's proposal to enter into a Power Purchase Agreement with SR Ripley II, LLC. for an approximately 30-megawatt solar photovoltaic generating facility in Lauderdale County, Tennessee. In your letter you concurred that the Crescent Heights Historic District, Forerunner Baptist Church, and Rice Park Office Building are eligible and will not be adversely affected by the proposed undertaking. You also requested additional information regarding the effects assessment for the Wood Family Cemetery, specifically effects to the setting of the cemetery. In your letter, you state, "We require this additional information as the TVA is assuming the Wood Family Cemetery is eligible under Criterion A for settlement. Therefore, setting is an important aspect of integrity to consider when assessing effects. Our office needs to know how much vegetation cover is between the cemetery and the proposed undertaking."

TerraX originally recommended Wood Family Cemetery eligible under Criteria A and D, which TVA agreed. Based on further discussion with your office, it is TVA's opinion that the Wood Family Cemetery does not retain sufficient integrity to be eligible under Criterion A. Although background research found that the Wood Family Cemetery is one of the oldest cemeteries established within the Ripley area and some of the first Euro-American settlers of Lauderdale County may be interred within the cemetery boundaries, additional research would be required to determine the burial location of Sabret and Mary Wood, as well as various other family members. As no markers are retained, the location of their interment is unknown within the cemetery boundaries. In addition, background research suggests that the family did not have a significant impact on settlement patterns, exploration, or development of Lauderdale County or Ripley. Therefore, it is TVA's opinion that the Wood Family Cemetery does not rise to the level of significance to make the resource eligible under Criteria A or B. Further, the cemetery lacks its integrity of setting, design, materials, workmanship, and feeling. No grave markers or cemetery boundaries are extant on the property and property has not been maintained. The internal setting of the cemetery has been diminished due to the lack of maintenance resulting in

Mr. E. Patrick McIntyre, Jr.  
Page 2  
March 26, 2024

the apparent total loss of boundary features, above-grade grave markers, or other distinguishing features of a cemetery. Currently there is a dense stand of trees on the eastern half of the cemetery that first appears in the 1947 aerial. While TVA finds that the cemetery is not associated with significant events or retains integrity to warrant an eligibility determination under Criterion A, TVA still maintains that the resource could be eligible under Criteria Consideration D as an archaeological resource, for the potential research value into early-settler burial patterns. Given the 20-meter ground disturbance buffer, the proposed undertaking would not effect the Wood Cemetery should it be eligible under Criterion D.

With this additional information in place, TVA maintains the proposed undertaking would not adversely affect historic properties.

Pursuant to 36 CFR Part 800.5(c) we are notifying you of TVA's finding of no adverse effect, providing the documentation specified in § 800.11(e); and inviting you to review the finding. Also, we are seeking your agreement with TVA's revised eligibility determination for Wood Cemetery and finding that the undertaking as currently planned would have no effect to the Wood Cemetery should it be eligible under Criterion D.

If you have any questions, please contact Michaelyn Harle by email, [mharle@tva.gov](mailto:mharle@tva.gov).

Sincerely,



Michaelyn Harle  
Manager, Cultural Projects Reviews  
Cultural Compliance

MSH:ERB

**From:** [McLamb, Erica S](#)  
**To:** [Williams, Karsen](#)  
**Cc:** [RichardsonSeacat, Harriet](#)  
**Subject:** FW: Ripley Solar Project, CRMS 32898998595 - Project # SHPO0001869  
**Date:** Thursday, March 28, 2024 6:58:05 AM  
**Attachments:** [State Seal for TDEC.pngx](#)  
[patricksignature.pngx](#)

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**From:** TN Help  
**Sent:** Wednesday, March 27, 2024 12:09 PM  
**To:** Beliles, Emily  
**Cc:** Harle, Michaelyn S  
**Subject:** Ripley Solar Project, CRMS 32898998595 - Project # SHPO0001869

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[www.tnhistoricalcommission.org](http://www.tnhistoricalcommission.org)

2024-03-27 11:04:42 CDT

Michaelyn Harle  
TVA

RE: Tennessee Valley Authority (TVA), Architecture Review, Ripley Solar Project, CRMS 32898998595, Project#: SHPO0001869, , Lauderdale County, TN

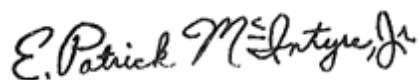
Dear Michaelyn Harle:

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

Based on the additional information provided, we concur that the Wood Family Cemetery is not eligible under Criteria A and B as due to lack of significance. We still concur that the Crescent Heights Historic District, Forerunner Baptist Church, and Rice Park Office Building will not be adversely affected by the undertaking.

This office has no objection to the implementation of this project as currently planned. If project plans are changed, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Include the Project # if you need to submit any additional information regarding this undertaking. Questions and comments may be directed to Casey Lee, who drafted this response, at \_\_\_\_\_, +1 \_\_\_\_\_. We appreciate your cooperation.

Sincerely,



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

Ref:MSG13121543\_afQYJjFoN9CVGohPuLd





400 West Summit Hill Drive, Knoxville, Tennessee 37902

April 29, 2024

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), RIPLEY SOLAR, FINAL REPORT, LAUDERDALE COUNTY, TENNESSEE (35.7219600 -89.4849059)(TVA TRACKING - CRMS 32898998595) \* SHPO0001869)

Please find enclosed the final report titled *Phase I Archaeological Survey of Ripley II Solar Project, Lauderdale County, Tennessee*. An electronic version has also been submitted to your office. TVA received concurrence from your office for this undertaking in a letter dated March 27, 2024.

This fulfills TVA's obligations under section 106 for this project. If project plans are altered or there are inadvertent discoveries during construction, TVA will consult with your office. If you have any questions or comments, please contact Michaelyn Harle at [mharle@tva.gov](mailto:mharle@tva.gov).

Sincerely,

A handwritten signature in black ink that reads "Michaelyn Harle". The signature is written in a cursive, flowing style.

Michaelyn Harle  
Manager, Cultural Projects Reviews  
Cultural Compliance

MSH:ERB

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Tennessee Valley Authority  
400 W. Summit Hill Drive  
Knoxville, TN 37902

## **Re: Ripley II Solar Agreement to Avoid Potential Historic Properties and Family Cemetery**

Tennessee Valley Authority (TVA) entered into a power purchase agreement (PPA) with SR Ripley II, LLC, a wholly owned subsidiary of Silicon Ranch Corporation, on December 26, 2022, to purchase the electric power generated by a proposed 30-megawatt solar photovoltaic (PV) facility in Lauderdale County, Tennessee, for a term of 20 years. The associated construction, operation, and maintenance of the solar PV facility, known as the Ripley II Solar Project, are herein referred to as the Undertaking.

To help fulfill TVA's Section 106 responsibilities under the National Historic Preservation Act, SR Ripley II, LLC conducted Phase I cultural resources surveys of the area of potential effects (APE). The Phase I cultural resources survey identified one archaeological site (40LA231) within the APE that has unknown eligibility for listing on the National Register of Historic Places (NRHP) and one historic cemetery (Wood Family cemetery; FS-15) that is ineligible for listing under the NHPA. These two sites (40LA231 and FS-15) should either be avoided by the Undertaking or further evaluated or tested. SR Ripley II, LLC's affiliate owns the property that includes these sites, although the Wood family cemetery also occupies a portion of the adjoining property to the east, which is not owned by any affiliate of SR Ripley II, LLC. As shown on the attached map figure depicting the solar PV facility layout and the location of the sites, SR Ripley II, LLC excluded these areas from development, disturbance, and other activities associated with the Undertaking, including future activities associated with the operation and maintenance of the solar PV facility.

To further ensure that the sites are adequately protected during the Undertaking, SR Ripley II, LLC and TVA agree that of the Undertaking will not disturb these two sites for the entire 20-year term of the PPA without TVA's review and, as necessary, consultation with the Tennessee Historical Commission, acting as the state historic preservation officer, and federally recognized Indian tribes with an interest in the Undertaking. If warranted at a future time, during the term of the PPA, such consultation would be conducted in accordance with applicable federal regulations prior to any disturbance of these sites by the Undertaking.

TVA agrees that, with avoidance by the Undertaking of the one archaeological site of unknown NRHP eligibility and the one historic cemetery during the life of the Undertaking, there will be



no effect on these historic properties in connection with the Undertaking. TVA and SR Ripley II, LLC further agree that avoidance of these sites by the Undertaking will adequately protect these sites from any potential negative effects of the Undertaking.

Sincerely,

Luke Wilkinson  
SVP, Project Development  
SR Ripley II, LLC

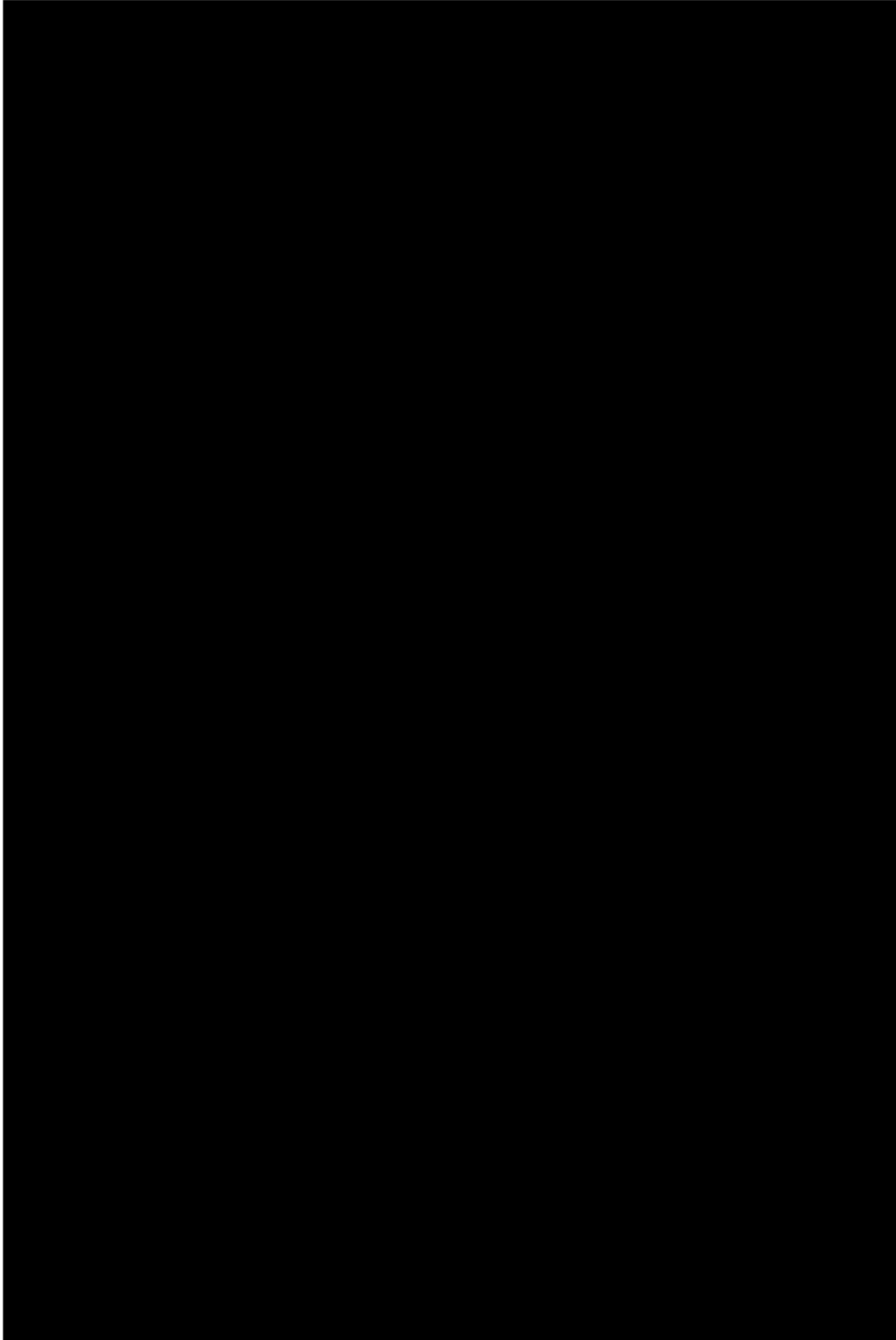
ACCEPTED AND AGREED

THIS 13 DAY OF November 2024

Tennessee Valley Authority

BY: Ying P. Ayliffe

ITS: \_\_\_\_\_



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# 1048TN-SR Ripley II\_Archaeological Avoidance agreement\_10.1.24

Final Audit Report

2024-10-02

Created:	2024-10-02
By:	Chris Eidman (chris.eidman@siliconranch.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA4fOhFhHY-3FOjbaTDI5OCF8K633hQJnB

## "1048TN-SR Ripley II\_Archaeological Avoidance agreement\_10.1.24" History

-  Document created by Chris Eidman (chris.eidman@siliconranch.com)  
2024-10-02 - 4:16:59 PM GMT- IP address: 24.11.27.231
-  Document emailed to luke.wilkinson@siliconranch.com for signature  
2024-10-02 - 4:18:04 PM GMT
-  Email viewed by luke.wilkinson@siliconranch.com  
2024-10-02 - 4:42:06 PM GMT- IP address: 152.39.222.87
-  Signer luke.wilkinson@siliconranch.com entered name at signing as Luke Wilkinson  
2024-10-02 - 4:42:34 PM GMT- IP address: 99.42.9.157
-  Document e-signed by Luke Wilkinson (luke.wilkinson@siliconranch.com)  
Signature Date: 2024-10-02 - 4:42:36 PM GMT - Time Source: server- IP address: 99.42.9.157
-  Agreement completed.  
2024-10-02 - 4:42:36 PM GMT

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**Appendix E – Public Notice and Draft Environmental Assessment  
Public Comments**

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## YOU'RE INVITED

# TVA Wants Your Comments on the Ripley II Solar Project

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As a neighbor of the area for the proposed Ripley II Solar Project, Tennessee Valley Authority (TVA) would like to hear from you. TVA is conducting a public comment period on the Draft Environmental Assessment (EA) for the purchase of electricity generated by the proposed Ripley II Solar Project in Lauderdale County, TN. The EA will assess the potential environmental effects of constructing, operating and maintaining the proposed 30-megawatt (MW) alternating current (ac) solar facility.

The Solar Facility would be constructed and operated by SR Ripley II, LLC, a wholly-owned subsidiary of Silicon Ranch Corporation. The project would occupy approximately 194 acres on a 490-acre tract of land currently zoned for High Density/Mobile Home and General Business and is comprised mostly of agricultural fields. Public comments are invited beginning July 15 through August 16, 2024.

**Comments may be submitted online at [tva.com/NEPA](https://tva.com/NEPA), or by email at [nepa@tva.gov](mailto:nepa@tva.gov).**



**Tennessee Valley Authority**  
1101 Market Street  
Chattanooga, TN 37402

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The 30-day public comment period begins July 15, 2024 and will end on August 16, 2024. To be considered, mailed comments must be postmarked, or emailed comments timestamped, by August 15, 2024.

Comments may be emailed or mailed to:

[nepa@tva.gov](mailto:nepa@tva.gov)

Erica McLamb

Tennessee Valley Authority

1101 Market St. Chattanooga, TN

37402

Please note that any comments received, including names and addresses, will become part of the project administrative record and will be available for public inspection.

Comment No.	EA Section No.	EA Edit Warranted? (Y/N)	Document	Topic	Public / Agency Comment	TVA Response	Commenter(s)
1		N	DEA	General	General support of the project.	Comment noted.	Judy Mashburn, Lillie Johnson, Elizabeth
2		N	DEA	General	General opposition to the project.	Comment noted.	Katelyn
3	2.3	N	DEA	Alternatives	Why was this location chosen? Suggestion to select different location.	As stated in Section 2.3 of the EA, in determining the suitability for development of a site within TVA's service area that would meet customer needs and the goals of expanding TVA's renewable energy portfolio, multiple factors were considered. This process involved screening potential locations and ultimately eliminating those sites that did not have the needed attributes. This process of review and refinement ultimately led to the consideration of the current proposed Project site.	Jade Reynolds, Joe, Annette Wenzler
4	1.1	N	DEA	Alternatives	Suggestion that other technologies such as rooftop solar or solar canopies should be considered instead of utility-scale solar.	As described in Chapter 1 of the EA, TVA is committed to deliver reliable, low-cost, and cleaner energy with fewer environmental impacts. Please see Chapter 1 of the EA for further information. In general, the cost for distributed generation, such as rooftop solar and solar canopies, is higher than utility-scale generation for the same type of resource. The proposed action would help TVA achieve the purpose and need of this project in a cost-effective manner.	Jade Reynolds
5	3.2.2.2, 3.3.2	Y	DEA	Prime Farmland; Land Use	How will prime farmland be impacted? Will farming continue on the land during operation of the solar site? After decommissioning?	Sections 3.2.2 and 3.3.2 of the final EA have been revised to better describe the effects of the proposed action on farmland. 344 acres of the development area has recently been farmed and would be removed from row cropping during the construction and operation of the solar facility. Less than a third of the development area (19 acres) is classified as prime farmland. The development area comprises less than 0.02 percent of both the total cropland and prime farmland in Lauderdale County. Any area within the Project site not developed for the solar facility would be undeveloped while allowing for agricultural or vegetation management activities. Adhering to BMPs during construction and operation of the solar facility would preserve topsoil and limit erosion, resulting in negligible impacts to prime farmland. Following decommissioning of the solar facility, the site could be used for row cropping with minimal reduction in productivity.	Jade Reynolds, Amber Saldana, Katelyn, Eric Ellis, Joe, Nic Lewis, Annette Wenzler
6	1.4, 2.5, 3.4.2	Y	DEA	Water Resources	Request for information on possible water runoff as a result from installing solar panels (impervious surfaces). Commenter is specifically concerned that the project would increase flooding on Hyde Road.	Prior to starting construction, SR Ripley II, LLC will develop a stormwater pollution prevention plan (SWPPP) (see Section 1.4 of the EA) and then implement the plan during all phases of construction and operation. Specific runoff and erosion control measures are described in Section 2.5 of the EA. Changes to groundwater infiltration and surface water runoff, as described in Section 3.4.2 of the EA, would be minimal following installation of the PV panels and other Project components and revegetation of the Project site. Section 3.4.2 of the final EA has been revised to better describe impacts caused by increased impervious surfaces.	Bob Wenzler

7	1.4, 2.5	N	DEA	Water Resources	As noted in the draft EA, a stormwater construction permit (CGP) will be required including a Storm Water Pollution Prevention Plan (SWPPP) but owing to the size of the disturbance (over 50 acres) an individual permit rather than a general permit will be necessary. The project will need to have a hydrologic determination performed to identify all of the aquatic resources within the project limits of disturbance and assess the potential for any alterations to wet weather conveyances, streams, wetlands, or other aquatic resources. Buffers to avoid streams and wetlands should be used as much as possible. An individual Aquatic Resource Alteration Permit (ARAP) will likely be required. There will be considerable vegetation management around the panels which may involve the use of herbicides. Care should be taken to follow manufacturer's directions and avoid herbicide application prior to predicted rainfall events or high winds to minimize any possibility of runoff or drift.	As stated in Section 1.4 of the EA, the proposed Project would require a NPDES Construction Storm Water General (CGP) (TNR100000) permit, SWPPP, ARAP, and possible septic system, see Section 3.4.2.2.1.1 for further information. Section 2.5 of the EA states that only USEPA-registered and TVA approved pesticides and herbicides would be used in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts in areas requiring chemical treatment.	TDEC
8	3.5.2	N	DEA	Wildlife	Will this project impact wildlife?	The construction and operation of the solar facility would impact the wildlife on the Project site through the removal of about 51 acres of forest and conversion of most of the developed portion of the site from cropland and forest to a mix of grasses and herbaceous plants. Due to the large amount of already disturbed habitat being impacted, and the amount of similarly suitable habitat in areas immediately adjacent to the Project site, impacts to populations of common wildlife species are anticipated to be minimal to negligible. Overall, the proposed action would have minimal to negligible adverse impacts on populations of common wildlife species. See Section 3.5.2 of the EA for more detail.	Collin Fountain, Joe, Annette Wenzler
9	3.6.2	N	DEA	Visual Impacts	How will solar panels impact the view (aesthetics)?	The manufactured, structured appearance of the built facility would be most apparent from vantage points surrounding the Project site along State Route 19, Highland Street Extended, Sadler Street, Crescent Drive, Bluebird Street, and Eastland Avenue. The perimeter of the 11 large blocks of facility components and Project switchgear would be enclosed with six-foot-tall chain-link security fencing topped with three strands of barbed wire. Visual impacts are expected to be minimal. See section 3.6.2 of the EA for a more detailed description of the visual impacts of the solar facility and measures to minimize these visual impacts.	Collin Fountain, Nic Lewis, Annette Wenzler
10	3.7.2	N	DEA	Noise	How will ambient noise be impacted?	Noise generated during the construction and operation of the solar facility is described in Section 3.7.2 of the EA. The highest noise levels would be from site clearing and grading, which would primarily occur for a relatively short period of time near the start of construction activities, and from the use of pile drivers to install the solar panel support structures.  Following completion of construction activities, the ambient sound environment would return to existing levels or below existing levels by eliminating seasonal use of some agricultural equipment. Noise impacts from these Project components are anticipated to be minimal to negligible. See Section 3.7.2 of the EA for more detail.	Nic Lewis, Annette Wenzler

11	3.8	N	DEA	Air Quality and GHG Emissions	TDEC recommends operating trucks with up-to-date emission control technologies and proper maintenance to minimize emissions. Recommends adopting BMPs to minimize idling to reduce the impact of mobile source emissions on ambient air quality.	Comment noted. The use of construction equipment, which would be well maintained, would cause a minor temporary increase in GHG emissions during construction activities. The Project cannot commit to operating trucks with up-to-date emission control technologies or BMPs to minimize idling at this time. SR Ripley II will encourage vendors to use up-to-date emission controls technologies.	TDEC
12	2.2.2, 3.8	N	DEA	Air Quality and GHG Emissions	If the disposal of trees or vegetation is necessary during construction, TDEC recommends the evaluation of alternatives to open burning. Tennessee's open burning regulations can be found at <a href="https://publications.tnsofiles.com/rules/1200/1200-03/1200-03-04.pdf">https://publications.tnsofiles.com/rules/1200/1200-03/1200-03-04.pdf</a> .	Section 2.2.2 of the EA includes the use of chippers as an alternative to open burning for disposal of tree waste. If burning is selected, only vegetation and untreated wood would be burned, and it would be done in accordance with applicable local ordinances or burn permit requirements and avoided on days air quality alerts have been issued, as much as feasible.	TDEC
13	3.10.1, 3.10.2	Y	DEA	Natural Areas and Recreation	How will hunting opportunities on neighboring land be impacted?	Section 3.10 of the final EA has been updated regarding this information. The area surrounding the Project site that may be used informally for hunting would not be disrupted, so hunting would likely continue. Hunting that occurs surrounding the Project site would be disrupted during construction due to noise disturbance and presence of construction workers and construction equipment. During operation of the Project no impacts to hunting would occur (see Section 3.10.2).	Annette Wenzler
14	3.12	Y	DEA	Waste Management	This project may involve the demolition or renovation of structures. Be advised that there are federal regulations enforced by the EPA and TDEC regarding asbestos renovation and demolition activity. These regulations apply to any building or structure known to contain asbestos and to any facilities proposed to be demolished. When any structures are proposed to be demolished, an asbestos demolition notification must be provided in advance, and proper predemolition surveys must be conducted to identify any regulated asbestos containing material (ACM) presence. Prior to any building demolition, all facilities must be examined for ACM, and all potential ACM in the buildings proposed for demolition must be handled and disposed of in accordance with the applicable Federal, state, and local regulations. Tennessee's asbestos regulations can be found in Chapter 1200-03-11 of the Tennessee Air Pollution Control Regulations (TAPCR).	Comment noted. Section 3.12.2 in the final EA has been updated to address asbestos demolition and notification. Four on-site buildings have the potential to be demolished. Prior to demolition, a hazardous materials survey of the on-site buildings will be conducted and SR Ripley II, LLC will submit notification of demolition to APC. The presence of RACM will be reported to the APC through the notification process using TDEC form CN-1055 (Notification of Demolition and/or Asbestos Renovation). RACM would be handled and disposed of in accordance with applicable federal, state, and local regulations. The project would develop and implement a variety of plans and programs to ensure safe handling, storage, use, and decommissioning of hazardous materials (e.g., Hazardous Material Business Plan), as noted in Section 3.12 of the EA.	TDEC
15	3.12	N	DEA	Waste Management	TDEC found no active facilities or ongoing petroleum underground storage tank cleanups in the map area submitted for review. However, if any unexpected Underground storage tanks are encountered, that contain petroleum, contact the Jackson Field Office (731-521-1300) and ask to speak with someone in the Division of Underground Storage Tanks as soon as possible for instructions. For tanks containing hazardous materials other than petroleum you may need to contact the Division of Remediation or Solid Waste. They can also be reached at the number provided above.	This corroborates with findings from the Project's Phase I environmental site assessment. SRC will contact the TDEC Jackson Field Office if previously unknown USTs are encountered on the Project site.	TDEC

16	3.12	N	DEA	Waste Management	TDEC strongly recommends that any wastes associated with construction confined to the limits of the proposed project — construction may include but is not limited to the following: unforeseen damages and repairs, cleanup, grading, excavation, testing of subsurface conditions, confining sediment, surface stabilization, leaks, and spills — must be handled in accordance with the Solid and Hazardous Waste Rules and Regulations of the state. This includes all materials that would be classified as solid and/or hazardous wastes per these chapters. With respect to the possibility of a legacy solid waste site, Tennessee's Solid Waste Management program only dates back to 1972, so there could conceivably be disposal in this area that predates the TDEC's program of which no information is available. Any wastes which may be uncovered during this project would be subject to a hazardous waste determination and must be managed appropriately. Reviews were conducted in internal state and federal databases (WasteBin, ECHO/NEPAssist, respectively) with respect to the delineated project site. Review indicated there are not hazardous waste generating sites within approximately a half mile of the project area.	No hazardous waste generating sites were identified on the Project site and no recommendations were identified on the Project site during the Phase I Environmental Site Assessment. SRC will comply with federal, state, and local regulations if previously unknown waste disposal is discovered on the Project site.	TDEC
17	3.13.2	N	DEA	Public Health and Safety	Will the solar site impact health? How will electromagnetic radiation impact the surrounding area?	The facility site will be surrounded by security fencing to manage unauthorized public entry and all applicable electrical, workplace safety, and environmental codes and standards will be followed during construction and operation. During operation, solar PV systems, like many other electrical systems, generate electromagnetic fields (EMF). However, according to a study published by North Carolina State University in 2017, solar PV technologies and solar inverters do not pose significant human health risks. See Section 3.13.2 for more information.	Annette Wenzler
18	1.1	N	DEA	Socioeconomics; Utilities	Will the project save us money on our utility bills?	While the Project will not directly save nearby customers money on their utility bills, the Project will support TVA's objectives to deliver reliable, low-cost, and cleaner energy with fewer environmental impacts.	Lillie Johnson
19	3.15.2.2	Y	DEA	Socioeconomics	How will you mitigate the loss in jobs from the decrease in farming land? Was the land purchased being tenant farmed?	Section 3.15.2.2 of the final EA has been revised to address potential impacts to agricultural employment. The Project is not anticipated to have an impact to agricultural employment. Two out of the three parcels purchased for the Project site were tenant farmed before being purchased by SR Ripley II, LLC. Therefore, impacts to land available for tenant farming are expected to be minimal. During the Project, 86 acres of land that has been used for row cropping on the Project site would be undeveloped while allowing for agricultural or vegetation management activities. Following decommissioning of the solar facility, the site could be utilized for a variety of types of agricultural production, including row cropping. See Section 3.15.2.2 for more detail.	Amber Saldana



20	3.15.2.2	Y	DEA	Socioeconomics	Will food prices go up as a result of lost farmland for this project?	Section 3.15.2.2 of the final EA has been revised to address potential impacts to food prices. The Project is not anticipated to have an impact to food prices. As the crops produced on the land prior to the Project were either fiber crops (cotton) or non-specialty food crops (soybean and corn), no increase in food prices is anticipated. During the Project, 86 acres of land that has been used for row cropping on the Project site would be undeveloped while allowing for agricultural or vegetation management activities. Following decommissioning of the solar facility, the site could be utilized for a variety of types of agricultural production, including row cropping. See Section 3.15.2.2 for more detail.	Eric Ellis
21	3.15	Y	DEA	Socioeconomics	How will the solar site impact property value?	Section 3.15 of the final EA has been revised to address potential impacts to adjacent landowner property values. The Project has been designed to minimize impacts to adjacent and nearby properties and is not expected to decrease the value of these properties. As discussed in Section 3.6 of the EA, long-range views from residential farm complexes, historic properties, and churches in the Project area are generally limited by mature deciduous trees framing property boundaries, nearby fields, and roads. Section 3.15.2 of the EA has been revised to provide more information on this topic.	Annette Wenzler

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**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#1]  
**Date:** Monday, July 22, 2024 11:21:28 PM

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Name	Collin Fountain
City	Ripley
State	TN
Email	[REDACTED]
Phone Number	[REDACTED]

Please provide your comments by uploading a file or by entering them below. \*

I am against a solar farm in Lauderdale county. It negatively affects wildlife and is an eyesore.

**From:** Judy Mashburn  
**To:** [nepa](#)  
**Date:** Tuesday, July 23, 2024 9:01:08 AM

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I think it would be good for Lauderdale County

**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#2]  
**Date:** Tuesday, July 23, 2024 5:34:23 PM

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Name	Jade Reynolds
City	Ripley
State	Tn
Organization	Centurion
Email	[REDACTED]
Phone Number	[REDACTED]
Please provide your comments by uploading a file or by entering them below. *	I do not agree with this project being on agriculture land. There are plenty of business and other buildings that the solar panels can be put on. A parking lot can be covered in solar panels.

**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#7]  
**Date:** Wednesday, July 24, 2024 11:57:11 AM

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Name	Elizabeth
City	Ripley
State	Tennessee
Organization	None
Please provide your comments by uploading a file or by entering them below. *	I'm all for the solar implication. I know it may consume some farm land but with time comes change and with the vast solar potential it will only build a stronger future!

**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#5]  
**Date:** Wednesday, July 24, 2024 10:28:49 AM

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**This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the “Report Phishing” button located on the Outlook Toolbar at the top of your screen.**

Name	Eric Ellis
City	Ripley
State	TN
Email	[REDACTED]
Phone Number	[REDACTED]

Please provide your comments by uploading a file or by entering them below. \*

I don't believe any more farm land needs to be bought up and replaced for solar panels. Food is already expensive enough without getting rid of all the farm land that grows our crops.

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**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#6]  
**Date:** Wednesday, July 24, 2024 10:42:45 AM

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Name	Joe
City	Halls
State	Tn
Email	[REDACTED]
Phone Number	[REDACTED]

Please provide your comments by uploading a file or by entering them below. \*


Absolutely against a solar farm in our county unless there is fallow ground unsuitable for farming or wildlife habitat!



**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#4]  
**Date:** Wednesday, July 24, 2024 9:56:39 AM

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**This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the “Report Phishing” button located on the Outlook Toolbar at the top of your screen.**

Name	Katelyn
City	Halls
State	TN
Organization	None
Email	

Please provide your comments by uploading a file or by entering them below. \*

Absolutely NO on your solar bs. We are 100% a farming community and plan on keeping it that way.

**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#3]  
**Date:** Wednesday, July 24, 2024 8:53:48 AM

**This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the “Report Phishing” button located on the Outlook Toolbar at the top of your screen.**

Name	Amber Saldana
City	Ripley
State	Tn
Organization	Cold Creek Flower Farm
Email	[REDACTED]
Phone Number	[REDACTED]

Please provide your comments by uploading a file or by entering them below. \*

I am originally from Lauderdale County and have returned here after a 20 year military career. I now have a small farm in Ripley on 55 acres.

believe in the benefits of solar power but not at the expense of losing agricultural land in our county. Many of our row crop farmers in the county rent land to farm. If this proposed project takes away our farmers’ ability to farm 200 acres, then you are taking away putting food on the table of people that are most likely barely getting by.

It is no secret our county is poor, rural, and needs help. It’s also no secret that Tennessee is losing agricultural land at an astonishing rate. I ask that you please consider whether this land tract is currently being rented for row crop farming and if so, find a way to allow it to continue. The farmers may not be able to afford the land for purchase. Don’t take that away from them. Please don’t take away our agriculture. Please find out if a farmer is renting the land you are proposing to buy. Talk to them. I offer my assistance in making that happen. Farming in Lauderdale county is one of the few successes we have. While solar energy is a positive, please consider the impact of it negatively affecting our small agricultural community. Thank you.

**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#8]  
**Date:** Thursday, July 25, 2024 10:19:41 PM

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**This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the “Report Phishing” button located on the Outlook Toolbar at the top of your screen.**

Name	Nic Lewis
City	Ripley
State	TN
Email	[REDACTED]

Please provide your comments by uploading a file or by entering them below. \*

Historically, Lauderdale County and its community has been an agricultural resource to its population. It is not a very prosperous area, however, it has a unique southern feel that is hardly obtainable anywhere else. We try to keep this humble community as quiet and peaceful as we can without the hustle and bustle of the surround areas. We understand that this project would be beneficial to TVA and could pass savings on the customers of the valley. We, as a community of Lauderdale natives feel that we should keep as much agriculture in our county as possible.

**From:** [Bob Wenzler](#)  
**To:** [nepa](#)  
**Subject:** Ripley II solar Project  
**Date:** Thursday, July 25, 2024 4:27:38 PM

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To Whom it my Concern;

My name is Bobby Wenzler, I live at [REDACTED] I'm concerned about the solar project and the environmental impact on Hyde Road. The concern I have is the rain water run off. Hyde Road already receives water off of hwy 19 East, the City of Ripley and the surrounding farm land that doesn't soak up the water. The flooding has become more recent in the past years and has caused damage to land and driveways on Hyde Road. The Lauderdale County Highway Department says it's not their problem because the ditch is past their right of way, and is on my property. I have spent thousands of dollars to keep my driveway from washing out again and now the solar farm is coming in and going to push more water down Hyde Road into Hyde Creek and the Cane Creek Watershed. If the ditches were cleaned out and Hyde Creek was widened all the way to Cane Creek it wouldn't be such a big problem. However, trying to get Lauderdale County to do anything is like pulling teeth. I have Contacted Lauderdale County Highway Department, Soil Conservation Service and Crane Creek Watershed with no help. The ditches have gone un maintained for years and large trees have grown slowing down water flow. I know you are going to say it not going to add more water but it will, the panels will push water in a different direction and not have enough area to soak into the ground therefore, creating more water runoff. Thank you for listening and have a great day.

Bobby Wenzler  
[REDACTED]

**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#9]  
**Date:** Friday, July 26, 2024 6:21:32 PM

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**This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the "Report Phishing" button located on the Outlook Toolbar at the top of your screen.**

Name	Annette Wenzler
City	ripley
State	KY
Email	[REDACTED]
Phone Number	[REDACTED]

Please provide your comments by uploading a file or by entering them below. \*

Not in agreement with this location due to the following:

Best solar farms are either not visible from one's home ... this will be 2) minimize the acreage of prime -productive soils for agriculture- this will take the place of agriculture that has been in on the surrounding land for some time 3) the constant hum from some transformers 4)negative relationship between solar farms and property value 5)could be harmful to health -giving out electromagnetic radiation ; some who may suffer from hypersensitivity ,6) impact on environment- habitat degradation 7) unsightly.

The land I own has been around for over 100 years, with vegetation, wild life out our front door and back door, the look of the sunrise and sunset, the thought of this is heartbreaking, This is also undermining of local resident's property value from 5-25%,. I don't understand why this location, right off our HWY 19 for the community and tourist to see, People hunt on the neighboring land, how will they continue. There is plenty of land in this county away from homes. this has to be a financial gain for the landowner who has shown no indication of what a good neighbor constitutes. We pay taxes , we value our property , land and rights we want to live in peace. I do not support this location. I do understand some of the benefits, but find a location elsewhere

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**From:** [REDACTED]  
**To:** [nepa](#)  
**Date:** Wednesday, August 7, 2024 2:03:18 PM

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I am Lillie j Johnson.I am all for the solar project only if it is better for the community and only if it saves us customers money on our utility bills.Thank you Lillie Johnson concerned customer.

**From:** [Wufoo](#)  
**To:** [nepa](#)  
**Subject:** Ripley II Solar Environmental Assessment [#10]  
**Date:** Monday, August 12, 2024 1:08:17 PM

**This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the “Report Phishing” button located on the Outlook Toolbar at the top of your screen.**

Name	Emma Bartolo
City	Chattanooga
State	Tennessee
Organization	Tennessee Department of Environment and Conservation
Email	[REDACTED]
Phone Number	[REDACTED]

Please provide your comments by uploading a file or by entering them below. \*

August 12, 2024

Via Online Submission to [REDACTED]

Tennessee Valley Authority  
1101 Market St.  
Chattanooga, TN 37402

Dear the Tennessee Valley Authority:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Tennessee Valley Authority’s (TVA) Draft Environmental Assessment (EA) for the SR Ripley II Solar Facility project. This assessment analyzes the potential environmental impact of the construction and operation of a proposed solar facility by SR Ripley II, LLC and the associated transmission system components in Lauderdale County, Tennessee. The project further entails the

purchase of the electricity generated by the solar facility by TVA and the potential installation of fiber optic overhead ground wire (OPGW). The proposed project would occupy approximately 194 acres on a 490-acre tract of land that is currently zoned for High Density/Mobile Home and General Business and is comprised of primarily agricultural fields.

The Draft EA evaluates the environmental impacts associated with the following two alternatives:

- No Action Alternative: TVA would not purchase the power generated by the project (i.e., TVA would not be involved with the project), and SR Ripley II, LLC would not construct the proposed solar PV facility. Existing conditions (e.g., land use, natural resources, visual resources, physical resources, and socioeconomics) in the project area would not change as a result of the Proposed Action.

- Proposed Action Alternative: TVA would execute the power purchase agreement (PPA) to purchase the power generated by the proposed solar PV facility. SR Ripley II, LLC would

construct, operate, and maintain a 30-MW AC single-axis tracking PV solar power facility on the 490-acre site located in Lauderdale County. Ripley Power and Light would connect the solar facility to TVA's existing Ripley-Covington 161-kV TL via a new approximately 0.3-mile-long 34.5-kV dedicated gen-tie from a proposed on-site approximately 0.5-acre switchgear to the existing on-site Ripley Power and Light substation. Access to the switchgear would be from an access road from State Route 19 or from Highland Street Extended. TVA would install OPGW on approximately 0.75 mile of the portions of the Ripley-Covington 161-kV transmission line that are on the project site.

TDEC is the environmental and natural resource regulatory agency in Tennessee with delegated responsibility from the U.S. Environmental Protection Agency (EPA) to regulate sources of air pollution; solid and hazardous waste; underground storage tanks; and water resources. TDEC has reviewed the draft EA and offers the following comments regarding the proposed project:

#### Division of Air Pollution Control

- Idling: Truck traffic associated with construction projects generate emissions of PM, CO, NO<sub>2</sub>, SO<sub>2</sub>, VOC, and CO<sub>2</sub>, therefore, TDEC recommends the operation of trucks with up-to-date emission control technologies and proper maintenance to minimize vehicle and equipment emissions. TDEC also recommends the adoption of best practices to minimize vehicle idling to reduce the impact of mobile source emissions on ambient air quality.
- Open Burning: If the disposal of trees or vegetation is necessary during construction, TDEC recommends the evaluation of alternatives to open burning. Tennessee's open burning regulations can be found at <https://publications.tnsosfiles.com/rules/1200/1200-03/1200-03-04.pdf>.
- Asbestos: This project may involve the demolition or renovation of structures. Be advised that there are federal regulations enforced by the EPA and TDEC regarding asbestos renovation and demolition activity. These regulations apply to any building or structure known to contain asbestos and to any facilities proposed to be demolished. When any structures are proposed to be demolished, an asbestos demolition notification must be provided in advance, and proper pre-demolition surveys must be conducted to identify any regulated asbestos containing material (ACM) presence. Prior to any building demolition, all facilities must be examined for ACM, and all potential ACM in the buildings proposed for demolition must be handled and disposed of in accordance with the applicable Federal, state, and local regulations. Tennessee's asbestos regulations can be found in Chapter 1200-03-11 of the Tennessee Air Pollution Control Regulations (TAPCR).

#### Division of Underground Storage Tanks

TDEC found no active facilities or ongoing petroleum underground storage tank cleanups in the map area submitted for review. However, if any unexpected Underground storage tanks are encountered, that contain petroleum, contact the Jackson Field Office (731-521-1300) and ask to speak with someone in the Division of Underground Storage Tanks as soon as possible for instructions. For tanks containing hazardous materials other than petroleum you may need to contact the Division of Remediation or Solid Waste. They can also be reached at the number provided above.

#### Division of Water Resources

As noted in the draft EA, a stormwater construction permit (CGP) will be required including a Storm Water Pollution Prevention Plan (SWPPP) but owing to the size of the disturbance (over 50 acres) an individual permit rather than a general permit will be necessary. The project will need to have a hydrologic determination performed to identify all of the aquatic resources within the project limits of disturbance and assess the potential for any alterations to wet weather conveyances, streams, wetlands, or other aquatic resources. Buffers to avoid streams and wetlands should be used as much as possible.

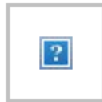


An individual Aquatic Resource Alteration Permit (ARAP) will likely be required. There will be considerable vegetation management around the panels which may involve the use of herbicides. Care should be taken to follow manufacturer's directions and avoid herbicide application prior to predicted rainfall events or high winds to minimize any possibility of runoff or drift.

TDEC appreciates the opportunity to provide comment on the draft EA. Please note that these comments are not indicative of approval or disapproval of the proposed projects or activities contained within. Please contact me should you have any questions regarding these comments.

Sincerely,  
Emma Bartolo  
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**Subject:** Ripley II Solar Environmental Assessment [#11]  
**Date:** Monday, August 12, 2024 3:33:34 PM

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TDEC IS RESUBMITTING THEIR COMMENTS ON THE SR RIPLEY II SOLAR FACILITY PROJECT DUE TO THE INCLUSION OF ADDITIONAL CONTENTS.

Dear the Tennessee Valley Authority:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Tennessee Valley Authority’s (TVA) Draft Environmental Assessment (EA) for the SR Ripley II Solar Facility project. This assessment analyzes the potential environmental impact of the construction and operation of a proposed solar facility by SR Ripley II, LLC and the associated transmission system components in Lauderdale County, Tennessee. The project further entails the purchase of the electricity generated by the solar facility by TVA and the potential installation of fiber optic overhead ground wire (OPGW). The proposed project would occupy approximately 194 acres on a 490-acre tract of land that is currently zoned for High Density/Mobile Home and General Business and is comprised of primarily agricultural fields.

The Draft EA evaluates the environmental impacts associated with the following two alternatives:

- No Action Alternative: TVA would not purchase the power generated by the project (i.e., TVA would not be involved with the project), and SR Ripley II, LLC would not construct the proposed solar PV facility. Existing conditions (e.g., land use, natural resources, visual resources, physical resources, and socioeconomics) in the project area would not change as a result of the Proposed Action.
- Proposed Action Alternative: TVA would execute the power purchase agreement (PPA) to purchase the power generated by the proposed solar PV facility. SR Ripley II, LLC would construct, operate, and maintain a 30-MW AC single-axis tracking PV solar power facility on the 490-acre site located in Lauderdale County. Ripley Power and Light would connect the solar facility to TVA’s existing Ripley-Covington 161-kV TL via a new approximately 0.3-mile-long 34.5-kV dedicated gen-tie from a proposed on-site approximately 0.5-acre switchgear to the existing on-site Ripley Power and Light substation. Access to the switchgear would be from an access road from State Route 19 or from Highland Street Extended. TVA would install OPGW on approximately 0.75 mile of the portions of the Ripley-Covington 161-kV transmission line that are on the project site.

TDEC is the environmental and natural resource regulatory agency in Tennessee with delegated responsibility from the U.S. Environmental Protection Agency (EPA) to regulate sources of air pollution; solid and hazardous waste; underground storage tanks; and water resources. TDEC has reviewed the draft EA and offers the following comments regarding the proposed project:

#### Division of Air Pollution Control

- Idling: Truck traffic associated with construction projects generate emissions of PM, CO, NO<sub>2</sub>, SO<sub>2</sub>, VOC, and CO<sub>2</sub>, therefore, TDEC recommends the operation of trucks with up-to-date emission control technologies and proper maintenance to minimize vehicle and equipment emissions. TDEC also recommends the adoption of best practices to minimize vehicle idling to reduce the impact of mobile source emissions on ambient air quality.
- Open Burning: If the disposal of trees or vegetation is necessary during construction, TDEC recommends the evaluation of alternatives to open burning. Tennessee's open burning regulations can be found at <https://publications.tnsosfiles.com/rules/1200/1200-03/1200-03-04.pdf>.
- Asbestos: This project may involve the demolition or renovation of structures. Be advised that there are federal regulations enforced by the EPA and TDEC regarding asbestos renovation and demolition activity. These regulations apply to any building or structure known to contain asbestos and to any facilities proposed to be demolished. When any structures are proposed to be demolished, an asbestos demolition notification must be provided in advance, and proper pre-demolition surveys must be conducted to identify any regulated asbestos containing material (ACM) presence. Prior to any building demolition, all facilities must be examined for ACM, and all potential ACM in the buildings proposed for demolition must be handled and disposed of in accordance with the applicable Federal, state, and local regulations. Tennessee's asbestos regulations can be found in Chapter 1200-03-11 of the Tennessee Air Pollution Control Regulations (TAPCR).

#### Division of Underground Storage Tanks

TDEC found no active facilities or ongoing petroleum underground storage tank cleanups in the map area submitted for review. However, if any unexpected Underground storage tanks are encountered, that contain petroleum, contact the Jackson Field Office (731-521-1300) and ask to speak with someone in the Division of Underground Storage Tanks as soon as possible for instructions.

For tanks containing hazardous materials other than petroleum you may need to contact the Division of Remediation or Solid Waste. They can also be reached at the number provided above.

#### Division of Water Resources

As noted in the draft EA, a stormwater construction permit (CGP) will be required including a Storm Water Pollution Prevention Plan (SWPPP) but owing to the size of the disturbance (over 50 acres) an individual permit rather than a general permit will be necessary. The project will need to have a hydrologic determination performed to identify all of the aquatic resources within the project limits of disturbance and assess the potential for any alterations to wet weather conveyances, streams, wetlands, or other aquatic resources. Buffers to avoid streams and wetlands should be used as much as possible.

An individual Aquatic Resource Alteration Permit (ARAP) will likely be required. There will be considerable vegetation management around the panels which may involve the use of herbicides. Care should be taken to follow manufacturer's directions and avoid herbicide application prior to predicted rainfall events or high winds to minimize any possibility of runoff or drift.

#### Division of Solid Waste Management

TDEC strongly recommends that any wastes associated with construction confined to the limits of

the proposed project — construction may include but is not limited to the following: unforeseen damages and repairs, cleanup, grading, excavation, testing of subsurface conditions, confining sediment, surface stabilization, leaks, and spills — must be handled in accordance with the Solid and Hazardous Waste Rules and Regulations of the state. This includes all materials that would be classified as solid and/or hazardous wastes per these chapters.

With respect to the possibility of a legacy solid waste site, Tennessee's Solid Waste Management program only dates back to 1972, so there could conceivably be disposal in this area that predates the TDEC's program of which no information is available. Any wastes which may be uncovered during this project would be subject to a hazardous waste determination and must be managed appropriately.

Reviews were conducted in internal state and federal databases (WasteBin, ECHO/NEPAssist, respectively) with respect to the delineated project site. Review indicated there are not hazardous waste generating sites within approximately a half mile of the project area.

TDEC appreciates the opportunity to provide comment on the draft EA. Please note that these comments are not indicative of approval or disapproval of the proposed projects or activities contained within. Please contact me should you have any questions regarding these comments.

Sincerely,

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