

Exhibit G Biological Habitat Assessment and USFWS Coordination



**> Biological Habitat Assessment
Circleville Solar Transmission Line
Pickaway County, Ohio**

June 2022
ECT No. 210330-0900

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List of Acronyms and Abbreviations

ACEP	Agricultural Conservation Easement Program
ALE	Agricultural Land Easements
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
C	Federal candidate species
CFR	Code of Federal Regulations
Circleville Solar	Circleville Solar, LLC
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
COA	Conservation Opportunity Areas
DBH	Diameter at Breast Height
DOW	Division of Wildlife
ECT	Environmental Consulting & Technology, Inc.
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
HEL	Highly Erodible Land
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
IBA	Important Bird Area
IPaC	Information for Planning and Consultation tool
LE	Federally endangered
LT	Federally threatened
MBTA	Migratory Bird Treaty Act
MW	Megawatt
NCED	National Conservation Easement Database
NFHL	National Flood Hazard Layer
NGO	Non-governmental organization
NLCD	National Land Use Land Cover Database
NLEB	Northern long-eared bat
NP	Nature Preserve
NRCS	Natural Resources Conservation Service
ODNR	Ohio Department of Natural Resources
OH NHD	Ohio Natural Heritage Database
OPSB	Ohio Power Siting Board
ORC	Ohio Revised Code
P	State- potentially threatened
PAD-US	Protected Areas Database
PEM	Palustrine Emergent
PFO	Palustrine Forested
PHW	Primary Headwater
Project	Circleville Solar Transmission Line
PV	Photovoltaic

QHEI	Qualitative Habitat Evaluation Index
SC	State Species of Concern
SE	State-Endangered
ST	State-Threatened
Survey Area	212-acre site that was field reviewed for the Project
SI	Species of Special Interest
SP	State Park
SSURGO	Soil Survey Geographic Database
SWAP	State Wildlife Action Plan
TES	Threatened and Endangered species
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
USGS NHD	National Hydrography Dataset
WA	Wildlife Area
WPA	Wildlife Production Area
WRE	Wetland Reserve Easement
WRP	Wetlands Reserve Program
WWH	Warmwater Habitat

Executive Summary

Circleville Solar, LLC (Circleville Solar) is developing an approximately 3.5-mile gen-tie transmission line, associated with the 70-megawatt (MW) photovoltaic Circleville Solar generation facility in Pickaway County, Ohio. Circleville Solar contracted Environmental Consulting & Technology, Inc., to conduct a Biological Habitat Assessment for the proposed Circleville Solar Transmission Line (Project). The purpose of this Biological Habitat Assessment is to identify and discuss landscape characteristics and biological features, such as the potential presence of federally and state-listed threatened and endangered species (TES), undeveloped natural habitats, and other sensitive and rare habitats occurring within a 212-acre Ecological Field Survey Area (Survey Area) that were evaluated for the Project, and to discuss those features in the context of Project development.

The Survey Area footprint covers an approximately 200-foot corridor of the Preferred and Alternate Routes, the proposed collector substation, two laydown yard areas, off-right-of-way (ROW) access road areas, and the southern half of the existing Circleville Substation where the Circleville Solar Transmission Line will interconnect. The Survey Area includes areas south of US-22 and west of the railroad that were evaluated for potential route siting.

The Survey Area is located in Circleville, Jackson, and Wayne Townships in Pickaway County, Ohio. The eastern terminus is located at the western boundary of the City of Circleville within the existing Circleville Substation and extends approximately 3.5 miles west-northwest of the city. The Survey Area is dominated by agricultural fields, road ROW, and rural residential properties. These portions are considered to have a low potential to provide suitable habitat for federally and state-listed TES. However, remaining undeveloped natural habitat (e.g., riparian woodlots, grassy areas/old fields, wetlands) near the eastern terminus of the Survey Area along the Scioto River corridor have a moderate to high potential to provide habitat for federally and state-listed TES.

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) identified nine federally listed TES whose range overlap with the regional vicinity of the Survey Area. Of the nine listed species, seven have a moderate to high potential to occur within the Survey Area, while the remaining two have a low and moderate potential, respectively, based on desktop reviews and field studies.

Two federally listed TES bat species may occur within the regional vicinity of the Survey Area, including the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (NLEB, *Myotis septentrionalis*). Habitat suitable for these species (e.g., woodlots and treelines) is present within the Survey Area along the Scioto River forested riparian corridor. Furthermore, field reviews of potential bat habitat areas determined that forested stands within the Survey Area were comprised of trees species that could support bat species and are located adjacent to rivers that can serve as flight corridors. Impacts to bat species within the vicinity of the Survey Area may be avoided or minimized by avoiding forested areas, minimizing tree clearing to the extent practicable, or conducting tree cutting in the winter months (October 1 – March 31) while bats are no longer using summer roosting trees. If tree clearing must occur during the summer months, then further coordination with the Ohio Department of Natural Resources (ODNR) and USFWS, as well as a mist net or acoustic survey, will be required prior to clearing.

A federally endangered fish, the Scioto madtom (*Noturus trautmani*), and five federally listed mussel species occur within the regional vicinity of the Survey Area. Based on information provided by ODNR, the five federally listed mussel species identified by IPaC have known occurrences within the Scioto River within the eastern portion of the Survey Area. Additionally, the Scioto madtom is known to occur within Big Darby Creek, a tributary to the Scioto River. Therefore, there is a moderate to high potential for federally listed aquatic species to occur within the Scioto River within the Survey Area.

The ODNR's review of the Ohio Natural Heritage Database (OH NHD) for a 1-mile radius around the Survey Area indicated state-listed TES and state special concern species with the potential to occur within 1-mile of the Survey Area, including 19 mussel species, nine fish species, and one plant species. Coordination with the ODNR completed in April of 2022 verified that the plant species, pale umbrella sedge (*Cyperus acuminatus*), has been delisted and no species-specific surveys or avoidance measures are recommended.

Due to the dominant agricultural landscape throughout much of the Survey Area, state-listed aquatic species have a low potential to occur within most streams within the Survey Area. However, there is a moderate to high potential for these aquatic species to occur within the Scioto River within the eastern portion of the Survey Area.

Review of the USFWS IPaC also identified that the bald eagle (*Haliaeetus leucocephalus*) as well as 23 birds of conservation concern (BCC) have the potential to occur within the vicinity of the Survey Area. Additionally, some of these species may use areas along the Scioto River and easement areas. However, no bald eagles or bald eagle nests were observed during the field surveys. Additionally, coordination with USFWS for the Circleville Solar generation facility indicated that there are no known records of bald eagle nests within the vicinity of the Project.

This Biological Habitat Assessment identified habitat resources within the Survey Area that may potentially be utilized by TES and other sensitive wildlife. TES that use wetland, riverine, forested, and grassland habitats have potential to occur within the Survey Area. Avoidance of impacts to the substrates and banks of the Scioto River should avoid adverse impacts to aquatic species. In addition, ODNR restricts work in perennial streams from March 15 through June 30; however, an in-water work waiver may be obtained from ODNR. A majority of the Survey Area does not provide suitable habitat for listed or sensitive species. However, TES species may use areas within the eastern portion of the Survey Area along the Scioto River corridor and Conservation Reserve Program area. In accordance with USFWS guidance, conducting tree clearing activities between October 1 and March 31 is recommended to avoid adverse effects to listed bats.

1.0 Introduction

Circleville Solar, LLC (Circleville Solar) is developing an approximately 3.5-mile gen-tie transmission line in association with the 70-megawatt (MW) photovoltaic (PV) Circleville Solar generation facility in Pickaway County, Ohio. Circleville Solar contracted Environmental Consulting & Technology, Inc. (ECT) to conduct a Biological Habitat Assessment for the proposed Circleville Solar Transmission Line (Project).

The purpose of this Biological Habitat Assessment is to identify and discuss landscape characteristics and biological features, such as the potential presence of federally and state-listed threatened and endangered species (TES), undisturbed natural habitats, and other sensitive and rare habitats occurring within the Project.

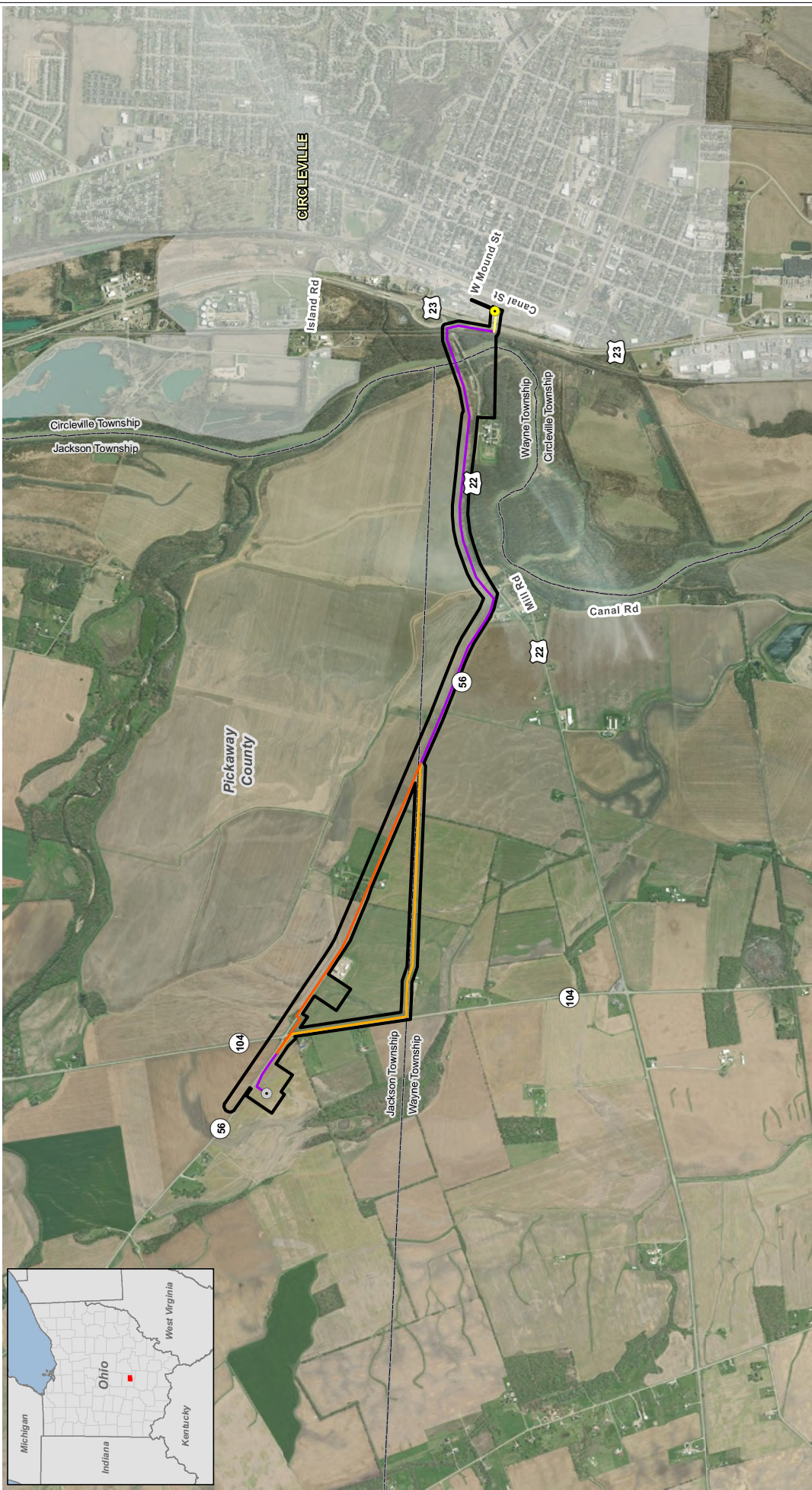
This assessment involved a desktop review of publicly available information and geospatial data from federal, state, and non-governmental organizations (NGOs), including but not limited to the U.S. Fish & Wildlife Service (USFWS)'s Information for Planning and Consultation (IPaC) tool, informal USFWS coordination letters, the Ohio Department of Natural Resource (ODNR) Natural Heritage Database (OH NHD), an ODNR Environmental Review of the Project, informal ODNR coordination, U.S. Geological Survey (USGS) Maps, and the 2019 National Land Use Land Cover Database (NLCD). Additionally, ECT conducted an on-site field review of an approximately 212-acre Survey Area (Survey Area; **Figure 1**) in May 2021, December 2021, and February 2022 to assess areas of potential TES habitat and undisturbed habitats identified during the desktop and literature review.

2.0 Survey Area Description

Approximately 212 acres of land being considered for the Project, the Survey Area, were investigated for potential habitat suitable for TES and other biological/environmentally sensitive resources (**Figure 1**).

The Survey Area footprint covers an approximately 200-foot corridor of the Preferred and Alternate Routes, the proposed collector substation, two laydown yard areas, off-ROW access road areas, and the southern half of the existing Circleville Substation where the Circleville Solar Transmission Line will interconnect. The Survey Area includes areas south of US-22 and west of the railroad that were evaluated for potential route siting.

The Survey Area is located in Pickaway County, Ohio, west of US-23 and the City of Circleville (**Figure 1**). The USGS Williamsport (2019) and Circleville (2019) 7.5 minute quadrangle maps (USGS 2019b; 2019a) depict elevations within the Survey Area ranging from approximately 650 to 670 feet above mean sea level (**Figure 2**).



Legend

- Circleville Substation
- Collector Substation
- Preferred Route
- Alternate Route
- Common Preferred/Alternate Route
- Common Preferred/Alternate Route - Underground

- Ecological Field Survey Area
- Township Boundary
- City Boundary

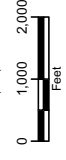
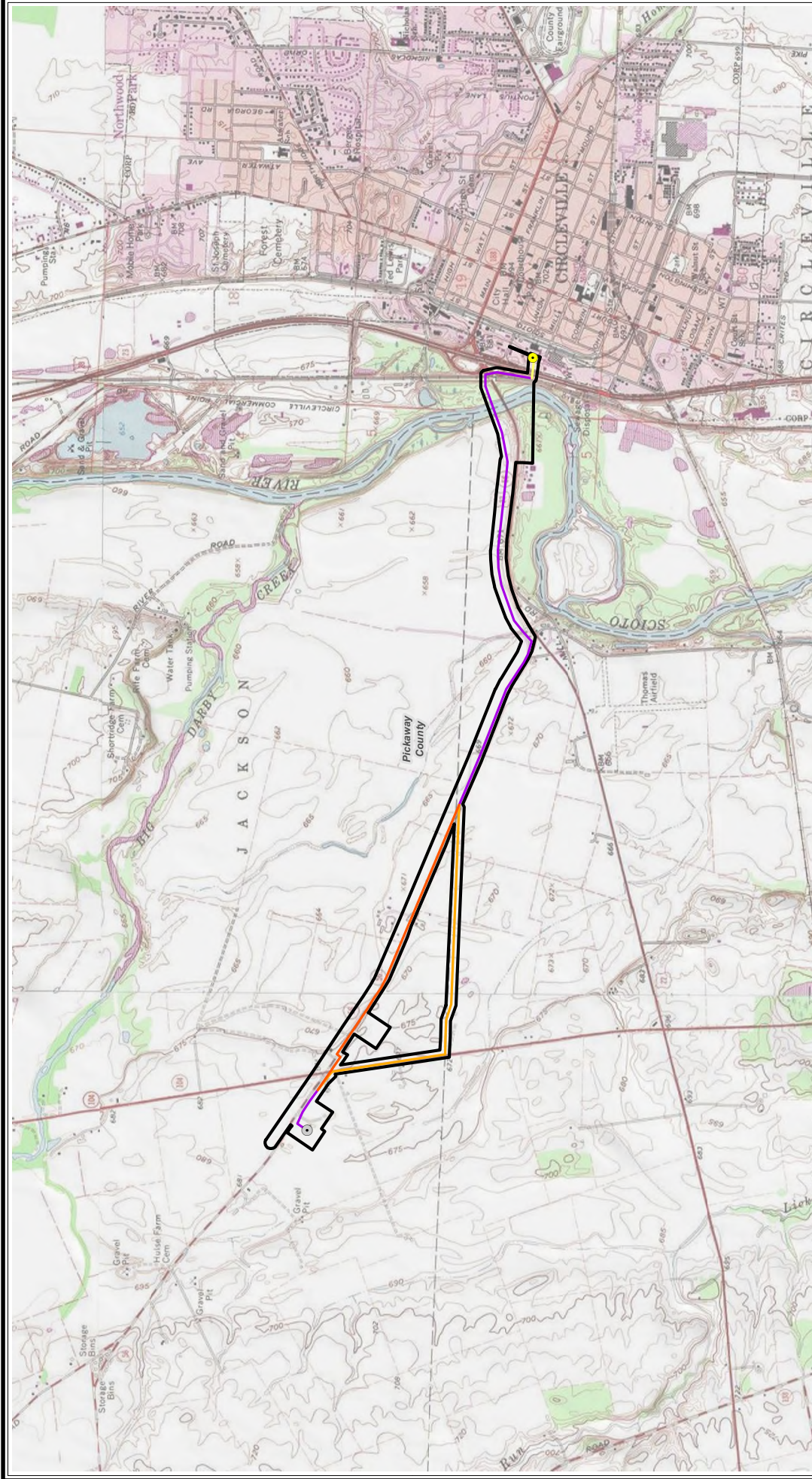


Figure 1

Location Map
 Circleville Solar Transmission Line
 Pickaway County, Ohio
 Date: 6/7/2022



Sources: ESRI World Imagery, 2020; NEER, 2022; ECT, 2022.



- Legend**
- Circleville Substation
 - Collector Substation
 - Ecological Field Survey Area
 - Preferred Route
 - Alternate Route
 - Common Preferred/Alternate Route
 - Common Preferred/Alternate Route - Underground

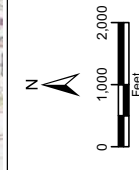


Figure 2
Topographic Map
 Circleville Solar Transmission Line
 Pickaway County, Ohio
 Date: 6/7/2022



Sources: USGS Quads: Williamsport and Circleville, 2019; OH: NEER, 2022; ECT, 2022.

3.0 Regulatory Review

The following subsections outline federal and state laws that confer legal protection to TES in the state of Ohio.

3.1 Federal Regulations

3.1.1 Endangered Species Act

The Endangered Species Act of 1973 (ESA, 16 United States Code [USC] §1531-1544) authorizes the USFWS (while working cooperatively with States) to identify, list, and monitor qualifying species as endangered and threatened. The process by which potential candidates are listed is determined by the vulnerability of the species population considering a number of different factors. Species that are designated as either endangered or threatened are afforded protection from possession, sale, transport, and take. The definition of take is “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” including “incidental take” or significant habitat modification.

3.1.2 Bald and Golden Eagle Protection Act

Under authority of the Bald and Golden Eagle Protection Act (BGEPA, 16 USC 668–668d), bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are afforded legal protections. The BGEPA prohibits the take, sale, purchase, barter, offer of sale, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. The BGEPA also expands the common law scope of “take”—to include “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb,” and includes criminal and civil penalties for violating the statute (see 16 USC 668). The USFWS further defined the term “disturb” as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior. The BGEPA specifies that violations must occur “knowingly, or with wanton disregard for this act.”

3.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) integrates and implements four international treaties that provide for the protection of migratory birds against hunters and poachers. The MBTA prohibits “the taking, killing, possession, transportation, import and export of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior.” (16 USC § 703; 1918). The word “take” is defined by regulation as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect,” (50 Code of Federal Regulations [CFR] § 10.12; 1973). The USFWS maintains a list of all species protected by the MBTA at 50 CFR § 10.13 (1973). This list includes over 1,000 species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

3.2 State Regulations

Ohio Revised Code (ORC) 1531.25 charges the ODNR Division of Wildlife (DOW) to adopt rules restricting the taking or possessing of native wildlife threatened with statewide extirpation and to develop and periodically update a list of endangered species. Any wildlife species whose survival or recruitment within the state are in jeopardy and any species designated under the federal ESA are protected under Ohio state law.

4.0 Habitat Assessment Methods

The goal of this Biological Habitat Assessment is to assess the Survey Area comprehensively and systematically within its landscape context to evaluate whether rare or federal and state-listed species and/or their habitats occur within the Survey Area. *Section 5.0* of this assessment describes site characteristics of a desktop survey of the Survey Area as well as the results of field surveys of the Survey Area conducted in May 2021, December 2021, and February 2022.

4.1 Desktop & Literature Review

Publicly available information and geospatial data from multiple sources, including federal, state, and county agencies, as well as NGOs were utilized for preparation of this assessment. Datasets and resources reviewed include, but are not limited to, the following:

- The 2019 NLCD
- USGS Topographic Maps
- The USGS Protected Areas Database of the United States (PAD-US)
- The USFWS Critical Habitat Viewer
- The USFWS IPaC Tool
- The U.S. Department of Agriculture -Natural Resources Conservation Service (USDA-NRCS) Web-Soil Survey
- The USDA-NRCS Soil Survey Geographic Database (SSURGO)
- The OH NHD
- The USGS National Hydrology Dataset (USGS NHD)
- Federal Emergency Management Agency (FEMA) floodplain data

Selected datasets were used to display critical environmental and ecological features. The datasets were then processed, projected, and clipped to the Survey Area for acreage calculations, percentages, as well as to visually display critical features.

4.2 Field Review

After the desktop evaluation, ECT conducted a field review of the approximately 212-acre Survey Area to identify, delineate, and characterize wetlands, to assess water features and streams, to assess forested areas for bat habitat suitability, and to observe land covers and identify undisturbed natural

areas. The field review took place on May 3-7 and May 12-14, 2021; December 15 and 22, 2021; and February 22, and 23, 2022.

5.0 Desktop and Field Results

5.1 Site Characteristics

5.1.1 Land Use and Land Cover

Land cover within the Survey Area was reviewed using the 2019 NLCD (**Figure 3**; Yang et al. 2018; MRLC Consortium 2021b). The Survey Area is located within a largely rural landscape dominated by agricultural land. Land cover/land use in the Survey Area primarily includes cultivated crops (approximately 62%) and developed land (developed-open space, developed-low intensity, and developed-medium intensity collectively comprise approximately 26% of Survey Area). Hay/pasture, deciduous forest, and open water each account for 3 to 5% of the Survey Area. The remaining land cover types collectively cover less than 3% of the total Survey Area acreage (**Table 1, Figure 3**).

Table 1. Land Cover and Land Use within the Survey Area

Land Cover Type	Survey Area (Acres)	Percent in Survey Area
Cultivated Crops	128.72	61.76%
Developed-Open Space	19.92	9.40%
Developed-Low Intensity	17.12	8.08%
Developed-Medium Intensity	15.63	7.38%
Hay/Pasture	9.42	4.45%
Deciduous Forest	7.62	3.60%
Open Water	6.80	3.21%
Mixed Forest	2.92	1.38%
Emergent Herbaceous Wetlands	2.03	0.96%
Developed-High Intensity	1.65	0.78%
Woody Wetlands	0.02	0.01%
Total	211.84	100.00%

Source: (Yang et al. 2018; MRLC Consortium 2021)

According to the Environmental Protection Agency's (EPA) Ecoregion mapping data, the Survey Area is located within the Loamy, High Lime Till Plains of the Eastern Corn Belt Plains ecoregion (Woods et al. 1998). Vegetation within the Loamy, High Lime Till Plains Ecoregion is characterized by beech forests, oak-sugar maple forests, and elm-ash swamp forests, however agriculture and livestock production is now widespread in this ecoregion (Woods et al. 1998). Field surveys in 2021 and 2022 observed that the majority of the western portion of the Survey Area is dominated by actively tilled croplands planted with corn (*Zea mays*) and soybeans (*Glycine max*). Agricultural fields are surrounded by disturbed/maintained grassy swales and forested areas. The eastern portion of the Survey Area

includes forested areas along the Scioto River corridor, two grassland areas, and mowed grassy swales. Grasslands and forested habitat within the Survey Area are described further below.

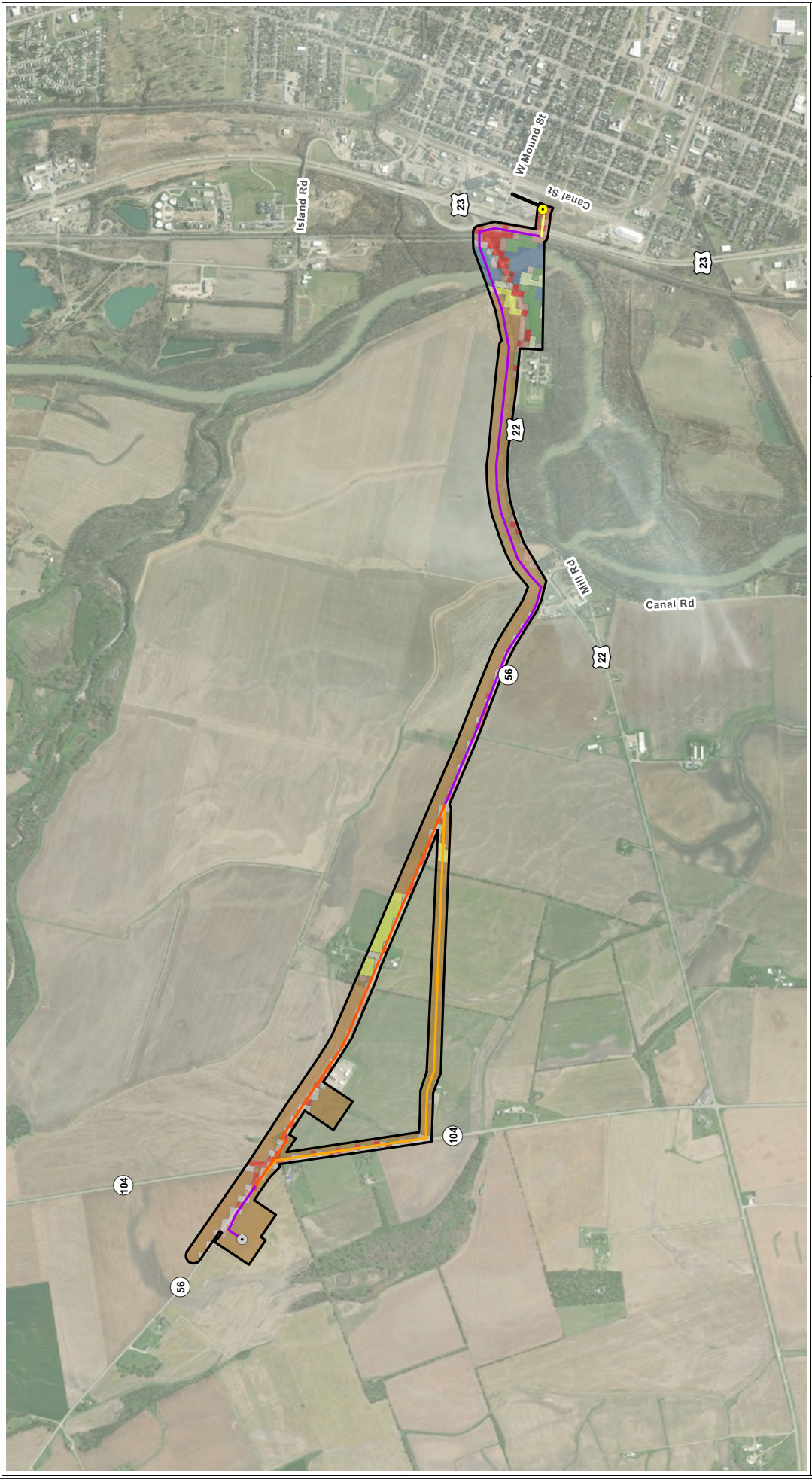


Figure 3
Land Cover

Circleville Solar Transmission Line
Pickaway County, Ohio
Date: 6/7/2022

ECT

Legend

Circleville Substation
Collector Substation
Preferred Route
Alternate Route
Common Preferred/Alternate Route - Underground
Ecological Field Survey Area

NLCD Classification
Open Water
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity

Land Cover
Deciduous Forest
Mixed Forest
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceous Wetlands

Scale
0 750 1,500 Feet

North Arrow
N

Sources: NLCD 2019; ESRI World Imagery 2020; NEER, 2022; ECT, 2022.

Grasslands & Pastures

The 2019 NLCD indicates that the Survey Area only contains approximately 9 acres of hay/pastures (approximately 4% of the Survey Area acreage) and no grassland/herbaceous habitat. The pasture/hay category includes areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle (Yang et al. 2018; MRLC Consortium 2021). Areas used as pastures, fallow fields, and buffer strips (i.e., vegetated strips along streams that protect surface water from agricultural runoff) can have the ecological functions of grasslands. Grassland and herbaceous habitat within the Survey Area are primarily limited to maintained (e.g., mowed) grasslands within the Elmon Richards Scioto River Fishing Access and grassy swales along crop fields. These grassland fields are dominated by yellow foxtail (*Setaria pumila*), ground ivy (*Glechoma hederacea*), smooth brome (*Bromus inermis*), reed canary grass (*Phalaris arundinacea*), and Morrow's honeysuckle (*Lonicera morrowii*). However, a grassland area adjacent to the Elmon Richards Scioto River Fishing Access was identified as having higher quality grassland species such as yellow Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), and little false bluestem (*Schizachyrium scoparium*). This area could provide potentially suitable habitat for grassland dependent species within the vicinity of the Survey Area.

Forested Habitat

The 2019 NLCD indicates that mixed forest, deciduous forest, and woody wetlands comprise approximately 11 acres (5%) of the Survey Area. In general, forested habitat found within the Survey Area is concentrated near the eastern terminus of the Survey Area along the riparian corridor of the Scioto River (**Figure 3**). In agricultural landscapes, isolated woodlots and narrow corridors can also provide critical ecological functions and habitats for wildlife, flora, and potentially bat species (see *Section 5.2*). The wooded areas identified during the field surveys of the Survey Area are composed primarily of common hackberry (*Celtis occidentalis*), pignut hickory (*Carya glabra*), silver maple (*Acer saccharinum*), Morrow's honeysuckle, eastern cottonwood (*Populus deltoides*), and slippery elm (*Ulmus rubra*) in the canopy and shrub layers. Common herbaceous species in forested wetland areas were reed canary grass, calico aster (*Symphyotrichum lateriflorum*), and shallow sedge (*Carex lurida*). Common herbaceous species in upland forested areas were tree seedlings, Canadian goldenrod (*Solidago canadensis*), riverbank wild rye (*Elymus riparius*), elephant panic grass (*Panicum elephantipes*), red fescue (*Festuca rubra*), and common teasel (*Dipsacus fullonum*).

5.1.2 Wetlands and Streams

The Survey Area is located within the Lick Run-Scioto River (Hydrologic Unit Code [HUC] 05060002 0403) within the Lower Scioto River (HUC 05060002) watershed. The Lower Scioto watershed makes up part of the larger Scioto River watershed, which drains 6,513 square miles across 31 counties in central and southern Ohio (OEPA 2022). Forest, cultivated crops, and pasture/hay are the predominant land covers within the Lower Scioto River watershed (OEPA 2022).

ECT completed aquatic resource delineations of the 212-acre Survey Area on May 3-7 and May 12-14, 2021; December 15 and 22, 2021; and February 22, and 23, 2022. The delineations identified a total of eight wetlands, four streams, and two ditches within the Survey Area (**Figure 4**). Four of the wetlands identified within the Survey Area are depressional palustrine emergent (PEM) wetlands that occur within agricultural fields and a portion of the Elmon Richards Scioto River Fishing Access area. The remaining four wetlands within the Survey Area are palustrine forested (PFO) wetlands along the Scioto River corridor in the eastern portion of the Survey Area. Of the 27.83 acres of wetlands delineated within the Survey Area, 16.59 acres are PEM and 11.24 acres are PFO wetlands (**Table 2**). Vegetation found in identified PEM wetlands included reed canary grass, wand panic grass (*Panicum virgatum*), narrowleaf cattail (*Typha angustifolia*), and calico aster. Additionally, portions of one wetland adjacent to the Elmon Richards Scioto River Fishing Access appear to have been planted with high quality native grasses such as yellow Indian grass, big bluestem, and little false bluestem. PFO wetlands were dominated by silver maple, slippery elm, and eastern cottonwood. Understory and herbaceous vegetation typically consisted of reed canary grass, calico aster, and shallow sedge.

Table 2. Delineated Wetlands in Survey Area

Wetland Type	Acres (Survey Area)	Percent of Total 212-ac Survey Area
Emergent (PEM)	16.59	7.83%
Scrub-Shrub (PSS)	0.00	0.00%
Forested (PFO)	11.24	5.31%
Total	27.83	13.14%

Source: (Wetland and Stream Delineation Report for the Circleville Solar Transmission Line).

Four streams were identified within the Survey Area including one intermittent stream, two unnamed perennial streams, and a portion of the Scioto River. Stream quality assessments were conducted following OEPA's Qualitative Habitat Evaluation Index (QHEI) and Headwater Habitat Evaluation Index

(HHEI) methodologies dependent upon stream size and/or maximum pool depth (OEPA 2020b; 2006). Small streams (evaluated using the HHEI) typically scored low and were designated as Class II Primary Headwater (PHW) Streams. The OEPA has designated the portion of Scioto River, located in the eastern portion of the Survey Area, with the potential to attain Warmwater Habitat (WWH) per the OAC Chapter 3745-1 Water Quality Standards. The nearest OEPA monitoring station, Station #660960 at US-22, indicates that the Scioto River was in full attainment of WWH per the 2020 Integrated Water Quality Monitoring and Assessment Report (OEPA 2020a). **Appendix A** presents representative copies of photographs depicting the wetlands and streams documented within the Survey Area.

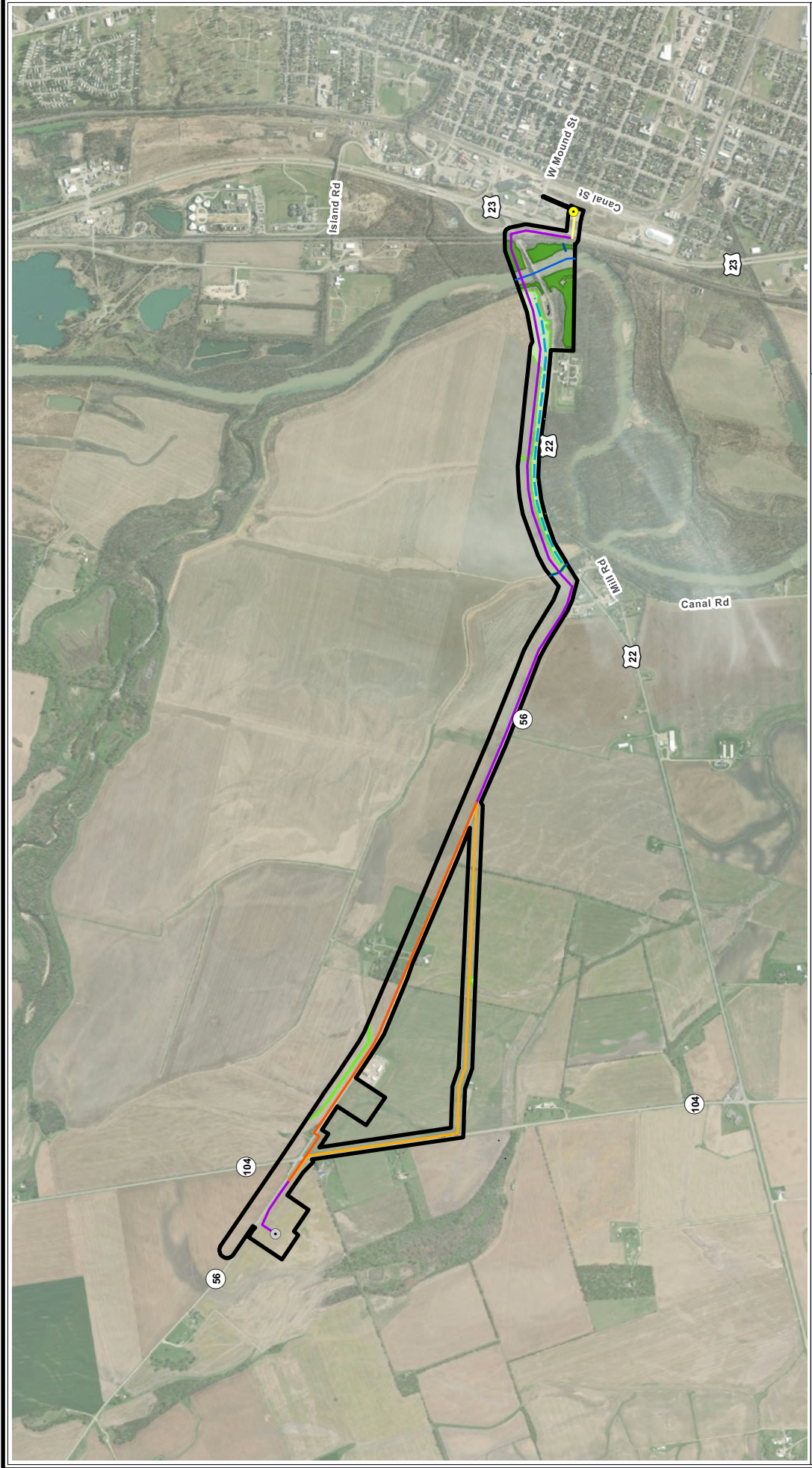
The water features identified within the Survey Area were evaluated for their potential to provide suitable habitat for wildlife, including federally and state-listed species. Four of the eight wetland features identified within the Survey Area occur within actively tilled agricultural fields and are dominated by monocultures of invasive species such as narrowleaf cattail and reed canary grass. Therefore, most emergent wetlands within the Survey Area are unlikely to provide suitable habitat for TES. However, portions of an emergent wetland and forested wetlands within the eastern portion of the Survey Area adjacent to the Scioto River and the Elmon Richards Scioto River Fishing Access area could support wetland dependent flora and fauna and could act as migratory corridors for bats and avian species. Conducting activities outside of the active periods for TES (e.g., clearing trees during the winter seasonal period for bats) could help to reduce or avoid impacts to species that may use these higher quality areas of the Survey Area.

The Scioto River channel is also likely to provide suitable habitat for a diverse assemblage of aquatic species such as fish and mussels. Avoiding impacts to the Scioto River channel and the implementation of construction stormwater best management practices (BMPs) that prevent erosion and sedimentation into the river, should help to avoid or reduce impacts to species that are present in the Scioto River.

5.1.3 Floodplains

Floodplains of large rivers and streams may provide beneficial habitat for federally or state-listed species, as these areas frequently contain wetland habitats. The FEMA National Flood Hazard Layer (NFHL) dataset for Pickaway County floodplain data indicates that a 100-year floodplain (flood area ID 39129C) associated with the Scioto River overlaps large portions of the eastern portion of the Survey

Area (**Figure 5**; FEMA 2022). The FEMA NFHL dataset also indicates that the eastern portion of the Survey Area also overlaps the regulatory floodway (flood area ID 39129C) of the Scioto River (**Figure 5**; FEMA 2022). ECT identified eight wetlands within large portions of the Survey Area designated as part of the floodplain and regulatory floodway of the Scioto River.



Legend

- Circleville Substation
- Collector Substation
- Ecological Field Survey Area
- Preferred Route
- Alternate Route
- Common Preferred/Alternate Route
- Common Preferred/Alternate Route - Underground

- Ditch
- Stream, Intermittent
- Stream, Perennial

- Emergent Wetland
- Forested Wetland

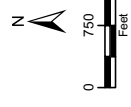


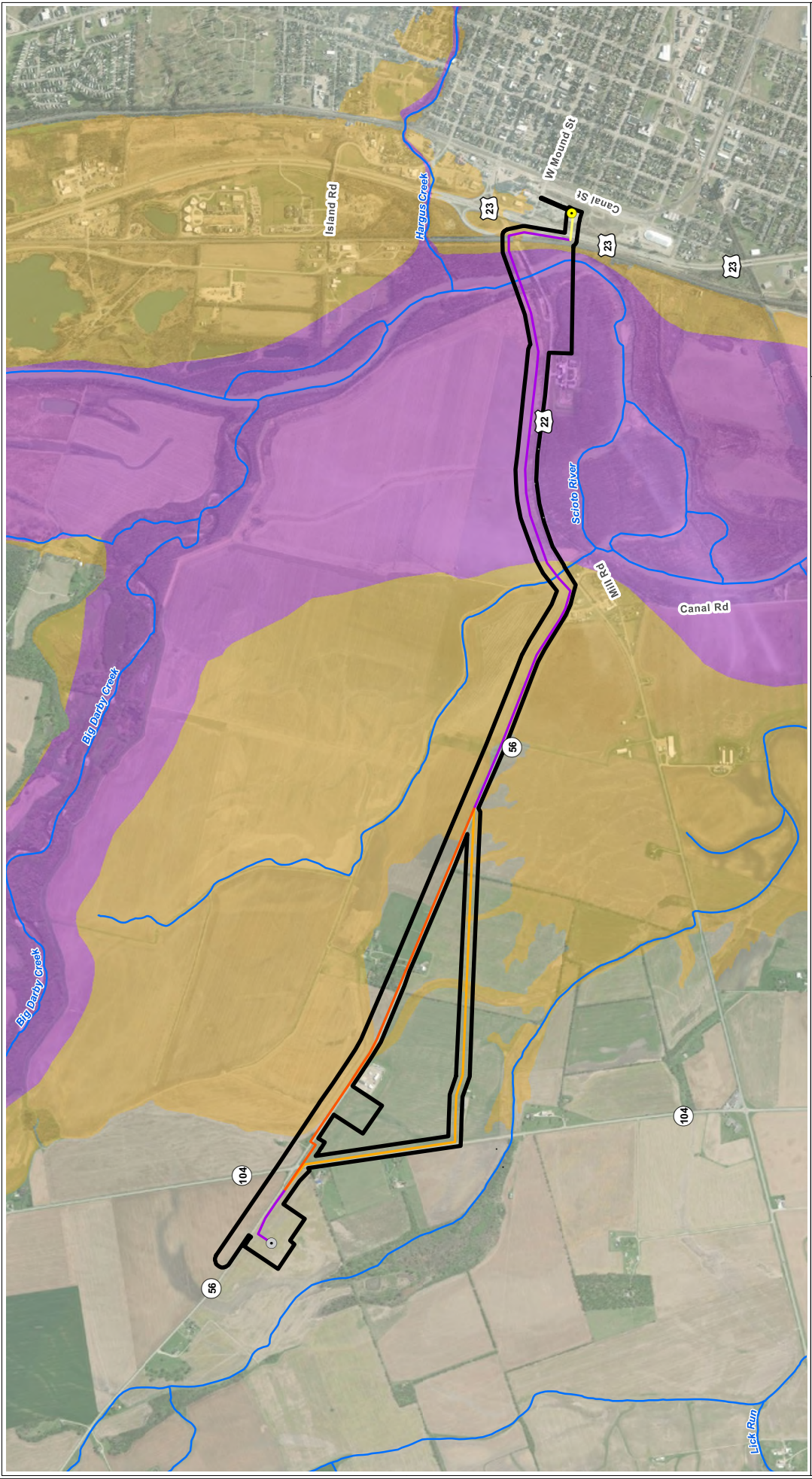
Figure 4
Wetland and Stream Delineation

Circleville Solar Transmission Line
Pickaway County, Ohio

Date: 6/7/2022



Sources: ESRI World Imagery, 2020; NEER, 2022; ECT, 2022.



- Legend**
- Circleville Substation
 - Collector Substation
 - Ecological Field Survey Area
 - Preferred Route
 - Alternate Route
 - Common Preferred/Alternate Route
 - Common Preferred/Alternate Route - Underground

- FEMA Flood Zones**
- Zone AE
 - Approximate Floodway

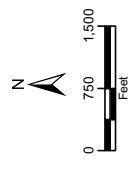


Figure 5
FEMA Floodplain
Circleville Solar Transmission Line
Pickaway County, Ohio
Date: 6/7/2022



Sources: FEMA, 2020; ESRI World Imagery, 2020; NEER, 2022; ECT, 2022.

5.1.4 Soils

The USDA-NRCS's SSURGO was reviewed to provide a soil characterization within the Survey Area as well as ratings of soil use (USDA-NRCS 2022d; 2022c). A table of all the soils identified within the Survey Area, including soil type descriptions, is provided below in **Table 3**. A map of soil types within the Survey Area and their boundaries is also provided in **Figure 6**.

Table 3. Soils within the Survey Area

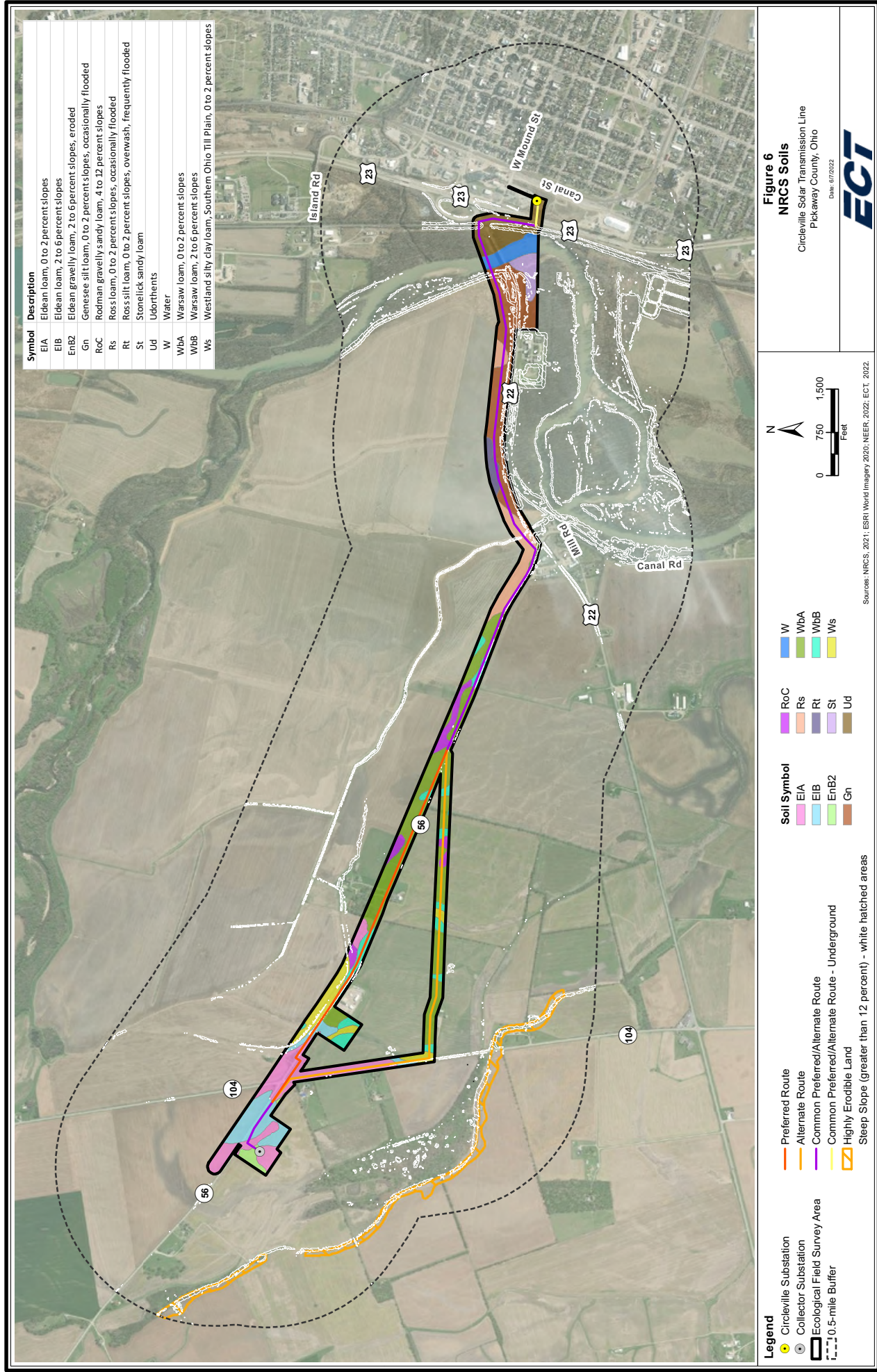
Map Unit Symbol	Soil Name	HEL ¹ (Y/N)	Acres within Survey Area	Percent within Survey Area
WbA	Warsaw loam, 0 to 2 percent slopes	N	50.95	24.05%
Gn	Genesee silt loam, 0 to 2 percent slopes, occasionally flooded	N	36.34	17.15%
EIA	Eldean loam, 0 to 2 percent slopes	N	27.31	12.89%
EIB	Eldean loam, 2 to 6 percent slopes	N	15.96	7.53%
Ud	Udorthents	N	15.62	7.37%
Rs	Ross loam, 0 to 2 percent slopes, occasionally flooded	N	14.50	6.85%
WbB	Warsaw loam, 2 to 6 percent slopes	N	14.25	6.73%
Ws	Westland silty clay loam, Southern Ohio Till Plain, 0 to 2 percent slopes	N	11.56	5.46%
RoC	Rodman gravelly sandy loam, 4 to 12 percent slopes	N	8.15	3.85%
W	Water	N	6.47	3.05%
St	Stonelick sandy loam	N	5.09	2.40%
Rt	Ross silt loam, 0 to 2 percent slopes, overwash, frequently flooded	N	3.20	1.51%
EnB2	Eldean gravelly loam, 2 to 6 percent slopes, eroded	N	2.45	1.15%
Total			211.84	100.00%

¹ Highly Erodible Land
Source: (USDA-NRCS 2022d; 2022c).

Highly Erodible Soils and Steep Slopes

ECT reviewed the USDA-NRCS's list of soils in Pickaway County to identify soils within the Survey Area and a 0.5-mile buffer that are classified as Highly Erodible Land (HEL; USDA-NRCS Ohio 2022). The review indicated that there are no soils designated as HEL in the Survey Area, however there are soils designated as HEL in the 0.5-mile buffer (**Table 3, Figure 6**). The review also indicated that there are critically steep slopes of 12% or greater within the Survey Area (approximately 13 acres, or 6% of the

Survey Area). Steep slopes within the Survey Area are mainly concentrated along agricultural swales, riparian corridors, and the Scioto River corridor (**Figure 6**).



5.1.5 Public Lands and Conservation Easements

Publicly Owned and Managed Lands

ECT's review of the USGS PAD-US and the ODNR Lands mapper (ODNR 2022b) identified the ODNR DOW-managed Elmon Richards Scioto River Conservation Area within the eastern portion of the Survey Area (**Figure 7**). Outside the Survey Area, the closest public lands include the ODNR-managed Circleville Canal Wildlife Area (WA), located approximately 1.00 mile to the south, Wildlife Production Area (WPA) 10, located approximately 2.23 miles to the southwest, as well as the Bartley Dedicated Nature Preserve (managed by the Ohio Division of Natural Areas and Preserves), located approximately 2.00 miles to the southeast (**Figure 7**; USGS 2022). WPAs are managed for enhancing the wildlife in the area and are often open to the public for hunting.

Conservation Easements

The Conservation Reserve Program (CRP) is a federally funded conservation program that provides farmers with assistance and resources to convert highly erodible land to resource-conserving vegetative cover to enhance the environmental quality of the surrounding region (USDA-FSA 2022). Neither the PAD-US or the National Conservation Easement Database (NCED) located properties enrolled in the USDA Farm Service Agency (FSA) – CRP or Conservation Reserve Enhancement Program (CREP) mapped within the Survey Area (NCED 2022; USGS 2022). Although CRP and CREP easements are common throughout rural areas in Ohio, this information is often not publicly available. Circleville Solar confirmed with landowners that a grassland area within the eastern portion of the Survey Area is enrolled in the CRP. This area contains higher quality grassland species and appears to have been restored from cultivated cropland. The extents of the CRP easement are shown on **Figure 7**.

The Agricultural Conservation Easement Program (ACEP) is a federally funded conservation program to help conserve agricultural lands and wetlands and their related benefits (USDA-NRCS 2022a). The Agricultural Land Easements (ALE, formerly the Farm and Ranch Lands Protection Program) prevent the conversion of prime/unique farmlands, statewide/locally important soils, and historic and archaeological features on farmlands and ranches to non-agricultural uses (USDA-NRCS 2022b). The USDA works cooperatively with state, tribal, and local governments as well as NGOs to preserve valuable farmlands under the ACEP-ALE in Ohio. Wetland Reserve Easements (WRE, formerly the Wetlands Reserve Program [WRP]) protect, restore, and enhance wetlands through the purchase of easements on private and tribal-owned land (USDA-NRCS 2022e). Similar to CRP easements,

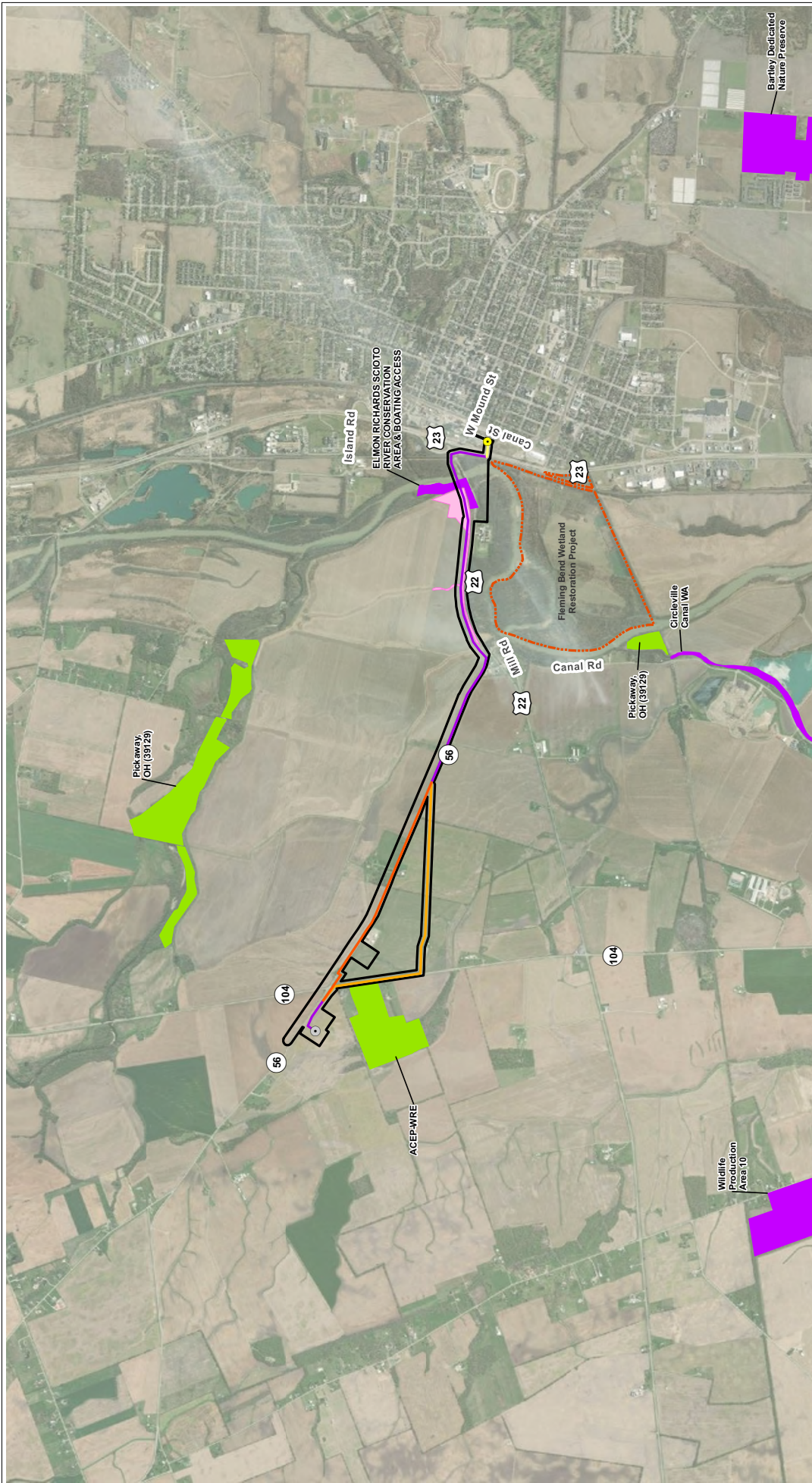
information on ACEP lands may not be publicly available to protect sensitive landowner information. ECT's review of the PAD-US and NCED did not locate properties enrolled in the ACEP within the Survey Area boundary or a 0.5-mile radius (NCED 2022; USGS 2022). However, the field review in May 2021 identified an area enrolled with the ACEP-WRE to the west of the Survey Area (**Figure 7**). Circleville Solar confirmed with the landowner this area is enrolled in the WRP.

The NCED identified several ACEP-WREs to the north and south of the Survey Area boundary along Big Darby Creek and Scioto River, with the nearest ACEP-WRE located approximately 0.75 miles from the Survey Area (**Figure 7**). The identified easements are currently under private management by the USDA-NRCS.

State Wildlife Action Plan – Areas of Conservation Opportunity

Ohio's State Wildlife Action Plan (SWAP) identifies Conservation Opportunity Areas (COAs) which aim to enhance and maintain the highest level of terrestrial wildlife diversity in the state (ODNR- Division of Wildlife 2015). No COAs are located in the Survey Area. However, the Scioto River Watershed, in which the Survey Area is located, is identified as a Conservation Opportunity Watershed in the Ohio SWAP.

Although the Survey Area is located within a designated COA Watershed, the Survey Area accounts less than 0.01% of the total Scioto River watershed acreage (approximately 4,168,320 acres in size; OEPA 2022). Therefore, impacts to lands within Survey Area would not constitute a significant change in available habitat for wildlife species. Furthermore, at the time of this report, COAs do not have regulatory protections and are intended to serve as guidance for conservation planning as they represent areas of conservation potential.



Circleville Substation

- Collector Substation
- Preferred Route
- Alternate Route
- Common Preferred/Alternate Route
- Common Preferred/Alternate Route - Underground

Ecological Field Survey Area

- NRCS / ACEP-WRE
- State Trust Land
- CRP Easement
- Fleming Bend Wetland Restoration Project

Figure 7

Public Lands

Circleville Solar Transmission Line

Pickaway County, Ohio

Date: 6/7/2022

Scale

0 0.25 0.5 Miles

Legend

Circleville Solar Transmission Line

Pickaway County, Ohio

Date: 6/7/2022

Sources: USFPA, ODNR, 2021; ESRI World Imagery, 2020; NEER, 2022; ECT, 2022.

5.2 Threatened and Endangered Species

5.2.1 Federally Listed Species

The USFWS' IPaC tool provides information regarding federally listed TES as well as proposed and candidate species based on known records and species ranges within the region of a defined area (e.g., Project boundary or county). The unofficial TES list from IPaC (accessed March 4, 2022) indicates that the Survey Area is within the range (i.e., are known to or are believed to occur) of six federally endangered (LE), two federally threatened species (LT) and one candidate species (C; **Table 4; Appendix B**). The following paragraphs discuss species indicated by the IPaC results. Additional federal species that were listed within the OH NHD review are discussed in *Section 5.2.2*.

Table 4. USFWS IPaC Results

Common Name (Scientific Name)	Status ¹	Habitat	Potential Occurrence in Survey Area
Mammals			
Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	LT, SE	Forested regions. Forages in upland and lowlands woods and along floodplain forests.	Moderate to High
Indiana Bat (<i>Myotis sodalis</i>)	LE, SE	Forested regions. Forages on hillsides, ridge forests, and riparian and floodplain forests.	Moderate to High
Fish			
Scioto Madtom (<i>Noturus trautmani</i>)	LE, SE	Stream riffles of moderate flow over sandy gravel bottom.	Moderate
Insects			
Monarch Butterfly (<i>Danaus plexippus</i>)	C	Grasslands with the larval host plant milkweed and a diverse assemblage of flowering plants with nectar for adults.	Low
Mussels			
Northern Riffleshell (<i>Epioblasma torulosa rangiana</i>)	LE, ST	A variety of streams (from large to small) with bottoms of firmly packed sand or gravel.	Moderate to High
Snuffbox Mussel (<i>Epioblasma triquetra</i>)	LE, SE	Small to medium creeks or rivers, inhabiting areas with a swift current.	Moderate to High
Clubshell (<i>Pleurobema clava</i>)	LE, ST	Small streams and rivers, often below the sediment surface.	Moderate to High
Rabbitsfoot (<i>Quadrula cylindrica cylindrica</i>)	LT, SE	Small to medium streams and larger rivers, often in shallow areas along the bank.	Moderate to High
Rayed Bean (<i>Villosa fabalis</i>)	LE, SE	Lakes and small to large streams.	Moderate to High

¹ Status Key: LT=federally threatened; LE=federally endangered; SE=state-endangered ST=state-threatened, C= Candidate. Source: (USFWS 2022b; 2012a; Whitaker et al. 2007; USFWS 2020b; Roe 2002; USFWS 2020a; 2020c; Watters 1994; USFWS 1997b; 2009a).

Indiana Bat

Summer habitat for the LE Indiana bat (*Myotis sodalis*) includes a variety of forested/wooded habitats, including riparian zones, bottomland and floodplain habitats, and upland communities. Suitable foraging habitat may also include adjacent and interspersed non-forested habitats, such as emergent wetlands, adjacent edges of agricultural fields, wooded fencerows, and old fields or open pastures with isolated trees that provide roosting habitat (USFWS 2007; 2017; Menzel et al. 2001). Suitable habitat includes forests and woodlots with varying amounts of canopy closure that contain potential roosts (i.e., live trees and/or snags ≥ 5 inches diameter at breast height [DBH] that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests,

and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of forested/wooded habitat (USFWS 2017).

In summer, the Indiana bat is found across most of the state of Ohio with maternity colonies most common in the northeastern and southern portions of the state (USFWS 2007). According to the 2007 Indiana Bat Draft Recovery Plan (USFWS 2007; 2018a), summer reproductive records (i.e., maternity colonies) are known within Pickaway County, including along Big Darby Creek to the north of the Survey Area (Kniewski and Gehrt 2011).

The Indiana bat hibernates colonially during winter in caves and abandoned mines in the east-central United States (USFWS 2017). According to the 2007 Indiana Bat Draft Recovery Plan (USFWS 2007), Pickaway County does not contain any known Indiana bat hibernacula. However, the Survey Area is located approximately 12 miles west of a “Priority 4” hibernaculum in Hocking County, 24 miles northeast of a “Priority 4” hibernaculum in Highland County, and 85 miles east of a “Priority 2” hibernaculum in Preble County. Hibernacula are assigned priority rankings based on the number of bats they hold. Although “Priority 1” hibernacula are essential to the recovery of the Indiana bat, “Priority 2” hibernacula also contribute to the recovery of the Indiana bat and house at least 1,000 but fewer than 10,000 bats one or more winters in the last 10 years. “Priority 4” hibernacula are least important to the recovery and long-term conservation of the Indiana bat. These hibernacula typically have current or observed historic populations of fewer than 50 bats (USFWS 2007).

Forest cover within the Survey Area primarily occurs as an area of mixed early successional/second growth deciduous forest near the eastern terminus of the Survey Area, along the Scioto River riparian corridor. Consultation with USFWS indicated that presence of the Indiana bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence (**Appendix C**). In addition, the species may also migrate through the Survey Area. Therefore, there is a moderate to high potential for Indiana bats to occur within the Survey Area.

Northern Long-eared Bat

The LT northern long-eared bat (NLEB, *Myotis septentrionalis*) is a migratory bat species that forages and travels within forested habitat, including upland forest, lowland forest, forested linear elements

such as tree-lined hedgerows and stream corridors, and occasionally adjacent and interspersed emergent wetlands, old fields, and agricultural fields (USFWS 2014). During summer, this species roosts singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically 3 inches or greater DBH) in upland and lowland woodlots and tree-lined corridors (USFWS 2014). This species occurs throughout Ohio in summer and is known to overwinter in caves and mines of Ohio (USFWS 2015). Townships containing known hibernacula or roost trees in Ohio have not been published by USFWS as part of the USFWS NLEB Bat 4(d) Rule. However, according to the IPaC results, the incidental take of NLEB is not prohibited at the Survey Area's location in accordance with the 4 (d) Rule (**Appendix B**). This indicates that the Project is located more than 0.25 mi from a known hibernacula and more than 150 feet from a known maternity roost tree (USFWS 2022c).

Forest cover within the Survey Area primarily occurs as an area of mixed early successional/second growth deciduous forest near the eastern terminus of the Survey Area, along the Scioto River riparian corridor. This species is more restricted to interior woodland than other bat species (Whitaker et al. 2007) but may occur along small tracts of woodlands and/or floodplain forests within the Survey Area in summer. Consultation with USFWS indicates that presence of the NLEB is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence (**Appendix C**). In addition, this species may migrate through the Survey Area. Therefore, there is moderate to high potential for NLEB to occur within the Survey Area.

Indiana Bat and Northern Long-eared Bat Potential Summer Bat Habitat

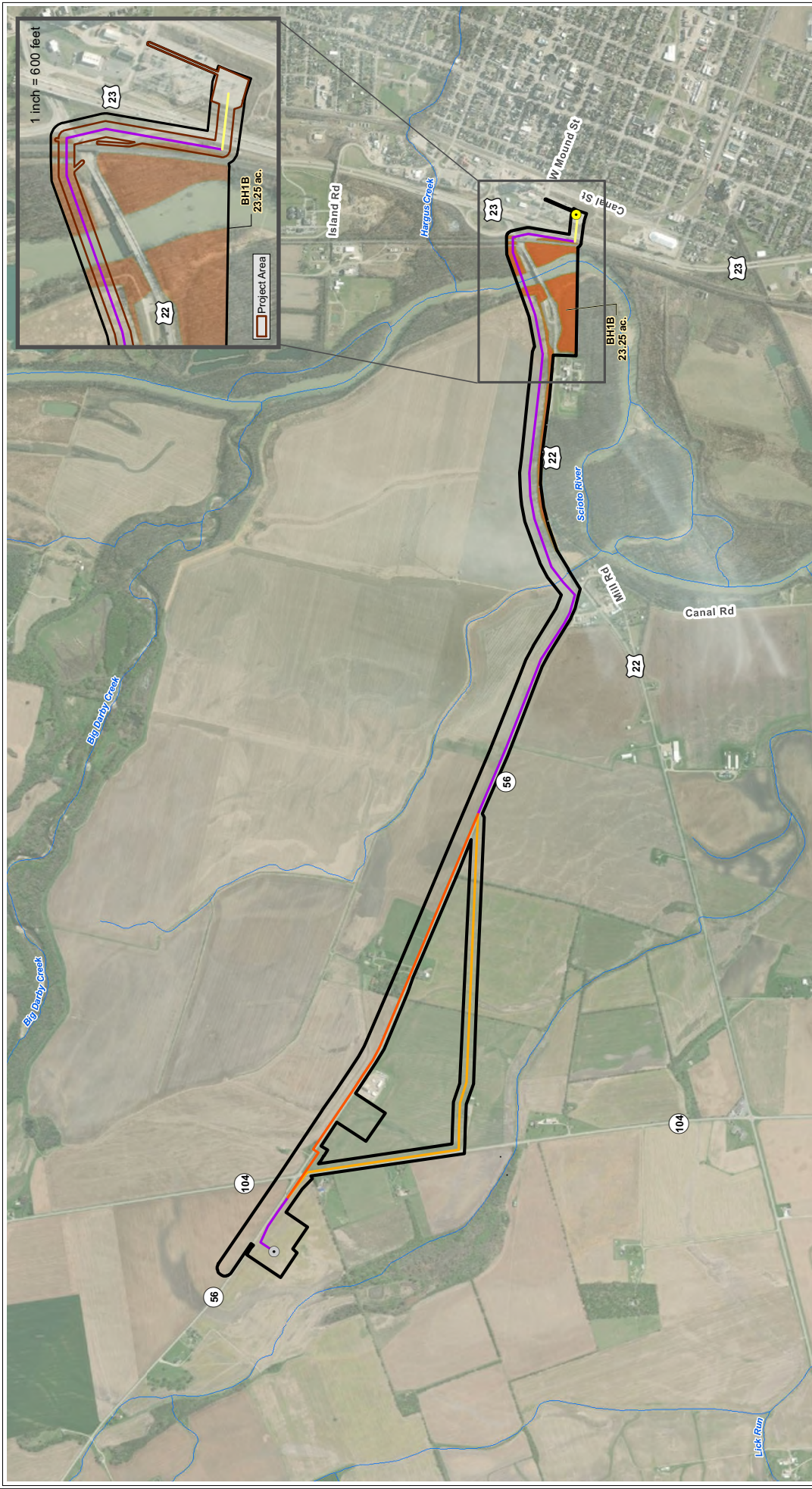
Forested areas within the Survey Area were surveyed for potential bat habitat in May 2021, December 2021, and February 2022. A USFWS Bat Habitat Assessment form was completed for the reviewed forested areas and is provided in **Appendix D**. The field assessment confirmed approximately 23.25 acres of potential bat habitat within the Survey Area. The forested areas on-site included mixed early successional/second growth deciduous forest adjacent to or in the vicinity of water for foraging bats. The majority of these areas were located near the eastern terminus of the Survey Area, along the Scioto River (**Figure 8**), and were rated as moderate quality habitat for bats. Dominant overstory tree species in the assessed forested areas included silver maple, eastern cottonwood, and American sycamore (*Platanus occidentalis*) in the canopy and gray dogwood (*Cornus racemosa*) as the dominant shrub layer. Some of these species, such as silver maple and cottonwood, are known to have

exfoliating or furrowed bark, which may allow for bat roosting. In addition, due to the proximity to flight corridors, low subcanopy clutter, proximity to a source of water, and high foraging potential, it is ECT's professional opinion that the majority of forested areas identified within the Survey Area contain moderate suitability for listed bat species.

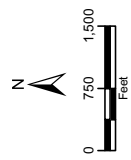
If tree clearing must be done, it is recommended by the USFWS that tree clearing occur during the winter months (October 1 through March 31) when bats have left their summer roosts for hibernacula to avoid impacts to this species. Further agency recommendations and coordination regarding bat species is included in *Section 6.0*.

Indiana Bat and Northern Long-eared Bat Potential Hibernacula

The Indiana bat and NLEB typically overwinter in suitable underground hibernacula, including natural caves and abandoned mines with constant temperatures and humidity. A desktop review for potential hibernacula was conducted for the Survey Area and a 0.25-mile radius. The review included searching the USGS database of *Prospect and Mine-Related Features from 7.5- and 15-minute topographic quadrangles maps* and the ODNR's *Mines of Ohio and Karst Map* databases (Horton and San Juan 2021; ODNR 2022c). Inactive surface mines were identified within the Survey Area and 0.25-mile buffer along US-22 (**Figure 9**). However, surface mines would not constitute suitable bat hibernacula and these areas of the Survey Area appear to have been active agricultural fields planted with row crops since at least 1985. No gravel pits were identified within the Survey Area. The nearest gravel pit is located approximately 0.25 miles outside the Survey Area but would not be considered suitable bat hibernacula. No further mines, quarries, karst features, or sinkholes were identified during the desktop or field reviews (**Figure 9**). No suitable hibernacula were identified within the Survey Area or 0.25-mile buffer.



- Legend**
- Circleville Substation
 - Collector Substation
 - Ecological Field Survey Area
 - Bat Habitat Area
 - Preferred Route
 - Alternate Route
 - Common Preferred/Alternate Route
 - Common Preferred/Alternate Route - Underground



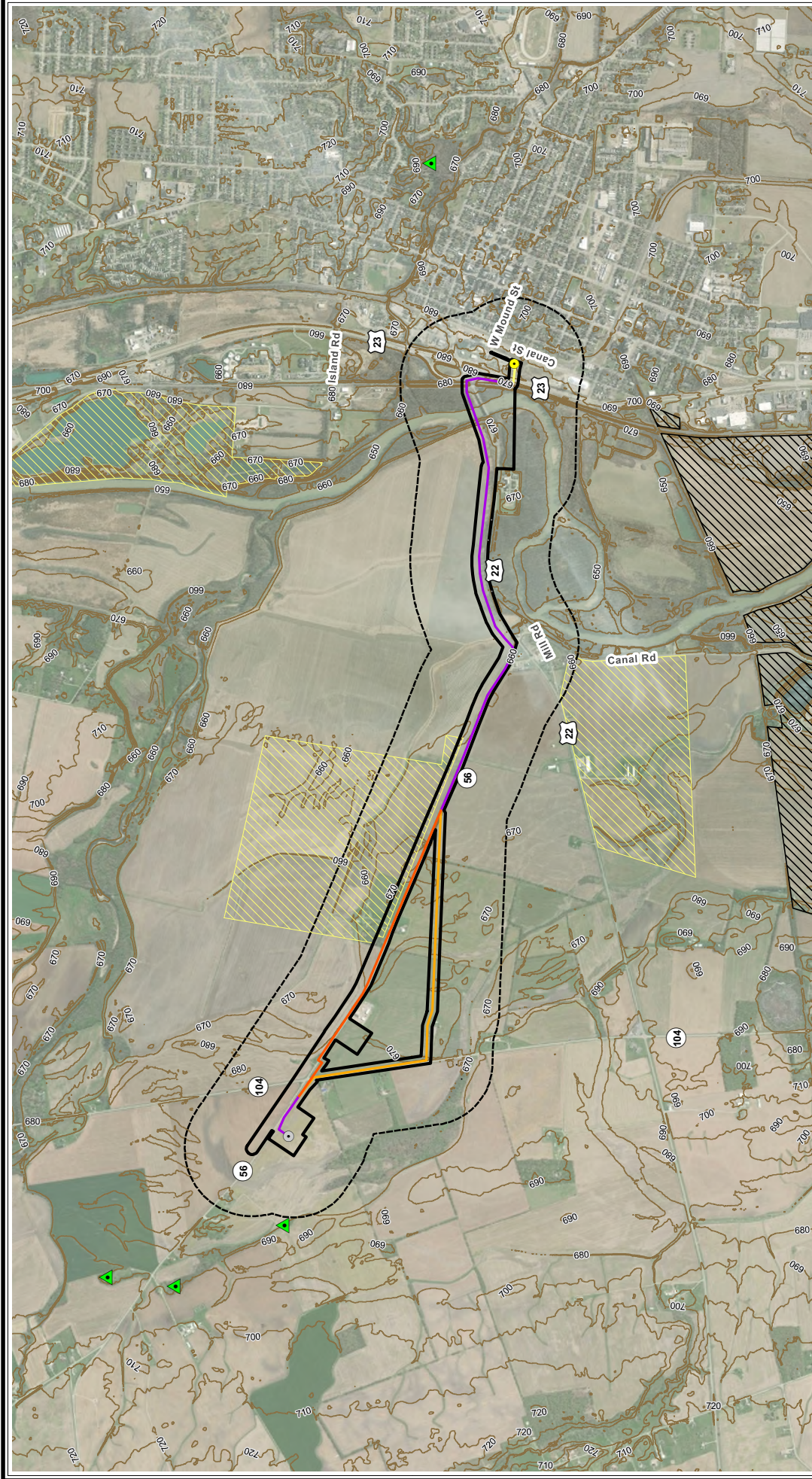
**Figure 8
Forested Areas**

Circleville Solar Transmission Line
Pickaway County, Ohio

Date: 6/7/2022



Sources: ESRI World Imagery, 2020; NEER, 2022; ECT, 2022.



- Legend**
- Circleville Substation
 - Collector Substation
 - Ecological Field Survey Area
 - 0.25-mile Buffer
 - Preferred Route
 - Alternate Route
 - Common Preferred/Alternate Route
 - Common Preferred/Alternate Route - Underground
 - 10ft Contour
 - Gravel Pit
 - Surface Mine
 - Active
 - Inactive

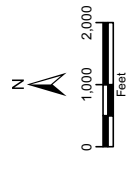


Figure 9
Potential Bat Hibernacula Indicators

Circleville Solar Transmission Line
 Pickaway County, Ohio
 Date: 6/7/2022



Sources: ODNR, 2021; USGS, 2021; ESRI World Imagery 2020; NEER, 2022; ECT, 2022.

Scioto Madtom

The Scioto madtom (*Noturus trautmani*) is a LE fish that prefers stream riffles of moderate current over gravel bottoms with high quality water that is free of suspended sediments. The Scioto madtom has been found exclusively in a small section of Big Darby Creek, a major tributary to the Scioto River (USFWS 1997b; 2009a). Big Darby Creek is not located within the Survey Area; however, Big Darby Creek discharges into the Scioto River approximately 0.9 river miles upstream (i.e., north) of the Survey Area. The streams and waterbodies identified within the Survey Area were evaluated for their potential to support fish species during on-site surveys in May 2021, December 2021, and February 2022. While streams and ditches are located throughout the Survey Area, the majority of these surface water features have been heavily channelized/straightened through agricultural fields and did not contain riffle/pool complexes. Additionally, high sedimentation was observed within the majority of on-site streams and channels. The Scioto River is a higher quality perennial river that has potential to support this species. Further, the location of the Survey Area downstream of the Big Darby Creek indicates potential for this species to occur in the reach of the Scioto River within the Survey Area.

Monarch Butterfly

The monarch butterfly is listed as a federal candidate species that is being considered for listing under the ESA. Although the monarch butterfly is known to forage on many wildflowers, monarch butterflies prefer open fields and meadows with milkweeds (*Asclepias* spp.), its larval host plant (USDA Forest Service 2022). According to the USFWS the current range of the monarch butterfly overlaps the region of the Survey Area.

Grassland areas within the Survey Area are mainly dominated by ruderal and invasive species such as yellow foxtail, ground ivy, smooth brome, and reed canary grass. Higher quality grasslands within the Survey Area, such as the identified CRP easement, were dominated by wetland grass species with limited wildflowers. Habitats suitable for foraging, non-breeding, and potentially breeding monarch butterflies were not observed during the desktop or field reviews. Additionally, the heavy use of herbicides in agricultural areas like the Survey Area likely precludes the occurrence of milkweed (USDA Forest Service 2022). The monarch butterfly is unlikely to occur within the Survey Area.

Mussels

The LE clubshell (*Pleurobema clava*), northern riffleshell (*Epioblasma torulosa rangiana*), rayed bean (*Villosa fabalis*), and snuffbox mussel (*Epioblasma triquetra*) as well as the LT rabbitsfoot (*Quadrula cylindrica cylindrica*) occur in a variety of aquatic habitat, including lakes and small to large perennial streams (Roe 2002; USFWS 2012a; 2012c; 2020a; 2020c; Watters 1994).

The streams and waterbodies identified within the Survey Area were evaluated for their potential to support mussels during on-site surveys in May 2021, December 2021, and February 2022. While streams and ditches are located throughout the Survey Area, including three perennial streams, two of the identified perennial streams exhibited high sedimentation rates and had substrates dominated by fine particles such as silt. However, the third perennial stream, the Scioto River, has potential to support these species. In addition, based on information provided by ODNR, these five mussel species have known occurrences within the Scioto River. Therefore, there is a moderate to high potential for these federally listed mussels to occur within the reach of the Scioto River that crosses the eastern portion of the Survey Area.

5.2.2 State-listed Species

The ODNR's OH NHD maintains the state's inventory of existing records of TES, high-quality natural communities, and significant natural areas in the state. This inventory is a continuous process; thus, the absence of records in the database for a specific location does not preclude the potential presence of TES at a specific project site. ECT submitted a request for ODNR to conduct a 1-mile radius search around the Survey Area on May 19, 2021 (**Appendix C**). ODNR also completed an Environmental Review for state-listed TES with known ranges within the vicinity of the Survey Area, as described in *Section 6.2.2*.

On May 20, 2021, the ODNR responded that the Survey Area is within range of documented occurrences of 14 stated-endangered (SE) species and seven state-threatened (ST) species (**Appendix C; Table 5**). Seven state species of concern (SC) also have documented occurrences within range the Survey Area and are included in **Table 5** below. The pale umbrella sedge (*Cyperus acuminatus*) was identified as occurring within the vicinity of the Project in the OH NHD review, but was confirmed as having been delisted from Ohio's rare plant species list in 2020, per consultation with ODNR in April 2022. The ODNR indicated that no surveys are recommended for this delisted species. **Table 5** also

includes a brief description of preferred habitat requirements and provides a preliminary desktop determination of the potential of occurrence within the Survey Area. ECT also reviewed Species of Greatest Conservation Need identified in the SWAP, which collectively includes species listed as SE, ST, SC, or Special Interest (SI) in **Table 5** (ODNR- Division of Wildlife 2015).

Table 5. Ohio Listed Species Summary-Survey Area

Common Name Scientific Name	Status ¹	Habitat	Potential Occurrence in Survey Area
Mussels			
Elephant-ear (<i>Elliptio crassidens</i>)	SE	Large rivers in mud, sand, or fine gravel.	Moderate to High
Northern Riffleshell (<i>Epioblasma rangiana</i>)	SE, LE	A variety of streams (from large to small) with bottoms of firmly packed sand or gravel.	Moderate to High
Snuffbox (<i>Epioblasma triquetra</i>)	SE, LE	Small to medium creeks or rivers, inhabiting areas with a swift current.	Moderate to High
Long-solid (<i>Fusconaia subrotunda</i>)	SE	Streams and small rivers with clear water and sand or gravel substrates; may also be found in coarse gravel and cobble in larger rivers.	Moderate to High
Pink Mucket (<i>Lampsilis abrupta</i>)	SE, LE	Mud and sand and in shallow riffles and shoals swept free of silt in major rivers and tributaries.	Moderate to High
Pocketbook (<i>Lampsilis ovata</i>)	SE	Small to large rivers with gravel and coarse sand substrates mixed with some silt or mud; usually found in moderate to strong current, but can survive in standing water.	Moderate to High
Washboard (<i>Megaloniais nervosa</i>)	SE	Large rivers with slow current and muddy to coarse gravel substrates; may also be found in medium to small rivers.	Moderate to High
Clubshell (<i>Pleurobema clava</i>)	SE, LE	Clean, loose sand and gravel in medium to small rivers and streams.	Moderate to High
Rabbitsfoot (<i>Theliderma cylindrical</i>)	SE, LT	Small to medium sized rivers of moderate current with clear, relatively shallow water and a mixture of sand and gravel substrates.	Moderate to High
Fanshell (<i>Cyprogenia stegaria</i>)	SE, LE	Medium to large rivers, with sand or gravel substrates.	Moderate to High
Black Sandshell (<i>Ligumia recta</i>)	ST	Varying sizes of creeks, rivers, and lakes with sand and gravel bottoms and moderate current.	Moderate to High

Common Name Scientific Name	Status ¹	Habitat	Potential Occurrence in Survey Area
Threehorn Wartyback (<i>Obliquaria reflexa</i>)	ST	Medium to large rivers with slackwater conditions to swift currents and substrates of gravel to muddy sand.	Moderate to High
Fawnsfoot (<i>Truncilla donaciformis</i>)	ST	Small to large rivers and lakes with gravel or sand substrates.	Moderate to High
Elktoe (<i>Alasmodonta marginata</i>)	SC	Small to large streams and small to medium rivers with swifter currents over packed sand and gravel substrates.	Moderate to High
Purple Wartyback (<i>Cyclonaias tuberculata</i>)	SC	Medium to large rivers with gravel or mixed sand and gravel substrates.	Moderate to High
Wavy-rayed Lampmussel (<i>Lampsilis fasciola</i>)	SC	Small-medium sized shallow streams, in and near riffles, with good current. Prefers sand or gravel substrates.	Moderate to High
Round Pigtoe (<i>Pleurobema sintoxia</i>)	SC	Mud, sand, or gravel substrates of medium to large rivers.	Moderate to High
Kidneyshell (<i>Ptychobranhus fasciolaris</i>)	SC	Creeks, rivers, and lakes with moderate to swift currents, high water quality, and sand or gravel substrates.	Moderate to High
Deertoe (<i>Truncilla truncata</i>)	SC	Rivers and lakes with a moderately swift current and firm sand or gravel substrates.	Moderate to High
Fish			
Spotted Darter (<i>Etheostoma maculatum</i>)	SE	Medium-sized rivers and streams, typically in areas of swift current at the end of a riffle where there are many very large boulders.	Moderate to High
Northern Madtom (<i>Noturus stigmosus</i>)	SE	Deep swift riffles of large rivers, usually found in and around cobbles and boulders.	Moderate to High
Northern Brook Lamprey (<i>Ichthyomyzon fossor</i>)	SE	Adults found in clear brooks with fast flowing water and either sand or gravel bottoms. Juveniles found in slow moving water buried in soft substrate of medium to large streams.	Moderate to High
Goldeye (<i>Hiodon alosoides</i>)	SE	Large rivers, often with turbid waters from clay silts. Often found in areas with swift currents, including below dams.	Moderate to High
Tippecanoe Darter (<i>Etheostoma tippecanoe</i>)	ST	Medium to large streams and rivers in riffles of moderate current with a substrate of gravel and small cobble-sized rocks.	Moderate to High
Blue Sucker (<i>Cycleptus elongatus</i>)	ST	Deep, swift water in channels of large rivers with sand, gravel, or rubble bottoms.	Moderate to High

Common Name Scientific Name	Status ¹	Habitat	Potential Occurrence in Survey Area
Lake Chubsucker (<i>Erimyzon sucetta</i>)	ST	Moderately clear lakes, oxbow lakes, sloughs of weedy lakes and their associated marshy streams dense with organic debris over bottoms of cobble, sand, boulders, mud, or silt.	Moderate to High
Paddlefish (<i>Polyodon spathula</i>)	ST	Large, deep, slow-moving rivers, lakes, and reservoirs.	Moderate to High
Western Creek Chubsucker (<i>Erimyzon claviformis</i>)	SC	Clear headwaters, creeks, and small rivers of prairies; typically streams with sand and gravel.	Very Low

¹Status Key: ST=state-threatened; SE=state-endangered; FE=federally endangered; FT=federally threatened; SC=state species of concern

Source: (Roe 2002; MNFI 2022; USFWS 2009b; 2012c; 2020c; 2022b; NatureServe 2022; Watters 1994; USFWS 2020a; Minnesota Wildflowers 2022; ODNR- Division of Wildlife 2017; MNDNR 2022c; USFWS 2019; 1997a; 2018b; MNDNR 2022a; USFWS 2001; Watters, Hoggarth, and Stansbery 2009; Fuller 2019; USFWS 2011; MNDNR 2022d; 2022b; WDNR 2022).

The Survey Area is dominated by land under agricultural use, such as row crops. The potential for suitable habitat for state listed TES identified during the OH NHD review is described in further detail in the following paragraphs. SC and SI species are not afforded legal protection under ORC 1531.25. These species are, therefore, not discussed in further detail in this Habitat Assessment.

State-Listed Mussels

The OH NHD did not list any ST or SE mussels with an occurrence within streams within the western portion of the Survey Area (**Appendix C**). However, occurrences of eight SE mussels: elephant-ear (*Elliptio crassidens*), northern riffleshell (LE), snuffbox (LE), long-solid (*Fusconaia subrotunda*), pink mucket (LE; *Lampsilis abrupta*), pocketbook (*Lampsilis ovata*), washboard (*Megaloniais nervosa*), clubshell (LE), rabbitsfoot (LT) and fanshell (LE; *Cyprogenia stegaria*) and three ST mussels: black sandshell (*Ligumia recta*), threehorn wartyback (*Obliquaria reflexa*), and fawnsfoot (*Truncilla donaciformis*) are recorded in the Scioto River, which drains through the eastern portion of the Survey Area, and Big Darby Creek, located approximately 0.9 river miles north and upstream of the Survey Area. Two of these species, pink mucket and fanshell, are also federally listed, but were not identified by the IPaC results. The state-listed mussel species may be found in a variety of aquatic habitats from small streams to large rivers and lakes of varying substrates and swiftiness (USFWS 2012a; 2012b; 2012c; Watters 1994; Roe 2002). However, freshwater mussels are generally intolerant of the sedimentation and poor water quality that is often associated with agricultural practices (**Table 5**).

The Survey Area contains several streams and ditches (**Figure 4**); however, channelization and sedimentation rates within the majority of delineated features that drain through agricultural fields likely precludes persistence of native mussel species. With the exception of the Scioto River, which is a larger, higher quality stream, the streams within the Survey Area are also generally lacking the cobble or gravel substrates, high water quality, and/or water velocity that many of these mussel species require. Based on information provided by ODNR, several of the state listed mussels have known occurrences within the Scioto River corridor within the eastern portion of the Survey Area. Therefore, there is a moderate to high potential for state- listed mussel species to occur within the Scioto River within the Survey Area.

State-Listed Fish

The OH NHD identified eight state-listed fish species with occurrences in the vicinity of the Survey Area including the SE spotted darter (*Etheostoma maculatum*), SE northern madtom (*Noturus stigmosus*), SE northern brook Lamprey (*Ichthyomyzon fossor*), and SE goldeye (*Hiodon alosoides*), as well as the ST Tippecanoe darter (*Etheostoma tippecanoe*), ST blue sucker (*Cycleptus elongatus*), ST lake chubsucker (*Erimyzon sucetta*), and ST paddlefish (*Polyodon spathula*). These state-listed species may be found in a variety of aquatic habitats from brooks to large streams of varying substrates and swiftness (ODNR-Division of Wildlife 2017; USFWS 2011; MNDNR 2022d; Fuller 2019; USFWS 2022a; MNDNR 2022a; USFWS 2001; WDNR 2022).

While streams and ditches are located throughout the Survey Area, the majority of these features have been heavily modified for agricultural uses and are unlikely to provide suitable habitat for state-listed fish species. However, these species have a moderate to high potential to occur within the Scioto River located within the eastern portion of the Survey Area.

5.3 General Wildlife

5.3.1 Sensitive Habitats

USFWS Designated Critical Habitat

The USFWS' Critical Habitat portal provides information regarding TES Critical Habitat designation. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a TES and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but is critical to its recovery.

Based on currently available information from the USFWS's IPaC tool accessed on March 4, 2022, there are no USFWS-designated critical habitats within the vicinity of the Survey Area (USFWS 2022b).

Habitat Fragmentation

Habitat fragmentation occurs when large tracts of land are converted to other vegetation types such that only scattered fragments of such habitat remain, resulting in overall habitat loss, increase in edge habitat and edge effects, and isolation effects (Faaborg et al. 1993). The ecological impacts of habitat fragmentation may include interruption/alterations to natural processes, reduction in habitat connectivity, and stress on species and natural communities (Pearsall 2012).

Effects of fragmentation on the ecology of forest ecosystems has been widely examined, but much of the literature focuses on larger spatial areas than that represented by the extent of most renewable energy projects like the Circleville Solar Transmission Line (National Research Council 2007). .

The Survey Area is in a region where much of the pre-settlement, contiguous forest and swamp habitats have been replaced with agriculture or by smaller patches of forest, tree rows, and old field/pasture. Much of the Survey Area contains cultivated cropland (approximately 61% of the Survey Area) and hay fields/pastures (approximately 4% of the Survey Area) as depicted on **Figure 3**. A few smaller tracts of grassland/herbaceous cover that are not actively farmed remain in the landscape scattered throughout the Survey Area, but do not represent a dominant feature in the landscape. Development within previously disturbed areas would not be expected to cause habitat fragmentation.

5.3.2 Avian Species

In addition to federally and state-listed TES, the Survey Area may also provide suitable habitat for avian species protected under the BGEPA of 1940 (BGEPA 1940) and the MBTA of 1918. The USFWS IPaC results indicate that bald eagles and 23 additional migratory bird species that USFWS has designated as birds of conservation concern (BCC) have been documented within the region of the Survey Area (Table 6; USFWS 2022c).

Table 6. Birds of Conservation Concern Potential Breeding Habitat Summary

Common Name Scientific Name	Potential Breeding Habitat Land Cover Types	Potential for Breeding within Survey Area	Breeding Dates
American Bittern (<i>Botaurus lentiginosus</i>)	Wetland habitats with thick vegetation of cattails, bulrushes, and sedges. Rarely will nest on dry ground with dense and tall vegetation.	Low	April 1 – Aug 31
American Golden-plover (<i>Pluvialis dominica</i>)	Tundra.	None – breeds elsewhere	-
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Upland forest, Forested wetland, and fields near large bodies of water.	Moderate	Oct. 15- Aug 31
Black Rail (<i>Laterallus jamaicensis</i>)	Marsh habitats with tall vegetation such as bulrushes and needle rushes.	Low	March 1 to Sept 15
Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	Large, dense deciduous thickets and shrubby places, often on the edges of woodland or around marshes. Also in second growth of mixed deciduous-coniferous woods, or along their brushy edges.	Moderate	May 15 to Oct 10
Bobolink (<i>Dolichonyx oryzivorus</i>)	Open habitats like grasslands like prairies, pastures, and hayfields with a mixture of grasses and broad-leaved plants.	Moderate	May 20 to July 31
Buff-breasted Sandpiper (<i>Calidris subruficollis</i>)	Grasslands in the High Arctic of Alaska and Canada.	None – breeds elsewhere	-
Canada Warbler (<i>Cardellina canadensis</i>)	Mixed conifer and deciduous forest with shrubby and mossy understory near water.	Low	May 20 – Aug 10
Cerulean Warbler (<i>Dendroica cerulea</i>)	Large areas of older growth forests with tall trees.	Low	April 21 to July 20
Dunlin (<i>Calidris alpina arctica</i>)	Subarctic and arctic tundra.	None – breeds elsewhere	-

Common Name Scientific Name	Potential Breeding Habitat Land Cover Types	Potential for Breeding within Survey Area	Breeding Dates
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	Large areas (>250 acres of grassland/pasture/fallow field.	Low	May 1 to Aug 31
Hudsonian Godwit (<i>Limosa haemastica</i>)	Boreal forests of the artic.	None – breeds elsewhere	-
Kentucky Warbler (<i>Oporornis formosus</i>)	Large tracks (>1,200 acres) of lowland hardwood forested near waters.	Low	April 20 to Aug 20
Least Bittern (<i>Ixobrychus exilis</i>)	Freshwater and brackish marshes with tall aquatic vegetation such as cattails, sedges, and other reeds and rushes, preferentially in places interspersed with open water and woody vegetation.	Low	Aug 16 – Oct 31 ¹
Lesser Yellowlegs (<i>Tringa flavipes</i>)	Freshwater and brackish marshes. May use flooded agricultural fields for stopover habitat during migration.	None – breeds elsewhere	-
Prairie Warbler (<i>Dendroica discolor</i>)	Large clearings or fallow fields with scattered trees and shrub clumps	Low	May 1 – July 31
Prothonotary Warbler (<i>Protonotaria citrea</i>)	Flooded bottomland woods, swamps. Tend to avoid patches of forests less than 250 acres.	Moderate	April 1 to July 31
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	Upland forest (deciduous) but will use developed/urban areas including fence posts within farmland areas.	Moderate	May 10 to Sept 10
Ruddy Turnstone (<i>Arenaria interpres morinella</i>)	Rocky coasts of the tundra.	None – breeds elsewhere	-
Rusty Blackbird (<i>Euphagus carolinus</i>)	Fens, bogs, and beaver ponds.	None – breeds elsewhere	-
Semipalmated Sandpiper (<i>Calidris pusilla</i>)	Low tundra habitat near wetlands.	None – breeds elsewhere	-
Short-billed Dowitcher (<i>Limnodromus griseus</i>)	Breed along the border of boreal forests and the artic tundra.	None – breeds elsewhere	-
Wood Thrush (<i>Hylocichla mustelina</i>)	Deciduous forests dominated by beech, sweet gum, and red maples. More common in damper woodlands close to streams than dried woodlands. Will nest in smaller wooded areas with less success.	Moderate	May 10 to Aug. 31
Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>)	Young forests and edge habitat. Prefers stands with aspens, but may use any mixture of deciduous forests.	Moderate	May 10 to July 15

¹Breeding dates vary slightly based on ODNR and USFWS provided information.

Source: (Cornell University 2019; Cooper 2000; USFWS 2022b; Audubon Society 2022).

Of the species in **Table 6** above, the black-billed cuckoo (*Coccyzus erythrophthalmus*), bobolink (*Dolichonyx oryzivorus*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), wood thrush (*Hylocichla mustelina*), yellow-bellied sapsucker (*Sphyrapicus varius*), and bald eagle have a moderate potential to breed and forage within the Survey Area due to the presence of woodland and grassland habitats in the eastern portion of the Survey Area along the Scioto River and within the identified CRP easement.

Migratory Bird “Hot Spots”

ECT reviewed publicly available information from the eBird database which provides records of avian observances by both professional and amateur birders (eBird 2022). Review of the database indicates known occurrences of bald eagle, wood thrush, and prothonotary warbler within the Survey Area (see below; Elmon Richard Scioto River Fishing Access). However, the database did not indicate known occurrences of any other IPaC listed BCC within the Survey Area. Although the absence of records for the other BCC within the Survey Area does not preclude the presence of sensitive avian species, the lack of records does suggest that use of the Survey Area by these avian species is low.

Several eBird “hot spots” were observed within or in the vicinity of the Survey Area. “Hot spots” in eBird are locations where multiple birders have entered observation data for a location (eBird 2022). The reach of the Scioto River that transects near the eastern terminus of the Survey Area has observations of more than 100 avian species. The Elmon Richard Scioto River Fishing Access “hot spot” is also located near the eastern terminus of the Survey Area. Calamus Swamp Preserve, Forest Cemetery, Circleville, Canal Park, Mary Virginia Crites Hannan Park, A. W. Marion SP, Island Road, Island Road Quarry, and Stages Pond State Nature Preserve are all eBird “hot spots” located within approximately 10 miles of the Survey Area with observations of up to 206 avian species (eBird 2022). These designated “hot spots” areas include forests, kettle hole wetlands/swamps, and open water habitats, which offer unique or rare habitats for avian species within the region (ODNR 2022a; Columbus Audubon 2022). While these areas are likely to attract migratory birds and bald eagles in the region, the majority of the Survey Area itself is dominated by agricultural fields with limited undisturbed grassland and wetland habitat. However, avian species are likely to use portions the Survey Area along the eastern terminus, near the Scioto River.

Important Bird Areas

The National Audubon Important Bird Area (IBA) Program identifies, designates, and monitors what is believed to be important places for birds. The northern extent of the Scioto River- Lower IBA overlaps the eastern portion of the Survey Area. The Scioto River-Lower IBA covers greater than 25,000-acre area and is located in Pickaway, Ross, Pike, and Scioto Counties, Ohio. The Scioto River-Lower IBA, associated with the Scioto River corridor, is recognized as a major north-south migratory path for birds north from the Ohio River (National Audubon Society 2016). In fall and spring, this corridor supports flights of migratory land birds. In addition, the Scioto River provides an important wintering area for waterfowl due to open water during winter. Bald eagles are known to both nest and winter along the Scioto River within the IBA (National Audubon Society 2016). IBAs do not have legal status and are not reviewed by public entities prior to being established.

Eagles & Raptors

Though not a BCC, both the bald eagle (also listed in the IPaC results) and golden eagle are protected throughout the United States under the Bald and Golden Eagle Protection Act (BGEPA 1940).

Bald eagles live near large bodies of water including estuaries, rivers, lakes, reservoirs, and coasts that provide a foraging base for the birds. Breeding eagles typically construct nests in large tree species such as cottonwoods and sycamores. Winter habitat suitability is defined by food availability, presence of roost sites that provide protection from inclement weather, and absence of human disturbance (Buehler 2000). The Scioto River, which drains through the eastern terminus of the Survey Area, is known to serve as a corridor for nesting and wintering bald eagles. Therefore, suitable nesting and foraging habitat is likely within the Survey Area.

Golden eagles do not nest in Ohio (Kochert et al. 2002; Millsap and Vana 1984), but their presence has been documented within portions of the state during the winter and spring and fall migratory periods. Thus, the golden eagle is unlikely to breed within the Survey Area but there is potential for individual or migrant golden eagles to occur in the Survey Area in winter or during migration.

The Survey Area was reviewed for raptor, including bald eagle, nests during on-site surveys in May 2021, December 2021, and February 2022. Forested areas exist within the Survey Area, including forested wetlands and upland forest. The identified forested areas are in close proximity to a large

body of water (Scioto River), as is preferred by bald eagles and other raptors when nesting, therefore there is potential for raptors to breed within the Survey Area. No bald eagles or bald eagle nests were observed within the Survey Area during the field surveys. Raptors may also utilize the Survey Area, including the farmed portions, for foraging.

6.0 Agency Correspondence

6.1 USFWS Correspondence

On June 29, 2021, ECT submitted a letter to USFWS requesting preliminary information on federally listed TES, bald eagles, sensitive habitats, and other potential environmental concerns for a study area that included both the Circleville Solar generation facility and the Survey Area. On July 20, 2021, USFWS responded that besides the LE Indiana bat and LE NLEB, they *“do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitats.”* A copy of full agency consultation is provided in **Appendix C**.

According to the USFWS *“the endangered Indiana bat (*Myotis soldalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the state of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey had been performed to document absence.”* If tree clearing is needed, the USFWS recommends that the removal of trees with three (3) inches or greater DBH be avoided wherever possible. The USFWS also requested that the proposed acreage of forest clearing be provided to them for further review of impacts to bat species. Further, if any caves or abandoned mines may be disturbed, further coordination was requested to determine if fall or spring portal surveys are warranted (**Appendix C**). The field investigation did not identify any caves or abandoned mines within the Survey Area and impacts to such features are not anticipated. Further coordination for bald eagles may be necessary due to the Survey Area’s overlap with the Scioto River corridor.

6.2 ODNR Correspondence

6.2.1 Ohio Natural Heritage Database

On May 19, 2021, ECT submitted an OH NHD request to ODNR requesting information on sensitive species and habitats within the vicinity of the Survey Area. On May 20, 2021, the ODNR provided the OH NHD records within a one-mile radius of the Survey Area (**Appendix C**). Please refer to *Section 5.2.2* for a discussion of the species reported by ODNR as being within the vicinity of the Survey Area.

6.2.2 ODNR Environmental Review

On July 26, 2021, ECT submitted an Environmental Review request to the ODNR. On September 1, 2021, ODNR DOW confirmed the TES previously reported from the OH NHD and provided the following comments and recommendations:

General

The DOW recommends that impacts to streams, wetlands, and other water resources be avoided and minimized to the fullest extent possible, and BMPs be utilized to minimize erosion and sedimentation.

Bats

The ODNR DOW recommends the following to reduce impacts to state-listed bat species within range of the Survey Area:

- Implement seasonal tree clearing window of October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible.
- If this seasonal tree clearing window cannot be implemented, conduct a mist net survey or acoustic survey June 1 through August 15, prior to any cutting. If state-listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW.
- The DOW recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the Survey Area. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. ECT completed a desktop habitat assessment and no potentially suitable hibernacula were identified (see *Section 5.2.1* above for additional information).

Mussels

The ODNR DOW indicated that the Survey Area is within the range of several state-listed mussel species, including species not previously discussed during agency coordination or IPaC review. Among the streams within the Survey Area, the Scioto River, located near the eastern terminus of the Survey Area has known occurrences of and has appropriate habitat with the potential to support these listed

mussel species. The DOW indicated that if no work is proposed in perennial streams, this project is not likely to impact these species. Refer to **Appendix C** for the full list of mussel species discussed by the DOW.

Fish

The DOW indicated that the Survey Area is within the range of several state-listed fish species, including species not previously discussed during agency coordination or IPaC review. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to listed fish species and their habitat. Among the streams within the Survey Area, the Scioto River, located near the eastern terminus of the Survey Area, may contain appropriate habitat with the potential to support these listed fish species. The DOW indicated that if no work is proposed in perennial streams, this project is not likely to impact these species. Refer to **Appendix C** for full list of fish species discussed by the DOW.

Avian

The DOW indicated that the Survey Area is within the range of five listed avian species, including species not previously discussed during agency coordination or IPaC review. Two of these species, the ST least bittern (*Ixobrychus exilis*) and sandhill crane (*Grus canadensis*) have a low potential to occur within the Survey Area. These species are wetland-nesting birds. Least bitterns nest in PEM wetlands with tall aquatic vegetation such as cattails, sedges, and other reeds and rushes, interspersed with patches of open water and of woody vegetation, while sandhill cranes require a large area of wet meadow, marsh, or bog for nesting (Cornell University 2019; "Sandhill Crane" 2014; **Appendix C**). The wetlands identified within the Survey Area do not exhibit the appropriate habitat characteristics and therefore are unlikely to support breeding least bitterns or sandhill cranes.

The remaining three avian species listed by DOW, the SE lark sparrow (*Chondestes grammacus*), SE northern harrier (*Circus hudsonis*), and SE upland sandpiper (*Bartramia longicauda*), also have a low potential to nest within the Survey Area.

The DOW describes lark sparrow nesting habitat as grassland habitats with scattered shrubs, disturbed open areas, and patches of bare soil. Various boulders, fence posts, and powerlines within a habitat area provide perching for singing males (Rodewald et al. 2016; Swanson 1996). Swanson

(1996) and Peterjohn (2001) both stated that the Lark Sparrow uses different habitat types in Ohio than in other parts of their range. This difference may be due to the lack of quality habitat on the edge of the species range and the inability for sustainable populations (Rodewald et al. 2016; Peterjohn 2001; Martin and Parrish 2020). Based on the location of the Project and habitat constraints such as patch size, frequent mowing for existing ROWs, and visitation for fishing access at the Elmon Richards Scioto River Fishing Access, the potential for nesting lark sparrows to occur within the Survey Area is considered low.

Northern harrier habitat is characterized by DOW as open grassland, both wet and dry, and marshes. The northern harrier is also adapted well to grasslands on reclaimed strip mines (Rodewald et al. 2016; ODNR 2019). Breeding territories can vary from two acres to 272 acres according to DOW. Rodewald et al (2016) states that northern harriers in neighboring states require at least 136 acres for successful nesting. Peterjohn (2001) indicates that in Ohio the northern harrier generally places their nests on the ground in the middle of rose tangles in wetlands and that in uplands they prefer grasslands with no woody cover. Based on the location of the Project and habitat constraints such as patch size, frequent mowing for existing ROWs, location within floodplain, and visitation for fishing access, the potential for nesting northern harriers to occur within the Survey Area is considered low.

The DOW characterizes upland sandpiper habitat as grassland with a mix of exotic and native grasses associated with airports, grazed and ungrazed pastures, and hayfields. Rodewald et al. (2016) reported that the majority of breeding pairs in Ohio were associated with grassy fields at smaller airports. This species requires large tracts of habitat approximately 20 acres in size with vegetation between six to 14 inches in height and forages in areas less than four inches in height (ODNR 2015; Swanson 1996). Based on the location of the Project and habitat constraints such as patch size, frequent mowing for existing ROWs, location within floodplain, and visitation for fishing access the potential for nesting upland sandpipers to occur within the Survey Area is considered low.

Refer to **Appendix C** for full list of avian species discussed by the DOW.

7.0 Summary and Conclusions

This Biological Habitat Assessment evaluated potential for the Circleville Solar Transmission Line to contain or affect biological resources such as federal and state TES, TES habitats, or other sensitive natural areas and wildlife.

A total of eight federally listed TES and one candidate species have the potential to occur within the vicinity of the Survey Area (**Table 4**). Limited portions of the Survey Area may contain suitable habitat for two bat species. The Indiana bat and the NLEB have the potential to occur in the Survey Area, particularly in the forested woodlots near the eastern terminus of the Survey Area. If tree clearing is required, cutting following seasonal guidelines (October 1 through March 31) provided by the ODNR DOW and USFWS (see *Section 6.2.1*), should minimize or avoid impacts to federally listed bats potentially on-site of the Survey Area. Five federally listed mussel species and one federally listed fish species have moderate to high potential to occur within the Survey Area; the majority of streams within the Survey Area are disturbed agricultural streams and lack appropriate habitat to support these mussel and fish species. However, the Scioto River, located near the eastern terminus of the Survey Area, may support these aquatic species. One federal candidate insect species also has a low potential to occur within the Survey Area due to limited grassland habitats and disturbances from agriculture.

The ODNR identified state-listed TES, including 13 mussel species and eight fish species with moderate to high potential to occur within the vicinity of the Survey Area. The majority of streams within the Survey Area are disturbed agricultural streams and lack appropriate habitat to support these mussel and fish species. However, the Scioto River, located near the eastern terminus of the Survey Area, may support these aquatic species.

In addition to federally and state-listed TES, ECT reviewed the Survey Area for potential habitat for avian species protected under the BGEPA and the MBTA. Western areas of the Survey Area dominated by actively tilled cropland have a limited potential to provide suitable breeding habitat for listed avian species. However, the riparian forested habitat of the Scioto River corridor may support bald eagles and grasslands within the CRP easement in the eastern portion of the Survey Area have low potential to support other grassland-nesting avian species. No bald eagle nests were observed within the

Survey Area, therefore impacts to breeding bald eagles are not anticipated. However, if eagle nests are identified prior to or during construction, then additional agency coordination is required.

Impacts to TES and wildlife within the Survey Area are anticipated to be minimized through the avoidance of suitable habitat to the greatest extent practicable and through the implementation of best management practices.

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Appendix A Photographic Log

> Photographic Log



Photo #1	
Date: 12/15/2021	
Feature: W1A-UPL	
Lat/Long: 39.610979, -83.003437	
Direction: East	
Description: Most of the land use within the Ecological Field Survey Area is dominated by cropland that was planted with corn (<i>Zea mays</i>). These areas are potentially not suitable for federally and state-listed species.	

Photo #2	
Date: 12/15/2021	
Feature: W2A-UPL	
Lat/Long: 39.600157, -82.972412	
Direction: North	
Description: Upland grassy areas were dominated by yellow foxtail (<i>Setaria pumila</i>), ground ivy (<i>Glechoma hederacea</i>), smooth brome (<i>Bromus inermis</i>). These areas also appeared to be frequently mowed and potentially unsuitable for listed species.	

> Photographic Log

Photo # 3

Date: 12/15/2021

Feature: W4A-SP

Lat/Long:
39.601246, -82.960576

Direction: East

Description: Emergent wetlands (W4A) in the eastern Ecological Field Survey Area overlap an identified Conservation Reserve Program (CRP) property. This easement area is dominated by yellow Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), and little false bluestem (*Schizachyrium scoparium*). These areas may provide habitat for listed species.



Photo # 4

Date: 12/22/2021

Feature: D1Bb



Lat/Long:
39.600883, -82.957315

Direction: West



Description: Photo depicts ditch D1Bb which is located in the Elmon Richards Scioto River Fishing Access in the eastern Ecological Field Survey Area. This area is maintained by ODNR and is comprised mostly of maintained grasslands and riparian forest corridors along the Scioto River. This area could potentially provide marginal habitat for listed species.



> Photographic Log

<p>Photo #5</p> <p>Date: 12/15/2021</p> <p>Feature: W2A-SP</p> <p>Lat/Long: 39.600272, -82.972277</p> <p>Direction: South</p> <p>Description: Emergent wetlands within the Ecological Field Survey Area were dominated by invasive species like reed canary grass (<i>Phalaris arundinacea</i>). These areas potentially offer low quality habitat for listed species.</p>	
<p>Photo #6</p> <p>Date: 12/15/2021</p> <p>Feature: W1A-SP</p> <p>Lat/Long: 39.610951, -83.003453</p> <p>Direction: East</p> <p>Description: Wetland W1A in the western Ecological Field Survey Area is dominated by narrowleaf cattail (<i>Typha angustifolia</i>).</p>	

> Photographic Log

<p>Photo #7</p> <p>Date: 12/15/2021</p> <p>Feature: W6A-UPL/BH2B</p> <p>Lat/Long: 39.600269, -82.958831</p> <p>Direction: North</p> <p>Description: Wetland and upland forested areas are located along the Scioto River in the eastern Ecological Field Survey Area. These forested areas may provide habitat for listed bat species.</p>	
<p>Photo #8</p> <p>Date: 12/22/2021</p> <p>Feature: W1B-SP/BH1B</p> <p>Lat/Long: 39.601207, -82.954032</p> <p>Direction: South</p> <p>Description: Photo shows sample point for W1B along the eastern side of the Scioto River corridor. These forested areas may be suitable for listed bat species.</p>	

> **Photographic Log**






Photo #9	
Date: 12/15/2021	
Feature: W4A-UPL	
Lat/Long: 39.601304, -82.956800	
Direction: North	
Description: Shrubs near the eastern Ecological Field Survey Area may serve as flight corridors for bats from the Scioto River corridor to other parts of the Ecological Field Survey Area.	

Photo # 10	
Date: 05/05/2021	
Feature: W7B-UPL/BH3B	
Lat/Long: 39.6145935, -82.9492403	
Direction: East	
Description: Hedgerows along agricultural fields in the Ecological Field Survey Area may serve as marginal-quality flight corridors for bats.	

> Photographic Log

<p>Photo # 11</p> <p>Date: 12/22/2021</p> <p>Feature: Scioto River</p> <p>Lat/Long: 39.601241, -82.955046</p> <p>Direction: North</p> <p>Description: The Scioto River corridor runs through the eastern Ecological Field Survey Area. This river system is known to have occurrences of federally and state-listed aquatic species. The river corridor may also be a potential flight corridor for bats and a foraging area for eagles.</p>	
<p>Photo # 12</p> <p>Date: 12/15/2021</p> <p>Feature: S1A</p> <p>Lat/Long: 39.600341, -82.972317</p> <p>Direction: North</p> <p>Description: Streams within the western Ecological Field Survey Area appeared to have been previously channelized. High sedimentation rates also suggest these streams are potentially not suitable for federally and state-listed aquatic species.</p>	

> Photographic Log

Photo # 13	
Date: 12/15/2021	
Feature: S2A	
Lat/Long: 39.601322, -82.964031	
Direction: East	
Description: Stream S2A that runs along US-22 in the Ecological Field Survey Area was determined to be an intermittent stream, making it unsuitable habitat for aquatic species as it dries up during parts of the year.	

Appendix B USFWS IPaC Results (March 4, 2022)

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

Pickaway County, Ohio



Local office

Ohio Ecological Services Field Office

☎ (614) 416-8993

📠 (614) 416-8994

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

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 species¹ 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 Fisheries²).

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
Indiana Bat <i>Myotis sodalis</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> Wherever found This species only needs to be considered if the following condition applies: <ul style="list-style-type: none"> Incidental take of the northern long-eared bat is not prohibited at this location. Federal action agencies may conclude consultation using the streamlined process described at https://www.fws.gov/midwest/endangered/mammals/nleb/s7.html No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Clams

NAME	STATUS
Clubshell <i>Pleurobema clava</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3789	Endangered
Northern Riffleshell <i>Epioblasma torulosa rangiana</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/527	Endangered
Rayed Bean <i>Villosa fabalis</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5862	Endangered

Insects

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

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats 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:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

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 off 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 (IF A
BREEDING SEASON IS INDICATED

FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Oct 15 to Aug 31

Bobolink *Dolichonyx oryzivorus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Jul 31

Prothonotary Warbler *Protonotaria citrea*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Apr 1 to Jul 31

Red-headed Woodpecker *Melanerpes erythrocephalus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Sep 10

Rusty Blackbird *Euphagus carolinus*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds elsewhere

Wood Thrush *Hylocichla mustelina*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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.

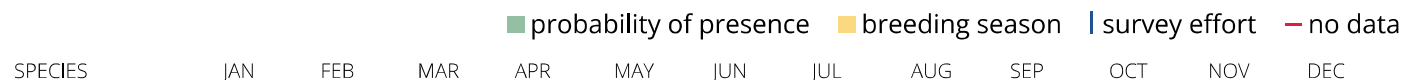
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

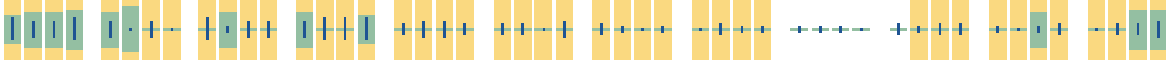
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

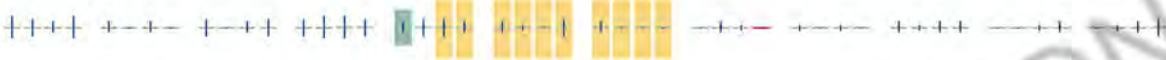
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald Eagle
Non-BCC
Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



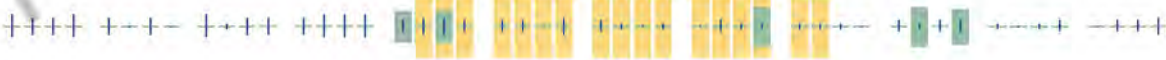
Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Prothonotary Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Rusty Blackbird
BCC - BCR (This is a
Bird of
Conservation
Concern (BCC) only
in particular Bird
Conservation
Regions (BCRs) in
the continental
USA)



Wood Thrush
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



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 migratory birds potentially occurring 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 offshore 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 [AKN Phenology 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, migrating or present year-round in my project 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 refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). 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

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.

Appendix C Agency Coordination



UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994



TAILS# 03E15000-2021-TA-1717

Dear Ms. Miller,

The U.S Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Should the proposed site contain trees ≥ 3 inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. **The Service requests additional information on the extent of tree clearing proposed so that we may evaluate the potential for the project to effect the Indiana and northern long-eared bat and recommend appropriate minimization measures. Please provide estimated acreages of forest clearing as well as maps indicating areas to be cleared.**

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

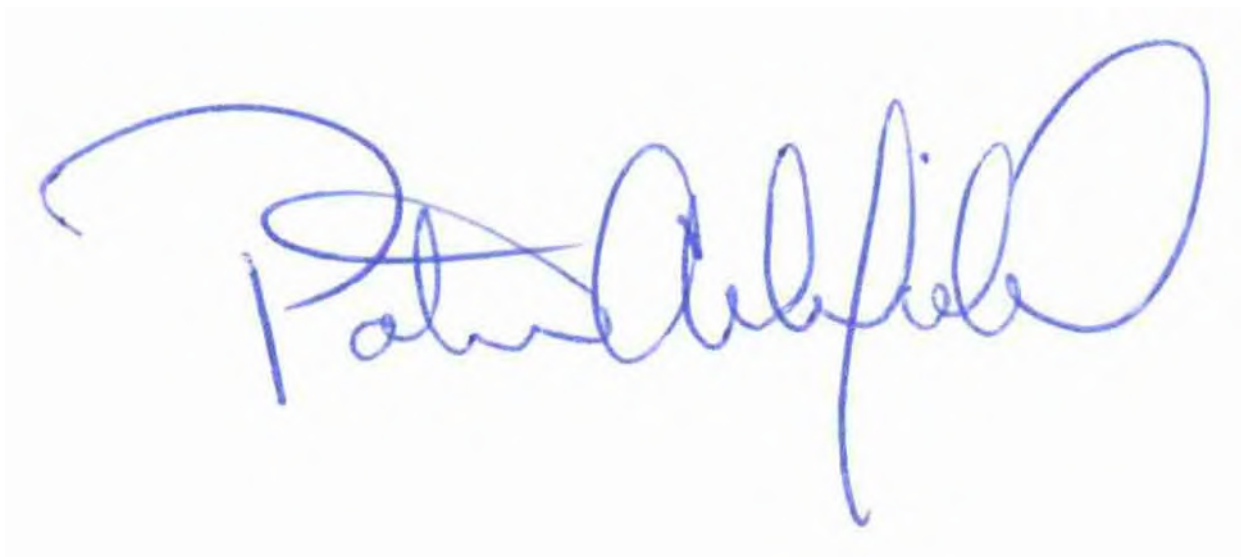
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

A handwritten signature in blue ink, reading "Patrice M. Ashfield". The signature is fluid and cursive, with a large initial "P" and a long, sweeping underline.

Patrice M. Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Jeff Johnson, Chief
Division of Natural Areas & Preserves
2045 Morse Rd, Building A
Columbus, Ohio 43229

20 May 2021

Jessica Miller
Environmental Consulting & Technology, Inc.
161 E. Aurora Rd.
Northfield, OH 44067

Dear Ms. Miller,

I have reviewed the Natural Heritage Database for the Circleville Commercial Development Revised project area, including a one mile radius, in Jackson, Wayne and Circleville Townships, Pickaway County, Ohio. The numbers/letters on the list below correspond to the areas marked on the accompanying map. Common name, scientific name and status are given for each species. Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; FE = federal endangered, and FT = federal threatened.

- A. Big Darby Creek State Scenic River
- B. Richards 1 Scenic River Easement – ODNR Scenic Rivers Program
- C. Richards 3 Scenic River Easement – ODNR Scenic Rivers Program
- D. Elmon Richards Scioto River Wildlife Area – ODNR Division of Wildlife
- E. Calamus Swamp – Columbus Audubon Society
- F. Circleville Canal Wildlife Area – ODNR Division of Wildlife
- 1. *Alasmodonta marginata* – Elktoe, SC
- Cyclonaias tuberculata* – Purple Wartyback, SC
- Elliptio crassidens* – Elephant-ear, E
- Epioblasma rangiana* – Northern Riffleshell, E, FE
- Epioblasma triquetra* – Snuffbox, E, FE
- Etheostoma maculatum* – Spotted Darter, E
- Etheostoma tippecanoe* – Tippecanoe Darter, T
- Ichthyomyzon fossor* – Northern Brook Lamprey, E
- Lampsilis fasciola* – Wavy-rayed Lampmussel SC
- Ligumia recta* – Black Sandshell, T
- Megalania nervosa* – Washboard, E
- Mussel Bed
- Noturus stigmosus* – Northern Madtom, E
- Pleurobema clava* – Clubshell, E, FE
- Pleurobema sintoxia* – Round Pigtoe, SC
- Ptychobranchius fasciolaris* – Kidneyshell, SC
- Theliderma cylindrica* – Rabbitsfoot, E, FT
- Truncilla donaciformis* – Fawnsfoot, T
- Truncilla truncata* – Deertoe, SC

2. *Erimyzon claviformis* – Western Creek Chubsucker, SC
3. *Alasmodonta marginata* – Elktoe, SC
- Cycleptus elongatus* – Blue Sucker, T
- Cyclonaias tuberculata* – Purple Wartyback, SC
- Cyperus acuminatus* – Pale Umbrella-sedge, P
- Cyprogenia stegaria* – Fanshell, E, FE
- Elliptio crassidens* – Elephant-ear, E
- Epioblasma rangiana* – Northern Riffleshell, E, FE
- Epioblasma triquetra* – Snuffbox, E, FE
- Etheostoma maculatum* – Spotted Darter, E
- Etheostoma tippecanoe* – Tippecanoe Darter, T
- Fusconaia subrotunda* – Long-solid, E
- Hiodon alosoides* – Goldeye, E
- Lampsilis abrupta* – Pink Mucket, E, FE
- Lampsilis fasciola* – Wavy-rayed Lampmussel SC
- Lampsilis ovata* – Pocketbook, E
- Ligumia recta* – Black Sandshell, T
- Noturus stigmosus* – Northern Madtom, E
- Obliquaria reflexa* – Threehorn Wartyback, T
- Pleurobema clava* – Clubshell, E, FE
- Pleurobema sintoxia* – Round Pigtoe, SC
- Polyodon spathula* – Paddlefish, T
- Ptychobranhus fasciolaris* – Kidneyshell, SC
- Theliderma cylindrical* – Rabbitsfoot, E, FT
- Truncilla donaciformis* – Fawnsfoot, T
- Truncilla truncata* – Deertoe, SC
4. Breeding Amphibian Site
5. *Erimyzon sucetta* – Lake Chubsucker, T

If this project is located within 1000 feet of a state designated scenic river, the approval of the Director of ODNR may be required in accordance with Ohio Revised Code section 1547.82. Please contact Scenic River Program Manager Bob Gable at 614-265-6814 for further information.

We are unaware of any geologic features, state nature preserves, parks or forests or national wildlife refuges, parks or forests within a one mile radius of the project area.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

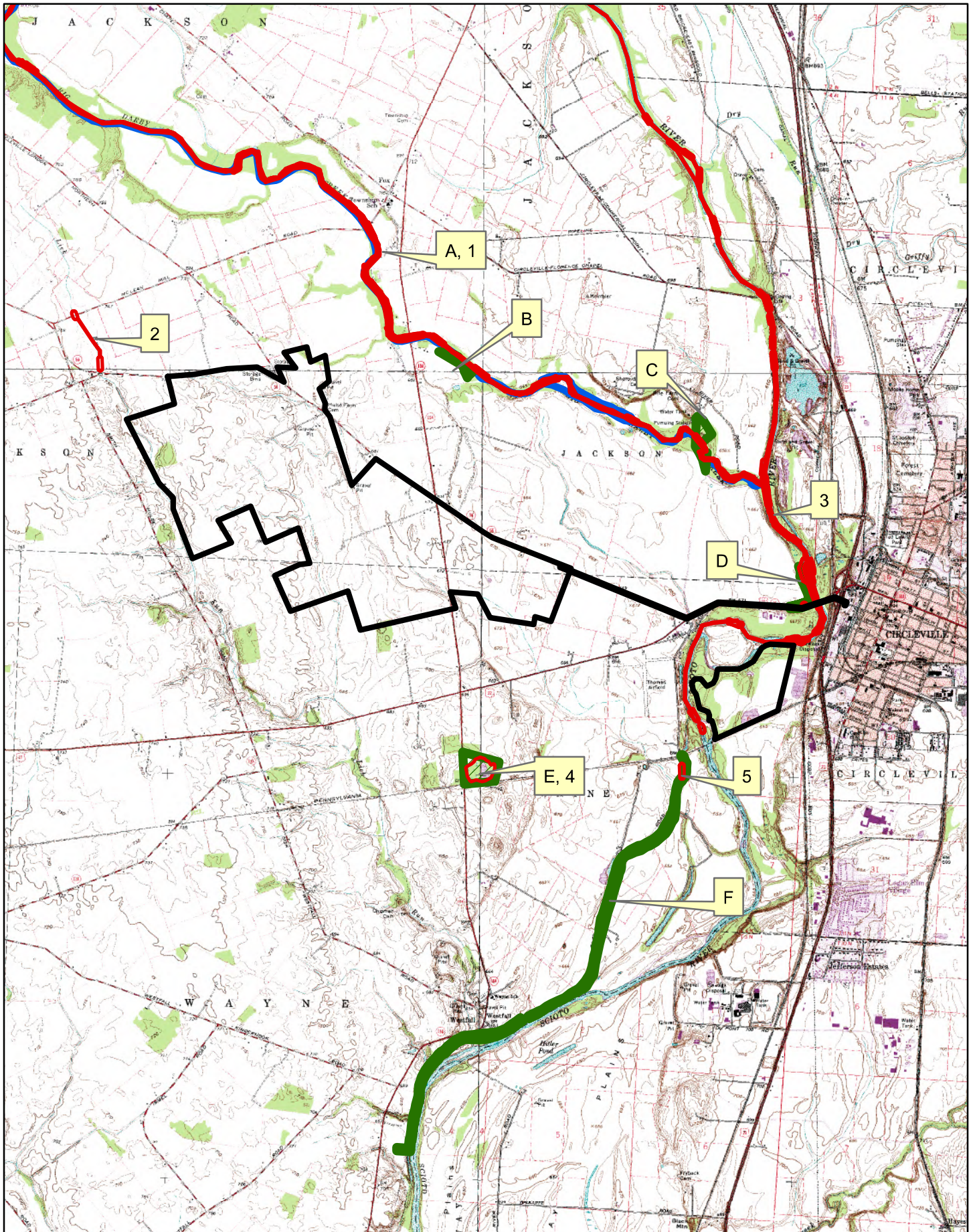
Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,



Debbie Woischke
Ohio Natural Heritage Program

Circleville Commercial Development





Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate

John Kessler, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6621
Fax: (614) 267-4764

September 1, 2021

Jessica Miller
Environmental Consulting & Technology, Inc.
161 East Aurora Road
Northfield, OH 44067

Re: 21-0714; Circleville Solar Project

Project: The proposed project includes construction activities, including the installation of foundations, project facilities (e.g., solar panels and electric collection lines), and infrastructure necessary for safe and continuous operation and access to the project.

Location: The proposed project is located in Circleville Township, Pickaway County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database provided a data request response on May 20, 2021 as included in the submitted project documentation. The Natural Heritage Database has the following data at or within a one mile radius of the project area:

Big Darby Creek State Scenic River
Richards 1 Scenic River Easement – ODNR Scenic Rivers Program
Richards 3 Scenic River Easement – ODNR Scenic Rivers Program
Elmon Richards Scioto River Wildlife Area – ODNR Division of Wildlife
Calamus Swamp – Columbus Audubon Society
Circleville Canal Wildlife Area – ODNR Division of Wildlife
Alasmidonta marginata – Elktote, SC
Cyclonaias tuberculata – Purple Wartyback, SC
Elliptio crassidens – Elephant-ear, E
Epioblasma rangiana – Northern Riffleshell, E, FE
Epioblasma triquetra – Snuffbox, E, FE
Etheostoma maculatum – Spotted Darter, E
Etheostoma tippecanoe – Tippecanoe Darter, T
Ichthyomyzon fossor – Northern Brook Lamprey, E
Lampsilis fasciola – Wavy-rayed Lampmussel SC

Ligumia recta – Black Sandshell, T
Megalonaias nervosa – Washboard, E
 Mussel Bed
Noturus stigmosus – Northern Madtom, E
Pleurobema clava – Clubshell, E, FE
Pleurobema sintoxia – Round Pigtoe, SC
Ptychobranhus fasciolaris – Kidneyshell, SC
Theliderma cylindrical – Rabbitsfoot, E, FT
Truncilla donaciformis – Fawnsfoot, T
Truncilla truncata – Deertoe, SC
Erimyzon claviformis – Western Creek Chubsucker, SC
Alasmidonta marginata – Elktoe, SC
Cycleptus elongatus – Blue Sucker, T
Cyclonaias tuberculata – Purple Wartyback, SC
Cyperus acuminatus – Pale Umbrella-sedge, P
Cyprogenia stegaria – Fanshell, E, FE
Elliptio crassidens – Elephant-ear, E
Epioblasma rangiana – Northern Riffleshell, E, FE
Epioblasma triquetra – Snuffbox, E, FE
Etheostoma maculatum – Spotted Darter, E
Etheostoma tippecanoe – Tippecanoe Darter, T
Fusconaia subrotunda – Long-solid, E
Hiodon alosoides – Goldeye, E
Lampsilis abrupta – Pink Mucket, E, FE
Lampsilis fasciola – Wavy-rayed Lampmussel SC
Lampsilis ovata – Pocketbook, E
Ligumia recta – Black Sandshell, T
Noturus stigmosus – Northern Madtom, E
Obliquaria reflexa – Threehorn Wartyback, T
Pleurobema clava – Clubshell, E, FE
Pleurobema sintoxia – Round Pigtoe, SC
Polyodon spathula – Paddlefish, T
Ptychobranhus fasciolaris – Kidneyshell, SC
Theliderma cylindrical – Rabbitsfoot, E, FT
Truncilla donaciformis – Fawnsfoot, T
Truncilla truncata – Deertoe, SC
 Breeding Amphibian Site
Erimyzon sucetta – Lake Chubsucker, T

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; FE = federal endangered, and FT = federal threatened.

The review was performed on the project area specified in the request as well as an additional one mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity. Additional comments on some of the features may be found in pertinent sections below.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The Division of Wildlife is working closely with our partners at Ohio Pollinator Habitat Initiative (OPHI) to create and enhance pollinator habitat at solar power installations. The OPHI Solar Pollinator Program Advisory Team has developed the Ohio Solar Site Pollinator Habitat Planning and Assessment Form and is available for your use. The form can be found at the following: <http://nebula.wsimg.com/7cf0240c398d5819e3e6ff011f0ba456?AccessKeyId=570E4FC7FCD2ED2F0C1A&disposition=0&alloworigin=1>. We recommend that the areas between and around the solar panels be planted with legumes and wildflowers (i.e. forbs) that are beneficial to pollinators and other wildlife and reduce use of non-native grass and gravel. The recommended legumes and forbs listed below are low-growing so as not to cast shadows on the solar panels and would only require one to two mowings a year for maintenance, which should minimize maintenance costs. For other areas of the installation where vegetation does not have to be low-growing, alternative pollinator mixes are available with a more diverse array of flowering plants. This perennial vegetation will provide beneficial foraging habitat to songbirds and pollinators while reducing storm water runoff, standing water, and erosion. Please contact the Ohio Pollinator Habitat Initiative <http://www.ophi.info/>, and specifically Mike Retterer mretterer@pheasantsforever.org for further information on solar power facility pollinator plantings.

Recommended low-growing grasses and forbs may include:

Little Bluestem	<i>Schizachyrium scoparium</i>
Sideoats Grama	<i>Bouteloua curtipendula</i>
Alfalfa	<i>Medicago spp.</i>
Alsike Clover	<i>Trifolium hybridum</i>
Brown-eyed Susan	<i>Rudbeckia triloba</i>
Butterfly Milkweed	<i>Asclepias tuberosa</i>
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>
Partridge Pea	<i>Chamaecrista fasciculata</i>
Timothy	<i>Phleum pratense</i>
Orchardgrass	<i>Dactylis glomerata</i>
Crimson Clover	<i>Trifolium incarnatum</i>
Ladino or White Clover	<i>Trifolium repens</i>

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist

net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the “OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING”. If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS “Range-wide Indiana Bat Survey Guidelines.” If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Erin Hazelton for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the following listed mussel species.

Federally Endangered

clubshell (*Pleurobema clava*)
fanshell (*Cyprogenia stegaria*)
northern riffleshell (*Epioblasma torulosa rangiana*)
purple cat’s paw (*Epioblasma o. obliquata*)
rayed bean (*Villosa fabalis*)
snuffbox (*Epioblasma triquetra*)

Federally Threatened

rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Endangered

butterfly (*Ellipsaria lineolata*)
ebonyshell (*Fusconaia ebenus*)
elephant-ear (*Elliptio crassidens*)
long-solid (*Fusconaia maculata maculata*)
Ohio pigtoe (*Pleurobema cordatum*)
pyramid pigtoe (*Pleurobema rubrum*)
sharp-ridged pocketbook (*Lampsilis ovata*)
washboard (*Megalonaias nervosa*)

State Threatened

black sandshell (*Ligumia recta*)
fawnsfoot (*Truncilla donaciformis*)
pondhorn (*Unio merus tetralasmus*)
threehorn wartyback (*Obliquaria reflexa*)

Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the following listed fish species.

Federally Endangered

Scioto madtom (*Noturus trautmani*)

State Endangered

bigeye shiner (*Notropis boops*)

goldeye (*Hiodon alosoides*)

northern brook lamprey (*Ichthyomyzon fossor*)

northern madtom (*Noturus stigmosus*)

shortnose gar (*Lepisosteus platostomus*)

spotted darter (*Etheostoma maculatum*)

shovelnose sturgeon (*Scaphirhynchus platyrhynchus*)

State Threatened

blue sucker (*Cypleptus elongatus*)

lake chubsucker (*Erimyzon sucetta*)

paddlefish (*Polyodon spathula*)

Tippecanoe darter (*Etheostoma tippecanoe*)

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the lark sparrow (*Chondestes grammacus*), a state endangered bird. This sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. In the Oak Openings area west of Toledo, lark sparrows occupy open grass and shrubby fields along sandy beach ridges. These summer residents normally migrate out of Ohio shortly after their young fledge or leave the nest. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the least bittern (*Ixobrychus exilis*), a state threatened bird. This secretive marsh species prefers dense emergent wetlands with thick stands of cattails, sedges, sawgrass or other semiaquatic vegetation interspersed with woody vegetation and open water. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus hudsonis*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the sandhill crane (*Grus canadensis*), a state threatened species. Sandhill cranes are primarily a wetland-dependent species. On their wintering grounds, they will utilize agricultural fields; however, they roost in shallow, standing water or moist bottomlands. On breeding grounds they require a rather large tract of wet meadow, shallow marsh, or bog for nesting. If grassland, prairie, or wetland habitat will be impacted, construction

should be avoided in this habitat during the species' nesting period of April 1 through August 31. If this habitat will not be impacted, this project is not likely to have an impact on this species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

Geological Survey: The Division of Geological Survey has the following comments.

Physiographic Region

The proposed project area is in Jackson and Wayne Townships, Pickaway County. This area is in the Columbus Lowland physiographic region. This region is characterized by lowland terrain surrounded by relative uplands. There is a broad slope towards the Scioto Valley and many large streams throughout the region. The geology of the region consists of loamy Wisconsinan-age till and extensive outwash in the Scioto Valley covering underlying bedrock (Ohio Department of Natural Resources, Division of Geological Survey, 1998).

Surficial/Glacial Geology

The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. The western portion of the project area is covered by flat to gently undulating ground moraine made of silty loam till. The eastern portion of the project area is covered by valley train outwash deposited by meltwater exiting the Wisconsinan glaciers (Pavey et al, 1999). Glacial drift throughout most of the study area is between 82 and 158 feet thick. Drift is variable throughout the project area, but thickest along the south-central edge (Powers and Swinford, 2004).

Bedrock Geology

The uppermost bedrock unit in the project area is the Ohio and Olentangy Shales Undivided. This unit is Devonian-age and consists of greenish gray to gray shale. The unit is clayey and often contains disseminated pyrite. Locally this unit may contain lenses or nodules of limestone as well as thin beds of brownish-black shale in the upper portion. It should be noted that bedrock is not exposed at the surface within the boundaries of the project area due to significant glacial drift. Underlying the Ohio and Olentangy Shales Undivided is the Devonian-age Columbus Limestone. This unit is characterized by bluish gray to brown fossiliferous limestone. The unit may be dolomitic in places and frequently contains solution features. It should be noted that bedrock is not exposed at the surface within the boundaries of the project area due to significant glacial drift (Slucher et al, 2006).

Oil, Gas and Mining

ODNR has record of 46 oil and gas wells within one mile of the proposed project area. Most of these wells are listed as final restoration or producing. Thirteen of the wells are actively producing oil. These wells produce out of the Copper Ridge Dolomite, Rose Run Sandstone, Knox Dolomite, or the Trempealeau Formation. Many of the wells are a part of the Lick Run oil field which has an average producing depth of 2490 feet. Additionally, there are five active

injection wells within one mile of the project area. There are two recently permitted wells; one that has been drilled but not yet producing and another has yet to be drilled. The remaining oil and gas wells are either restored, plugged and abandoned, or permitted but never drilled and now have expired permits (Ohio Department of Natural Resources, Division of Oil and Gas, Ohio Oil and Gas Wells Locator).

ODNR does not have record of any mining operations within the project area. The nearest mine to the project area is the Stevenson Site, a former sand and gravel quarry that was previously operated by Richards Farms Inc. The Stevenson Site is located adjacent to the northeastern edge of the project area (Ohio Department of Natural Resources, Division of Mineral Resources, Mines of Ohio).

Seismic Activity

Several small earthquakes have historically been recorded near the site. The three events closest to the site are listed in the chart below (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Earthquake Epicenters):

Date	Magnitude	Distance to Site Boundary	County	Township
October 21, 2013	2.0	3.4 miles	Pickaway	Jackson
November 12, 1899	3.1	20.6 miles	Ross	Scioto
January 16, 1870	2.9	21.9 miles	Fairfield	Berne

Soils

According to the USDA Web Soil Survey, the project area consists primarily of soils derived from loess and outwash. Eldean, Warsaw, and Kokomo are the most common soil series found within the boundaries of the project area. Predominately found in the eastern half of the project area these soils make up over 47% of the project area and are loams derived from outwash and glacial fluvial deposits. The Crosby, Miamian, and Westland Soils, common on the western half of the project area, account for 42% of the project area and are silt and clay loams derived from loess and till glacial till (USDA Web Soil Survey).

There is a low risk of shrink-swell potential in these soils. Slope variable, with slope seldom exceeding a 18% grade. Slopes are greatest along stream valleys (Ker and Christman, 1980 and USDA Web Soil Survey).

Groundwater

Groundwater resources vary throughout the project area. Wells developed in the underlying limestone bedrock are likely to yield up to 100 gallons per minute. The principle confined aquifer is the Columbus Limestone beneath the Ohio and Olentangy Shales Undivided. Yields up to 100 gallons per minute have been obtained from solution cavities at depths greater than 225 feet. Consolidated bedrock aquifer yields increase as the Ohio and Olentangy Shales thin to the west and the Columbus Limestone becomes more accessible and recharge to the Columbus Limestone increases (Schmidt, 1990 and Ohio Department of Natural Resources, Division of Water, Bedrock Aquifer Map, 2000). Wells developed in unconsolidated glacial material are likely to yield 5 to 500 gallons per minute. The main unconsolidated aquifer is the Scioto Buried Valley Aquifer, a thick deposit of sand and gravel. The Scioto Buried Valley Aquifer, located in the east half of the project area can produce yields between 100 and 500 gallons per minute. The western half of the project area contains the Prairie Complex Aquifer which is characterized by relatively thick clay layers interbedded with water-bearing deposits of sand and gravel. These sand and gravel deposits may yield between 5 and 25 gallons per minute (Ohio Department of Natural Resources, Division of Water, Statewide Unconsolidated Aquifer Map, 2000).

ODNR has record of 133 water wells drilled within one mile of the project area. These wells range in depth from 26 to 252 feet deep, with an average depth of 77.7 feet. The most common aquifer listed is sand and gravel. Sand and gravel aquifers account for 124 of the water wells. The remaining wells are bedrock wells with four wells producing out of limestone, four wells producing out of shale, and one record listing rock as the aquifer. Sustainable yields of 4 to 78 gallons per minute have been recorded from wells drilled in this area based on well log records. The average sustainable yield from these records within one mile was 18.3 gallons per minute. This is based on records from 40 wells within one mile of the project area that contain sustainable yield data. (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Water Wells).

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

From: Richard.Gardner@dnr.ohio.gov <Richard.Gardner@dnr.ohio.gov>
Sent: Monday, April 11, 2022 7:10 AM
To: Valerie Locker <vlocker@ectinc.com>
Cc: Beth Wilburn <bwilburn@ectinc.com>
Subject: RE: Circleville Solar (21-0714) Pale Umbrella Sedge

Valerie,

I apologize for not responding sooner. I think our staff member used an old data set when she did the ONHD search. *Cyperus acuminatus* is no longer listed. We downgraded the species in 2020 for being secure. You will not need to do any surveys for this species.

I apologize for the unnecessary work.

Sincerely,



Rick Gardner (he,him,his)
Chief Botanist
Division of Natural Areas & Preserves
Department of Natural Resources
2045 Morse Road, H-3
Columbus, OH 43229

office: (614) 265-6419
richard.gardner@dnr.ohio.gov
www.naturepreserves.ohiodnr.gov



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*message by mistake, please let me know, delete the message, and do not forward it to anyone else.
Thank you.*

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From: Valerie Locker <vlocker@ectinc.com>
Sent: Sunday, April 10, 2022 8:46 PM
To: Gardner, Richard <Richard.Gardner@dnr.ohio.gov>
Cc: Beth Wilburn <bwilburn@ectinc.com>
Subject: RE: Circleville Solar (21-0714) Pale Umbrella Sedge

Good evening Rick, I wanted to follow up with you on the request that Mike Pettegrew forwarded your way last week. As indicated below, we are hoping the DNR would provide additional information on the pale umbrella sedge (*Cyperus acuminatus*), which was listed on the attached Environmental Review for the Circleville Solar project and associated transmission line (No. 21-0714). There is potentially suitable habitat for the species along the transmission line route and we would like to both verify the listing status of this species and to discuss guidance and next steps.

If you could give me a call back on my mobile at (860) 305-9110 at your earliest convenience I would greatly appreciate it!

Val Locker, CPESC

Project Manager & Scientist
Natural Resources

Environmental Consulting & Technology, Inc. | ectinc.com
M: 860.305.9110

From: Valerie Locker
Sent: Monday, April 4, 2022 6:11 PM
To: Mike.Pettegrew@dnr.ohio.gov
Cc: Beth Wilburn <bwilburn@ectinc.com>
Subject: RE: Circleville Solar (21-0714) Pale Umbrella Sedge

Thank you, Mike. I appreciate the fast response and will look for a message from Rick.

Val Locker, CPESC

Project Manager & Scientist
Natural Resources

Environmental Consulting & Technology, Inc. | ectinc.com
M: 860.305.9110

From: Mike.Pettegrew@dnr.ohio.gov <Mike.Pettegrew@dnr.ohio.gov>
Sent: Monday, April 4, 2022 4:01 PM
To: Valerie Locker <vlocker@ectinc.com>
Cc: Beth Wilburn <bwilburn@ectinc.com>
Subject: RE: Circleville Solar (21-0714) Pale Umbrella Sedge

Val

I forwarded your request for guidance on this species to Rick Gardner (Chief Botanist for ODNR) of DNAP. Please let me know if you don't hear back from him in the next few days. Thanks.

	<p>Mike Pettegrew <i>Environmental Services Administrator</i> Ohio Department of Natural Resources, Office of Real Estate & Land Management 2045 Morse Road, Building E-2 Columbus, Ohio 43229 Office: (614) 265-6387 mike.pettegrew@dnr.ohio.gov https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/real-estate/environmental-review/</p>
<p><small>This message is intended solely for the addressee(s). Should you receive this message by mistake, we would be grateful if you informed us that the message has been sent to you in error. In this case, we also ask that you delete this message and any attachments from your mailbox, and do not forward it or any part of it to anyone else. Thank you for your cooperation and understanding.</small></p>	

From: Valerie Locker <vlocker@ectinc.com>
Sent: Monday, April 4, 2022 3:33 PM
To: Pettegrew, Mike <Mike.Pettegrew@dnr.ohio.gov>
Cc: Beth Wilburn <bwilburn@ectinc.com>
Subject: Circleville Solar (21-0714) Pale Umbrella Sedge

Good afternoon Mike,
I just left you a voicemail and wanted to follow up in writing. We are wondering whether the DNR could provide additional information on the pale umbrella sedge (*Cyperus acuminatus*), which was listed on the attached Environmental Review for the Circleville Solar project and associated transmission line (No. 21-0714). There is potentially suitable habitat for the species along the transmission line route and we would like to both verify the listing status of this species and to discuss guidance and next steps.

If you could give me a call back on my mobile at (860) 305-9110 I would greatly appreciate it!

Val Locker, CPESC
Project Manager & Scientist
Natural Resources
M: 860.305.9110



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Appendix D Bat Habitat Assessment Forms

APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name: Circleville Solar Project Gen-Tie Line Date: 02/22/2022
 Township/Range/Section: NA
 Lat Long/UTM/ Zone: 39.602505°, -82.953798° Surveyor: H. Mikula

Brief Project Description

Circleville Solar Project Gen-Tie Line is a proposed transmission line connecting the Circleville Solar Project to an existing substation.

Project Area				
	Total Acres	Forest Acres		Open Acres
Project	211.84	23.25 acres		188.59
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	
	1.74	0.00	21.51	

Vegetation Cover Types

Pre-Project	Post-Project
Agricultural crops, streams (agricultural/irrigation ditches), small forested areas	A 100-ft wide easement will be cleared to install utility poles and to allow for safe operations and maintenance of the utility line.

Landscape within 5 mile radius

Flight corridors to other forested areas?

There are multiple flight corridors to larger forested areas within 5 miles of the site. There are also various streams, major roads, and a major railroad that transect the Project Area itself including flight corridors along the Scioto River and Big Darby Creek.

Describe Adjacent Properties (e.g. forested, grassland, commercial or residential development, water sources)

Adjacent properties consist of agricultural land, industrial/commercial properties, open water and streams, and wetlands.

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)?

The Elmon Richards Scioto River Fishing Access area is located within the Project Area. Circleville Solar will coordinate with Ohio DNR to obtain a license to cross this property.

APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

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

Sample Site Description

Sample Site No.(s): _____ Scioto River forested floodplain

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral NA	Intermittent NA	Perennial 2, 314 m and 35 m	Describe existing condition of water sources: BH1B is adjacent to the Scioto River.
Pools/Ponds (# and size)	NA	Open and accessible to bats?		
		Yes		
Wetlands (approx. ac.)	Permanent	Seasonal		
	2	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%
	5	4	2	
Dominant Species of Mature Trees	Populus deltoides, Acer saccharinum			
% Trees w/ Exfoliating Bark	<5	<5	<5	
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	30	55	15	
No. of Suitable Snags		3		

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

Additional Comments:

The Scioto River and the other perennial stream can serve as flight corridors.

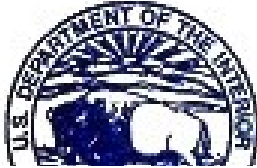
There are multiple wetlands located in the forested floodplain, which extends both north and south of the study area.

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

Valerie Locker

From: Ohio, FW3 <ohio@fws.gov>
Sent: Thursday, March 31, 2022 12:08 PM
To: Valerie Locker
Cc: nathan.reardon@dnr.state.oh.us; Parsons, Kate
Subject: Circleville Solar Project, Pickaway County in Ohio (Old Number 03E15000-2021-TA-1717)
Attachments: 2022 USFWS Federally Listed Bat Permittees - Ohio.pdf



UNITED STATES DEPARTMENT OF THE
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230

Project Code: 2022-0025488

Dear Ms. Locker,

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Seasonal Tree Clearing for Federally Listed Bat Species: The proposed project is in the vicinity of one or more confirmed records of Indiana bats. Should the proposed project site contain trees ≥ 3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend removal of any trees ≥ 3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleeb/index.html>), incidental take of Indiana bats is still

prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are known or assumed present.

If implementation of this seasonal tree cutting recommendation is not possible, and because the proposed project is ≥ 2.5 miles from the Indiana capture location(s), a summer survey may be conducted to document the presence or absence of Indiana bats at the project site. The summer survey must be conducted by an approved surveyor (list attached) and be designed and conducted in coordination with the Ohio Field Office. In Ohio, summer mist net surveys may only be conducted between June 1 and August 15. We recommend that any Indiana bats and northern long-eared bats captured during the survey, especially reproductively active females and juveniles, be monitored through radio-tracking to determine roost locations.

If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are also warranted. Portal surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office.

Survey results should be coordinated with this office prior to initiation of any work at the project area. Based on the results of the survey(s), we will evaluate potential impacts to the Indiana bat from the proposed project. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus it is important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Patrice Ashfield". The signature is fluid and cursive, with a large initial "P" and "A".

Patrice Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW

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Summary: Application Exhibit G - Biological Habitat Assessment and USFWS
Coordination electronically filed by Teresa Orahod on behalf of Dylan F. Borchers