

Exhibit E
Biological Habitat Assessment



> **Biological Habitat Assessment
Circleville Solar Project
Pickaway County, Ohio**

December 2021
ECT No. 210330

Circleville Solar
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Business Confidential: Not for Distribution



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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
CECPN	Certificate of Environmental Compatibility and Public Need
CFR	Code of Federal Regulations
Circleville	Circleville Solar
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
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
NWI	National Wetlands Inventory
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
OH NHD	Ohio Natural Heritage Database
ORC	Ohio Revised Code
OSPB	Ohio Power Siting Board
PAD-US	Protected Areas Database
PEM	Palustrine Emergent
PFO	Palustrine Forested
Project	Circleville Solar Project
PV	Photovoltaic
RBC	Running Buffalo Clover

SC	State Species of Concern
SE	State-Endangered
ST	State-Threatened
SC	Species of Special Concern
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
WOTUS	Waters of the United States
WPA	Wildlife Production Area
WRE	Wetland Reserve Easement

Executive Summary

Circleville Solar (Circleville) is developing a 70-megawatt (MW) photovoltaic (PV) solar project on approximately 1,636 acres in Pickaway County, Ohio (Project study area). Circleville Solar contracted Environmental Consulting & Technology, Inc. (ECT), to conduct a Biological Habitat Assessment for the proposed Circleville Solar (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 the Project study area, and to discuss those features in the context of Project development.

The proposed 1,636-acre Project study area is located in Jackson and Wayne Townships in Pickaway County, approximately 2.0 miles west of the Town of Circleville, Ohio. The Project study area is dominated by agricultural fields. Remaining undeveloped natural habitat (e.g., woodlots, grassy areas/old fields, wetlands, ponds/waterbodies) within the vicinity of the Project study area is primarily limited to the edges of agricultural fields and the western and southern portions of the Project study area. As such, the overall potential for Project study area to provide suitable habitat for federally and state-listed TES is considered to be low.

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) identified nine (9) federally listed TES whose range overlap with the regional vicinity of the Project study area. Of the nine (9) listed species, only two (2) have a low to moderate potential to occur within the Project study area based on desktop reviews and field studies.

Two (2) federally listed TES bat species may occur within the regional vicinity of the Project study area, including the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). Habitat suitable for these species (e.g., woodlots and treelines) is present but limited within the Project study area. Furthermore, field reviews of potential bat habitat areas determined that forested stands within the Project study area are thick with understory/shrub growth and generally lack trees species that commonly support bat species. Impacts to bat species within the vicinity of the Project study 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 (5) federally listed mussel species occur within the regional vicinity of the Project study area. However, streams within the Project study area are limited to disturbed agricultural streams, none of which were identified as having appropriate habitat to support aquatic species.

ECT additionally reviewed the Project study area for potential to support running buffalo clover (RBC, *Trifolium stoloniferum*), a recently federally delisted and state-endangered plant species. Desktop reviews indicated the RBC has a moderate potential to occur within the grasslands of the Project study area. However, a habitat assessment and on-site species-specific surveys for RBC conducted within the Project study area in May 2021 did not identify any populations of RBC within the Project study area.

The ODNR's review of the Ohio Natural Heritage Database (OH NHD) for a 1-mile radius around the Project study area indicated state-listed TES and state special concern (SC) species with the potential to occur within 1-mile of the Project study area, including 19 mussel species, nine (9) fish species, and one (1) plant species. Due to the dominant agricultural landscape, these species have a very low potential to occur within the Project study area. Streams within the Project study area are limited to disturbed agricultural streams, none of which were identified as having appropriate habitat to support state-listed mussel and fish species.

Additionally, wetland habitat within the Project study area is limited to depressional palustrine emergent (PEM) wetlands dominated by ruderal and invasive species, therefore TES and rare plants like the pale umbrella sedge (*Cyperus acuminatus*) are unlikely to occur within the Project study area.

Consultation with USFWS and ODNR 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

Project study area. However, most of these species are unlikely to breed within the Project study area due to limited natural habitats.

This Biological Habitat Assessment identified habitat resources within the Project study area that may potentially be utilized by TES and other sensitive wildlife. TES that use forested and grassland habitats have the greatest potential to occur within the Project study area. However, avoiding clearing within remanent grassland and forested habitats should avoid adverse impacts to these species. If clearing must occur within these habitats, then clearing should be avoided during the breeding season of avian and bat species (e.g., April 1 through September 30).

1.0 Introduction

Circleville Solar (Circleville) is developing a 70-megawatt (MW) photovoltaic (PV) solar project in Pickaway County, Ohio. Circleville contracted Environmental Consulting & Technology, Inc. (ECT), to conduct a Biological Habitat Assessment for the proposed Circleville Solar Project (Project). Findings for the Project are discussed in this Biological Habitat Assessment. The reviewed Project is comprised of approximately 1,636 acres (Project study area) in Pickaway County, Ohio (**Figure 1**).

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 study area.

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, the Ohio Department of Natural Resource (ODNR) Natural Heritage Database (OH NHD), U.S. Geological Survey (USGS) Maps, and the 2016 National Land Use Land Cover Database (NLCD). Additionally, ECT conducted on-site field visits in May 2021 to confirm areas of potential TES habitat and undisturbed habitats identified during the desktop and literature review.

2.0 Project Description

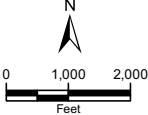
2.1 Project Study Area Description

Approximately 1,636 acres of land being considered for the Project study area were investigated for potential habitat suitable for TES and other biological/environmentally sensitive issues (**Figure 1**).

The Project Area is located in Pickaway County, Ohio, approximately 2.0 miles west of the town of Circleville, Ohio. The USGS Williamsport (2019) and Darbyville (2019) 7.5 minute quadrangle maps (USGS 2019b; 2019a) depict elevations within the Project Area ranging from approximately 670 to 725 feet above mean sea level (**Figure 2**).



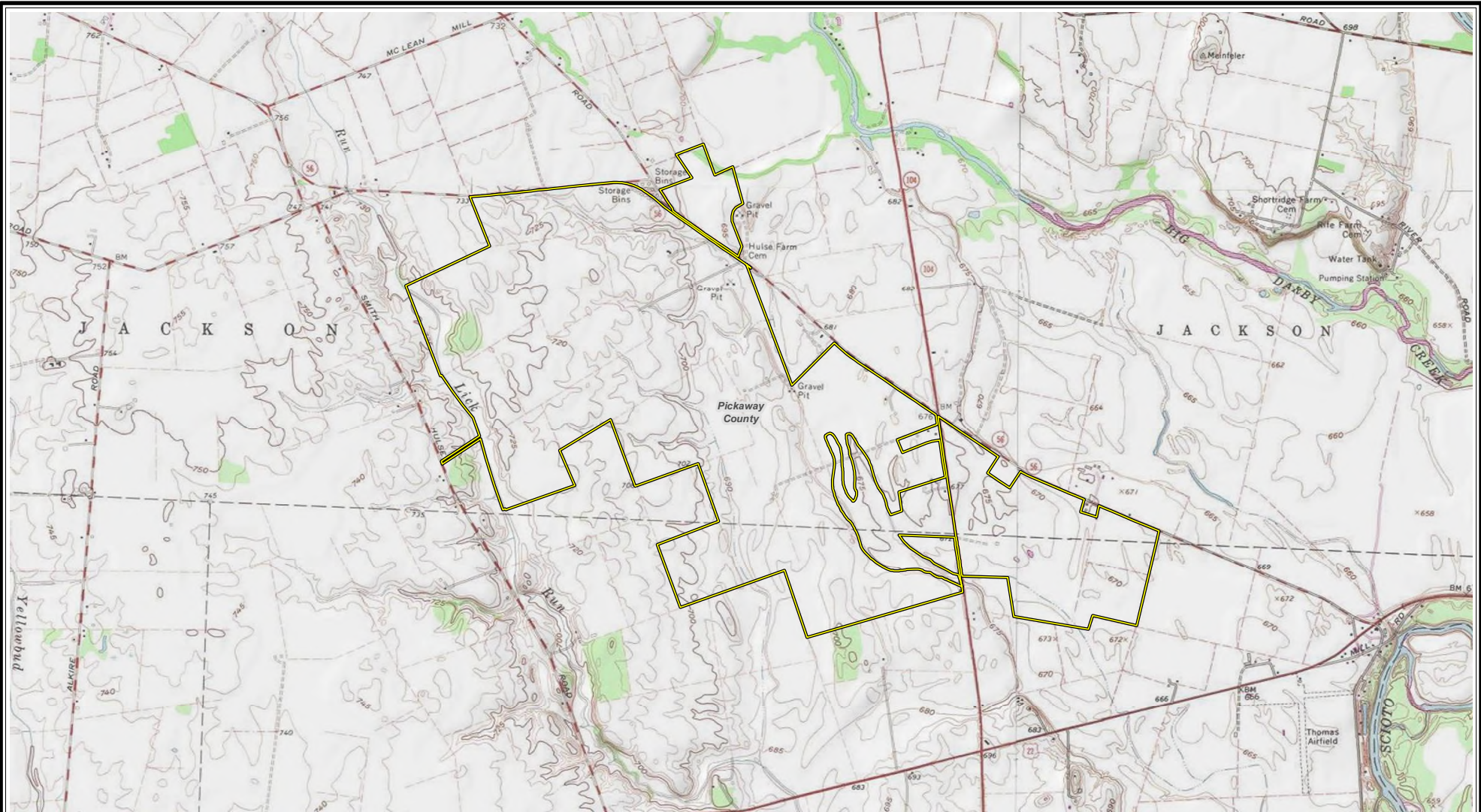
Legend:
Study Area



Sources: Maxar Imagery 2020; ECT, 2021.

Figure 1
Location Map
Circleville Solar Project
Pickaway County, Ohio
Date: 5/27/2021





Legend
Study Area

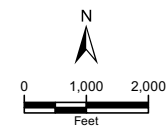


Figure 2
Topographic Map

Circleville Solar Project
Pickaway County, Ohio

Date: 5/27/2021

ECT

Sources: USGS Quads: Williamsport and Circleville, OH; ECT, 2021.

3.0 Regulatory Review

The following paragraphs 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,” 16 USC 668c, 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 (4) 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 objective of this Biological Habitat Assessment is to assess the Project study 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 Project study area. *Section 5.0* of this assessment describes site characteristics of a desktop survey as well as the results of field surveys of the Project study area conducted in May 2021.

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 2016 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 USFWS NWI
- 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 Project study 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 Project study area to identify, delineate, and characterize wetlands, to assess water features and streams, to assess forested areas

for bat habitat suitability, to observe land covers and identify undisturbed natural areas, and to conduct surveys for running buffalo clover (RBC). The field review took place from May 3 through 7 and May 12 through 14, 2021. Surveys for RBC were completed by ECT staff botanists/ecologists with appropriate qualifications and experience. Transect surveys were conducted on foot within potential suitable grassland habitat to assess species composition, site conditions, hydrology, and potential for the presence of RBC. To aid identification of target plants, if encountered, ECT utilized sets of diagnostic vegetative and floristic characters based on USFWS plant recognition descriptions, dichotomous keys, and professional experience with RBC.

5.0 Desktop and Field Results

5.1 Site Characteristics

5.1.1 Land Use and Land Cover

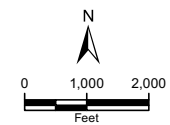
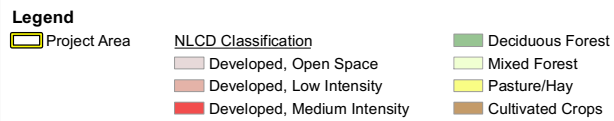
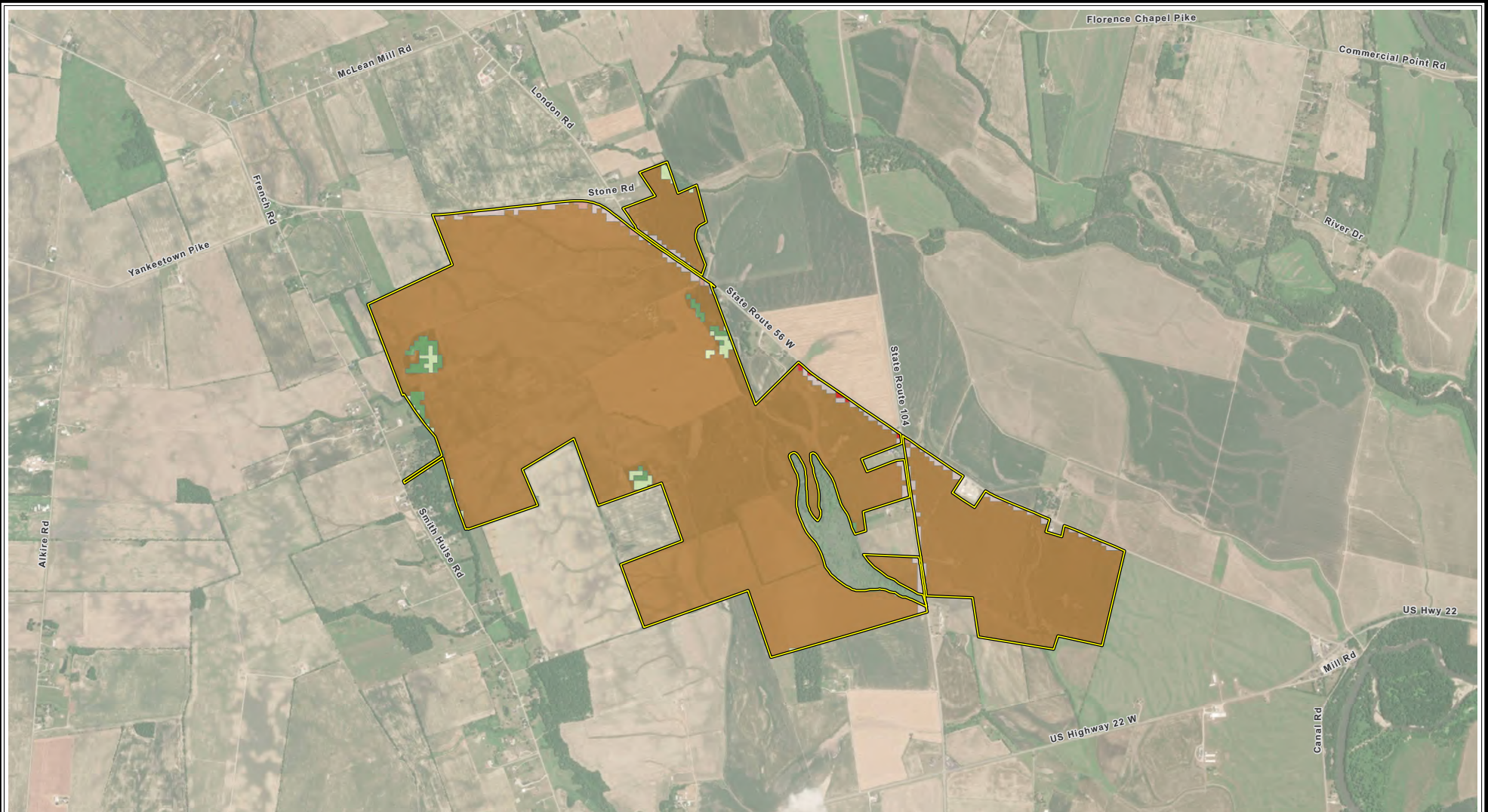
Land cover within the Project study area was reviewed using the 2016 NLCD (**Figure 3**; Yang et al. 2018; MRLC Consortium 2021). The Project is located within a largely rural landscape dominated by agricultural and undeveloped land. Land cover/land use in the Project study area primarily includes cultivated crops (97%). Mixed forest; developed, open space; and deciduous forest each account for approximately 1% of the Project study area. The remaining land cover types collectively cover less than 1% of the total Project study area acreage (**Table 1, Figure 3**).

Table 1. Land Cover and Land Use within the Project Study Area

Land Cover Type	Project Study Area (Acres)	Percent in Project Study Area
Cultivated Crops	1,582.03	96.68%
Mixed Forest	16.64	1.02%
Developed-Open Space	16.37	1.00%
Deciduous Forest	12.82	0.78%
Developed-Low Intensity	4.63	0.28%
Hay/Pasture	3.85	0.24%
Barren Land	<0.01	<0.01%
Total	1,636.35	100%

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

According to the Environmental Protection Agency's (EPA) Ecoregion mapping data, the Project 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 confirmed that the majority of the Project study area is dominated by active tilled croplands planted with corn (*Zea mays*) and soybeans (*Glycine max*). Agricultural fields are surrounded by disturbed/maintained grassland swales and forested areas. Grasslands and forested habitat within the Project study area are described further below.



Sources: Maxar Imagery 2020; ECT, 2021.

**Figure 3
Land Cover**

Circleville Solar Project
Pickaway County, Ohio

Date: 9/16/2021



Grasslands & Pastures

In addition to farmed fields, agricultural regions within the Project study area also include idle lands, pastures, and grasslands/herbaceous habitats. The 2016 NLCD indicates that the Project study area only contains approximately 4 acres of hay/pastures (0.24% of the Project study 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 2019). Areas used as pastures, those not actively farmed, and buffer strips (i.e., vegetated strips along streams that protect surface water from agricultural runoff) can have the ecological functions of grasslands. However, these areas are very limited within the Project study area based on the field visits in May 2021. Grassland and herbaceous habitat within the Project study area are primarily limited to fallow agricultural fields and grassy roadsides dominated by bluegrasses (e.g., *Poa compressa*, *Poa annua*), ground ivy (*Glechoma herderacea*), and purple dead-nettle (*Lamium purpureum*). No high-quality grasslands, such as prairies, were observed during the on-site field surveys.

Forested Habitat

The 2016 NLCD indicates that mixed and deciduous forests comprise approximately 30 acres (1.80%) of the Project study area. In general, forested habitat found within the Project study area is scattered throughout the western and southern portions of the Project study area. This forested habitat is found primarily as isolated woodlots and treelines along agricultural fields (**Figure 3**). In agricultural landscapes, isolated woodlots and narrow corridors can also provide critical ecological functions and habitats for wildlife, flora, and potentially TES, including bat species (see *Section 5.2*). However, limited forested areas exist within the Project study area. These areas consist of small, isolated woodlots and hedgerows and are typically surrounded by crop fields. The wooded areas identified during the field survey of the Project survey area are composed primarily of common hackberry (*Celtis occidentalis*), honey locust (*Gleditsia triacanthos*), silver maple (*Acer saccharinum*), black walnut (*Juglans nigra*), red oak (*Quercus rubra*), and white oak (*Quercus alba*) with honeysuckles (*Lonicera* spp.), gray dogwood (*Cornus racemosa*), multiflora rose (*Rosa multiflora*) and Allegheny blackberry (*Rubus allegheniensis*) in the shrub layer.

5.1.2 Wetlands and Streams

The majority of the Project study area is located within the Lick Run-Scioto River (Hydrologic Unit Code [HUC] 05060002 0403) within the Lower Scioto River (HUC 05060002) watershed. However, a small portion of the northern study area is located in the Lizard Run- Big Darby Creek (HUC 05060001 2204) watershed within the Big Darby Creek (HUC 05060001) watershed. The Lower Scioto River and Big Darby Creek watersheds make up part of the larger Scioto River watershed, which drains 6,513 square miles across 31 counties in central and southern Ohio (OEPA 2021). Agriculture and suburban use are the predominant land cover types within the Big Darby Creek watershed, while forest, cultivated crops, and pasture/hay are the predominant land covers within the Lower Scioto River watershed (OEPA 2021).

ECT completed aquatic resource delineations of the Project study area on May 3 through 7, 2021. The delineations identified a total of 19 wetlands, seven (7) streams, two (2) waterbodies, and two (2) ditches within the Project study area (**Figure 4**). The majority of the wetlands identified within the Project study area are depressional palustrine emergent (PEM) wetlands that occur within agricultural fields. Of the 30.91 acres of wetlands delineated within the Project study area, 30.68 acres are PEM and 0.23 acres are palustrine forested (PFO) wetlands (**Table 2**). Vegetation commonly found in PEM wetlands consists of reed canary grass (*Phalaris arundinacea*, invasive), common wheat (*Triticum aestivum*), purple dead-nettle, beaked cornsalad (*Valerianella radiata*), stinging nettle (*Urtica dioica*), wand panic grass (*Panicum virgatum*), common reed (*Phragmites australis*, invasive), narrowleaf cattail (*Typha angustifolia*, invasive), bitter dock (*Rumex obtusifolius*), and tall scouring-rush (*Equisetum hyemale*). PFO wetlands were dominated by common hackberry, black hawthorn (*Crataegus douglasii*), silver maple, and white mulberry (*Morus alba*). Understory and herbaceous vegetation typically consisted of common hackberry, gray dogwood, black elder (*Sambucus nigra*), amur honeysuckle (*Lonicera maackii*, invasive), reed canary grass, beaked cornsalad, fowl bluegrass (*Poa palustris*), and spotted touch-me-not (*Impatiens capensis*).

Table 2. Delineated Wetlands in Project Study Area

Wetland Type	Acres (Project Study Area)	Percent of Total Project Study Area
Emergent (PEM)	30.68	1.87%
Scrub-Shrub (PSS)	0.00	0.00%
Forested (PFO)	0.23	0.01%
Total	30.91	1.88%

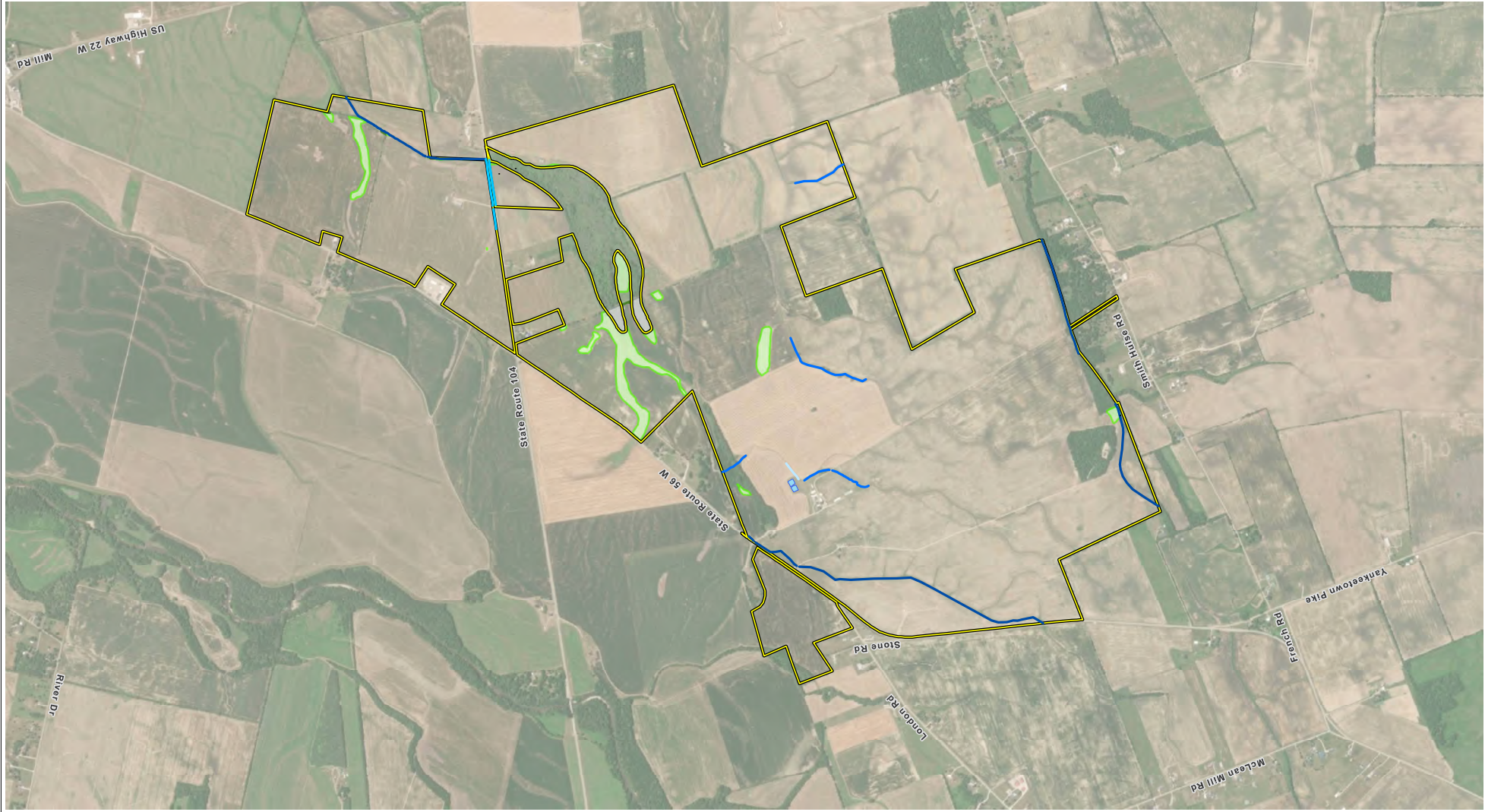
Source: (ECT 2021).

The seven (7) streams identified within the Project study area included one (1) ephemeral stream, four (4) perennial streams, and two (2) intermittent streams. Refer to the separate *Wetland and Stream Delineation Report* for the Circleville Solar Project for more details on these features. **Appendix A** presents representative copies of photographs depicting the wetlands, streams, and waterbodies documented within the Project study area.

The water features identified on site were evaluated for their potential to provide suitable habitat for wildlife, including federally and state-listed species. However, the majority of streams and wetland features identified within the Project study area occur within actively tilled agricultural fields with little to no riparian habitat. The potential for water resources within the Project study area to support a diverse assembly of wetland and riverine dependent fauna, serve as essential movement corridors for wildlife (e.g., bats, mammals, amphibians), and provide potential migratory stopover habitat for birds is very low.

5.1.3 Floodplains

Floodplains of large rivers and streams may provide beneficial habitat for sensitive flora and fauna species, as these areas frequently contain wetland habitats. The FEMA National Flood Hazard Layer (NFHL) datasets for Pickaway County floodplain data indicates 100-year floodplains (flood area ID 39129C) associated with Big Darby Creek and unnamed tributaries of the Scioto River, within the southeastern Project study area (**Figure 5**; FEMA 2021).



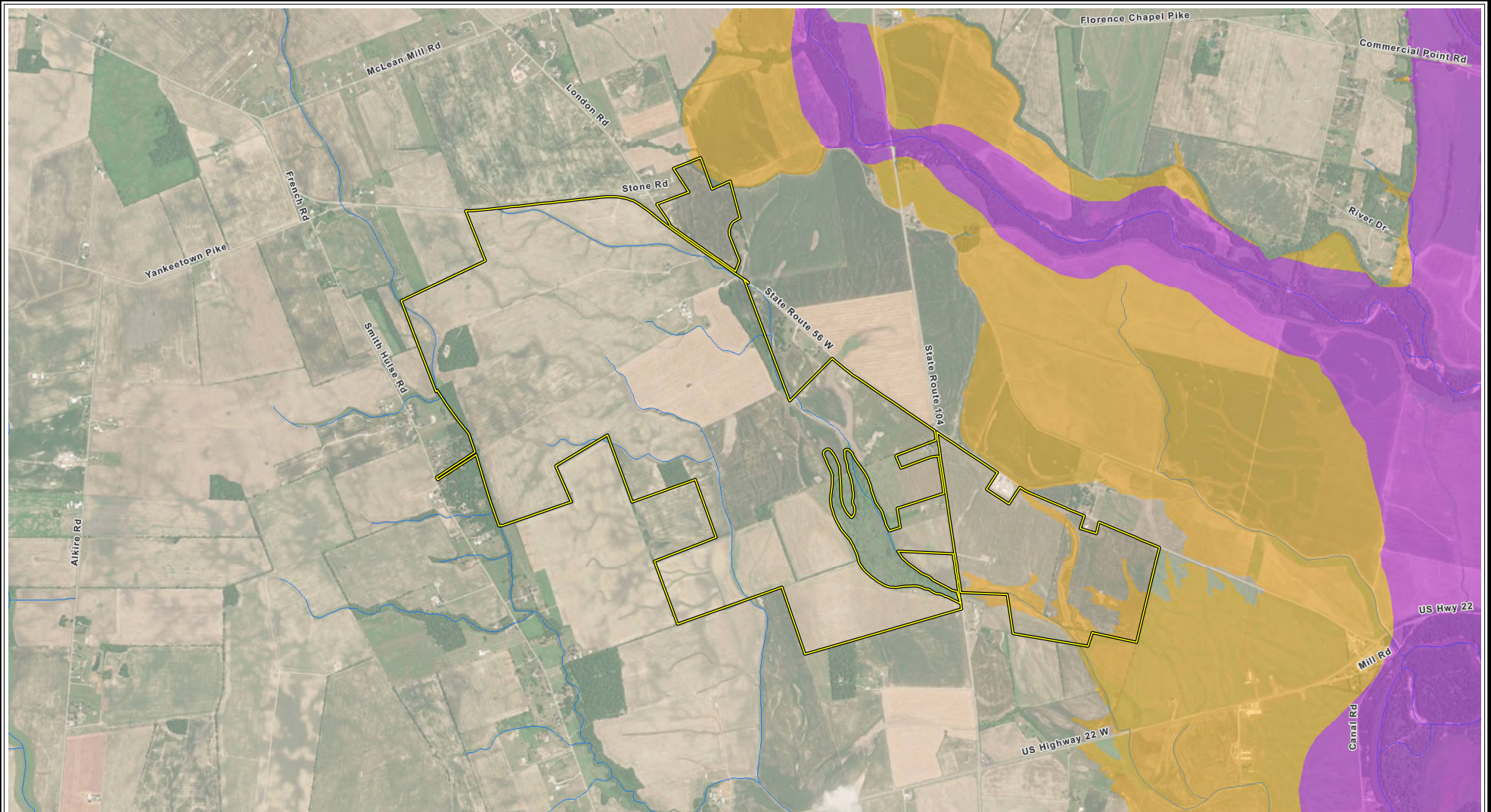
- Legend**
- Wetland (off-site)
 - Study Area
 - Emergent Wetland
 - Forested Wetland
 - Waterbody
 - Ditch
 - Stream, Ephemeral
 - Stream, Intermittent
 - Stream, Perennial

0 750 1,500
Feet
N

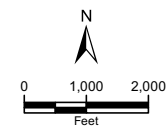
Sources: Maxar Imagery 2020, ECT, 2021

Figure 4
Wetland and Stream Delineation
Circleville Solar Project
Pickaway County, Ohio
Date: 9/22/2021

ECT



- Legend**
- Study Area
 - FEMA Flood Zones
 - Zone AE
 - Approximate Floodway



Sources: FEMA, 2020; Maxar Imagery 2020; ECT, 2021.

**Figure 5
Floodplain**

Circleville Solar Project
Pickaway County, Ohio

Date: 5/27/2021

ECT

5.1.4 Soils

The USDA-NRCS's SSURGO was reviewed to provide a soil characterization within the Project study area as well as ratings of soil use (USDA-NRCS 2021d; 2021c). A table of all the soils identified within the Project study area, including soil type descriptions, is provided below in **Table 3**. A map of soil types within the Project study area and their boundaries is also provided in **Figure 6**.

Highly Erodible Soils and Steep Slopes

ECT reviewed the list of soils in Pickaway County including soils within the Project study area and a 0.5 mile buffer identified as Highly Erodible Land (HEL, USDA-NRCS Ohio 2021). The review indicated that there are soils designated as HEL in both the Project study area and 0.5 mile buffer. However, only 1% of soils within the Project study area are designated as HEL (**Table3, Figure 6**). The review also indicated that there are no critically steep slopes of 12% or greater within the Project study area.

Table 3. Soils within the Project Study Area

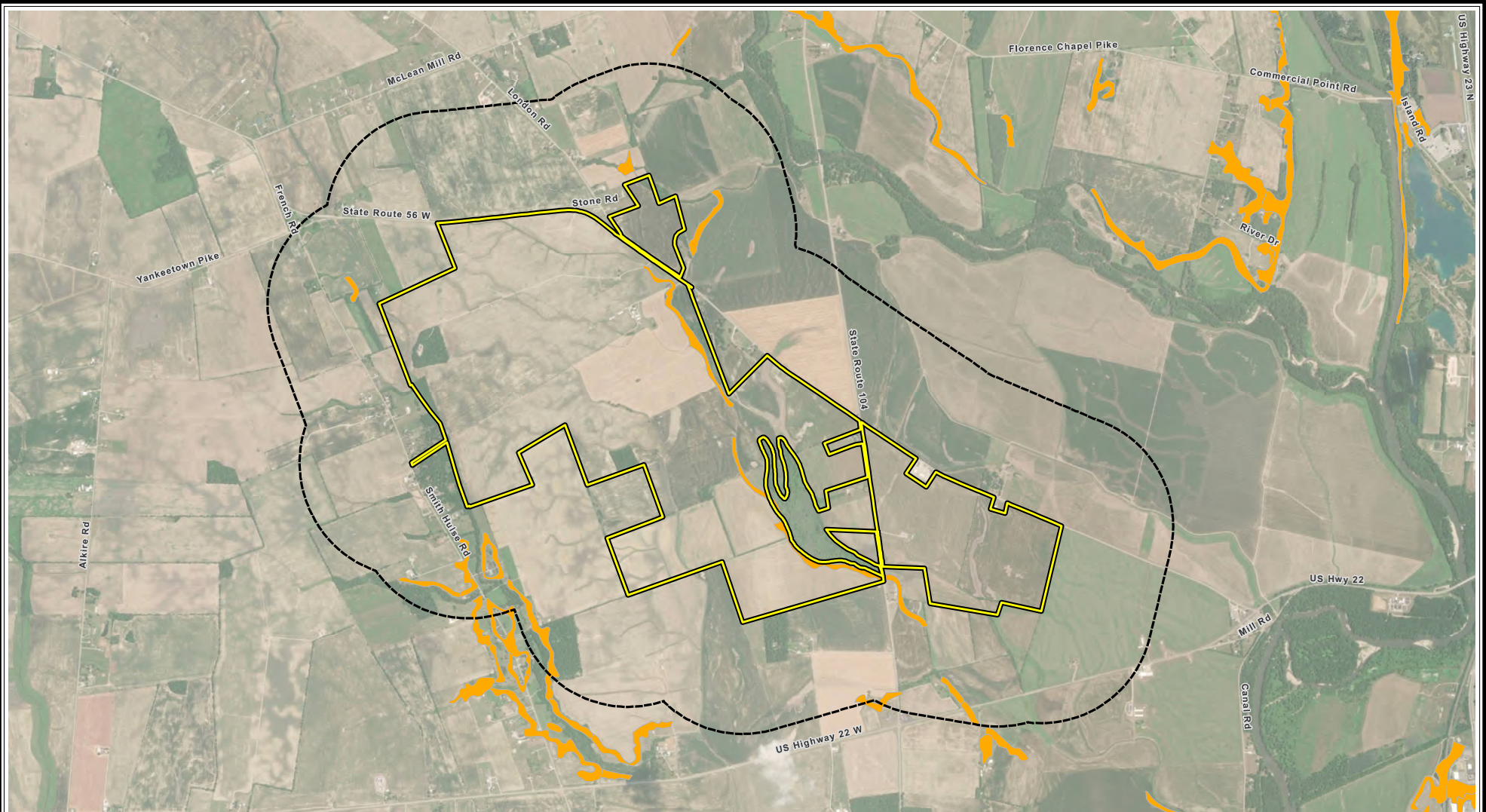
Map Unit Symbol	Soil Name	HEL ¹ (Y/N)	Acres within Project Study Area	Percent within Project Study Area
CrA	Crosby silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	N	261.38	15.97%
EIA	Eldean loam, 0 to 2 percent slopes	N	237.82	14.53%
Ws	Westland silty clay loam, Southern Ohio Till Plain, 0 to 2 percent slopes	N	162.91	9.96%
EnB2	Eldean gravelly loam, 2 to 6 percent slopes, eroded	N	147.75	9.03%
MIB	Miamian-Lewisburg silt loams, 2 to 6 percent slopes	N	141.26	8.63%
Ko	Kokomo silty clay loam, 0 to 2 percent slopes	N	136.38	8.33%
WbA	Warsaw loam, 0 to 2 percent slopes	N	125.24	7.65%
MkB	Miamian-Kendallville silt loams, 2 to 6 percent slopes	N	101.66	6.21%
EIB	Eldean loam, 2 to 6 percent slopes	N	61.45	3.76%
WbB	Warsaw loam, 2 to 6 percent slopes	N	45.97	2.81%
EpB	Eldean-Kendallville loams, 2 to 6 percent slopes	N	32.17	1.97%
Pa	Patton silty clay loam, 0 to 2 percent slopes	N	26.79	1.64%
WeA	Wea silt loam, 0 to 2 percent slopes	N	23.22	1.42%
CkD	Casco-Rodman gravelly loams, 12 to 18 percent slopes	Y	22.26	1.36%
MkC2	Miamian-Kendallville silt loams, 6 to 12 percent slopes, eroded	N	20.98	1.28%
ThA	Thackery silt loam, 0 to 2 percent slopes	N	15.61	0.95%
EpC2	Eldean-Kendallville loams, 6 to 12 percent slopes, eroded	N	12.84	0.78%
MhC3	Miamian clay loam, shallow to dense till substratum, 6 to 12 percent slopes, severely eroded	N	10.72	0.66%
ClB	Celina silt loam, 2 to 6 percent slopes	N	10.57	0.65%
Ln	Linwood muck	N	8.54	0.52%
RoC	Rodman gravelly sandy loam, 4 to 12 percent slopes	N	5.87	0.36%
TpA	Tippecanoe silt loam, 0 to 2 percent slopes	N	5.65	0.35%
CgC	Casco gravelly loam, 6 to 12 percent slopes	N	4.66	0.28%
CoB	Corwin silt loam, 2 to 6 percent slopes	N	4.27	0.26%
EIC2	Eldean loam, 6 to 12 percent slopes, eroded	N	3.48	0.21%
SlA	Sleeth silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	N	3.46	0.21%
Ag	Algiers silt loam	N	3.39	0.21%
Ud	Udorthents	- ²	0.05	<0.01%
Total			1,636.35	100%

¹ Highly Erodible Land

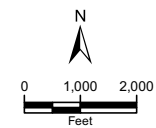
² No HEL ranking by NRCS

Source: (USDA-NRCS 2021d; 2021c).

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Legend
Study Area
Study Area - 0.5 Mile Buffer
High Erodible Soil



Sources: NRCS, 2021; Maxar Imagery 2020; ECT, 2021.

Figure 6
NRCS Soils

Circleville Solar Project
Pickaway County, Ohio

Date: 11/8/2021

ECT

5.1.5 Public Lands and Conservation Easements

Public Lands

ECT's review of the USGS PAD-US identified no public lands within the Project study area or a 0.5-mile buffer (**Figure 7**). The closest public lands to the Project study area include the ODNR-managed Wildlife Production Area (WPA) 4 (also known as the Wildlife Habitat Restoration Program [Irish] parcel), located approximately 0.95 miles to the northwest, Circleville Canal Wildlife Area (WA), located approximately 1.39 miles to the south, and WPA 10 (also known as the Wildlife Habitat Restoration Program [Cupp] parcel), located approximately 1.46 miles to the southwest (**Figure 7**; USGS 2021a). WPAs are managed for enhancing the wildlife in the area and are often open to the public for hunting. However, no public lands are located within or immediately adjacent to the Project study area.

Publicly Managed Lands

Review of the ODNR Lands mapper (ODNR 2021b) indicated no properties are located within or within a 0.5-mile radius of the Project study area. Multiple properties owned and/or managed by ODNR DOW are located approximately 1 mile outside of the Project study area. These areas include the Elmon Richards Scioto River Conservation Area, Circleville Canal WA, WPA 4, and WPA 10. The ODNR Division of Wildlife managed WPA 34 (also known as the Wildlife Habitat Restoration Program [Grisby] parcel) and the Trump Wildlife Area, as well as the Stages Pond Dedicated Nature Preserve (NP, Division of Natural Areas and Preserves), Bartley Dedicated Nature Preserve (Division of Natural Areas and Preserves), and A.W. Marion State Park (SP, Division of Parks and Watercraft) are also located within approximately five (5) miles of the Project study area (**Figure 7**).

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 2021). 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 Project study area (NCED 2021; USGS 2021). Although CRP and CREP easements are common throughout rural areas in Ohio, this information is often not publicly available. Thus, the Project study area may contain land under contract with the CRP that is not showing in publicly available data.

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 2021a). 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 2021b). 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 2021e). ECT's review of the PAD-US and NCED did not locate properties enrolled in the ACEP within Project study area boundary or a 0.5-mile radius (NCED 2021; USGS 2021). However, the field review in May 2021, identified an area enrolled with the ACEP-WRE within the Project study area whose boundary was not identified during the initial desktop review (**Figure 7**). Similar to CRP easements, additional information on ACEP lands may not be publicly available.

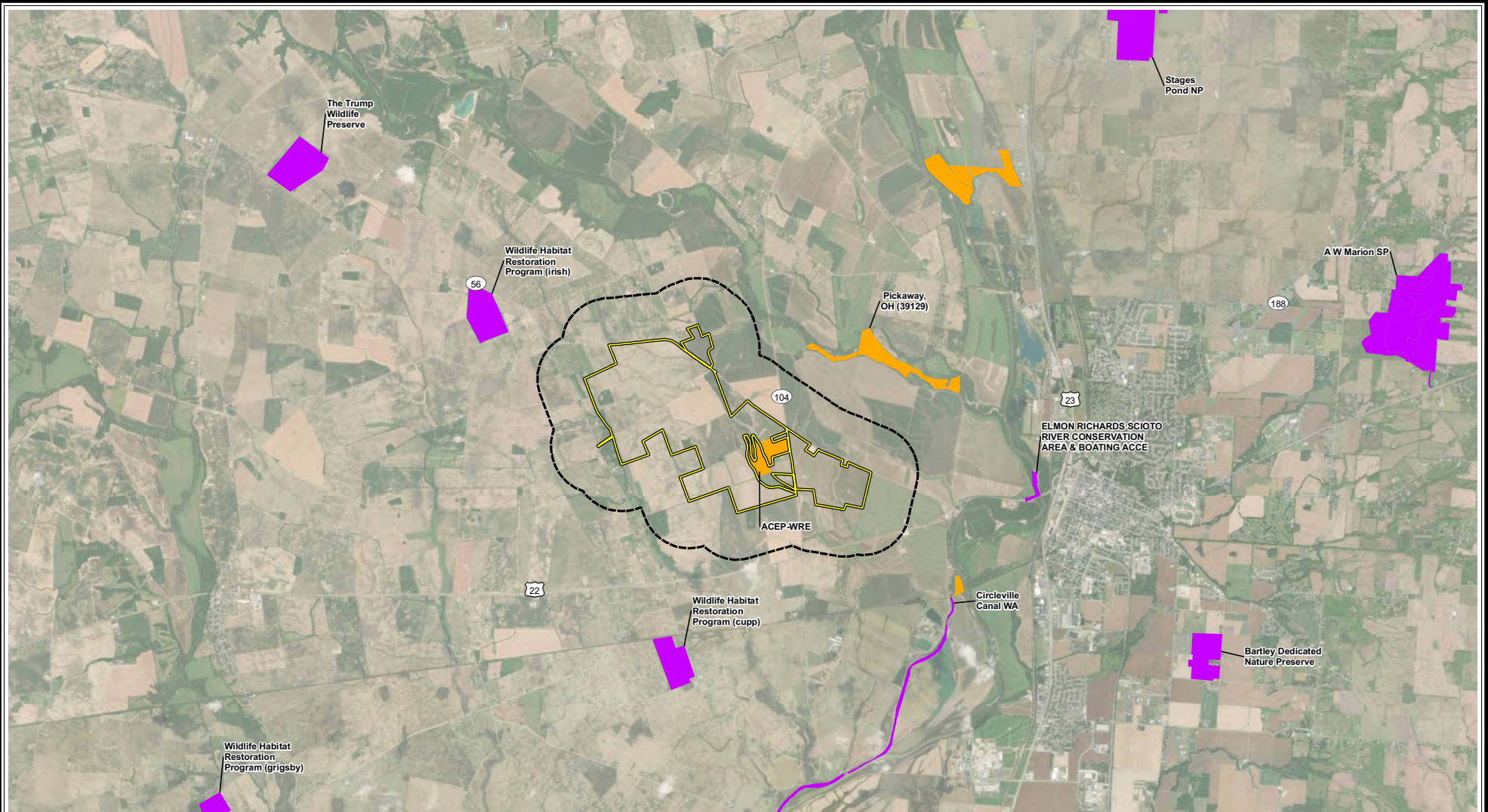
The NCED identified several ACEP-WREs to the northeast, east, and southeast of the Project study area boundary along Big Darby Creek and Scioto River, with the nearest ACEP-WRE located approximately 0.94 miles from the Project study area (**Figure 7**). The identified easements are currently under private management by the UDSA-NRCS.

State Wildlife Action Plan – Areas of Conservation Opportunity

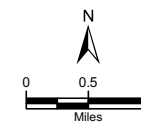
Ohio's State Wildlife Action Plan (SWAP) identifies Conservation Opportunity Areas (COAs) which aim to enhance and maintain the highest level of terrestrial wildlife diversity in the state (ODNR- Division of Wildlife 2015). No COAs are located in the Project study area. However, the Scioto River Watershed,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

Although the Project study area is located within a designated COA Watershed, the Project area accounts for less than 0.04% of the total Scioto River watershed acreage (approximately 4,168,320 acres in size, OEPA 2021). Therefore, impacts to lands within Project study 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.



- Legend**
- Study Area
 - Study Area - 0.5 Mile Buffer
 - NRCS / ACEP-WRE
 - State Trust Land



**Figure 7
Public Lands**

Circleville Solar Project
Pickaway County, Ohio

Date: 11/8/2021

ECT

Sources: USPAD, ODNR, 2021; Maxar Imagery 2020; ECT, 2021.

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 (originally accessed April 29, 2021 and then reassessed October 26, 2021) indicates that the Project study area is within the range (i.e., are known to or are believed to occur) of six (6) federally endangered (LE), two (2) federally threatened species (LT) and one (1) 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 Project Study Area
Mammals			
Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	LT, SE	Forested regions. Forages in upland and lowlands woods and along floodplain forests.	Low to Moderate
Indiana Bat (<i>Myotis sodalis</i>)	LE, SE	Forested regions. Forages on hillsides, ridge forests, and riparian and floodplain forests.	Low to Moderate
Fish			
Scioto Madtom (<i>Noturus trautmani</i>)	LE, SE	Stream riffles of moderate flow over sandy gravel bottom.	Very Low
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.	Very Low
Snuffbox Mussel (<i>Epioblasma triquetra</i>)	LE, SE	Small to medium creeks or rivers, inhabiting areas with a swift current.	Very Low
Clubshell (<i>Pleurobema clava</i>)	LE, ST	Small streams and rivers, often below the sediment surface.	Very Low
Rabbitsfoot (<i>Quadrula cylindrica cylindrica</i>)	LT, SE	Small to medium streams and larger rivers, often in shallow areas along the bank.	Very Low
Rayed Bean (<i>Villosa fabalis</i>)	LE, SE	Lakes and small to large streams.	Very Low

¹ Status Key: LT=federally threatened; LE=federally endangered; SE=state-endangered ST=state-threatened, C= Candidate. Source: (USFWS 2021d; 2012a; Whitaker et al. 2007; USFWS 2020b; Roe 2002; USFWS 2020a; 2020c; Watters 1994; USFWS 1997b; 2009a; 2021b; 2021a).

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.

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 Project study area is located approximately 14 miles west of a “Priority 4” hibernacula in Hocking County and 24 miles northeast of a “Priority 4” hibernacula in Highland County. Hibernacula are assigned priority rankings based on the number of bats they hold. “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 Project study area primarily occurs as small, isolated woodlots and treelines. However, 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 Project study area. Therefore, there is a low to moderate potential for Indiana bats to occur within the Project study area in summer.

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 Project study area's location (**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 2021e).

Forest cover within the Project study area primarily occurs as small, isolated woodlots and treelines. 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 Project study 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 Project study area. Therefore, there is low to moderate potential for NLEB to occur within the Project study area in summer.

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

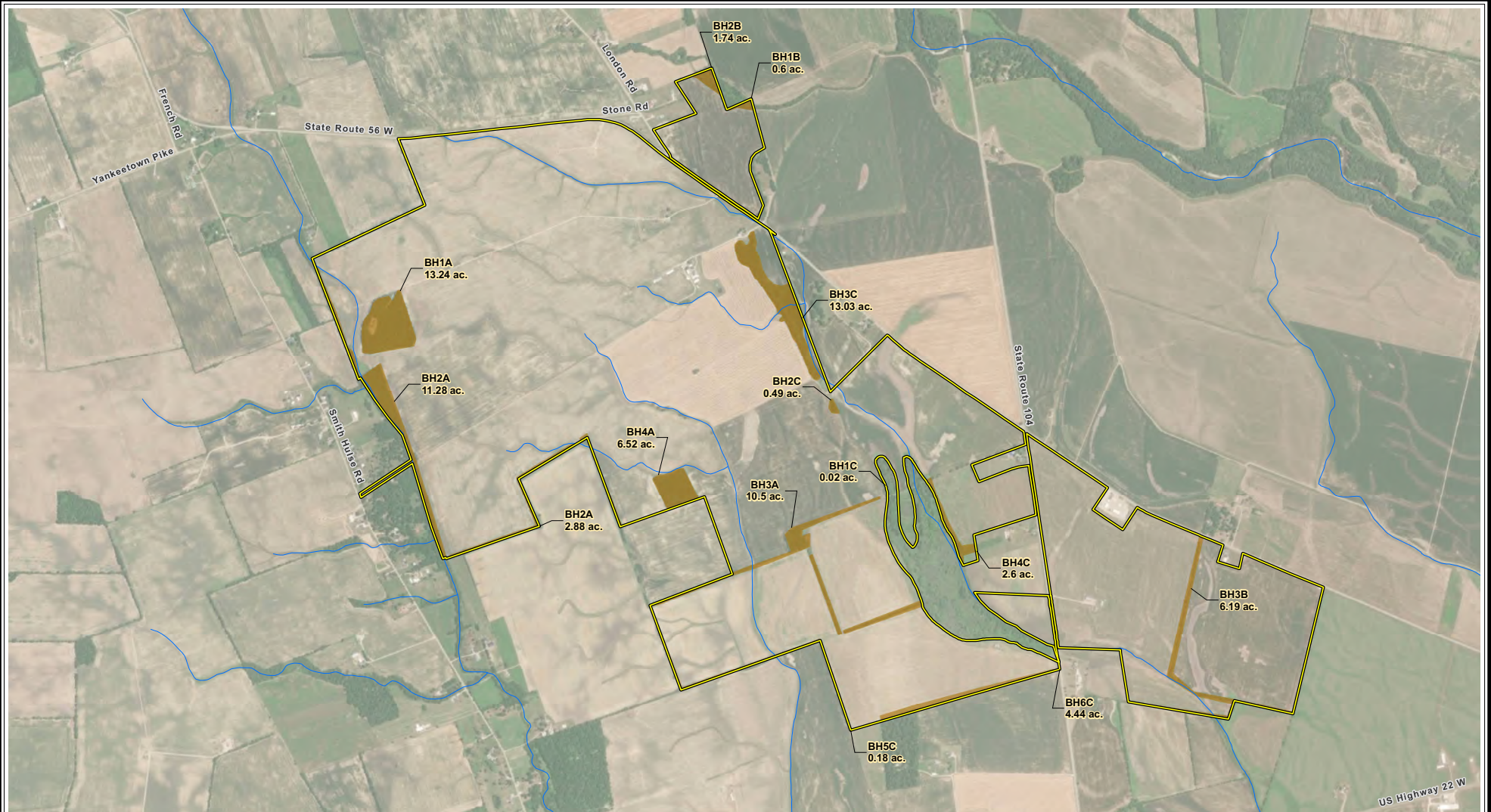
Forested areas within the Project study area were surveyed for potential bat habitat in May 2021. The field assessment confirmed approximately 73.7 acres of potential bat habitat within the Project study area. The forested areas on-site included isolated woodlots and hedgerows bordered by crop fields (**Figure 8**). However, while some areas were adjacent to or in the vicinity of water for foraging bats, the majority of assessed areas were rated as low to moderate overall habitat quality for bats. Dominant overstory tree species in the assessed forested areas included common hackberry, sugar maple (*Acer saccharum*), eastern cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), and Oaks (*Quercus* spp.), among others. The larger woodlots often contained understories dense with shrub species, such as honeysuckles, common privet (*Ligustrum vulgare*), and multiflora rose, which limited flight corridors for bats. Few trees were observed that exhibited suitably exfoliating bark, cracks, crevices, and/or hollows to allow for bat roosting. Due to the lack of habitat continuity, living trees with suitable exfoliating bark, suitable standing dead trees, and proximity to flight corridors, it is ECT's professional opinion that the majority of forested and hedgerow areas identified within the Project study area contain low suitability for listed bat species.

Avoiding tree clearing within the Project study area should help to avoid impacts to bat species that may occur on-site, including the Indiana bat and the NLEB. If tree clearing must be done, it is recommended that tree clearing occur during the winter months (October 1 through March 31) when

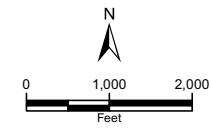
bats have left their summer roosts for hibernacula. Further agency recommendations on avoiding impacts to bat species is included in *Section 6.0*.

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. Within Ohio, a variety of bat species, including the Indiana bat and NLEB, have also been documented utilizing sandstone ledges for hibernation. A desktop review for potential hibernacula was conducted for the Project study 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 2021c). Topographic contour lines were also used to evaluate the potential presence of sandstone ledges within 0.25 miles of the Project study area. Two (2) gravel pits were identified within the northern portion of the Project study area, and a third gravel pit was identified just outside the boundary. However, these areas are unlikely to serve as suitable hibernacula for bats. No further mines, quarries, karst features, or sinkholes were identified during the desktop review. No steep slopes with the potential to contain sandstone ledges are located within the Project study area or 0.25-mile buffer (**Figure 9**). No suitable hibernacula were identified within the Project study area or 0.25-mile buffer.



Legend
Study Area
Bat Habitat Area



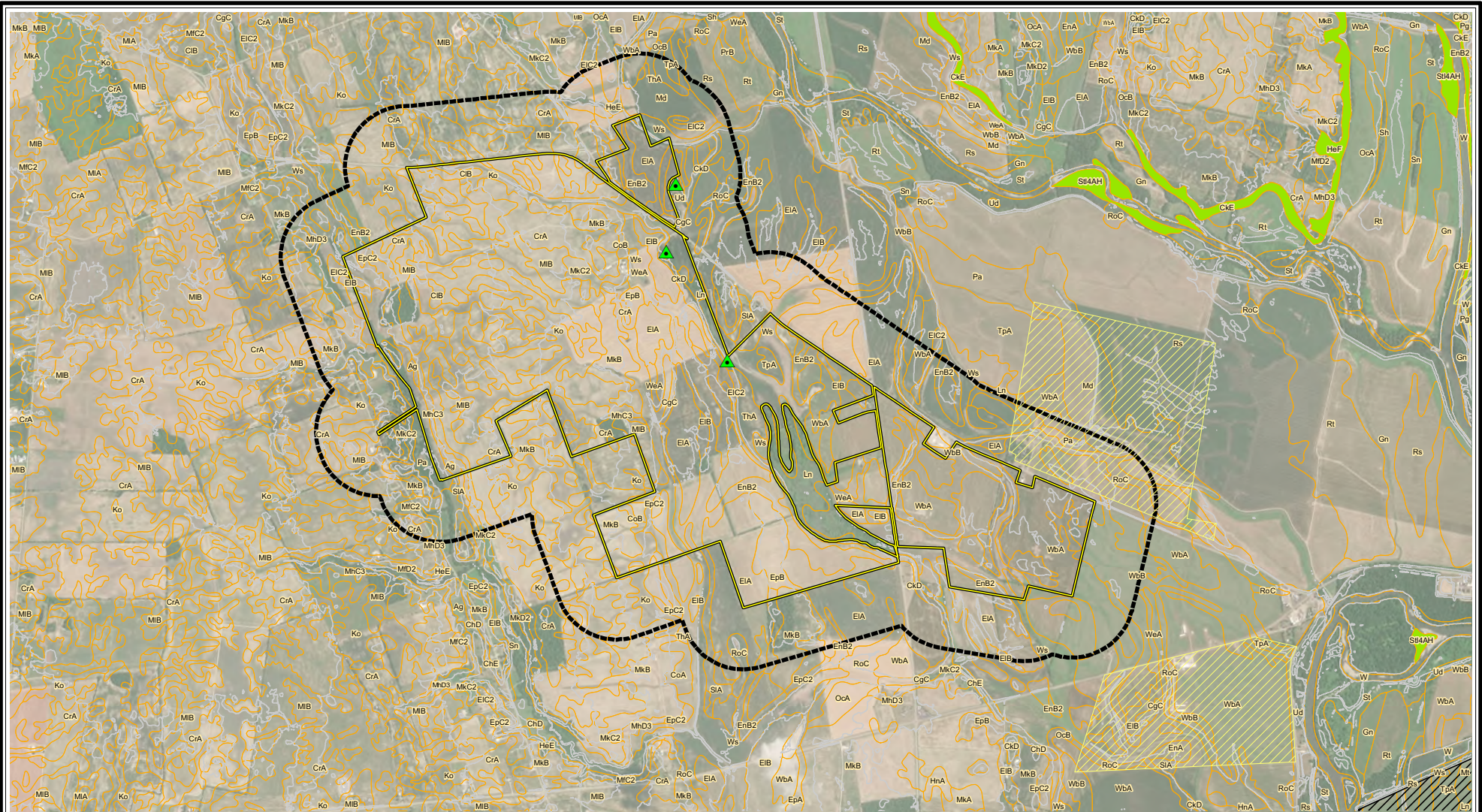
Sources: Maxar Imagery 2020; ECT, 2021.

Figure 8
Forested Areas

Circleville Solar Project
Pickaway County, Ohio

Date: 9/17/2021

ECT



Legend

- Study Area
- Project Area - 0.25 Mile Buffer
- 10ft Contour
- Soils (NRCS)
- Potential Sandstone Ledge
- Gravel Pit
- Surface Mine (Industrial Minerals)
- Active
- Inactive

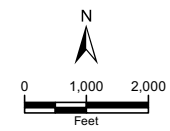


Figure 9
Potential Bat Hibernacula Indicators

Circleville Solar Project
Pickaway County, Ohio

Date: 9/17/2021



Sources: ODNR, 2021; USGS, 2021; USDA, 2021; Maxar Imagery 2020; ECT, 2021.

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). Neither Big Darby Creek nor the Scioto River are located within the Project study area. Therefore, the Scioto madtom is not expected to be located in the streams within the Project study area. Furthermore, the streams and waterbodies identified within the Project study area were evaluated for their potential to support fish species during on-site surveys in May 2021. While streams and ditches are located throughout the Project study area, these surface water features have been heavily channelized/straightened with no areas of riffle/pool complexes. Additionally, high sedimentation was observed within all on-site streams and channels. Therefore, suitable habitat for the Scioto madtom does not occur on-site of the Project study 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 2021). According to the USFWS the current range of the monarch butterfly overlaps the region of the Project study area.

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 Project study area likely precludes the occurrence of milkweed (USDA Forest Service 2021). The monarch butterfly is unlikely to occur within the Project study 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 Project survey area were evaluated for their potential to support mussel during on-site surveys in May 2021. While streams and ditches are located throughout the Project study area, only four (4) streams exhibited perennial flow. All of the identified perennial streams exhibited high sedimentation rates and had substrates dominated by fine particles such as silt. No suitable habitat for federally listed mussel species was identified within the Project study 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 Project study area on May 19, 2021 (**Appendix C**).

On May 20, 2021, the ODNR responded that the Project study area is within range of documented occurrences of 14 state-endangered (SE) species and seven (7) state-threatened (ST) species (**Appendix C; Table 5**). Seven (7) state species of concern (SC) and one (1) state-potentially threatened species also have documented occurrences within range the Project study area and are included in **Table 5** below. Running buffalo clover (RBC), a recently federally delisted and SE species, was not identified during ODNR correspondence but was identified in the initial IPaC prior to delisting. Because of its SE status, the Project study area was reviewed for potential suitable habitat for this species. However, none of these state-listed or SC species records are located within the Project study area itself. **Table 5** also includes a brief description of preferred habitat requirements and provides a preliminary desktop determination of the potential of occurrence within the Project study 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–Project Study Area

Common Name Scientific Name	Status ¹	Habitat	Potential Occurrence in Project Study Area
Mussels			
Elephant-ear (<i>Elliptio crassidens</i>)	SE	Large rivers in mud, sand, or fine gravel.	Very Low
Northern Riffleshell (<i>Epioblasma rangiana</i>)	SE, LE	A variety of streams (from large to small) with bottoms of firmly packed sand or gravel.	Very Low
Snuffbox (<i>Epioblasma triquetra</i>)	SE, LE	Small to medium creeks or rivers, inhabiting areas with a swift current.	Very Low
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.	Very Low
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.	Very Low
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.	Very Low
Washboard (<i>Megalonias nervosa</i>)	SE	Large rivers with slow current and muddy to coarse gravel substrates; may also be found in medium to small rivers.	Very Low
Clubshell (<i>Pleurobema clava</i>)	SE, LE	Clean, loose sand and gravel in medium to small rivers and streams.	Very Low
Rabbitsfoot (<i>Theliderma cylindrica</i>)	SE, LT	Small to medium sized rivers of moderate current with clear, relatively shallow water and a mixture of sand and gravel substrates.	Very Low
Fanshell (<i>Cyprogenia stegaria</i>)	SE, LE	Medium to large rivers, with sand or gravel substrates.	Very Low
Black Sandshell (<i>Ligumia recta</i>)	ST	Varying sizes of creeks, rivers, and lakes with sand and gravel bottoms and moderate current.	Very Low
Threehorn Wartyback (<i>Obliquaria reflexa</i>)	ST	Medium to large rivers with slackwater conditions to swift currents and substrates of gravel to muddy sand.	Very Low
Fawnsfoot (<i>Truncilla donaciformis</i>)	ST	Small to large rivers and lakes with gravel or sand substrates.	Very Low
Elktoe (<i>Alasmidonta marginata</i>)	SC	Small to large streams and small to medium rivers with swifter currents over packed sand and gravel substrates.	Very Low

Common Name Scientific Name	Status ¹	Habitat	Potential Occurrence in Project Study Area
Purple Wartyback (<i>Cyclonaias tuberculata</i>)	SC	Medium to large rivers with gravel or mixed sand and gravel substrates.	Very Low
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.	Very Low
Round Pigtoe (<i>Pleurobema sintoxia</i>)	SC	Mud, sand, or gravel substrates of medium to large rivers.	Very Low
Kidneyshell (<i>Ptychobranhus fasciolaris</i>)	SC	Creeks, rivers, and lakes with moderate to swift currents, high water quality, and sand or gravel substrates.	Very Low
Deertoe (<i>Truncilla truncata</i>)	SC	Rivers and lakes with a moderately swift current and firm sand or gravel substrates.	Very Low
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.	Very Low
Northern Madtom (<i>Noturus stigmosus</i>)	SE	Deep swift riffles of large rivers, usually found in and around cobbles and boulders.	Very Low
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.	Very Low
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.	Very Low
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.	Very Low
Blue Sucker (<i>Cycleptus elongatus</i>)	ST	Deep, swift water in channels of large rivers with sand, gravel, or rubble bottoms.	Very Low
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.	Very Low
Paddlefish (<i>Polyodon spathula</i>)	ST	Large, deep, slow-moving rivers, lakes, and reservoirs.	Very Low

Common Name Scientific Name	Status ¹	Habitat	Potential Occurrence in Project Study Area
Western Creek Chubsucker (<i>Erimyzon claviformis</i>)	SC	Clear headwaters, creeks, and small rivers of prairies; typically streams with sand and gravel.	Very Low
Plants			
Pale Umbrella-sedge (<i>Cyperus acuminatus</i>)	P	Disturbed, wet, sandy, or muddy shores of lakes, ponds, and streams, on mud flats and sloughs.	Low
Running Buffalo Clover (<i>Trifolium stoloniferum</i>)	SE ²	Mesic habitats with partial to filtered sunlight, where there is a prolonged pattern of moderate, periodic disturbance, such as mowing, trampling, or grazing.	Not identified during species specific surveys ³

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

²Recently delisted from the ESA list in August 2021

³Due to a moderate potential for RBC to occur within the Project study area, a species-specific survey was done. No populations of RBC were found.

Source: (Roe 2002; MNFI 2021; USFWS 2009b; 2012c; 2020c; 2021d; NatureServe 2021; Watters 1994; USFWS 2020a; Minnesota Wildflowers 2021; ODNR- Division of Wildlife 2017; MNDNR 2021c; USFWS 2019; 1997a; 2018b; MNDNR 2021a; WDNR 2021; USFWS 2001; Watters, Hoggarth, and Stansbery 2009; Fuller 2019; MNDNR 2021d; USFWS 2011; MNDNR 2021b).

The Project study 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 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 the Project study area (**Appendix C**). However, occurrences of eight (8) 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 (3) ST mussels: black sandshell (*Ligumia recta*), threehorn wartyback (*Obliquaria reflexa*), and fawnsfoot (*Truncilla donaciformis*) are recorded in the Scioto River and Big Darby Creek, approximately 1.4 miles east and 0.8 miles northeast of the Project study area at their closest points, respectively. Two (2) of these species, pink mucket and fanshell, are also federally listed, but were not identified in the IPaC results for the Project study area or its vicinity. These 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 swiftness (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 Project study area contains a network of streams/ditches (**Figure 4**); however, extensive channelization and sedimentation rates of these features is common and likely precludes persistence of native mussel species. The streams within the Project study area are also generally lacking the cobble or gravel substrates, high water quality, and/or water velocity that many of these mussel species require. Therefore, there is a low potential for native mussels to occur in streams and ditches within the Project study area

State-Listed Fish

The OH NHD identified eight (8) state-listed fish species with occurrences in the vicinity of the Project study 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 2021d; Fuller 2019; USFWS 2021c; MNDNR 2021a; WDNR 2021; USFWS 2001).

While streams and ditches are located throughout the Project study area, these surface water features have been heavily modified for agricultural uses and are unlikely to provide suitable habitat for state-listed fish species.

State Listed Plants

Running Buffalo Clover

The RBC (*Trifolium stoloniferum*) was previously listed as LE but was recently delisted from the ESA in August 2021; however this species is still listed as SE in Ohio. RBC occurs in a variety of mesic habitats with partial to filtered sunlight, where there is a prolonged pattern of moderate, periodic disturbance, such as mowing, trampling, or grazing (USFWS 2021b; 2021a). These habitats include, mesic woodlands, savannahs, floodplains, stream banks, grazed woodlots, mowed paths, old logging roads

or all-terrain vehicle trails, mowed wildlife openings within mature forest, and steep ravines. This plant is often found in areas of limestone or other calcareous bedrock. Sites that have not been disturbed within the last 20 years are not likely to support RBC (USFWS 2021b; 2021a). Limited small tracts of woodlands and/or floodplain forests and other disturbed mesic habitats occur within Project study area. Therefore, there is moderate potential for RBC to occur within the Project study area based on desktop and literature reviews.

Despite the presence of marginally suitable habitat within the Project study area, populations of RBC were not observed during the May 2021 surveys (**Appendix D**). Due to the negative species-specific survey results for RBC, it is anticipated that the Project will not adversely affect this species.

Pale Umbrella-sedge

The pale umbrella sedge (*Cyperus acuminatus*) is considered a potentially threatened species by the ODNR meaning that even though the species is not officially considered threatened, natural populations of the species are believed to be declining at a significant rate in large portions of the state and the species could reasonably become an officially threatened species in the foreseeable future (ODNR 2021d).

The pale umbrella sedge requires rock pools and wetland habitat that includes disturbed, wet, sandy, or muddy shores of lakes, ponds, and streams (MNDNR 2021a). Wetland habitat is limited primarily to depressional wetlands within agricultural fields that are frequently disturbed from mowing and tilling. Additionally, the majority of observed wetlands were dominated by invasive or ruderal plant species. Suitable wetland habitat for the pale umbrella sedge was not observed within the Project study area and therefore the Project is not expected to impact this rare plant species.

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 April 29, 2021 and October 26, 2021, there are no USFWS-designated critical habitats within the vicinity of the Project study area (USFWS 2021d).

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 Project (National Research Council 2007). Loss and fragmentation of native prairies/grasslands and displacement of grassland-associated species is a concern, particularly for area-sensitive species (Fletcher 2005; Ribic et al. 2009; Shaffer and Buhl 2015; Sliwinski and Koper 2012).

The Project study area is in a region where much of the pre-settlement contiguous forest and swamp forest habitats have been replaced with agriculture or by smaller patches of forest, tree rows, and old field/pasture. Much of the Project study area contains cultivated cropland (approximately 97% of the Project study area) and pastures (less than 1% of the Project study 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 Project study 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 Project study area may also provide suitable habit 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 Project study area (**Table 6**, USFWS 2021d).

Table 6. Birds of Conservation Concern Potential Breeding Habitat Summary

Common Name Scientific Name	Potential Breeding Habitat Land Cover Types	Potential for Breeding within Project Study 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.	Low	Sep. 1- 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.	Low	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	-
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	Large areas (>250 acres_ of grassland/pasture/fallow field.	Very 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.	Very Low	April 20 to Aug 20

Common Name Scientific Name	Potential Breeding Habitat Land Cover Types	Potential for Breeding within Project Study Area	Breeding Dates
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.	Very Low	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 arctic 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; USFWS 2021d; Audubon Society 2021; Cooper 2000).

Of the species in **Table 6** above, the red-headed woodpecker (*Melanerpes erythrocephalus*), wood thrush (*Hylocichla mustelina*), and yellow-bellied sapsucker (*Sphyrapicus varius*) have a moderate potential to breed within the Project study area due to the limited presence of woodland and grassland habitat in the Project study area. These areas include a small area of fallow field/pasture

located in an ACEP-WRE easement in the eastern portion of the Project study area, which could potentially support grassland birds. However, this area is recommended for avoidance and as such, impacts to grassland birds are not anticipated. Furthermore, clearing trees during the winter months (October 1- March 31) should avoid impacts to avian species that may nest within forested areas of the Project study area.

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 2021). Review of the database did not indicate known occurrences of any eagles or IPaC listed BCC within the Project study area. Although the absence of records within the Project study area does not preclude the presence of sensitive avian species, the lack of records does suggest that use of the Project study area by avian species is low.

Several eBird “hot spots” were observed within the vicinity of the Project study area. “Hot spots” in eBird are locations where multiple birders have entered observation data for a location (eBird 2021). Calamus Swamp Preserve, Deer Creek State Park, and Island Road Quarry are all eBird “hot spots” located within 10-miles of the Project study area with observations of up to 150 avian species (eBird 2021). Sections of the Scioto River to the east of the Project study area also have observations of 100 more avian species. 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 (Columbus Audubon 2021; ODNR 2021a). While these areas are likely to attract migratory birds and bald eagles in the region, the majority of the Project study area itself is dominated by agricultural fields with limited undisturbed grassland and wetland habitat. Avian species are more likely to use the nearby Scioto River corridor and surrounding natural areas than they are the Project study area.

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 Scioto River-Lower IBA covers an > 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 (*Platanus occidentalis*). 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, located outside of the Project study area to the east, is known to serve as a corridor for nesting and wintering bald eagles. However, suitable nesting and foraging habitat is unlikely to occur within the Project study area itself.

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 Project study area but there is potential for individual or migrant golden eagles to occur in Project study area in winter or during migration.

The Project study area was reviewed for raptor, including bald eagle, nests during on-site surveys in May 2021. Limited forested areas exist within the Project study area. These areas included isolated woodlots and hedgerows bordered by crop fields. The identified forested areas are not in close proximity to large bodies of water, as is preferred by bald eagles and other raptors when nesting, limiting the likelihood of raptors to breed within the Project study area. No bald eagles or bald eagle nests were observed within the Project study area during the field surveys.

Raptors may, however, utilize the Project study area, including the farmed portions, for foraging. Therefore, tree clearing should be avoided to the greatest extent practicable to avoid impacts to raptor species that may utilize isolated woodlots or treelines for perches during hunting.

6.0 Agency Correspondence

6.1 USFWS Correspondence

On June 29, 2021, ECT submitted a letter to USFWS requesting preliminary information on sensitive species and habitats and other potential environmental concerns for the Project study 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. 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 Project study area and impacts to such features are not anticipated.

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 Project study area. On May 20, 2021, the ODNR provided the OH NHD records within a one-mile radius of the Project study 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 Project study 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 that BMPs be utilized to minimize erosion and sedimentation. The DOW also recommends 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.

Bats

The ODNR DOW recommends the following to reduce impacts to state-listed bat species within range of the Project study 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 \geq 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 project 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. A desktop habitat assessment was conducted, and no potentially suitable hibernacula were identified (see *Section 5.2.1* above for additional information).

Mussels

The DOW indicated that the Project is within the range of several state-listed mussel species, including species not previously discussed during agency coordination or IPaC review. Streams within the Project study area are limited to disturbed agricultural streams, none of which were identified as having appropriate habitat to support these mussel species. Furthermore, 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 Project 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. Streams within the Project study area are limited to disturbed agricultural streams, none of which were identified as having appropriate habitat to support these fish species. Furthermore, 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 Project is within the range of five (5) listed avian species, including species not previously discussed during agency coordination or IPaC review. Two (2) of these species, the ST least bittern (*Ixobrychus exilis*) and sandhill crane (*Grus canadensis*) have a low potential to occur within the Project study 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 Project study area are low-quality and unlikely to support breeding least bitterns or sandhill cranes.

The remaining three (3) avian species listed by DOW, the SE lark sparrow (*Chondestes grammacus*), SE northern harrier (*Circus hudsonis*), and SE upland sandpiper (*Bartramia longicauda*), breed in grassland habitats and have low potential to breed within the Project study area. The only fallow field identified during field surveys is located within an ACEP-WRE area that is recommended for avoidance. It is anticipated that agricultural fields will continue to be cultivated until construction starts and will not be allowed to go fallow. Due to limited suitable grassland habitat found on-site, these avian species are unlikely to breed within the Project study area. Thus, this Project is not likely to impact these avian species. 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 Project study area 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 (8) federally listed TES and one (1) candidate species have the potential to occur within the vicinity of the Project study area (**Table 4**). Limited portions of the Project study area may contain suitable habitat for two (2) bat species. The Indiana bat and the NLEB have the potential to occur in the Project study area, particularly in the remnant forested woodlots on-site. Avoidance of forested areas or scheduling cutting following seasonal guidelines (October 1 through March 31) provided by the ODNR DOW (see *Section 6.2.1*), should minimize, or avoid impacts to federally listed bats potentially on-site of the Project study area. Five federally listed (5) mussel species and one (1) federally listed fish species have very low potential to occur within the Project study area; streams within the Project study area are limited to disturbed agricultural streams, none of which were identified as having appropriate habitat to support these mussel and fish species. One (1) federal candidate insect species also has a very low potential to occur within the Project study area due to limited grassland habitats and disturbances from agriculture.

The ODNR identified state-listed TES, including 13 mussel species, eight (8) fish species, and two (2) plant species with very low potential to occur within the vicinity of the Project study area; streams within the Project study area are limited to disturbed agricultural streams, none of which were identified as having appropriate habitat to support these mussel and fish species and wetland habitats are limited to disturbed depressional wetlands not suitable for rare plant species. RBC has a moderate potential to occur within the Project study area, however, populations of RBC were not observed during the species-specific surveys. Therefore, impacts to this species are not anticipated.

In addition to federally and state-listed TES, ECT reviewed the Project study area for potential habitat for avian species protected under the BGEPA and the MBTA. The occurrence and diversity of avian resources in the Project study area is limited, with cultivated cropland being the dominant land use.

Impacts to TES and wildlife within the Project study area are anticipated to be minimized through the avoidance of suitable habitat to the extent practicable and through the implementation of seasonal

clearing recommendations. Should Project development be unable to avoid sensitive areas or take place during the breeding season, further coordination with wildlife agencies and/or studies to evaluate the Project in terms of more exact TES use are recommended before construction begins.

8.0 References

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Appendix A Photographic Log



> Photographic Log

Photo # 1	
Date: 05/07/2021	
Feature: W4C-UPL	
Lat/Long: 39.609194, -83.015509	
Direction: North	
Description: Most of the land use within the Project Area was cropland planted with corn (<i>Zea mays</i>) or soybean (<i>Glycine max</i>).	
Photo # 2	
Date: 05/06/2021	
Feature: W5C-UPL	
Lat/Long: 39.612608, -83.021923	
Direction: North	
Description: Other upland areas included bare or sparsely vegetated agricultural fields.	

> Photographic Log

<p>Photo # 3</p> <p>Date: 05/06/2021</p> <p>Feature: W4C-SP</p> <p>Lat/Long: 39.6087646, -83.0147259</p> <p>Direction: West</p> <p>Description: Wetlands were mainly depressions or swales within farm fields dominated by emergent vegetation.</p>	
<p>Photo # 4</p> <p>Date: 05/04/2021</p> <p>Feature: W3B-SP</p> <p>Lat/Long: 39.5977478, -82.9860270</p> <p>Direction: South</p> <p>Description: Emergent wetlands were also present as narrow buffers along the streams that traversed the farm fields.</p>	

> Photographic Log

Photo # 5	
Date: 05/06/2021	
Feature: W9B-SP	
Lat/Long: 39.6190186, -82.9340897	
Direction: South	
Description: Some wetlands contained standing water or were sparsely vegetated depressions with agricultural fields.	
Photo # 6	
Date: 05/06/2021	
Feature: ACEP-WRE	
Lat/Long: 39.609123, -83.012654	
Direction: South	
Description: An ACEP-WRE (formerly known as WP easements) was identified within central portions of the Project study area. These types of easements are designed to conserve wetland habitats.	

> Photographic Log







Photo #7	
Date: 05/04/2021	
Feature: S2A	
Lat/Long: 39.624254, -83.038533	
Direction: Northwest	
Description: Streams within the Project Area were limited to disturbed agricultural streams, including perennial streams (representative view of perennial stream shown).	

Photo # 8	
Date: 05/06/2021	
Feature: S3A	
Lat/Long: 39.602757, -83.025851	
Direction: Southwest	
Description: Intermittent streams (representative view of intermittent stream shown) were also documented within the Project Area.	



> Photographic Log

Photo # 9	
Date: 05/06/2021	
Feature: S2C	
Lat/Long: 39.616958, -83.023104	
Direction: North	
Description: An ephemeral stream (shown) was also documented within the Project Area.	
Photo # 10	
Date: 05/06/2021	
Feature: WB2C	
Lat/Long: 39.617987, -83.023307	
Direction: Southwest	
Description: Waterbodies within the Project Area consisted of stormwater retention ponds surrounded by rural residential lawn and/or farm field.	

> Photographic Log

<p>Photo # 11</p> <p>Date: 05/07/2021</p> <p>Feature: NW9C</p> <p>Lat/Long: 39.606683, -83.009424</p> <p>Direction: North</p> <p>Description: Grassland habitats were present as fallow agricultural fields or grassy roadside swales. Herbaceous species included Canada bluegrass (<i>Poa compressa</i>), ground ivy (<i>Glechoma herderacea</i>), and Queen Anne's lace (<i>Daucus carota</i>).</p>	
<p>Photo # 12</p> <p>Date: 05/04/2021</p> <p>Feature: W5B-UPL</p> <p>Lat/Long: 39.6100769, -82.9658872</p> <p>Direction: North</p> <p>Description: Upland areas also contained fallow fields dominated by Virginia pepperweed (<i>Lepidium virginicum</i>).</p>	

> Photographic Log

<p>Photo # 13</p> <p>Date: 05/07/2021</p> <p>Feature: BH1-C</p> <p>Lat/Long: 39.6096972, -83.0120639</p> <p>Direction: North</p> <p>Description: Forested habitat within the Project Areas consisted mainly of isolated woodlots surrounded by crop fields. These areas generally contained thick shrub and understory layers and provided low habitat suitability for roosting bats.</p>	
<p>Photo # 14</p> <p>Date: 05/07/2021</p> <p>Feature: BH3-A</p> <p>Lat/Long: 39.6053139, -83.0222472</p> <p>Direction: Northeast</p> <p>Description: Hedgerows were also present within crop fields. Tree species present included hackberry (<i>Celtis occidentalis</i>) and red mulberry (<i>Morus rubra</i>).</p>	

Appendix B USFWS IPaC Results (April 29, 2021 & October 26, 2021)

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 *Myotis sodalis*

Endangered

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>

Northern Long-eared Bat *Myotis septentrionalis*

Threatened

Wherever found

This species only needs to be considered if the following condition applies:

- 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>

Fishes

NAME

STATUS

Scioto Madtom *Noturus trautmani*

Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/5395>

Clams

NAME

STATUS

Clubshell *Pleurobema clava*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/3789>

Northern Riffleshell *Epioblasma torulosa rangiana*

Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/527>

Rabbitsfoot *Quadrula cylindrica cylindrica*

Threatened

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/5165>

Rayed Bean *Villosa fabalis*

Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/5862>

Snuffbox Mussel *Epioblasma triquetra*

Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/4135>

Flowering Plants

NAME

STATUS

Running Buffalo Clover *Trifolium stoloniferum*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/2529>

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.)
American Bittern <i>Botaurus lentiginosus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6582	Breeds Apr 1 to Aug 31
American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle <i>Haliaeetus leucocephalus</i> 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 Sep 1 to Aug 31
Black Rail <i>Laterallus jamaicensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7717	Breeds Mar 1 to Sep 15

Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Buff-breasted Sandpiper <i>Calidris subruficollis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488	Breeds elsewhere
Canada Warbler <i>Cardellina canadensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Cerulean Warbler <i>Dendroica cerulea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 21 to Jul 20
Dunlin <i>Calidris alpina arctica</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Henslow's Sparrow <i>Ammodramus henslowii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Hudsonian Godwit <i>Limosa haemastica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Kentucky Warbler <i>Oporornis formosus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Least Bittern <i>Ixobrychus exilis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6175	Breeds Aug 16 to Oct 31

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

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

<https://ecos.fws.gov/ecp/species/9679>

Prairie Warbler *Dendroica discolor*

Breeds May 1 to Jul 31

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

Prothonotary Warbler *Protonotaria citrea*

Breeds Apr 1 to Jul 31

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

Red-headed Woodpecker *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

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

Ruddy Turnstone *Arenaria interpres morinella*

Breeds elsewhere

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

Rusty Blackbird *Euphagus carolinus*

Breeds elsewhere

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

Semipalmated Sandpiper *Calidris pusilla*

Breeds elsewhere

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

Short-billed Dowitcher *Limnodromus griseus*

Breeds elsewhere

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

<https://ecos.fws.gov/ecp/species/9480>

Wood Thrush *Hylocichla mustelina*

Breeds May 10 to Aug 31

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

Yellow-bellied Sapsucker *sphyrapicus varius*

Breeds May 10 to Jul 15

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

<https://ecos.fws.gov/ecp/species/8792>

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.

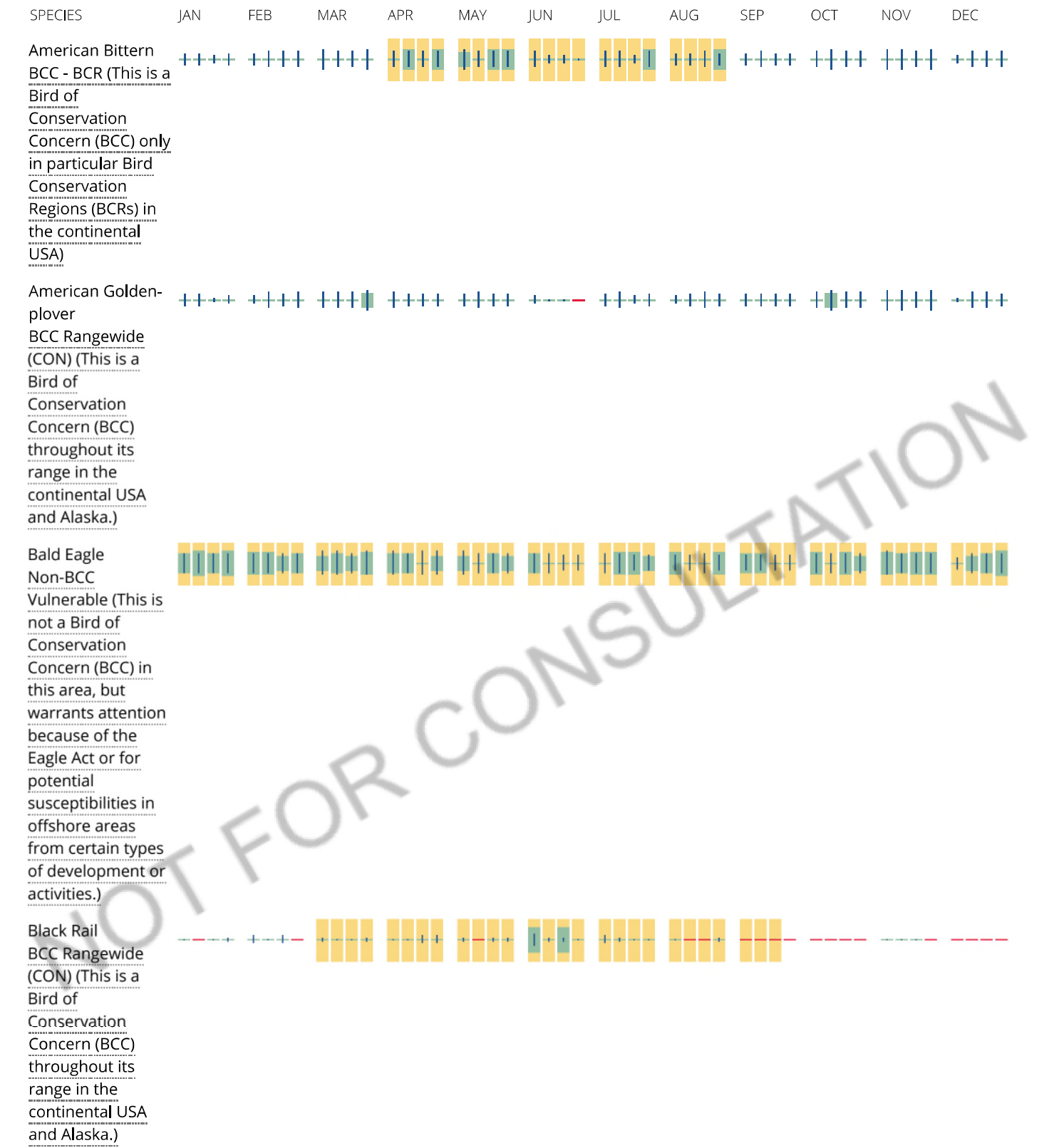
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

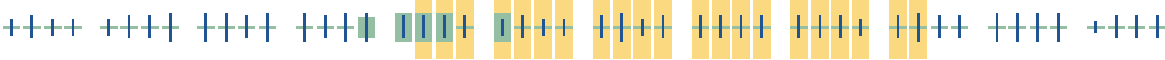
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

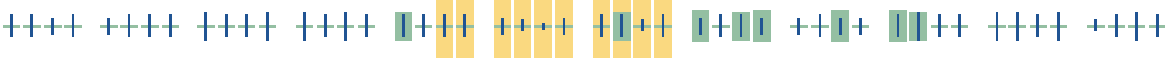
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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



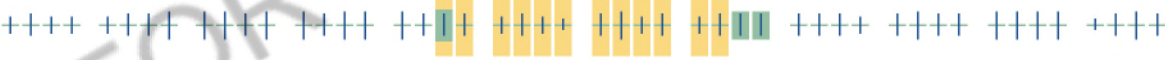
Bobolink
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



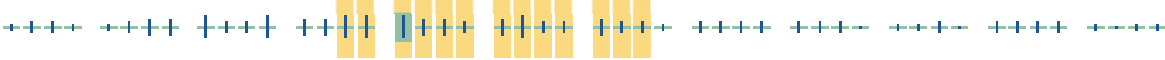
Buff-breasted
Sandpiper
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
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continental USA
and Alaska.)



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

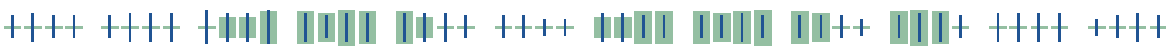


Cerulean Warbler
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)





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



Prairie Warbler
BCC Rangewide
(CON) (This is a
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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.)



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



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



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



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



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



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



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

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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](#).

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How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

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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.

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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](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the [NWI map](#) for a full list.

FRESHWATER EMERGENT WETLAND

[PEM1A](#)

[PEM1C](#)

[PEM1F](#)

[PEM1Ch](#)

[PEM1Ad](#)

[PEM1Fh](#)

[PEM1Ax](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFO1/SS1A](#)

[PFO1A](#)

[PFO1/SS1C](#)

[PFO1/EM1A](#)

[PFO1/EM1C](#)

FRESHWATER POND

[PABGh](#)

[PABGx](#)

[PABG](#)

[PABFh](#)

LAKE

[L2UBGh](#)[L2UBFh](#)[L1UBHx](#)[L1UBH](#)[L2UBFx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

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.

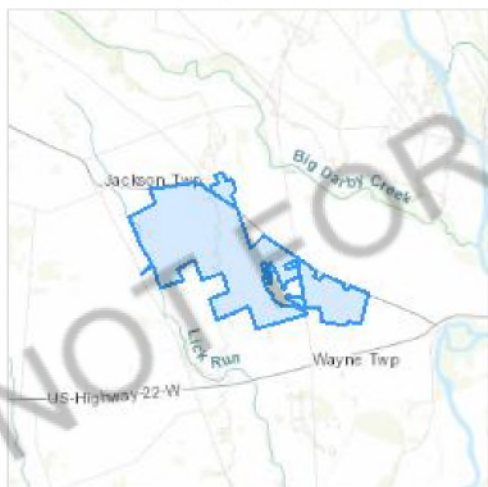
IPaC resource list

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 *Myotis sodalis***Endangered**

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<http://ecos.fws.gov/ecp/species/5949>

Northern Long-eared Bat *Myotis septentrionalis***Threatened**

Wherever found

This species only needs to be considered if the following condition applies:

- 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.

<http://ecos.fws.gov/ecp/species/9045>

Fishes

NAME

STATUS

Scioto Madtom *Noturus trautmani***Endangered**

Wherever found

No critical habitat has been designated for this species.

<http://ecos.fws.gov/ecp/species/5395>

Insects

NAME

STATUS

Monarch Butterfly *Danaus plexippus***Candidate**

Wherever found

No critical habitat has been designated for this species.

<http://ecos.fws.gov/ecp/species/9743>

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>

MIGRATORY BIRD INFORMATION IS NOT AVAILABLE AT THIS TIME

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Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

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WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

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

Data limitations

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

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

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

Data exclusions

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

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix C Agency Coordination

June 29, 2021

Angela Boyer
U.S. Fish and Wildlife Service, ohio@fws.gov
Region 3, Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230

**Re: Circleville Solar Project, Circleville, Pickaway County, Ohio
ECT No. 210330**

Dear Ms. Boyer:

Environmental Consulting & Technology, Inc. (ECT), is requesting on behalf of our client Nextera Energy Resources (NEER), potential records of threatened and endangered species (TES), eagle nests, or other conservation or protected properties for the proposed Circleville Solar Project (Project) in Pickaway County, Ohio (see Attachment A). This 70MW project will be constructed on a portion of the 1.636 acres depicted on the attached aerial map. The center point for the area is approximately located at 39.615957°, -83.022797°. The proposed approximate 3-mile transmission line will originate in the Project Area and traverse east along Main Street, across the Scioto River to the substation located to the east of SR 23.

The Project area consists primarily of agricultural fields with limited forested habitat. Nineteen (19) wetlands (primarily small and isolated) and seven (7) streams are located within the Project area. It is anticipated that stream and wetland impacts will be avoided. The proposed solar development will include some grubbing and grading for gravel access road installation and for the panel installation. Best management practices (BMPs) will be implemented during construction to minimize aquatic impacts.

The U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) tool was used to identify federally-listed TES that have the potential to occur within the Project area. The resulting list included the federally endangered Indiana bat (*Myotis sodalis*), scioto madtom (*Noturus trautmani*), clubshell (*Pleurobema clava*), northern riffleshell (*Epioblasma torulosa rangiana*), rabbitsfoot (*Quadrula cylindrica cylindrica*), rayed bean (*Villosa fabalis*), snuffbox mussel (*Epioblasma triquetra*), and running buffalo clover (RBC) (*Trifolium stoloniferum*), as well as the federally threatened northern long-eared bat (*Myotis septentrionalis*) (**Attachment B**).

The approximately 1,636-acre Project area was evaluated for potential habitat for the federally-listed bats during field assessments conducted May 3-7 and May 12-14. The

site is predominately composed of open agricultural fields with small isolated forested areas and treelines scattered throughout. The majority of these forested areas contain dense understory; however, several potential roost trees exist in these wooded areas that have an open canopy or sit on the edges of agricultural fields allowing for foraging access. Tree clearing will be minimized and limited only to where necessary for infrastructure placement or shade removal. Any trees to be cleared will be done during the winter clearing season, October 1-March 31. Therefore, adverse impacts to listed bats are not expected as a result of this project. Bat Habitat Assessment forms and habitat photos are attached for your review (**Attachment C**).

Both the scioto madtom and mussels listed within the vicinity of the Project Area are located within the Scioto River and would not be present in the disturbed agricultural streams located within the Project Area. Streams within the Project Area were evaluated for potential habitat for mussels and scioto madtom, and none were identified as having appropriate habitat to support these listed species. Intermittent and perennial stream impacts will be limited, and therefore, adverse impacts to these species are not anticipated as a result of this project. Photographs of the streams present within the Project Area are attached for your review (**Attachment D**).

No bald eagles (*Haliaeetus leucocephalus*) or nesting sites were observed during the site visit. Bald eagles are unlikely to be impacted by Project development since the proposed transmission line will likely be co-located with existing transmission and/or distribution lines.

An approved RBC Ohio surveyor, Katie Simon, reviewed available site data, including descriptions, photographs, and vegetation community descriptions and mapping from other surveys conducted within the Survey Area. On May 18-20, 2021, ECT conducted a habitat assessment and on-site species-specific surveys for RBC. The surveys took place in locations that may be directly affected by the Project. The surveys were completed by ECT's staff botanists/ecologists with appropriate qualifications and experience.

Transect surveys were conducted on foot within potential suitable habitat to assess species composition, site conditions, hydrology, and potential for the presence of RBC.

To aid identification of target plants, if encountered, ECT utilized sets of diagnostic vegetative and floristic characters based on USFWS plant recognition descriptions (USFWS 2020), dichotomous keys, and professional experience with RBC.

Running buffalo clover is a perennial forb with large trifoliate leaves and long stolons that root at the nodes. Their white flowers bloom between May and June. The preferred habitat of RBC includes mesic habitats with partial to filtered sunlight, where there is a prolonged pattern of moderate, periodic disturbance, such as mowing, trampling, or grazing (USFWS 2020). Despite the presence of marginally suitable habitat within the Project Area, populations of RBC were not observed during ECT's May 2021 survey.

Due to the negative species-specific survey results for RBC, ECT concludes that the proposed project will not adversely affect this species.

Though ECT does not believe that the above species are present on-site, we are requesting spatial and/or tabular information for known occurrences of TES, eagle records, and any protected lands or conservation easements within the project area boundaries, including the proposed transmission line and a 0.5-mile buffer on either side of the line. If there are known occurrences, please provide recommendations to either avoid impacts or to protect the species.

Should you have any questions please do not hesitate to contact me at (440) 263-9568 or jmiller@ectinc.com. Thank you.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.



Jessica Miller
Group Lead-Midwest
Natural Resource Group

Attachment A: Figures

Figure 1. Site Location Map

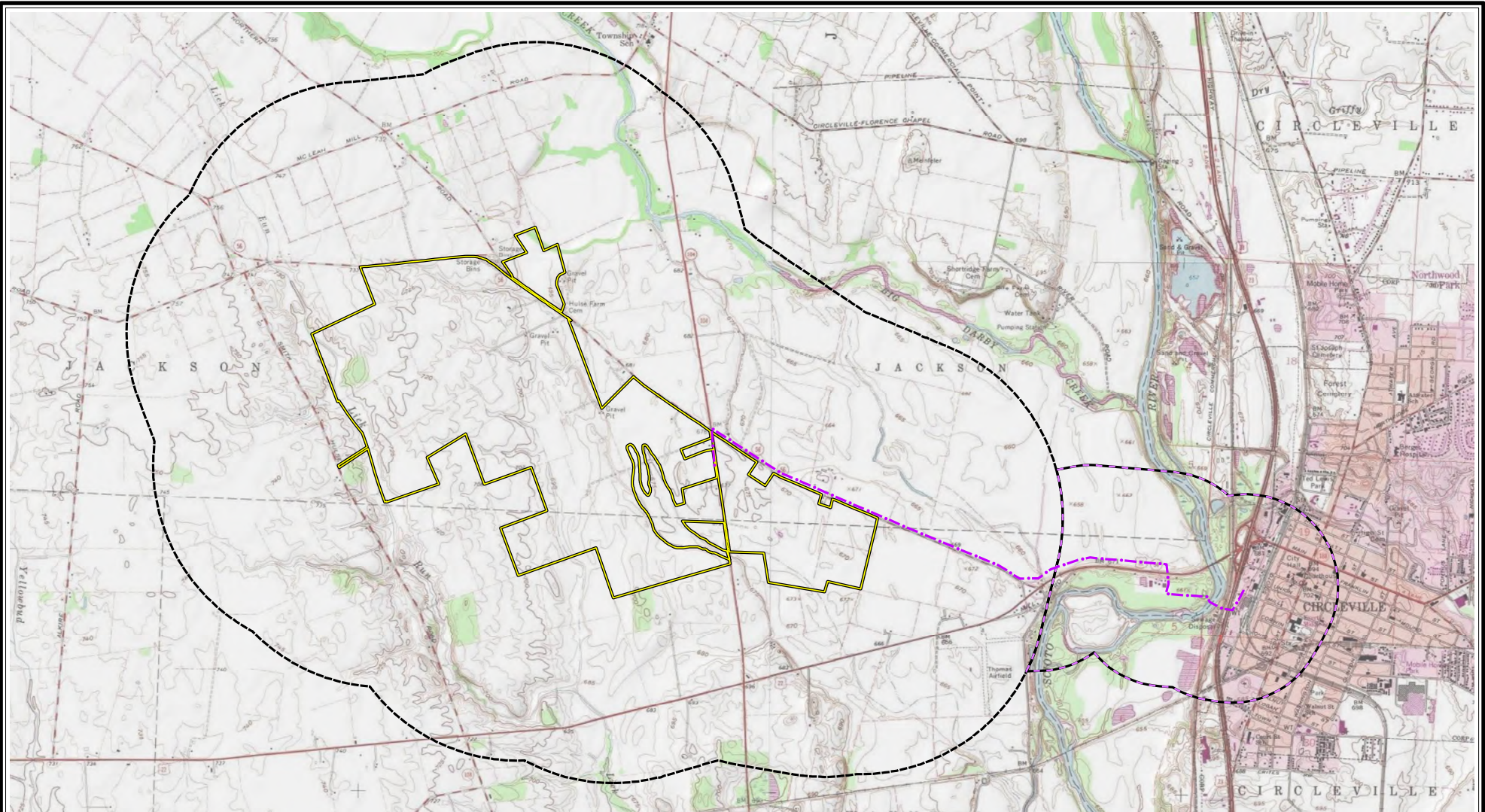
Figure 2. USGS Topographic Map

Attachment B: IPaC Species List

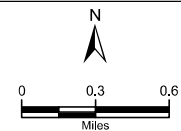
Attachment C: Bat Habitat Assessment Forms and Habitat Photographs

Attachment D: Stream Photographs

Attachment A:
Figures



- Legend**
- Study Area Boundary
 - Study Area 1 Mile Buffer
 - T-Line Option 1
 - T-Line Option 1 Half Mile Buffer



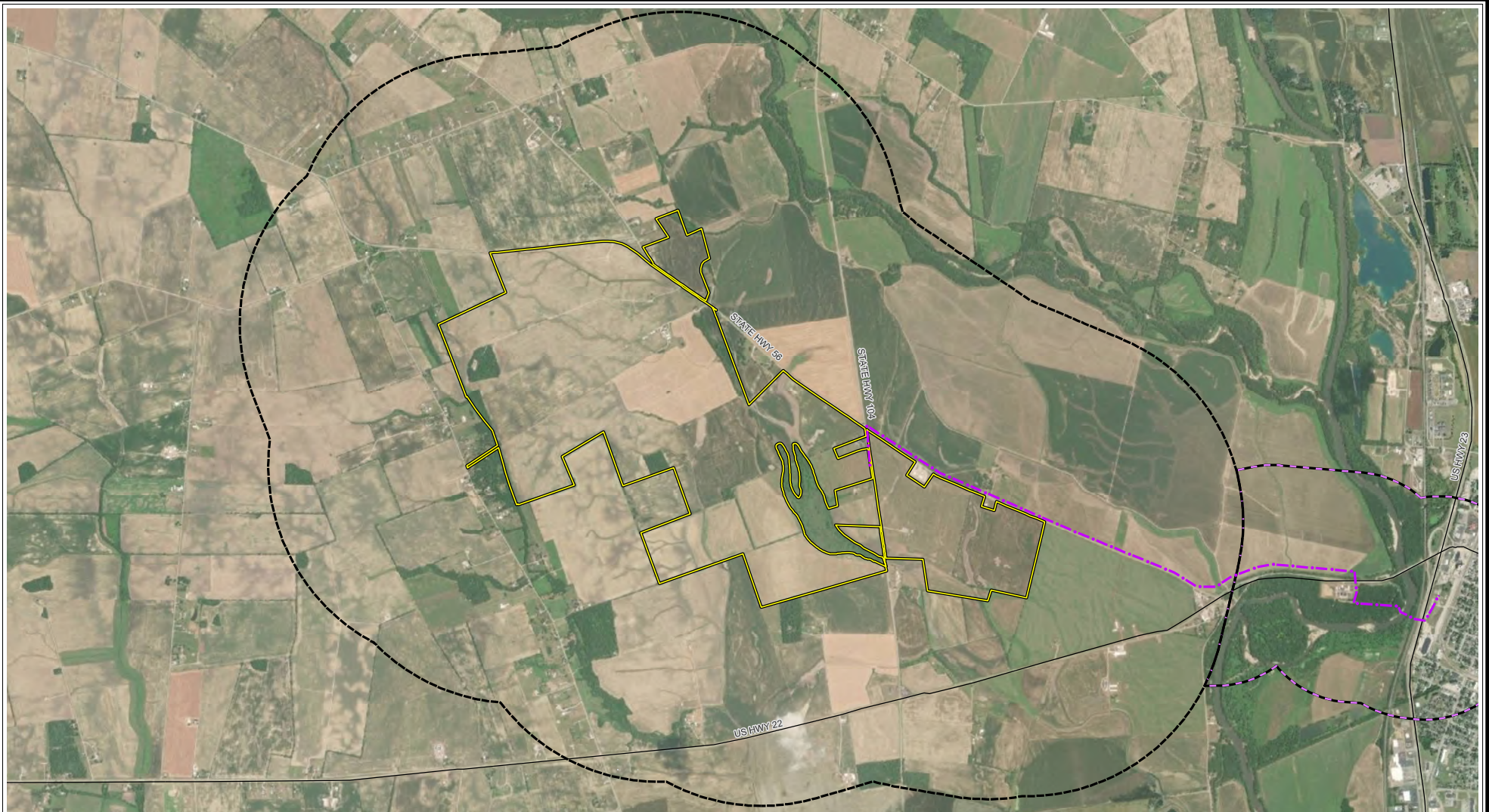
Sources: USGS Quad: Circleville, OH; ECT, 2021.

**Figure 1
Topographic Map**

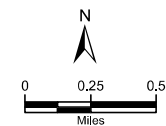
Circleville Project
Pickaway County, OH

Date: 6/29/2021

ECT



- Legend**
- Study Area Boundary
 - Study Area 1 Mile Buffer
 - T-Line Option 1
 - T-Line Option 1 Half Mile Buffer



Sources: Maxar 2020 Imagery; ECT, 2021.

Figure 2
Aerial Photograph - Solar Farm Area

Circleville Project
Pickaway County, OH

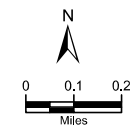
Date: 6/29/2021

ECT



Legend

- Study Area Boundary
- Study Area 1 Mile Buffer
- T-Line Option 1
- T-Line Option 1 Half Mile Buffer



Sources: Maxar 2020 Imagery; ECT, 2021.

Figure 2
Aerial Photograph - Transmission Line - Option 1

Circleville Project
Pickaway County, OH

Date: 6/29/2021

ECT

Attachment B:
IPaC Species List

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
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Fishes

NAME	STATUS
Scioto Madtom <i>Noturus trautmani</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5395	Endangered

Flowering Plants

NAME	STATUS
Running Buffalo Clover <i>Trifolium stoloniferum</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2529	Endangered

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
------	--

Bald Eagle *Haliaeetus leucocephalus*

Breeds Oct 15 to Aug 31

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>

Prothonotary Warbler *Protonotaria citrea*

Breeds Apr 1 to Jul 31

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

Red-headed Woodpecker *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

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

Rusty Blackbird *Euphagus carolinus*

Breeds elsewhere

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

Wood Thrush *Hylocichla mustelina*

Breeds May 10 to Aug 31

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

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 (■)

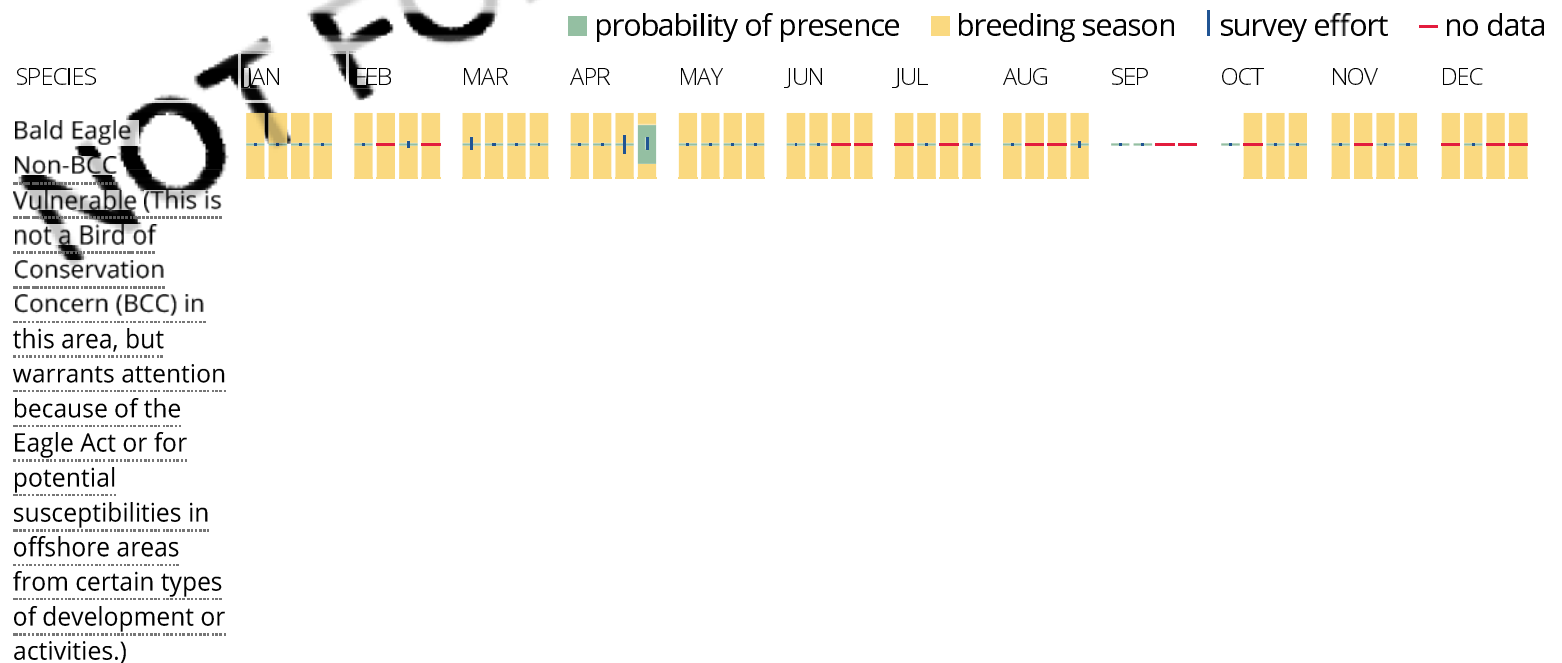
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be 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.

Breeding Season (🟡)



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



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 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

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Attachment C:
Bat Habitat Assessment Forms and Habitat
Photographs

BAT HABITAT ASSESSMENT FORM

Project Name/No.: Circleville Solar Date: 05/07/2021 State/County: Pickaway County, OH

Site Name/No.: _____ Biologist(s): Katie Simon

Habitat Data Point: BH1A Description: Woodlot approx. 14 acres bordered by ag. fields.

DBH Range: 3 to 24 Avg: 14 Canopy Height Range: 20 to 50 Average: 40

Photo: _____ Subcanopy Type: Lonicera maackii Clutter: High

Dominant Canopy Species: Celtis occidentalis, Carya sp., Quercus alba

Dominant Subcanopy Species: Lonicera maackii

Distance to Water: 400ft Type/Name: Perennial stream Value: High

Foraging Potential: High Roosting Potential: Moderate Overall Habitat Quality: Moderate

Comments:

Habitat Data Point: BH2A Description: Treelines bordered by ag. fields

DBH Range: 3 to 36 Avg: 14 Canopy Height Range: 20 to 50 Average: 30

Photo: _____ Subcanopy Type: Lonicera maackii Clutter: Moderate

Dominant Canopy Species: Celtis occidentalis, Morus rubra

Dominant Subcanopy Species: Lonicera maackii

Distance to Water: 0-1000ft Type/Name: Perennial stream Value: High

Foraging Potential: Moderate Roosting Potential: Low Overall Habitat Quality: Low

Comments:

Habitat Data Point: BH3A Description: Woodlot (approx. 2 acres) and treelines bordered by ag. fields

DBH Range: 3 to 24 Avg: 10 Canopy Height Range: 20 to 40 Average: 30

Photo: _____ Subcanopy Type: Saplings and Lonicera maackii Clutter: Low

Dominant Canopy Species: Celtis occidentalis, Morus rubra, Juglans nigra

Dominant Subcanopy Species: Celtis occidentalis, Morus rubra, Lonicera maackii

Distance to Water: 100-500ft Type/Name: Intermittent stream and wetland Value: High

Foraging Potential: High Roosting Potential: Low Overall Habitat Quality: Low

Comments:

BAT HABITAT ASSESSMENT FORM

Project Name/No.: Circleville Solar Center, Date: 05/03/2021 State/County: Pickaway County, Ohio

Site Name/No.: 210330 Biologist(s): H. Mikula

Habitat Data Point: BH1B Description: Connected woodlots split by parcel line

DBH Range: 5 to 25 Avg: 25 Canopy Height Range: 10 to 40 Average: 40

Photo: BH1B-PL Subcanopy Type: Saplings, shrubs, low branches Clutter: Moderate

Dominant Canopy Species: Ulmus americana, Quercus rubra

Dominant Subcanopy Species: Lonicera xylosteum

Distance to Water: 0 Type/Name: Stream Value: Moderate

Foraging Potential: High Roosting Potential: Low Overall Habitat Quality: Low

Comments: Stream runs through BH1B; Potential wetlands were identified within woodlot

Habitat Data Point: BH2B Description: Tree line in separating ag fields

DBH Range: 5 to 25 Avg: 15 Canopy Height Range: 10 to 40 Average: 35

Photo: BH3B Subcanopy Type: Srubs, saplings, branches Clutter: Moderate

Dominant Canopy Species: Quercus rubra, Prunus serotina, Tilia american

Dominant Subcanopy Species: Lonicera xylosteum, Elaeagnus umbellata

Distance to Water: 0 Type/Name: S1B Value: Moderate

Foraging Potential: High Roosting Potential: Low Overall Habitat Quality: Low

Comments: Tree line separating ag fields, partially runs along stream at southern end

Habitat Data Point: _____ Description: _____

DBH Range: _____ to _____ Avg: _____ Canopy Height Range: _____ to _____ Average: _____

Photo: _____ Subcanopy Type: _____ Clutter: _____

Dominant Canopy Species: _____

Dominant Subcanopy Species: _____

Distance to Water: _____ Type/Name: _____ Value: _____

Foraging Potential: _____ Roosting Potential: _____ Overall Habitat Quality: _____

Comments: _____

BAT HABITAT ASSESSMENT FORM

Project Name/No.: Circleville Solar Date: 05/07/2021 State/County: Pickaway County, OH

Site Name/No.: _____ Biologist(s): A. Dietz Oergel

Habitat Data Point: BH1C Description: Adjacent woodlots approx. 2-4 acres bordered by ag. fields.

DBH Range: 3 to 50 Avg: 20 Canopy Height Range: 20 to 50 Average: 40

Photo: _____ Subcanopy Type: Sambucus nigra, Cornus racemosa Clutter: High

Dominant Canopy Species: Celtis occidentalis, Acer saccharum, Populus deltoides

Dominant Subcanopy Species: Acer saccharum, Sambucus nigra

Distance to Water: 0ft Type/Name: Perennial stream Value: High

Foraging Potential: Moderate Roosting Potential: Moderate Overall Habitat Quality: Moderate

Comments:

Perennial stream appears to run through the eastern woodlot.

Habitat Data Point: BH2C Description: Approx. 0.5 acre woodlot bordered by ag. fields

DBH Range: 3 to 15 Avg: 15 Canopy Height Range: 3 to 15 Average: 15

Photo: _____ Subcanopy Type: Lonicera mackii Clutter: High

Dominant Canopy Species: Celtis occidentalis

Dominant Subcanopy Species: Acer rubra

Distance to Water: 130 Type/Name: Emergent Wetland Value: Low

Foraging Potential: Low Roosting Potential: Low Overall Habitat Quality: Low

Comments:

Habitat Data Point: BH3C Description: Woodlot (approx. 12 acres) surrounding by ag fields/residences

DBH Range: 3 to 30 Avg: 20 Canopy Height Range: 20 to 30 Average: 20

Photo: _____ Subcanopy Type: Saplings and Lonicera maackii Clutter: High

Dominant Canopy Species: Celtis occidentalis, Ulmus americana, Morus alba

Dominant Subcanopy Species: Celtis occidentalis, Lonicera maackii

Distance to Water: 0ft Type/Name: Perennial Stream and Wetland Value: High

Foraging Potential: Moderate Roosting Potential: Moderate Overall Habitat Quality: Moderate

Comments:

Stream and wooded wetland areas throughout the woodlot.

BAT HABITAT ASSESSMENT FORM

Project Name/No.: Circleville Solar Date: 05/12/2021 State/County: Pickaway County, OH

Site Name/No.: _____ Biologist(s): Katie Simon

Habitat Data Point: BH4A Description: Woodlot approx. 7 acres bordered by ag. fields

DBH Range: 3 to 40 Avg: 14 Canopy Height Range: 20 to 50 Average: 40

Photo: _____ Subcanopy Type: Lonicera maackii, Rosa multiflora Clutter: Low

Dominant Canopy Species: Quercus imbricaria, Juglans nigra, Celtis occidentalis, Gleditsia triacanthos

Dominant Subcanopy Species: Lonicera maackii, Rosa multiflora, Fraxinus spp.

Distance to Water: 700ft Type/Name: Intermittent stream Value: Moderate

Foraging Potential: Moderate Roosting Potential: Moderate Overall Habitat Quality: Moderate

Comments:

Habitat Data Point: _____ Description: _____

DBH Range: _____ to _____ Avg: _____ Canopy Height Range: _____ to _____ Average: _____

Photo: _____ Subcanopy Type: _____ Clutter: _____

Dominant Canopy Species: _____

Dominant Subcanopy Species: _____

Distance to Water: _____ Type/Name: _____ Value: _____

Foraging Potential: _____ Roosting Potential: _____ Overall Habitat Quality: _____

Comments:

Habitat Data Point: _____ Description: _____

DBH Range: _____ to _____ Avg: _____ Canopy Height Range: _____ to _____ Average: _____

Photo: _____ Subcanopy Type: _____ Clutter: _____

Dominant Canopy Species: _____

Dominant Subcanopy Species: _____

Distance to Water: _____ Type/Name: _____ Value: _____

Foraging Potential: _____ Roosting Potential: _____ Overall Habitat Quality: _____

Comments:

BAT HABITAT ASSESSMENT FORM

Project Name/No.: Circleville Solar Date: 05/07/2021 State/County: Pickaway County

Site Name/No.: _____ Biologist(s): A. Dietz-Oergel

Habitat Data Point: BH4C Description: Woodlot (approx 4 acres) surrounded by ag. fields

DBH Range: 15 to 30 Avg: 20 Canopy Height Range: 15 to 30 Average: 20

Photo: _____ Subcanopy Type: Lonicera mackii Clutter: High

Dominant Canopy Species: Prunus serotina, Celtis occidentalis

Dominant Subcanopy Species: Lonicera mackii

Distance to Water: 50ft Type/Name: Perennial stream and wetland Value: High

Foraging Potential: Moderate Roosting Potential: Moderate Overall Habitat Quality: Moderate

Comments:
Connects to off-site woodlot with wetlands and a perennial stream

Habitat Data Point: BH5C Description: Treeline bordered by ag. fields

DBH Range: 3 to 40 Avg: 15 Canopy Height Range: 20 to 40 Average: 30

Photo: _____ Subcanopy Type: Celtis occidentalis Clutter: High

Dominant Canopy Species: Celtis occidentalis, Morus alba

Dominant Subcanopy Species: Celtis occidentalis

Distance to Water: 500ft Type/Name: Perennial Stream Value: High

Foraging Potential: Moderate Roosting Potential: Moderate Overall Habitat Quality: Moderate

Comments:

Habitat Data Point: BH6C Description: Treeline bordered by ag. field

DBH Range: 3 to 40 Avg: 20 Canopy Height Range: 20 to 40 Average: 30

Photo: _____ Subcanopy Type: Lonicera mackii, Clutter: High

Dominant Canopy Species: Celtis occidentalis, Prunus serotina

Dominant Subcanopy Species: Celtis occidentalis

Distance to Water: 700ft Type/Name: Wetland and Perennial Stream Value: High

Foraging Potential: Moderate Roosting Potential: Moderate Overall Habitat Quality: Moderate

Comments:
Connects to off-site forest stand to the south

> Photographic Log



Photo #1	
Date: 05/3/2021	
Location: BH2A	
Feature: Bat Roost Habitat	
Direction: Southwest	
Description: This 23"DBH, dead unknown species was present within a woodlot located in the northwestern portion of the Project Area. This potential roost tree had full solar exposure, exfoliating bark and deadwood. The woodlot itself was choked with understory and did not present good travel corridors.	

Photo #2	
Date: 05/4/2021	
Location: BH2A, BH3A, BH3A, BH5C, BH6C	
Feature: Treelines	
Direction: Northeast	
Description: Treelines within the Project Area contained dead snags and relatively open understory.	

> Photographic Log



Photo #3	
Date: 05/5/2021	
Location: BH4A	
Feature: Wooded Wetlands	
Direction: North	
Description: The wooded wetland block within the center of the Project Area contained a few potential roost trees and sparse understory.	

Photo #4	
Date: 05/13/2021	
Location: BH3C	
Feature: Woodlot with Stream	
Direction: West	
Description: Woodlot has some potential roost trees and stream, however, understory was thick and choked with vegetation, prohibiting good travel corridors.	

Attachment D:
Stream Photographs

> Photographic Log



Photo #1	
Date: 05/4/2021	
Location: Stream 1B	
Feature: Stream	
Direction: upstream	
Description: Streams within the Project Area consist of channelized, overwide ditches with muck and silt-covered rock. These ditches are maintained through dredging.	

Photo #2	
Date: 05/7/2021	
Location: Stream 2B	
Feature: Stream	
Direction: downstream	
Description: Some streams within the Project Area have become overgrown with wetland vegetation due to a lack of flow and dredging maintenance.	

> Photographic Log

Photo #3	
Date: 05/14/2021	
Location: Stream 4A	
Feature: Stream	
Direction: downstream	
Description: This stream runs along the roadway and erosion of the streambanks has caused siltation.	



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.

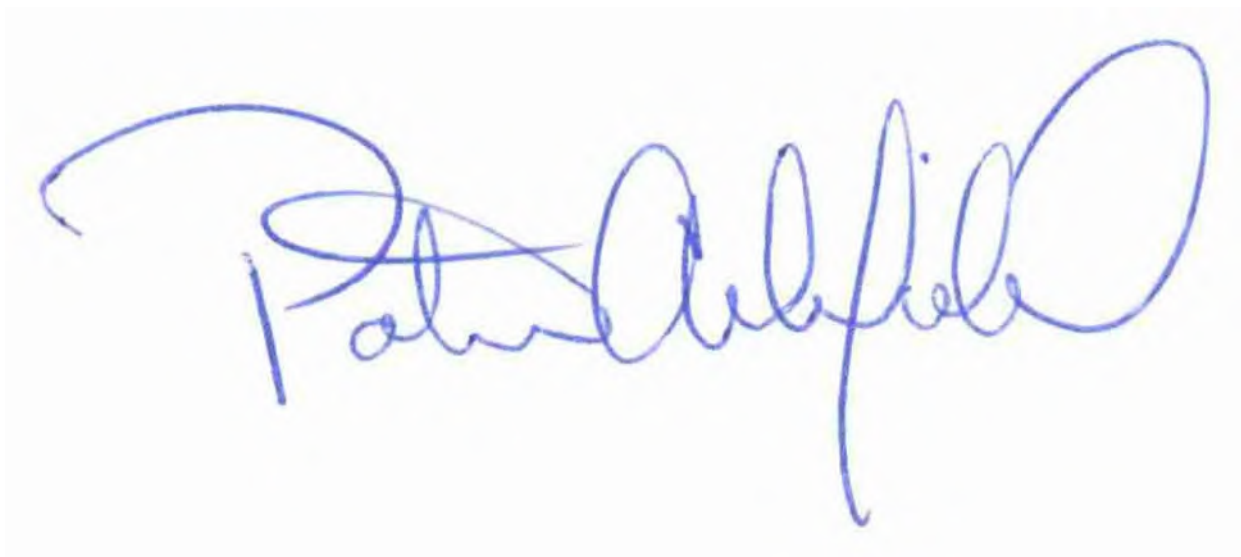
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing 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.

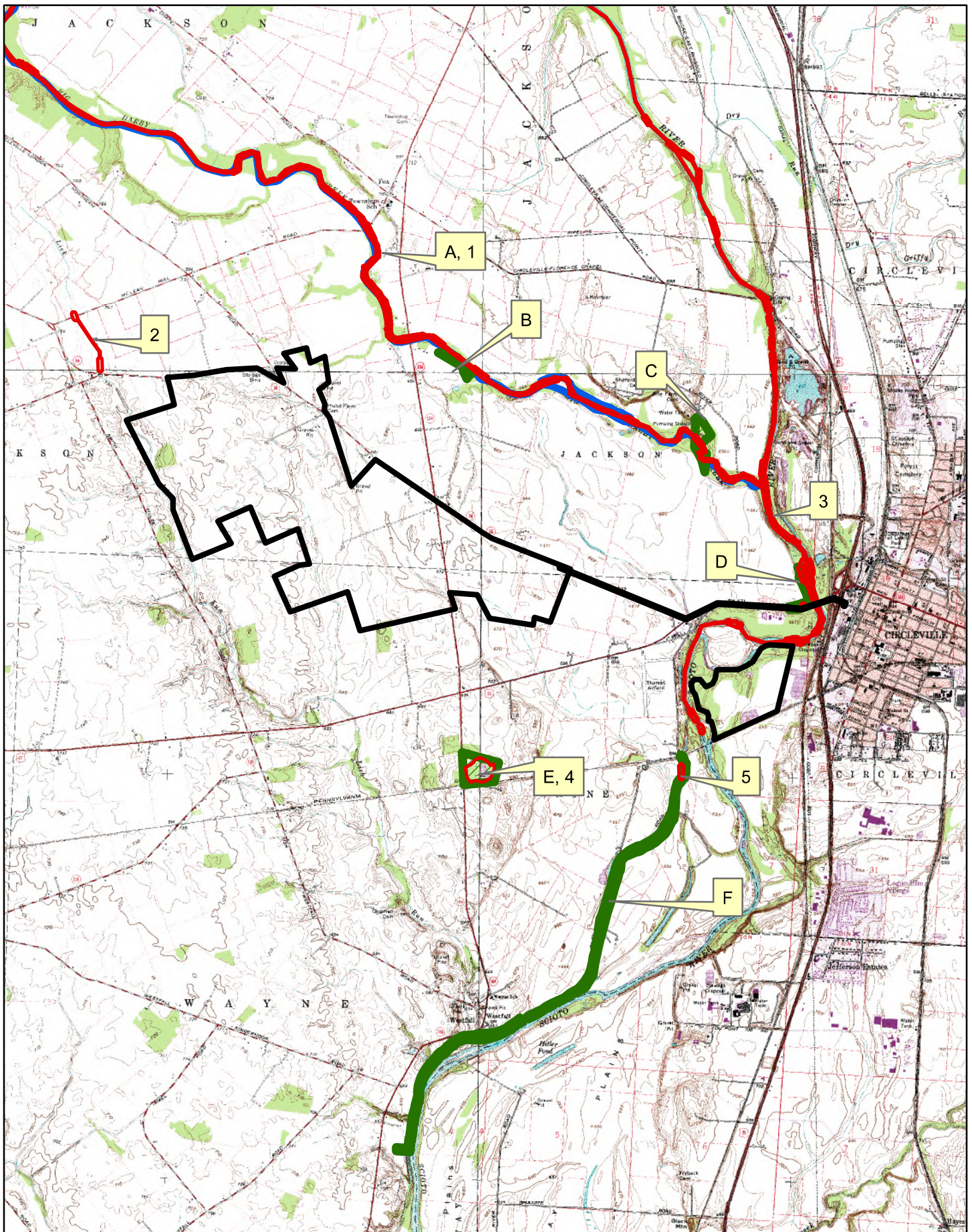
Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,



Debbie Woischke
Ohio Natural Heritage Program

Circleville Commercial Development



July 21, 2021

Mike Pettegrew
Environmental Specialist
Office of Real Estate & Land Management
Ohio Department of Natural Resources
2045 Morse Road, Building E-2
Columbus, Ohio 43230

**Re: Circleville Solar Project, Pickaway County, Ohio
ECT No. 210330**

Dear Mike:

Environmental Consulting & Technology, Inc. (ECT), is requesting on behalf of the Circleville Solar Project, a finding regarding potential effects to threatened and endangered species (TES), eagle nests, or other conservation or protected properties for the proposed Circleville Solar Project (Project) in Pickaway County, Ohio (Attachment A). The center point for the area is approximately located at 39.615957°, -83.022797°. The proposed transmission line route for the Project will originate in the Project area and traverse east along Main Street to the substation located to the east of State Route (SR) 23. Two routes are being investigated crossing the Scioto River, one which may co-locate with an existing transmission line route.

The work associated with the 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. Ongoing work will include activities associated with operating and maintaining the Project facilities, which are anticipated to have little impact within the Project area or the land surrounding it.

The Project area consists primarily of agricultural fields with scattered isolated forested habitat. Nineteen (19) wetlands (primarily small and isolated), seven (7) streams, and two (2) waterbodies were identified within the Project area during a wetland delineation conducted in May, 2021. It is anticipated that stream, wetland, and waterbody impacts will be avoided. The proposed 70MW solar development will include some grubbing and grading for gravel access road installation and for the panel installation on land south of SR 56 and west of SR 104. Best management practices (BMPs) will be implemented during construction to avoid or minimize erosion and sediment deposits into nearby streams.

The approximately 1,636-acre Project area was evaluated for potential habitat for the

federally-listed Indiana bat (*Myotis sodalis*), and northern long-eared bat (*Myotis septentrionalis*) during field assessments conducted May 3-7 and May 12-14. The site is predominately composed of open agricultural fields with small isolated forested areas and treelines scattered throughout. The majority of these forested areas contain dense understory; however, several potential roost trees exist in these wooded areas that have an open canopy or sit on the edges of agricultural fields allowing for foraging access. Tree clearing will be minimized and limited only to where necessary for infrastructure placement or shade removal. Any trees to be cleared will be done during the winter clearing season when bats have left their summer roosts, October 1-March 31. Therefore, adverse impacts to listed bats are not expected as a result of this Project. Representative photographs of woodlands within the Project area as included in Attachment B. ECT completed coordination with the U.S. Fish and Wildlife Service (USFWS) to determine if there are any potential impacts to bat species within the Project area (Attachment C). USFWS has requested an acreage of suitable roost tree removal to be provided once known and that seasonal clearing (October 1-March 31) of suitable habitat be adhered to.

An ODNR Natural Heritage Request for the Project and a surrounding 1-mile buffer (Attachment D) indicated several state-listed fish and mussel species including the Scioto madtom (*Noturus trautmani*) associated within the Scioto River within the vicinity of the Project area. These aquatic species would not be present in the disturbed agricultural streams located within the Project area. Streams within the Project area were evaluated for potential habitat for mussels and Scioto madtom during site visits in May 2021, and none were identified as having appropriate habitat to support these listed species. Intermittent and perennial stream impacts will be limited, and therefore, adverse impacts to aquatic species are not anticipated as a result of this project. Crossing of the Scioto River by the transmission line would not require any in-stream impacts. Representative photographs of the streams present within the Project area are attached for your review (Attachment B).

No bald eagles (*Haliaeetus leucocephalus*) or nesting sites were observed during the site visits in May 2021. The Project proposes to follow the USFWS National Bald Eagle Management Guidelines and is not anticipated to impact bald eagles.

An approved running buffalo clover (RBC) Ohio surveyor, Katie Simon, reviewed available site data, including photographs, vegetation community descriptions, and mapping from other surveys conducted within the Project area. On May 18-20, 2021, ECT conducted a habitat assessment and on-site species-specific surveys for RBC. The surveys took place in locations that may be directly affected by the Project.

Transect surveys were conducted on foot within potential suitable habitat to assess species composition, site conditions, hydrology, and potential for the presence of RBC.

RBC is a perennial forb with large trifoliate leaves and long stolons that root at the nodes. Their white flowers bloom between May and June. The preferred habitat of RBC includes mesic habitats with partial to filtered sunlight, where there is a prolonged pattern of moderate, periodic disturbance, such as mowing, trampling, or grazing (USFWS 2020). Despite the presence of marginally suitable habitat within the Project area, populations of RBC were not observed during ECT's May 2021 survey.

Due to the negative species-specific survey results for RBC, ECT concludes that the proposed project will not adversely affect this species. Considering the information above, ECT believes that the Circleville Solar Project will not adversely affect state endangered, threatened, or rare species. ECT respectfully requests a concurrence that no state-listed species will be impacted by the Project.

Should you have any questions please do not hesitate to contact me at (440) 263-9568 or jmiller@ectinc.com. Thank you.

Sincerely,

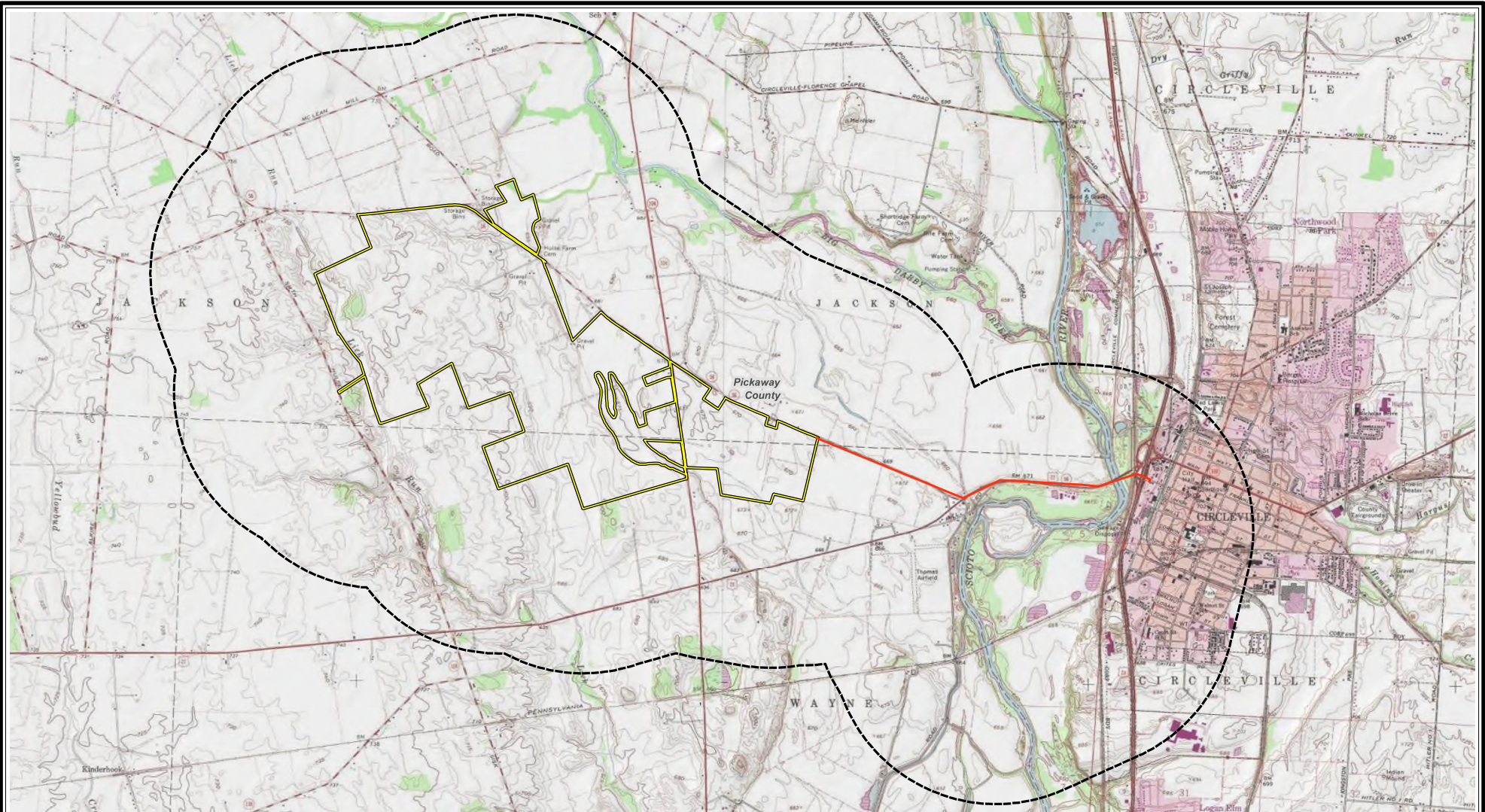
ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

A handwritten signature in black ink, appearing to read "Jessica Miller".

Jessica Miller
Group Lead-Midwest
Natural Resource Group

Attachments

Attachment A:
Topographic Map
Aerial Map of Project Area



- Legend**
- Study Boundary
 - Study Boundary 1 Mile Buffer
 - Potential Transmission Line

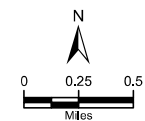


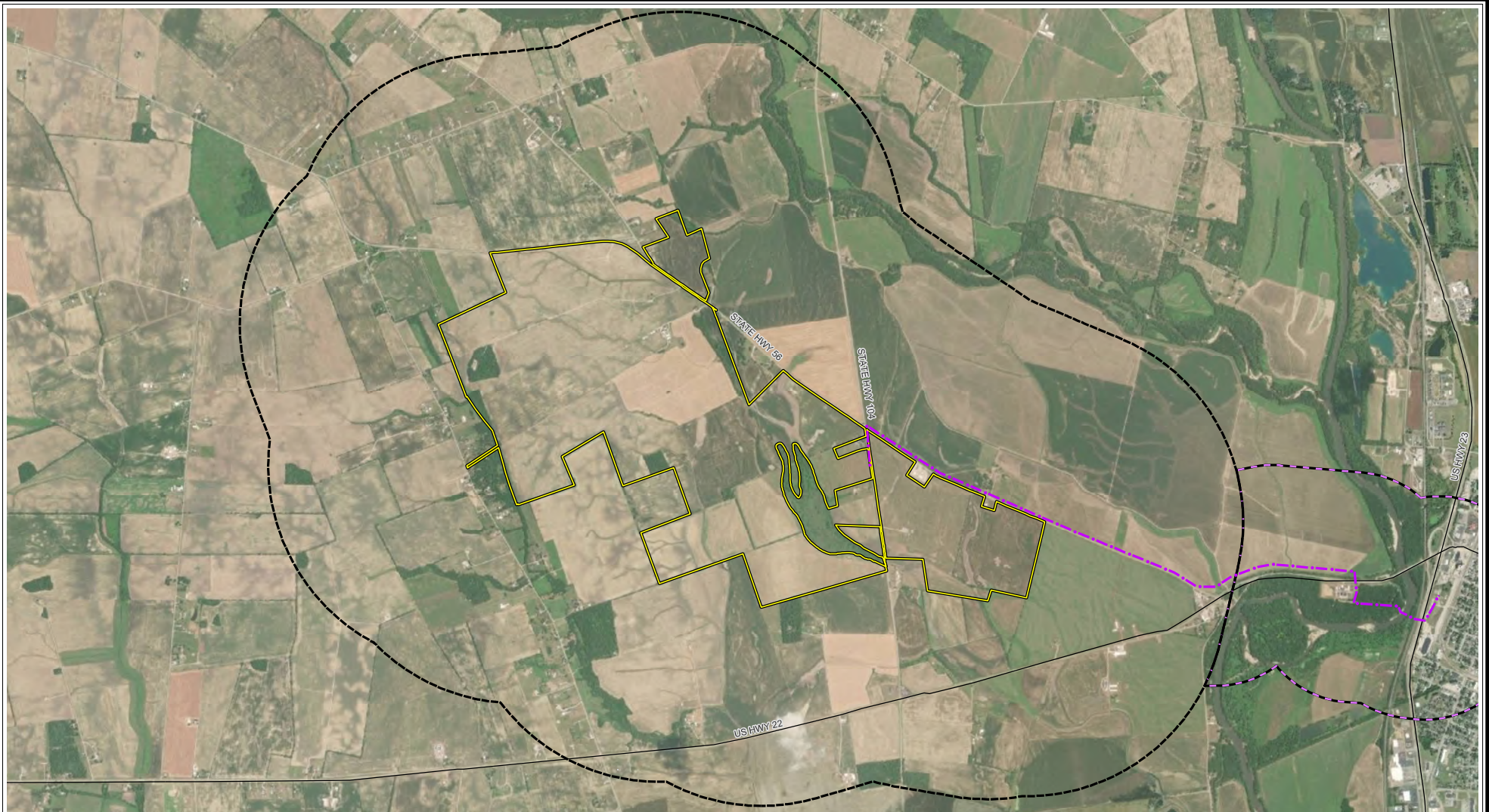
Figure 1
Topographic Map

Circleville Project
Pickaway County, OH

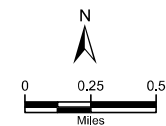
Date: 5/11/2021

ECT

Sources: USGS Quads: Williamsport and Circleville, OH; ECT, 2021.



- Legend**
- Study Area Boundary
 - Study Area 1 Mile Buffer
 - T-Line Option 1
 - T-Line Option 1 Half Mile Buffer



Sources: Maxar 2020 Imagery; ECT, 2021.

Figure 2
Aerial Photograph - Solar Farm Area

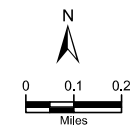
Circleville Project
Pickaway County, OH

Date: 6/29/2021

ECT



- Legend**
- Study Area Boundary
 - Study Area 1 Mile Buffer
 - T-Line Option 1
 - T-Line Option 1 Half Mile Buffer



Sources: Maxar 2020 Imagery; ECT, 2021.

Figure 2
Aerial Photograph - Transmission Line - Option 1

Circleville Project
Pickaway County, OH


Date: 6/29/2021

ECT

Attachment B:
Project Area Photo Log


> Attachment D - Photographic Log

Photo #1	
Date: 05/04/2021	
Feature: W1A-UP	
Lat/Long: 39.6146545, -83.0434558	
Direction: East	
Description: Much of the upland Project area consists of agricultural land that is regularly disturbed as a result of tilling, planting, and harvesting; making those areas unsuitable habitats.	

Photo # 2	
Date: 05/06/2021	
Feature: W8B-SP	
Lat/Long: 39.6189270, -82.9344047	
Direction: West	
Description: Most delineated wetlands within the Project area are concentrated around open water features or woodland areas. BMPs to avoid or minimize impacts on these areas will be utilized to the extent practicable.	

> Attachment D - Photographic Log

Photo # 3	
Date: 05/06/2021	
Feature: W9B-UPL	
Lat/Long: 39.6024475, -83.0048484	
Direction: North	
Description: Additional detail on upland areas, which are frequently disturbed for agricultural purposes.	

Photo # 4	
Date: 05/04/2021	
Feature: Stream 1B	
Lat/Long: 39.5996, -82.995678	
Direction: Upstream	
Description: Streams within the Project area consist of channelized, overwide ditches with muck and silt-covered rock. These ditches are maintained through dredging.	

> Attachment D - Photographic Log



Photo # 5	
Date: 05/07/2021	
Feature: Stream 2B	
Lat/Long: 39.617892, -83.027528	
Direction: Downstream	
Description: Some streams within the Project area have become overgrown with wetland vegetation due to a lack of flow and dredging maintenance.	

Photo # 6	
Date: 05/14/2021	
Feature: Stream 4A	
Lat/Long: 39.612703°, -83.02713°	
Direction: Downstream	
Description: This stream runs along the roadway and erosion of the streambanks has caused siltation.	

> Attachment D - Photographic Log




Photo # 7	
Date: 05/03/2021	
Feature: BH2A – Bat Roost Habitat	
Lat/Long: 39.614444°, -83.042794°	
Direction: Southwest	
Description: This 23"DBH, dead unknown species was present within a woodlot located in the northwestern portion of the Project area. This potential roost tree had full solar exposure, exfoliating bark and deadwood. The woodlot itself was choked with understory and did not present good travel corridors.	

Photo # 8	
Date: 05/04/2021	
Feature: BH2A, BH3A, BH5C, BH6C – Treelines	
Lat/Long: 39.605314°, -83.022247°	
Direction: Northeast	
Description: Treelines within the Project area contained dead snags and relatively open understory.	

> Attachment D - Photographic Log

Photo #9	
Date: 05/13/2021	
Feature: BH3C – Woodlot with Stream	
Lat/Long: 39.617214°, -83.019247°	
Direction: West	
Description: Woodlot has some potential roost trees and stream, however, understory was thick and choked with vegetation, prohibiting good travel corridors.	

Attachment C:
USFWS Coordination Letter



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.

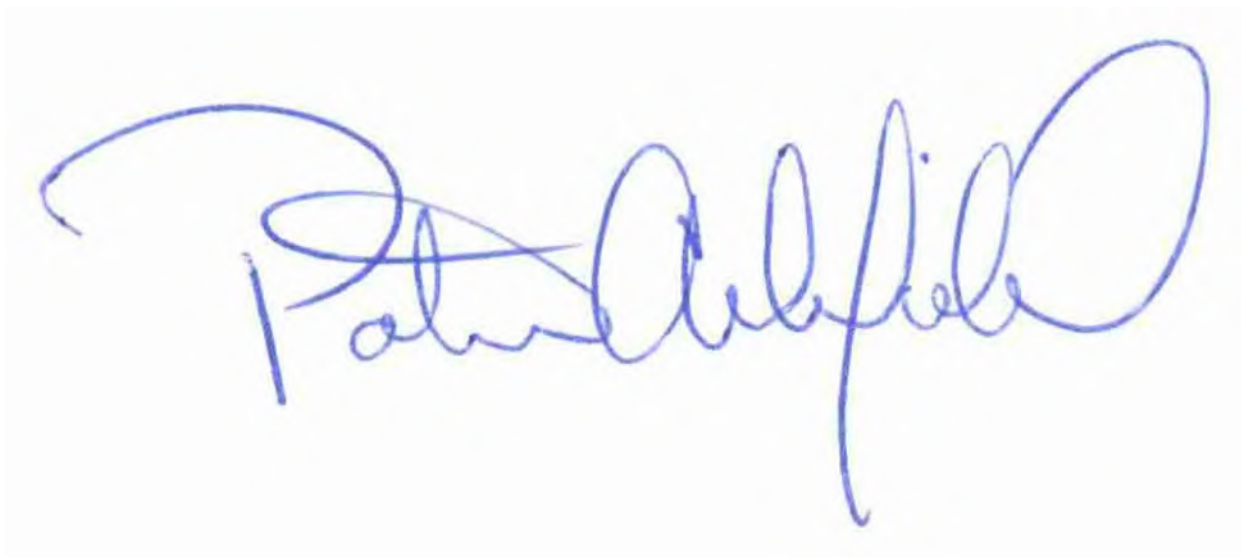
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing 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

Attachment D:
ODNR Natural Heritage Database Results



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.

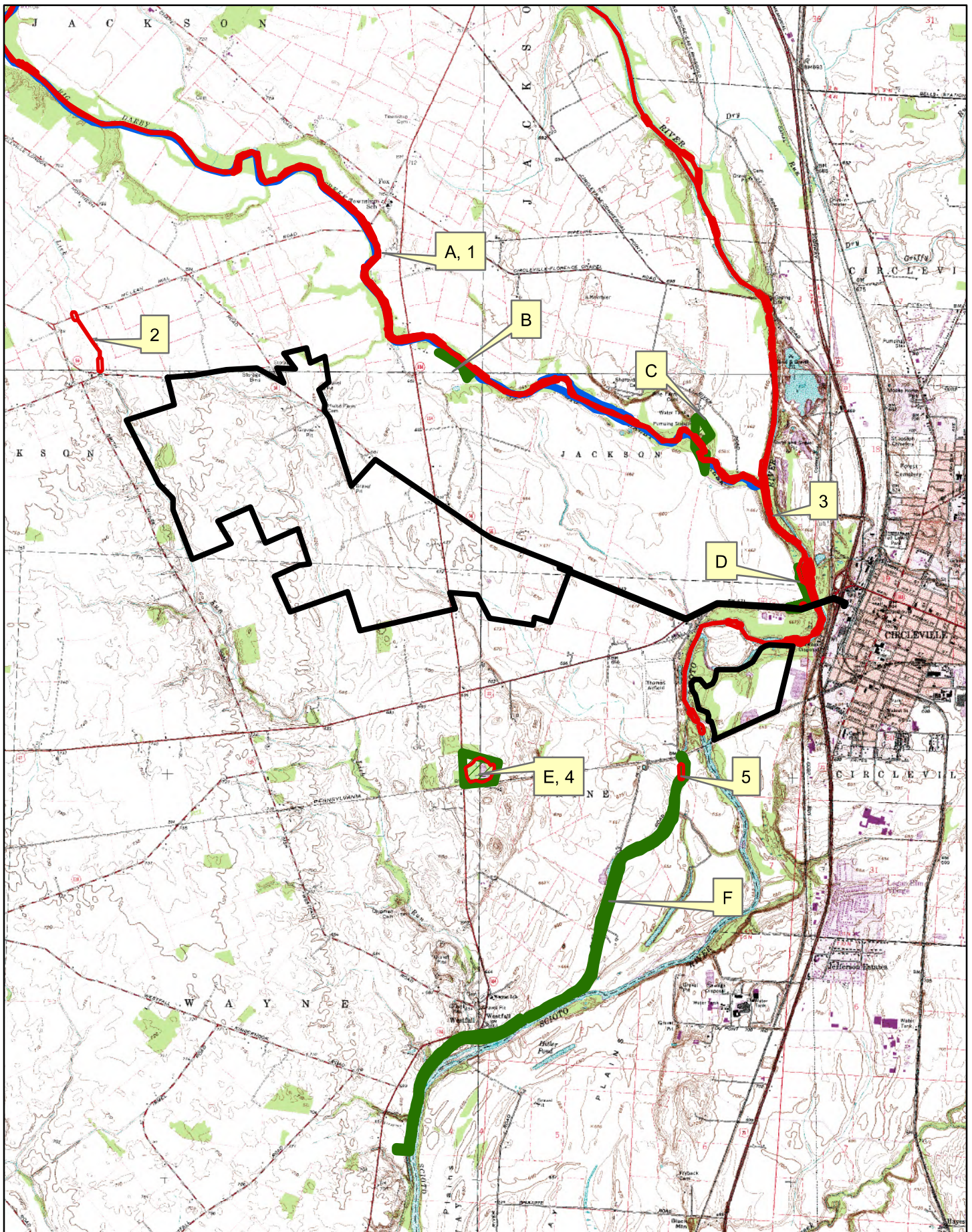
Please contact me at 614-265-6818 if I can be of further assistance.

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 (*Megaloniais 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)

Appendix D Circleville Solar Project - Running Buffalo Clover Survey Memo

To: Michael McConnell, NextEra Energy Resources, LLC

From: Katie Simon, PWS, Environmental Consulting & Technology, Inc. (ECT)

CC: Jessica Miller, ECT

Date: June 15, 2021

Re: Circleville Solar Project - Running Buffalo Clover Survey
ECT Project No. 210330

Comments:

NextEra Energy Resources, LLC (NextEra) contracted Environmental Consulting & Technology, Inc. (ECT) to complete habitat assessment and on-site species-specific surveys for the Running buffalo clover (*Trifolium stoloniferum*) for the Circleville Solar Project (Project). The proposed Project covers an area of approximately 1,636 acres located in Pickaway County, Ohio (*Site Location Map, Attachment A: Figure 1*).

The Project is located 2.0 miles west of Circleville, Ohio and primarily consists of agricultural fields with some areas of mature forest and rural residential properties.

Prior to completing the field survey, ECT reviewed available site data, including descriptions, photographs, and vegetation community descriptions and mapping from other surveys conducted within the 1,636-acre Project site (Study Area). On May 18-20, 2021, ECT conducted a habitat assessment and on-site species-specific surveys for the Running buffalo clover. The surveys took place in locations that may be directly affected by the Project. The surveys were completed by USFWS Qualified Running Buffalo Clover Surveyor, Katie Simon.

Transect surveys were conducted on foot within potential suitable habitat to assess species composition, site conditions, hydrology, and potential for the presence of Running buffalo clover.

To aid identification of target plants, if encountered, ECT utilized sets of diagnostic vegetative and floristic characters based on USFWS plant recognition descriptions (USFWS 2020), dichotomous keys, and professional experience with Running buffalo clover.

The Running buffalo clover is a perennial forb with large trifoliate leaves and long stolons that root at the nodes. Their white flowers bloom between May and June. The preferred habitat of Running Buffalo Clover includes mesic habitats with partial to filtered sunlight, where there is a prolonged pattern of moderate, periodic disturbance, such as mowing, trampling, or grazing (USFWS 2020). Despite the presence of marginally suitable habitat within the Study Area, populations of Running buffalo clover (*Trifolium stoloniferum*) were not observed during ECT's May 2021 survey.

Due to the negative species-specific survey results for Running buffalo clover, ECT concludes that the proposed project will not adversely affect this species.

> memo

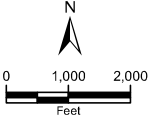
June 15, 2021

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Attachment A Site Location Map



Legend:
Study Area



Sources: Maxar Imagery 2020; ECT, 2021.

Figure 1
Location Map
Circleville Solar Project
Pickaway County, Ohio
Date: 5/27/2021



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in

Case No(s). 21-1090-EL-BGN

Summary: Application Exhibit E – Biological Habitat Assessment electronically filed
by Teresa Orahoad on behalf of Dylan F. Borchers