

**Exhibit R**  
**Ecological Impact and Directional Drilling**  
**Return Plan Report**

**Cardno**

**January 2021**

# Ecological Assessment

Pleasant Prairie Solar Energy Project

January 2021



## Document Information

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## Acronyms

BBS	Breeding Bird Survey
BGEPA	Bald and Golden Eagle Protection Act
CECPN	Certificate of Environmental Compatibility and Public Need
DOW	Division of Wildlife
HHEI	Headwater Habitat Evaluation Index
IPaC	Information for Planning and Conservation tool
LRW	Limited Resource Water
MRLC	Multi-Resolution Land Characteristics Consortium
MWW	Modified Warmwater
NAS	National Audubon Society
NLCD	National Land Cover Database
NWI	National Wetlands Inventory
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
OEPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Methodology
PEM	palustrine emergent
PFO	palustrine forested
PSS	palustrine scrub-shrub
Project	Pleasant Prairie Solar Energy Project
QHEI	Qualitative Habitat Evaluation Index
RTE	rare, threatened, or endangered
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WOTUS	waters of the United States

## Executive Summary

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Pleasant Prairie Solar Energy, LLC (Pleasant Prairie), an affiliate of Invenergy, is proposing to construct and operate the Pleasant Prairie Solar Energy Project (Project) located within Pleasant and Prairie townships, Franklin County, Ohio. The proposed photovoltaic (PV) solar energy facility will have a generation capacity up to 250 megawatts (MW) and is located within approximately 2,424 acres of privately owned lands (Project Area).

The Project will consist of photovoltaic panels, along with access roads, electric collection cables, a collection substation, a laydown area for construction staging, an operation and maintenance (O&M) building, and pyranometers. The Project is anticipated to temporarily impact up to 68 acres during construction and permanently impact up to 47.5 acres during operation, an additional 1,386 acres will host solar arrays. Permanent impacts will be limited to approximately 1 acre associated with solar panel support piles, 42.5 acres of access roads, 2.1 acres to accommodate the substation, 1.1 acre for the Project O&M facility (including permanent laydown areas) and approximately 0.8 acre to accommodate inverters. Temporary impacts are associated with workspaces to accommodate the installation of Project infrastructure in addition to laydown yards that will be utilized to stage equipment and materials during construction. Other general non-quantifiable temporary ground disturbance within the fence line associated with general construction activities will be covered under the general NPDES permit for the project.

As part of the Ecological Assessment, a desktop review of environmental resources was completed for the Project Area. This included a review of land use, wetlands, water quality/floodplain, and major species habitat.

Cardno also conducted field studies within the approximately 2,424-acre Project Area. A habitat assessment was completed for the Project Area, in addition to a visual habitat assessment on a 0.25-mile buffer surrounding the Project Area. Cardno also conducted a wetland delineation field survey to identify wetland or potential waterbodies of the United States, in accordance with Sections 401/404 of the Clean Water Act (CWA). Cardno's field efforts focused on accessible parcels across a broad area of leased parcels and easements.

Based on preliminary survey data and habitat evaluations, the Project will be constructed on land that is primarily agricultural with some scattered woodlots. Upon construction of the proposed Project, most of the Project Area land will be unavailable for agricultural use, resulting in a conversion to vegetated open land that hosts solar modules. The construction of the Project infrastructure will require limited tree clearing or trimming of windrows and smaller isolated woody vegetation to reduce shading and provide contiguous acreage for the Project. All of the proposed tree clearing is located in upland areas; no forested wetlands will be cleared. Habitat evaluations also found that the proposed Project is unlikely to have a significant impact on local or migratory bird populations, due to limited habitat provided by agricultural fields. The Project will observe seasonal restrictions on tree clearing to protect listed bat species (e.g., cutting trees only between October and March), or as conditions specify. Thus, it was determined that the Project is not likely to have significant or adverse impacts to wildlife or sensitive species utilizing the Project Area. Pleasant Prairie will continue consultation with the Fish and Wildlife Service and Ohio DNR to aid in the development of management plans as needed prior to construction. Due to the low probability of occurrence and impact to sensitive species, species-specific surveys are not anticipated at this time.

As part of the assessment, Cardno conducted a wetland delineation field survey to identify wetlands and potential waterbodies (Waters of the United States [WOTUS]), in accordance with Section 401/404 of the CWA. Potentially jurisdictional WOTUS, including Traditional Navigable Waters (TNW), their tributaries, and non-isolated wetlands, which are regulated under the jurisdiction of the State of Ohio and the US Army



Corps of Engineers (USACE) in accordance with Sections 401/404 of the CWA, were identified. In addition, isolated waterbodies and wetlands that do not have a significant nexus to TNW, which are considered waters of Ohio (as defined under Ohio Administrative Code [OAC] Rule 3745-1-02 (b)(77)1) and are regulated by the Ohio Environmental Protection Agency's Isolated Wetlands Permitting Program, were also identified. Cardno's wetland delineation surveyed approximately 2,352 acres.

Based on the field survey, 15 wetlands were delineated during field surveys, for a total of 7.62 acres of wetland within the Project Area. Eleven wetlands were palustrine emergent wetlands (PEM), one was palustrine scrub-shrub (PSS), and three were palustrine forested (PFO). Based on the preliminary Project layout provided by Pleasant Prairie, there will be no impact to wetlands due to the construction, operation, or maintenance of this Project (see Section 6, for impact details).

One stream and one pond were delineated within the Project Area, totaling 1,851 linear feet of waterway. The delineated stream was an unnamed secondary tributary of Hellbranch Run and was classified as a warm water habitat (WWH). There will be no impacts to waterbodies for the construction, operation or decommissioning of the proposed Project.

The Project's most significant ground disturbance will come from the conversion of agricultural land to land to be used for the solar panel arrays (up to 1,729 acres; i.e., fenced area) and associated infrastructure. Agricultural land provides minimal habitat for floral and faunal communities and are already disturbed on a seasonal and/or annual basis by farming activities such as plowing, planting, and harvesting. A conversion of land use from agricultural field to perennial herbaceous vegetation has the potential to create different floral and faunal species assemblages within the Project Area. Generally, ground surface under the solar panels is managed to create stable and maintained ground cover, which will have less runoff and sedimentation to local waterbodies, in comparison to an agricultural field.

Overall, the Project will likely have limited environmental impacts, in part due to the minimization of potential impacts to habitats (wetland and waterbodies) that may support wildlife, and. Impacts to trees are limited to windrows and other isolated woody vegetation. No streams are anticipated to be impacted. The Project is proposed to be primarily built on land that has already been disturbed seasonally/annually for agriculture with limited identified habitat of significant value to RTE species and other wildlife. Lastly, if the proposed Project were decommissioned, the landscape could be returned to its previous agricultural condition.

# 1 Introduction

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Pleasant Prairie Solar Energy LLC (Pleasant Prairie), an affiliate of Invenergy, is proposing to construct and operate the Pleasant Prairie Solar Energy Project (Project) located within Pleasant and Prairie townships, Franklin County, Ohio. The Project will generate up to 250 megawatts (MW) of power and is located within approximately 2,424 acres of privately owned lands (Project Area). Figure 1-1 Project Location Map illustrates the Project Area within Franklin County.

For this ecological assessment, Cardno conducted a desktop and field evaluation of the 2,424-acre Project area, which includes within its bounds, a 100-foot buffer, as required by the Ohio Administrative Code (OAC) 4906-4-08(B)(1)(b), and a desktop assessment for a 0.25-mile buffer. Cardno conducted a field reconnaissance survey to identify wetland or potential waterbodies of the United States, in accordance with Sections 401/404 of the Clean Water Act (CWA). Cardno's field efforts focused on accessible parcels across a broad area of leased parcels and easements (Survey Area).

This ecological assessment included a desktop review of the Project Area plus a 0.25-mile buffer for:

- > Land Use – categories to classify the predominant land use (e.g., agriculture, recreational, water), including vegetative communities;
- > Geology – desktop review of bedrock formation, glacial drift, and potential karst habitat;
- > Wetlands – areas with hydric soils that support hydrology and hydrophytic vegetation;
- > Water Quality/Floodplain – Ohio stream classifications and designations;
- > Habitat characterization; and
- > Major species, including federal and state-listed threatened and endangered species.

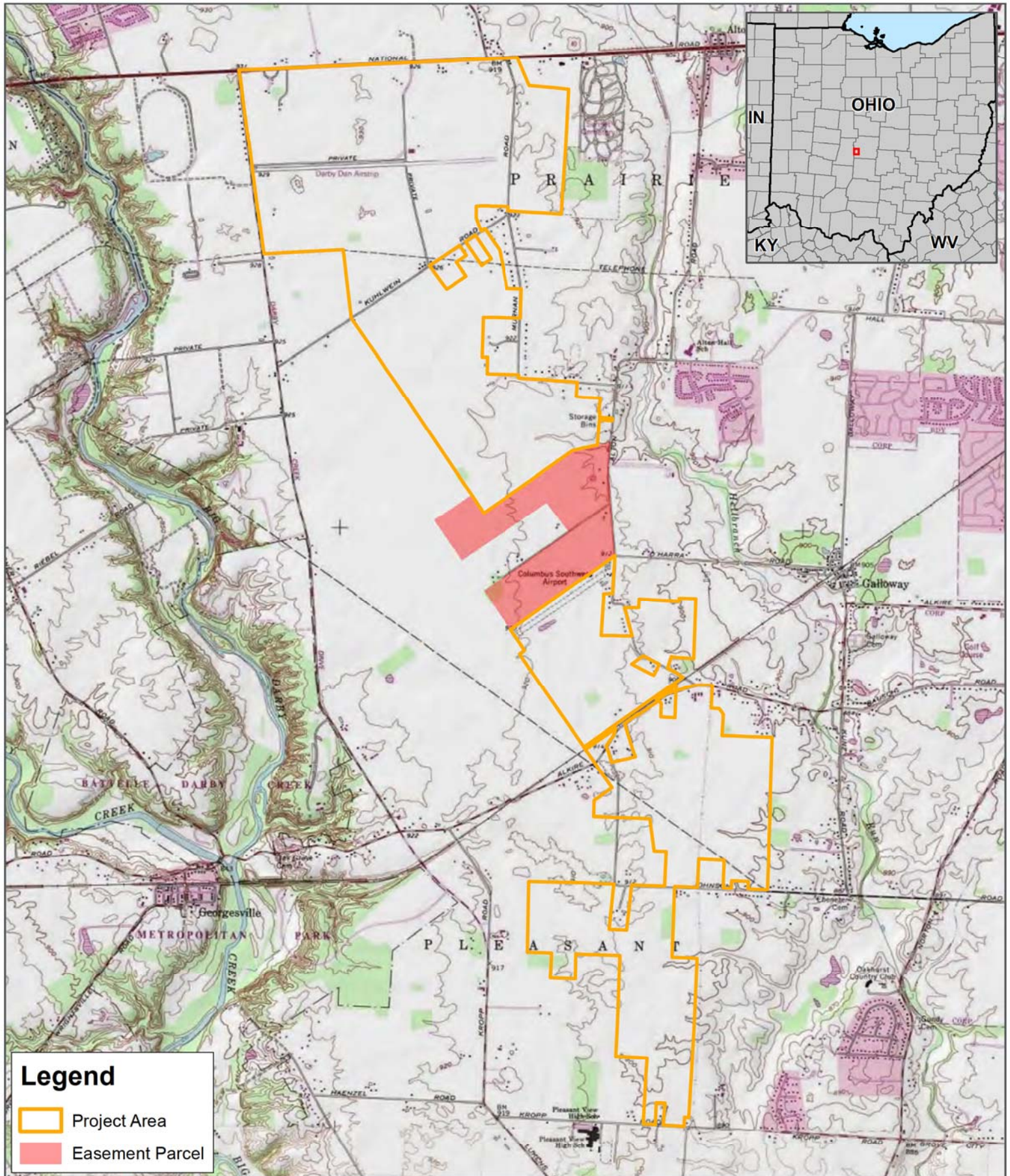
Field reconnaissance surveys were conducted within the Project Area during fall 2020, and included:

- > Wetland and surface water delineations; and
- > Habitat observations and sensitive species assessment.

Appendix A includes figures showing the following resources:

- > Land Use Map
- > Soils Map
- > Geology (bedrock formation, glacial drift, and karst features)
- > Regional Wildlife Areas
- > Field-Delineated Surface Waters
- > Watersheds
- > 401 Water Quality Certification Map





**Figure 1.1 - Project Overview**  
**Pleasant Prairie Solar Project**  
**Franklin County, Ohio**



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## **1.1 Project Description**

Assumptions used for this ecological assessment are based on the preliminary facility layout developed by Pleasant Prairie. These components are further described in Pleasant Prairie's application for a Certificate of Environmental Compatibility and Public Need (CECPN). The preliminary facility layout is provided in Figure 03-01 of the Certificate Application.

### **1.1.1 Site Preparation**

The primary steps for facility construction include the following: (1) installation of storm water, erosion control, and vegetation protection measures, (2) securing the perimeter of the construction area, (3) vegetation clearing, (4) minor earthwork and grading as necessary, (5) construction of access roads, and (6) installation of equipment and infrastructure such as pilings, racking, panels, inverters, weather stations, substations, and security fencing.

For additional details regarding site preparation, refer to sections 4906-03(B) and (C) of the Certificate Application.

### **1.1.2 Solar Project Infrastructure**

Successful construction and operation of the Project involves installation of the infrastructure components listed below. Standard overland construction techniques are anticipated for the installation of these components. For a more thorough description of these Project components, refer to section 4906-4-03(B) of the Certificate Application.

Of the approximately 2,424-acre Project Area, the fence line encloses approximately 1,729 acres, with approximately 1,386 acres within the fence line converted for Project infrastructure and subsequently unavailable for current land use for the duration of the Project.

The Project will include the following infrastructure:

- > Solar Panels
- > Project Substations
- > O & M Facilities
- > Inverters
- > Collection Lines
- > Access Roads
- > Equipment Laydown Areas

### **1.1.3 Operation and Maintenance**

Once in operation, the Project will generate electricity during daylight hours. Operation and maintenance staff will monitor operations remotely and conduct periodic on-site cleaning of panels and facility maintenance procedures, as needed. Only authorized personnel will be permitted on-site (e.g., employees monitoring and maintaining the Project). Project maintenance includes periodic maintenance of solar panels and solar components as well as the internal access road network. The level of vehicle activity entering and leaving the site during operation will be limited to scheduled and emergency maintenance visits.

## 2 Regulatory Overview

Pleasant Prairie is seeking a CECPN from the Ohio Power Siting Board (OPSB). The OPSB CECPN process includes a rigorous project review process involving review from the OPSB, Ohio State Historic Preservation Office (OSHPO), US Fish and Wildlife Service (USFWS), and Ohio Department of Natural Resources (ODNR), among other agencies prior to certification. Additional information regarding USFWS and OSHPO coordination is provided in Section 3.

Table 2-1 provides further detail of agencies and their regulatory authorities that may apply to the Project.

**Table 2-1 Potential Permit Requirements for the Pleasant Prairie Solar Energy Project**

Lead Agency Address	Agency Permit / Approval	Key Permit / Approval Thresholds
<b>Federal Reviews/Approvals</b>		
US Army Corps of Engineers (USACE) Huntington District	Clean Water Act (CWA) Section 404	Discharge of dredged and fill materials into waters of the United States (WOTUS), including wetlands with a significant nexus to navigable waterways.  Section 10 of the Rivers and Harbors Act (which applies to dredge and fill activities in navigable waters) is not applicable, as there are no navigable waterways in the Project Area.
US Fish and Wildlife Service (USFWS) Ohio Field Office	50 Code of Federal Regulations (CFR) 402; Section 7(a)(2) Consultation; Threatened and Endangered Species	The Endangered Species Act of 1973 (ESA) under Section 7(a)(2) directs all federal agencies to ensure that any action they authorize, fund, or carry-out does not jeopardize the continued existence of an endangered or threatened species or designated or proposed critical habitat (collectively referred to as protected resources).
<b>State Reviews/Approvals</b>		
Ohio Power Siting Board (OPSB)	Certificate of Environmental Compatibility and Public Need (OAC Chapter 4906-4-08(B))	The OPSB has the authority to approve solar electric generation and transmission facilities that will generate 50 or more MW.
Ohio Department of Natural Resources (ODNR)	State Rare, Threatened and Endangered Species. Ohio Code 1531.25	The chief of the division of wildlife, with the approval of the wildlife council, shall adopt and may modify and repeal rules, in accordance with Chapter 119 of the Revised Code, restricting the taking or possession of native wildlife, or any eggs or offspring thereof, that he or she finds to be threatened with state-wide extinction.
Ohio Historic Preservation Office (OSHPO) Ohio Historical Society	Section 106 compliance (36 CFR 800.11) Ohio Revised Code (ORC) Sections 149:51 through 149:54	Section 106 of the National Historic Preservation Act (NHPA) applies to certain projects that involve construction, demolition, or earthmoving activities, as mandated by Section 106 of the NHPA and 36 CFR 800.



Lead Agency Address	Agency Permit / Approval	Key Permit / Approval Thresholds
Ohio Environmental Protection Agency	CWA Section 401 Water Quality Certification (ORC Chapter 6111)	Discharge of dredge and fill materials into WOTUS, including wetlands with a significant nexus to navigable waterways.
Ohio Environmental Protection Agency	Isolated Wetlands Permit (ORC Chapter 6111.02-.029)	Construction activities that disturb isolated wetlands.
Ohio Environmental Protection Agency, Division of Surface Water	National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP) OEPA Permit No.: OHC000003	The NPDES CGP renewal authorizes NPDES permit coverage for those construction activities involving 1 or more acres of land disturbance.

## 2.1 Federal

In accordance with Section 404 of the CWA, the Project is located Franklin County, Ohio, which is within the jurisdiction of the US Army Corps of Engineers (USACE) Huntington District. The USACE holds jurisdiction over waters of the United States (WOTUS), including authority over any filling, mechanical land clearing, or construction activities that occur within the boundaries of any WOTUS. A permit must be obtained from the USACE before any of these activities occur. Proposed impacts to WOTUS are addressed in Section 6, below.

The USFWS requires the protection of species that are listed as threatened or endangered under the Endangered Species Act (ESA). Projects that have the potential to result in “take” of individuals or impact Designated Critical Habitat for these species, require permit authorization from the USFWS. In addition, the Bald and Golden Eagle Protection Act (BGEPA or Eagle Protection Act) and Migratory Bird Treaty Act (MBTA) establish provisions for the protection of eagles and migratory birds that are not necessarily threatened or endangered. The USFWS will typically review project information and provide technical assistance including recommendations to avoid or minimize risk of potential take of a species.

## 2.2 Section 404 / Clean Water Act

Surface waters are regulated under the CWA, under jurisdiction of either the federal or state government. Cardno identified potentially jurisdictional WOTUS, including Traditionally Navigable Waters (TNW), their tributaries, and non-isolated wetlands, which are regulated under the jurisdiction of the State of Ohio and the USACE in accordance with Section 401/404 of the CWA. Waterbodies and isolated wetlands that do not have a significant nexus to a TNW are considered waters of Ohio (as defined under Ohio Administrative Code [OAC] Rule 3745-1-02(b)(77)) and are regulated by the Ohio Environmental Protection Agency (OEPA’s) Isolated Wetlands Permitting Program.

## 2.3 Section 401 / Clean Water Act / Water Quality Certification

In Ohio, the Section 401 Water Quality Certification (WQC), and Isolated Wetland Permitting Section of the OEPA reviews applications for projects that propose the placement of fill or dredged material into WOTUS, as well as isolated waterbodies and wetlands that do not have a significant nexus to TNW, which are considered waters of Ohio (as defined under OAC Rule 3745-1-02 (b)(77)).

On March 17, 2017, OEPA finalized the 401 WQC and Response to Comments for the 2017 Nationwide Permits published by the USACE. Based on those 2017 Nationwide Permit (NWP) requirements, projects seeking a NWP (including #12), may review the OEPA’s Stream Eligibility Map to help determine if an individual WQC is required or not. This map identifies areas where projects are *Eligible*, *Ineligible*, or *Possibly Eligible* to use a NWP for 401 coverage. Based on current Project design, no impacts to streams

are anticipated, but a delineated stream is within the *Eligible* area and therefore qualifies for use of the NWP for 401 coverage if design plans change.

OEPA has not yet provided comment on the 2021 USACE NWP Final Rule, therefore guidance summarized above for the 401 Water Quality Certification (WQC), and Isolated Wetland Permitting process still apply.

### **2.3.1      2017 Nationwide Permit 12 Ohio 401 Certification Special Limitations and Conditions**

If impacts to WOTUS from the Project cannot be fully avoided as anticipated, the Project may use USACE Nationwide Permit #12 (NWP 12) to authorize impacts from certain access roads and collection lines. Under NWP 12 the individual crossings would be single and complete, provided the activity does not result in the loss of greater than ½-acre of WOTUS. Ohio has not yet provided comment on the 2021 NWP update, therefore the following lists the most recent 2017 NWP 12 Ohio Special Limitations and Conditions:

1. Ohio State certification general limitations and conditions apply to this NWP.
2. Except for maintenance activities authorized under this NWP, individual 401 WQC is required for use of this NWP when temporary or permanent impacts are proposed on or in any of the following waters:
  - a. Category 1 or 2 wetlands when impacts exceed 0.50 acre;
  - b. Streams located in *Ineligible* areas determined through the NWP Stream Eligibility guidance
  - c. Streams located in *Possibly Eligible* areas determined to be high quality through one of the NWP eligibility flowcharts;
  - d. State wild and scenic rivers;
  - e. National wild and scenic rivers; and
  - f. General high quality water bodies, which harbor federal and state-listed threatened or endangered aquatic species.
3. Temporary or permanent impacts to Category 3 wetlands are limited to less than 0.10 acre for activities involving the repair, maintenance, replacement, or safety upgrades to existing infrastructure that meets the definition of public need. OEPA will make the determination if a project meets public need during the ODNR Ohio's Rapid Assessment Methodology (ORAM) verification process.
4. Temporary or permanent impacts, as a result of stream crossings, shall not exceed a total of three per stream mile per stream.
5. For an individual stream, while the repair or replacement of an existing culvert of any length is not limited by this certification, any culvert extension shall not exceed 300 linear feet.
6. All hydric soils up to 12 inches in depth within wetlands shall be stockpiled and replaced as the topmost backfill layer. BMPs, such as silt fencing and soil stabilization, shall be implemented to reduce erosion and sediment runoff into adjacent wetlands.
7. Buried utility lines shall be installed at a 90-degree angle to the stream bank to the maximum extent practicable. When a 90-degree angle is not possible, the length of any buried utility line within any single water body shall not exceed twice the width of that water body at the location of the crossing.
8. The total width of any excavation, grading or mechanized clearing of vegetation and soil shall not exceed a maximum of 50 feet.



### **2.3.2 Ohio Environmental Protection Agency NPDES Permit**

In August of 1992, the USEPA delegated to Ohio EPA the authority to issue general NPDES permits. Ohio law regarding general permits (Ohio Revised Code Section 6111.035) was originally written to apply to coal mining and reclamation activities. It was revised to expand the scope of general permits to storm water discharges and then, in 1993, to include wastewater discharges with a de minimis impact on the receiving stream. Rules addressing the general NPDES permit program are in Ohio Administrative Code Chapter 3745-38.

There are two types of [NPDES permits](#); individual and general. An individual NPDES permit is unique to each facility. The limitations and requirements in an individual permit are based on the facility's operations, type and amount of discharge, and receiving stream, among other factors. Because some of the individual permits contain very similar or, in many cases, identical effluent limitations and requirements, their contents have been compiled into one permit that can be applied to certain categories of discharges. This is a general permit.

A general permit is one permit that covers facilities that have similar operations and type of discharge. A general NPDES permit is a potential alternative to an individual NPDES permit and affords coverage to new and existing dischargers that meet the eligibility criteria given in the general permit. General permits are used to cover discharges that will have a minimal effect on the environment.

The Project will require a National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP) based on the assessment that 1 or more acres of land disturbance will likely occur. A storm water pollution prevention plan (SWPPP) will also be prepared for the Project that will use sound engineering and/or conservation practices and implementation of standard soil erosion and sediment control (SESC) and storm water management practices addressing all phases of construction.

#### **2.3.2.1 *Big Darby Creek Watershed Stormwater Permit***

Ohio EPA issued a final alternative general permit renewal for storm water discharges associated with construction activities in Central Ohio's Big Darby Creek watershed. The general permit covers the entire 555-square mile Big Darby Creek watershed, including parts of Champaign, Clark, Franklin, Logan, Madison, Pickaway and Union counties. It authorizes construction activities disturbing 1 or more acres. The Big Darby general permit contains additional requirements that differ from Ohio EPA's standard general permit for storm water discharges from construction. One significant difference is a requirement to leave green space between construction activity and streams in the watershed. The setback distance is aimed at keeping sediment and other pollutants out of waterways, including the Big and Little Darby Creeks, which are designated state and national scenic rivers. In addition, the general permit contains requirements to maintain ground water recharge.

The Big Darby Creek TMDL identified specific management recommendations for the Big Darby Creek watershed. Some of the recommendations included in the total maximum daily load (TMDL) addressed construction-related stormwater runoff and were summarized as follows in a fact sheet (Ohio EPA 2005b):

- > Ohio EPA will evaluate issuing general permits for runoff associated with construction activity that are specific to the Big Darby Creek watershed. These would most likely be developed for the Hellbranch Run watershed, the Big Darby Creek headwaters areas, and the rest of the Big Darby Creek watershed.
- > Each general storm water permit will be evaluated to ensure pollution loading targets in the TMDL are achieved. Permits will include management practices and discharge limits designed to reduce sediment runoff and protect sensitive aquatic life uses in the watershed.
- > Developers will be expected to evaluate their project's effect on volume of flow and provide stream buffers that reduce sediment runoff.



The Project is aware of these restrictions within the watershed and have incorporated into the facility design by not encroaching further into the existing riparian buffers, the Project will not expand further than the existing active agricultural field. The Project will prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) for approval prior to start of construction. And the project will be stabilized with native grasses and have limited impervious surface area, thus maintaining current groundwater recharge. A Landscape and Vegetation Management Plan has been prepared for the Project, and is provided as an Exhibit to the Certification Application.

## **2.4 Compliance Strategy**

Based on the current proposed layout of the Project (See Section 6 for additional detail on anticipated impacts), there are no anticipated impacts to regulated resources (i.e., wetlands or waterbodies, RTE Species, or sensitive habitat) therefore no permits under Section 404 and 401 are anticipated. Additionally, with no anticipated impact to sensitive habitats and following coordination with ODNR and the USFWS, the Project is not anticipated to impact RTE species; therefore, no wildlife take permits will be needed. With no anticipated impacts to regulated resources, mitigation requirements are not anticipated, however the Project will restore all temporary impacts back to pre-construction condition. If impacts change, Pleasant Prairie will coordinate with USACE and OEPA as needed and obtain additional permits if required for construction or operation.

## 3 Agency Consultation

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### 3.1 US Fish and Wildlife Service

On behalf of the Project, Cardno submitted an Environmental Review request to the USFWS on October 12, 2020. The USFWS responded on November 13, 2020 (Appendix B). The USFWS stated that no federal wildlife areas, wildlife refuges or critical species habitats are located within the Project Area. USFWS also stated that throughout the entirety of Ohio, including the Project Area, there is potential for the presence of the federally listed endangered Indiana bat (*Myotis sodalis*) and the federally listed threatened northern long-eared bat (*Myotis septentrionalis*) where suitable habitat occurs. Information provided by USFWS indicates the entirety of the Project is in the vicinity of confirmed records of Indiana bats and maternity sites, and USFWS expressed concern over the potential for tree clearing to impact the species. Cardno and Pleasant Prairie followed up with USFWS via phone conference January 15, 2021, and provided additional details on the proposed Project tree clearing and Pleasant Prairie's commitment to only clear woody vegetation between October 1 and March 31. Cardno submitted a follow-up letter on January 20, 2021, to USFWS with this information and USFWS replied on January 26, 2021, that no anticipated adverse impact to RTE species are expected from the construction and operation of the Project.

A desktop review of the USFWS Information for Planning and Conservation (IPaC) database is discussed in Section 4.4.1.1

### 3.2 Ohio Department of Natural Resources

In addition, on behalf of the Project, Cardno submitted an Environmental Review request to the Ohio Department of Natural Resources (ODNR) on October 12, 2020. The ODNR responded on December 7, 2020 (Appendix B). ODNR's response was based on an inter-disciplinary review, including input from the Ohio Natural Heritage Database (ONHD), Division of Fish and Wildlife (DOW), and the Division of Water Resources. ODNR indicated the occurrences of eleven mussel species, five fish species, four bird species, two mammal species and one plant species within the vicinity of the Project.

ODNR identified the following conservation areas within the vicinity of the Project: Big Darby Creek State Scenic River, Little Darby Creek State Scenic River, Miller & Schmidt Scenic River Easements, Battelle Darby Creek Metro Park, Prairie Oaks Metro Park, Big Darby Creek Preserve, Alton Road Parkland, Blauser Clean Ohio Parkland, and Clover Parkland. A conservation site is defined by the Natural Heritage Database as a natural area of high quality not currently under formal protection. These areas are often home to sensitive species, unique plant communities or significant geological features. Since these conservation areas are not located within the Project Area they will not be disturbed or impacted as a result of construction or operation of the Project. A summary of Project impacts is provided in Section 6.3.

In addition to being in range of the federally listed Indiana bat and northern long-eared bat, ODNR stated the Project is within range of the state-listed endangered little brown bat (*Myotis lucifugus*) and the state-listed endangered tricolored bat (*Perimyotis subflavus*). During the summer months (April 1 through September 30), these bats predominately roost in trees behind loose, exfoliating bark, usually on trees with a ≥20-inch diameter at breast height (dbh). If suitable habitat is in the Project Area, ODNR recommended that Indiana bat roosting trees be conserved. If suitable habitat occurs within the Project Area and trees must be cut, the ODNR recommended cutting occur between October 1 and March 31. If tree removal is to occur during the summer months, the DOW recommended presence/absence surveys be conducted prior to cutting.

ODNR stated the Project is in range of five federally endangered mussels: purple cat's paw (*Epioblasma o. obliquata*), clubshell (*Pleurobema clava*), northern riffleshell (*Epioblasma torulosa rangiana*), rayed bean (*Villosa fabalis*), and snuffbox (*Epioblasma triquetra*); one federally threatened mussel: rabbitsfoot

(*Quadrula cylindrica cylindrica*); five state endangered mussels: long solid (*Fusconaia maculata maculata*), Ohio pigtoe (*Pleurobema cordatum*), pocketbook (*Lampsilis ovata*), washboard (*Megaloniaia nervosa*), and elephant-ear (*Elliptio crassidens crassidens*); and four state threatened mussels: black sandshell (*Ligumia recta*), threehorn wartyback (*Obliquaria reflexa*), pondhorn (*Unio merus tetralasmus*), and fawnsfoot (*Truncilla donaciformis*). Per the Ohio Mussel Survey Protocol, all Group 2, 3, and 4 streams require a mussel survey. Group 1 streams and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels to determine if mussels are present. The DOW recommended 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.

ODNR stated the Project is in the range of one federally endangered fish: Scioto madtom (*Noturus trautmani*); seven state endangered fish: goldeye (*Hiodon alosoides*), Iowa darter (*Etheostoma exile*), popeye shiner (*Notropis ariommus*), northern brook lamprey (*Ichthyomyzon fossor*), spotted darter (*Etheostoma maculatum*), shortnose gar (*Lepisosteus platostomus*), and tonguetied minnow (*Exoglossum laurae*); and three state threatened fish: lake chubsucker (*Erimyzon sucetta*), paddlefish (*Polyodon spathula*), and Tippecanoe darter (*Etheostoma tippecanoe*).

ODNR guidance states that the Project is within range of a variety of state-protected birds. Within vicinity of the Project Area, there have been documented breeding of the state endangered American bittern (*Botaurus lentiginosus*), state threatened least bittern (*Ixobrychus exilis*), state endangered northern harrier (*Circus hudsonis*), and state endangered upland sandpiper (*Bartramia longicauda*). Additionally, the Project is within range of the following protected species state threatened black-crowned night-heron (*Nycticorax nycticorax*), cattle egret (*Bubulcus ibis*), state endangered lark sparrow (*Chondestes grammacus*), and state threatened sandhill crane (*Grus canadensis*).

ODNR solicited comments from additional organizations, including the Ohio Scenic Rivers Program for considerations on ecological and hydrological protection and enhancement, as well as considerations for siting and best management practices, due to the proximity to Big Darby Creek and its watershed, Battelle Darby Creek Metro Park to the west and the Hellbranch Meadows restoration project to the east.



## 4 Desktop Ecological Assessment

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Cardno performed a desktop habitat survey using GIS to screen for and classify potential environmental resources. Reference material includes, but is not limited to, the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey for Franklin County, historic aerial photographs or farmed wetland maps from the USDA Farm Service Agency (FSA), National Wetland Inventory (NWI) maps, Ohio Wetland Inventory (OWI) maps, US Geological Survey (USGS) topographic maps, the USGS National Hydrography Dataset (NHD), and recent aerial photographs.

### 4.1 Land Use

The land use and vegetative community types within the Project Area are based on data provided by the Multi-Resolution Land Characteristics Consortium (MRLC), from the 2011 National Land Cover Database, amended 2016 (MRLC, 2018). The land use categories within the Project Area are classified according to the predominant land use, as follows:

- > **Agricultural (Cultivated Crops)** – Areas characterized by herbaceous vegetation that has been planted or is intensively managed to produce food, feed, or fiber; or is maintained in developed settings for specific purposes. Herbaceous vegetation accounts for 75-100 percent of the cover. This class also includes all land being actively tilled.
- > **Pasture/Hay** - Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops.
- > **Developed, Open Space** – Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
- > **Forested (Deciduous)** – Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change.
- > **Developed, Low/Medium Intensity** – Includes areas with a mixture of constructed materials and vegetation. Constructed materials account for 30-80 percent of the cover. Vegetation may account for 20 to 70 percent of the cover. These areas most commonly include single-family housing units. Population densities will be lower than in high intensity residential areas.
- > **Grassland/Herbaceous** – Areas dominated by upland grasses and forbs. In rare cases, herbaceous cover is less than 25 percent, but exceeds the combined cover of the woody species present. These areas are not subject to intensive management, but they are often utilized for grazing.
- > **Emergent Wetlands** – Areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
- > **Shrub Scrub** – Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.
- > **Woody Wetlands** – Areas where forest or shrubland vegetation accounts for 25 to 100 percent of the cover and the soil or substrate is periodically saturated with or covered with water.

- > **Mixed Forest** – Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of total tree cover.
- > **Barren Land (Rock/Sand/Clay)** – Areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15 percent of total cover

Land Use of the Project Area described below in Table 4-1, and is illustrated in Figure A-2 of Appendix A.

**Table 4-1 Land Use within the Pleasant Prairie Solar Energy Project Area, Franklin County, Ohio**

Type	Project Area (acres)	Project Area (%)
Cultivated Crops	2,209.86	91.2%
Pasture/Hay	118.78	4.9%
Developed, Open Space	45.79	1.9%
Deciduous Forest	23.49	1.0%
Developed, Low Intensity	14.82	0.6%
Grassland/Herbaceous	4.05	0.2%
Emergent Wetlands	2.59	0.1%
Developed, Medium Intensity	2.00	0.1%
Shrub/Scrub	1.11	0.0%
Woody Wetlands	1.05	0.0%
Mixed Forest	0.25	0.0%
Barren Land (Rock/Sand/Clay)	0.22	0.0%
<b>Total</b>	<b>2,424.02</b>	<b>100.0%</b>

Compiled from NLCD 2016 Land Cover Database.

\* The total acreage used in these calculations differs slightly from the Project Area due to differences inherent to the level of precision of the National Land Cover Dataset.

#### **4.1.1 Agricultural Conversion Considerations**

As described above, the Project Area currently exists primarily as active agricultural lands (91 percent) (Appendix A, Figure A-1). Upon construction of the Project, most of the Project Area land will be converted to PV solar panels and will be unavailable for agricultural use until after project decommissioning.

With respect to converting an agricultural field to a solar project, such a conversion is expected to have a negligible environmental impact. Agriculture fields provide minimal habitat for floral and faunal communities and are disturbed on a seasonal and/or annual basis by farming activities such as plowing, planting, and harvesting. As the Project intends to incorporate native vegetation habitat into its landscape design, the converted land will be equivalent or potentially provide improved habitat for species that utilize native grasslands for forage. A conversion of land use is likely to create different species assemblage within the Project Area. Faunal species tolerant of an agricultural field are anticipated to be tolerant of a solar field, as both are managed land. The conversion of the agricultural lands to native, low growing herbaceous vegetation will provide a diversity of plant species not typically associated with a monoculture crop. The proposed herbaceous vegetation will provide as much or greater vegetative cover as existing crop. The new plant cover will be maintained year round, as opposed to seasonal disturbance during crop



harvest, providing continuous ground covering and stabilization. This maintained ground cover will reduce runoff and sedimentation to local waterbodies in comparison to an agricultural field. Solar fields are also managed to stabilize the surrounding area to reduce soiling of the solar PV panels, which can come from dust, snow, and other particles that can settle on the array.

Additional details on the site stabilization and the surround landscaping is provided in the Landscape and Vegetation Management Plan, as an Exhibit to the Certificate Application.

## **4.2 Geology**

The Project is in the Level III Eastern Corn Belt Plain Ecoregion, Level III, more specifically the Pre-Wisconsinan Drift Plains, characterized by deeply leached, acidic till and thin loess, with widespread and nearly flat, poorly drained soils. Elevation within the Project Area ranges between 900 and 1,150 feet above mean sea level (USEPA 2018).

### **4.2.1 Bedrock**

The Project Area is overlies Columbus Limestone which consists of limestone and dolomite, and Salina Undifferentiated, dolostone, evaporite, and shale. These formations consist of loamy, medium to high lime. Wisconsinan-age till and outwash in the Scioto Valley, overlaying deep Devonian/Mississippian-age carbonate rocks, shale, and siltstone (OEPA 1998).

Bedrock geology of the Project Area is illustrated in Figure 3 of Appendix A.

### **4.2.2 Glacial Drift**

Glacial drift depth is defined as the thickness of glacially derived sediments (drift) and post-glacial stream sediments overlying the buried bedrock surface. Generally, the northern portion of the Project Area located over sediments between 50 feet to 100 feet thick, while the southern portion has glacially derived sediments between 100 feet and 150 feet, with some locations having depths greater than 150 feet. It is anticipated that blasting will not be required, therefore not causing impacts to wildlife or habitats within the vicinity of the Project.

Glacial drift thickness of the Project Area is illustrated in Figure 4 of Appendix A, Project Area Figures.

### **4.2.3 Karst**

Karst is a type of landform that develops as a result of limestone, dolomite, or gypsum dissolution. Karst terrain is characterized by the presence of features such as sinkholes, caverns, and caves. Karst landforms host some of Ohio's rare fauna; however, they also can be a significant geologic hazard. The Project Area is not located within karst geology and therefore, the Project would not impact habitat for fauna known to occupy these features.

Bedrock and probable karst features within the Project Area are illustrated in Figure A-5, of Appendix A.

## **4.3 Soils**

Soils within the Project Area are outlined in Table 4-2. Project soil information was obtained from the Web Soil Survey, an application of the NRCS, and from the Soil Survey of Franklin County, Ohio. The two most dominant soils within the Project Area include the Kokomo silty clay loam, 0 to 2 percent slopes (1,133.88 acres, 46.8 percent) and the Lewisburg Crosby complex, 2 to 6 percent slopes (830.94 acres, 34.3 percent). A complete list of soils within the Project Area is provided in Table 4-2.



**Table 4-2 NRCS Soils within the Pleasant Prairie Solar Energy Project Area, Franklin County, Ohio**

Soil Symbol	Soil Name	Hydric Rating	Project Area (acres)	Project Area (%)
Ko	Kokomo silty clay loam, 0 to 2 percent slopes	90	1,133.88	46.8%
LeB	Lewisburg-Crosby complex, 2 to 6 percent slopes (Franklin Co.)	15	830.94	34.3%
CrB	Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes	5	243.86	10.1%
CrA	Crosby silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	5	161.10	6.6%
CeB2	Celina silt loam, 2 to 6 percent slopes, eroded	4	17.18	0.7%
MIC2	Miamian silty clay loam, 6 to 12 percent slopes, eroded	5	17.00	0.7%
CeB	Celina silt loam, 2 to 6 percent slopes	10	7.11	0.3%
Wt	Westland silty clay loam, Southern Ohio Till Plain, 0 to 2 percent slopes	90	5.53	0.2%
Cc	Carlisle muck	100	5.36	0.2%
CeA	Celina silt loam, 0 to 2 percent slopes	5	1.42	0.1%
EIB	Eldean silt loam, 2 to 6 percent slopes	0	0.65	0.0%
<b>Total</b>			<b>2,424.02</b>	<b>100.0%</b>

\* The total acreage used in these calculations differs slightly from the Project Area due to differences inherent to the level of precision of the NRCS Web Soil Survey.

#### 4.3.1 Highly Erodible Soils / Steep Slopes

Based on a review of the NRCS Web Soil Survey, the Project Area soils are not classified as highly erodible soils, most with Wind Erodibility Group ratings between 4 and 6 (1 being highly erodible; 8 being least erodible). Only the Carlisle muck, with a rating of 2, has a relatively high susceptibility to wind erosion, but this soil series is minimal within the Survey Area, comprising only 5.4 acres, or 0.2 percent of the total area. As these soils do not occur within the Project Area, no figure is prepared to illustrate this.

#### 4.3.2 Hydric Soils

The poor draining qualities of hydric soils combined with local flat or bowl-shaped topography make these locations predisposed to containing wetland areas. The Project Area is composed of three soil types within the Project Area (1,144.8 acres, 47.2 percent) are described as hydric, on the hydric rating scale of 0 (non-hydric) to 100 (hydric). These soils include Kokomo silty clay loam, 0 to 2 percent slopes (1,133.9m 46.8 percent), Westland silty clay loam, Southern Ohio Till Plain, 0 to 2 percent slopes (5.5 acres, 0.2 percent), and Carlisle muck (5.36 acres, 0.2 percent) (NRCS 2019). The remaining soils found in the Project Area are non-hydric.

### 4.4 Biological Resources

Information on the existing wildlife in the Project Area was obtained from a variety of sources, including publicly available data from federal and state agencies. Wildlife within the Project Area could potentially use the area for foraging, migratory stopover, breeding and/or shelter. Based on the current land use, species present in the vicinity of the Project Area are primarily associated with agricultural fields, isolated

wooded lots, and potential wetland areas. Major species, as defined by OAC Chapter 4906-17, are those species with recreational or commercial value, or are listed as federally or state-listed threatened or endangered species. A discussion of potential Rare, Threatened or Endangered (RTE) species is found below. Common game species<sup>1</sup> in northwestern Ohio include American woodcock (*Scolopax minor*), chukar (*Alectoris chukar*), gray partridge (*Perdix perdix*), northern bobwhite (*Colinus virginianus*), ring-necked pheasant (*Phasianus colchicus*), ruffed grouse (*Bonasa umbellus*), wild turkey (*Meleagris gallopavo*), mallard (*Anas platyrhynchos*) and other ducks, mourning dove (*Zenaida macroura*), eastern cottontail rabbit (*Sylvilagus floridanus*), eastern gray (*Sciurus carolinensis*) and fox (*Sciurus niger*) squirrels, and white-tailed deer (*Odocoileus virginianus*). Other than the agricultural crops in the area, no commercially valuable species are anticipated to be present in the Project Area.

#### 4.4.1 **Wildlife Resources**

Wildlife resources such as birds, bats, terrestrial, and aquatic organisms have the potential of being impacted with any utility-scale energy project. Project construction activities such as earth moving (grading), vehicular movements, and construction equipment are likely to displace wildlife using the habitat for foraging, breeding, and nesting. However, the Project is located within a primarily active agricultural area, likely to have limited use by wildlife species and periodically ongoing activities similar to those described above. Discussions on birds, raptors, bald eagles, bats, and any other sensitive or listed species potentially existing in the Project Area are provided below.

##### 4.4.1.1 ***Birds***

The National Audubon Society designates Important Bird Areas (IBA) around the globe as sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds' passageways. IBAs range from a few acres to thousands of acres in size, but usually they are discrete sites that stand out from the surrounding landscape.

The Scioto River-Greenlawn IBA is located approximately 16 miles east of the Study Area. This unique area is found within the city limits of Columbus as an intact riparian corridor surrounded by a heavily urbanized area. This IBA consists of the Greenlawn Dam and surrounding basin, a seasonal mudflat and rocky riffles just downstream of the dam. The Green Lawn Cemetery and Arboretum is also located within this IBA, along with a series of walking and bicycle paths.

The National Audubon Society states that this IBA has had 212 birds recorded, which is the most that have been observed along any portion of the Scioto River. Many high-priority species have been observed using this area as a riparian corridor, such as the northern pintail (*Anas acuta*), pied-billed grebe (*Podilymbus podiceps*), American bittern, osprey (*Pandion haliaetus*), a variety of gulls and terns, prothonotary warbler (*Protonotaria citrea*), northern waterthrush (*Parkesia noveboracensis*), and other warbler species. An assortment of neotropical migrant songbirds have been seen using this area as stopover. Peregrine falcons (*Falco peregrinus*) and bald eagles have also been observed using this area for hunting. In recent years, the yellow-crowned night-heron (*Nyctanassa violacea*), a high priority species, has been seen breeding within this IBA, although there are no recent records within the last few years. Large numbers of migrant land birds have been seen in the Green Lawn Cemetery portion of this IBA. High-priority nesting species witnessed in this area include the red-shouldered Hawk and the red-headed Woodpecker.

Due to the lack of adequate habitat in the immediate Study Area, it is likely that many of the bird species would opt for higher quality habitat nearby, such as the IBA listed above for roosting, foraging, and breeding and the Battelle Darby Metro Park, adjacent to the Project Area.

<sup>1</sup> [http://www.dnr.state.oh.us/Home/wild\\_resourcessubhomepage/ResearchandSurveys/WildlifePopulationStatusLandingPage/tabid/19230/Default.aspx](http://www.dnr.state.oh.us/Home/wild_resourcessubhomepage/ResearchandSurveys/WildlifePopulationStatusLandingPage/tabid/19230/Default.aspx)



The North American Breeding Bird Survey (BBS) tool was also used to assess bird communities within the vicinity of the Project Area. The tool was implemented by the US Geological Survey and Canadian Wildlife service to track and monitor populations of North American birds. The closest Bird Survey Route is the London Route, Ohio (BBS Route 66166), located approximately 18 miles to the west of the Study Area. This route is part of the Eastern Tallgrass Prairie conservation region of Ohio. A total of 84 different bird species have been observed along this route. The land use along this route is similar to that of the Study Area, consisting mostly of active agricultural lands, and includes wooded portions of Walnut Run. The northern harrier, a state-listed endangered species, along with the following species of concern have been recorded along this route: black-billed cuckoo (*Coccyzus erythrophthalmus*), bobolink (*Dolichonyx oryzivorus*), grasshopper sparrow (*Ammodramus savannarum*), northern bobwhite (*Colinus virginianus*), red-headed woodpecker (*Melanerpes erythrocephalus*), and vesper sparrow (*Pooecetes gramineus*). Table 4-3 outlines the top ten most observed species along the Cuba Route. No listed species of concern occur in the top-ten list.

These areas are illustrated in relation to the Project Area in Figure 6 of Appendix A.

**Table 4-3 Ten Most Common Species Observed along the Cuba Breeding Bird Survey Route**

Common Name	Scientific Name
European Starling	<i>Sturnus vulgaris</i>
American Robin	<i>Turdus migratorius</i>
Common Grackle	<i>Quiscalus quiscula</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Mourning Dove	<i>Zenaida macroura</i>
House Sparrow	<i>Passer domesticus</i>
Song Sparrow	<i>Melospiza melodia</i>
Killdeer	<i>Charadrius vociferus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Chipping Sparrow	<i>Spizella passerina</i>

The Christmas Bird Count is a census of wintering birds in the western hemisphere that is administered by the National Audubon Society and performed annually by volunteer birdwatchers. The Big and Little Darby Creek-Darbydale loop is the closest location to the Project Area and is located approximately 6 miles to the southwest (Figure A-5). A total of 60 species have been recorded in this area, and the 10 most common are included in Table 4-4. Of all species observed at the Big and Little Darby Creek-Darbydale loop, the following state-listed species have been recorded: northern harrier (endangered), barn owl (threatened), sandhill crane (threatened) and great egret (species of concern).

**Table 4-4 Bird Species Commonly Observed on National Audubon Society's Caesar Creek-Spring Valley Christmas Bird Counts**

Common Name	Scientific Name
European Starling	<i>Sturnus vulgaris</i>
Ring-billed Gull	<i>Larus delawarensis</i>
American Robin	<i>Turdus migratorius</i>
Canada Goose	<i>Branta canadensis</i>
Mallard	<i>Anas platyrhynchos</i>
Mourning Dove	<i>Zenaida macroura</i>
Carolina Chickadee	<i>Poecile carolinensis</i>
Blue Jay	<i>Cyanocitta cristata</i>
Rock Pigeon	<i>Columba livia</i>
Downy Woodpecker	<i>Picoides pubescens</i>

#### **4.4.1.2 Bald Eagles and Raptors**

The bald eagle is no longer a state-listed threatened species, although it is still protected under the Bald and Golden Eagle Protection Act (Eagle Protection Act). This Act was passed in 1940 to prevent the extinction of the bald eagle and was amended in 1962 to include protection of golden eagles. In addition, the Migratory Bird Treaty Act (MBTA) establishes provisions for the protection of migratory birds that are not necessarily threatened or endangered. No public records were identified for known bald eagle or sensitive raptor nests in the Project Area or 0.25-mile buffer. Due to the lack of large bodies of water or marsh systems within the Study Area, it is unlikely for the Study Area to host either of these species due to inadequate foraging or nesting habitat, although the possibility exists for these species to pass through the Project Area.

#### **4.4.1.3 Federal Listings**

The Endangered Species Act (ESA) and ODNR regulations protect species that are listed as threatened or endangered. Activities that may result in "take" of federally listed species may require special permitting from the US Fish and Wildlife Service (USFWS). Our evaluation of the Project focuses on the avoidance of impacts to species and their habitat that are afforded protection under the ESA.

The USFWS lists federally listed species by county. The list for Franklin County, Ohio includes the endangered Indiana bat (*Myotis sodalis*), threatened northern long-eared bat (*Myotis septentrionalis*), eight endangered mussels: rayed bean (*Villosa fabalis*), Fanshell (*Cyprogenia stegaria*), pink mucket pearlymussel (*Lampsilis abrupta*), northern riffleshell (*Epioblasma rangiana*), snuffbox (*Epioblasma triquetra*), purple cat's paw (*Epioblasma obliquata*), rabbitsfoot (*Theliderma cylindrica*), clubshell (*Pleurobema clava*), and one fish, the endangered Scioto madtom (*Noturus trautmani*), and two flowering plants: the threatened eastern prairiefringed orchid (*Platanthera leucophaea*) and the endangered running Buffalo clover (*Trifolium stoloniferum*).

The USFWS Information for Planning and Conservation (IPaC) tool used to screen the Project Area for sensitive species under USFWS jurisdiction, indicating that from the species listed above species, the following may occur or could potentially be affected by activities in the Project Area: Indiana bat, northern long-eared bat, Scioto madtom, and running buffalo clover. Additionally, twenty non-listed migratory birds of conservation concern including the American bittern (*Botaurus lentiginosus*), American golden-plover (*Pluvialis dominica*), bald eagle (*Haliaeetus leucoccephalus*), black-billed cuckoo (*Coccyzus erythrophthalmus*), bobolink (*Dolichonyx oryzivorus*), buff-breasted sandpiper (*Calidris subruficollis*), dunlin



(*Calidris alpina arctica*), eastern whip-poor-will (*Antrostomus vociferous*), Henslow's sparrow (*Ammodramus henslowii*), Hudsonian godwit (*Limosa haemastica*), Kentucky warbler (*Oporornis formosus*), least bittern (*Ixobrychus exilis*), lesser yellowlegs (*Tringa flavipes*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), ruddy turnstone (*Arenaria interpres morinella*), rusty blackbird (*Euphagus carolinus*), semipalmated sandpiper (*Calidris pusilla*), short-billed dowitcher (*Limnodromus griseus*), and willow flycatcher (*Empidonax traillii*) were mentioned as being potentially present in this area. The report did not identify any critical habitat existing in the area. State and federally listed species, and their presumed presence in the Project Area are provided in Table 4-5. A full copy of the IPaC report is included in Appendix C.

The Project also sent consultation letters to the USFWS to solicit information and guidance that may not be part of the IPaC database; USFWS provided similar information on the potential presence of listed bats and subsequently concluded that based on the limited anticipated disturbance of potential habitat, and the Project's commitment to clearing woody vegetation between October and March, they do not anticipate impacts to RTE species, see Section 3.1 for additional details on USFWS correspondence.

#### 4.4.1.4 State Listings

In addition to coordination with ODNR, Cardno reviewed the available ODNR Division of Wildlife (DOW) state species listings, to gain an in depth understanding of ecological communities within the vicinity of the Project, from two sources: ODNR DOW's Ohio's Listed Animal Species Report, updated March 2020 and ODNR's state-listed plant species by county, updated July 2016, for Franklin County, Ohio (A complete listing of state-listed animal and plant species for Franklin County is included in Appendix C).

Within Franklin County, there are six state endangered birds, seven state endangered fish, two state endangered mammals, twelve state endangered mussels, one state endangered reptile, and one state threatened flowering plant. Additionally, there are four state threatened birds, three state threatened fish, one state threatened mammal, four state endangered mussels, and two state endangered flowering plants. State and federally listed species, and their presumed presence in the Project Area are provided in Table 4-5.

In addition to species afforded protections by the state and listed as either threatened or endangered, ODNR has jurisdiction over and provides review on the status of many other species. Species of Concern indicates a category of species or subspecies which might become threatened in Ohio under continued or increased stress, or for species for which there is some concern, but for which information is insufficient to permit an adequate status evaluation. Species that are designated as Special Interest occur periodically and is capable of breeding in Ohio, and the range within Ohio is at the edge of a larger, contiguous range with viable population(s) within the core of its range. With the exception of efforts to conserve occupied areas, minimal management efforts will be directed for these species because it is unlikely to result in significant increases in their populations within the state. These species are often studied and managed within their major taxa, i.e., Mammals, birds, mollusks, fish, and reptiles. The state lists the following species of concern: two amphibians, six birds, seventeen birds, one butterfly, two fish, fourteen mammals, seven mussels, and two moths. The state lists the following as species of special interest: twenty birds, one mammal, and one moth. A complete list of Species of Concern and Special Interest are provided in Table 4-6.

**Table 4-5. Federally and State-Listed Species with Ranges in the Pleasant Prairie Solar Project Study Area, Franklin County, Ohio**

Common Name	Scientific Name	Federal Listing Status	State Listing Status	Habitat	Occurrence in Project Area
<b>Birds</b>					
Upland Sandpiper	<i>Bartramia longicauda</i>	-	SE	Inhabit grasslands and are most numerous in native prairies in the Great Plains, nesting within areas of tall grasses and broadleaf weeks. They also are known to forage pastures, both grazed and ungrazed, and in agricultural fields, especially fallow fields, but sometimes hay or other crop fields.	Potential to forage within agricultural fields within the Project Area. No individuals observed
Lark Sparrow	<i>Chondestes grammacus</i>	-	SE	This species nests in grasslands with scattered trees, disturbed open areas and shrubby fields. In winter, they occupy brushy areas of grasslands.	Not likely to occur as Project Area does not contain grasslands or shrubby field. Seasonally tilled farmlands limit the nesting potential of this species. No individuals observed.
Cattle Egret	<i>Bubulcus ibis</i>	-	SE	Found in wetlands mostly, but also sometimes dry pastures, farms, fields and roadsides. Nests in trees or shrubs.	Potential to occur in agricultural fields and along roadsides. No individuals observed.
American Bittern	<i>Botaurus lentiginosus</i>	-	SE	Inhabit marshes and large, shallow wetlands with tall marsh vegetation and often areas of open water. Sometimes found feeding in dry, grassy fields.	Not likely to occur as marsh and large wetland habitat is not present within the Project Area. No individuals observed.
Northern Harrier	<i>Circus hudsonius</i>	-	SE	Breeding Northern Harriers are most common in large, undisturbed tracts of wetlands and grasslands with low, thick vegetation. They breed in freshwater and brackish marshes, lightly grazed meadows, old fields, tundra, dry upland prairies, drained marshlands, high-desert shrubsteppe, and riverside woodlands.	Potential to forage in agricultural fields. Loafing pair observed within the Project Area (late fall 2020).
Sandhill Crane	<i>Grus canadensis</i>	-	ST	Found roosting within wetlands, but may also utilize agricultural fields. For breeding, they require wet meadows, shallow marshes or moist bottomlands.	Potential to occur in agricultural fields. No individuals observed.



Common Name	Scientific Name	Federal Listing Status	State Listing Status	Habitat	Occurrence in Project Area
Least Bittern	<i>Ixobrychus exilis</i>	-	ST	Found in mostly freshwater marsh but also brackish marsh, in areas with tall, dense vegetation standing in water.	Not likely to occur as marsh habitat is not present within the Project Area.
Black-crowned Night-heron	<i>Nycticorax</i>	-	ST	Found in a variety of aquatic habitats, around both fresh and salt water, including marshes, rivers, ponds, mangrove swamps, tidal flats, canals, rice fields. Nests in groves of trees, in thickets, or on ground, usually on islands or above water.	Not likely to occur as preferred aquatic habitat is not present within the Project Area.
<b>Mammals</b>					
Indiana Bat	<i>Myotis sodalis</i>	E	SE	Hibernates in caves and mines; Maternity and foraging habitat includes small stream corridors with well-developed riparian woods; upland forests	Potential to occur as roost trees exist along windrows and wood lot edges. No individuals observed.
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	T	SE	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.	Potential to occur as roost trees exist along windrows and wood lot edges. No individuals observed.
Black Bear	<i>Ursus americanus</i>	-	SE	Typically found in coniferous and deciduous forests, as well as open alpine habitats, but not wide-open areas such as plains for fields.	Not likely to occur as thick forests are not present within the Project Area.
<b>Reptiles</b>					
Smooth Greensnake	<i>Opheodrys vernalis</i>	-	E	Occupy moist, grassy areas, usually in prairies, pastures, meadows, marshes, and lake edges, as well as open forested areas.	Not likely to occur as quality moist, grassy habitat is not present within the Project Area.
<b>Mussels</b>					
Rayed Bean	<i>Villosa fabalis</i>	E	SE	Typically occupy small, headwater creeks, but also have the potential to occur in large rivers and wave-washed areas of glacial lakes.	Not likely to occur as high-quality creeks are not present within the Project Area.
Fanshell	<i>Cyprogenia stegaria</i>	E	-	Occupy areas of packed sand and gravel within medium to large rivers that have fast moving currents.	Not likely to occur as medium or large rivers are not present within the Project Area.

Common Name	Scientific Name	Federal Listing Status	State Listing Status	Habitat	Occurrence in Project Area
Pink Mucket Pearlymussel	<i>Lampsilis abrupta</i>	E	-	Inhabits shallow riffles and shoals of major rivers and tributaries. Often found in rubble, gravel, or sand substrates that have been swept free of silt by the current.	Not likely to occur as major rivers are not present in the Project Area.
Northern Riffleshell	<i>Epioblasma rangiana</i>	E	SE	Found in small to large streams with firmly packed sand or gravel bottom.	Not likely to occur, as surrounding agricultural land use
Snuffbox	<i>Epioblasma triquetra</i>	E	-	Typically found in small- to medium-sized creeks, inhabiting areas with a swift current. Also found in some larger rivers with sand, gravel or cobble substrates.	Not likely to occur as streams with swift currents are not present in the Project Area.
Butterfly	<i>Ellipsaria lineolata</i>	-	SE	Found in large rivers with swift currents in sand or gravel substrates.	Not likely to occur as large, fast moving rivers are not present in the Project Area.
Elephant-ear	<i>Elliptio crassidens</i>	-	SE	Occupy rivers that have mud, sand, gravel or rock substrate and in water that has medium or fast currents like large creeks or rivers.	Not likely to occur as large, fast-moving creeks or rivers are not present within the Project Area.
Purple Cat's Paw	<i>Epioblasma obliquata</i>	E	SE	Occupy large rivers with sandy gravel substrates. It occurs in water of shallow to moderate depth with a swift current.	Not likely to occur as large, fast-moving rivers are not present within the Project Area.
Longsolid	<i>Fusconaia subrotunda</i>	-	SE	Found in small streams to large rivers and prefers a mixture of sand, gravel, and cobble substrates without excessive accumulation of silt and detritus.	Not likely to occur as clear, large streams are not present within the Project Area.
Pocketbook	<i>Lampsilis ovata</i>	-	SE	Inhabit mid-sized rivers and creeks with a clear or sandy silt floor.	Not likely to occur as most streams within the Project Area are small and of low quality.
Rabbitsfoot	<i>Theliderma cylindrica</i>	E	ST	Inhabits shallow areas of small to medium sized streams and some larger rivers with gravel and sand substrate.	Not likely to occur as water quality in the small streams is influenced by surrounding land use, particularly agricultural runoff. No individuals observed.
Washboard	<i>Megalaniaes nervosa</i>	-	SE	Typically found in the main channel areas of a large river or stream with substrates composed of sand, gravel, or mud.	Not likely to occur as large rivers or streams are not present within the Project Area.

Common Name	Scientific Name	Federal Listing Status	State Listing Status	Habitat	Occurrence in Project Area
Clubshell	<i>Pleurobema clava</i>	E	SE	Found in small rivers and streams with clean sand and gravel substrate.	Not likely to occur as water quality in the small streams is influenced by surrounding land use, particularly agricultural runoff. No individuals observed.
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	-	SE	Occupy shoals and riffles of medium to large rivers in relatively shallow water and coarse-particle substrate, along sand bars or in deep water.	Not likely to occur as deep, large rivers or streams are not present within the Project Area.
Ohio Pigtoe	<i>Pleurobema cordatum</i>	-	SE	Found in large rivers with substrates composed of a mixture of relatively firm and clean gravel, sand, and silt.	Not likely to occur as large rivers are not present within the Project Area.
Black Sandshell	<i>Ligumia recta</i>	-	ST	Found in rivers, lakes, and large streams, usually in riffles or raceways with good current.	Not likely to occur as fast-moving, large streams are not present within the Project Area.
Pondhorn	<i>Unio merus tetralasmus</i>	-	ST	Found in large rivers with substrates of clean sand or gravel.	Not likely to occur as large rivers are not present within the Project Area.
Ebonyshell	<i>Reginaia ebenus</i>	-	SE	Inhabits large rivers and is usually on a gravel, sand, or mud bottom in water at least six feet deep where the current is swift.	Not likely to occur as large, deep streams or rivers are not present within the Project Area.
Threehorn Wartyback	<i>Obliquaria reflexa</i>	-	ST	Found in medium to large rivers with slackwater conditions to swift currents and substrates of gravel to muddy sand.	Not likely to occur as large, fast moving streams are not present within the Project Area.
Fawnsfoot	<i>Truncilla donaciformis</i>	-	ST	Found in flowing areas of large rivers in soft or coarse substrate in depths up to 9 meters.	Not likely to occur as large, deep rivers or streams are not present within the Project Area.
<b>Fish</b>					
Iowa Darter	<i>Etheostoma exile</i>	-	SE	Found in slow, clear waters of lakes, ponds, and streams with ample submerged vegetation and substrates consisting of sand, peat, and organic material.	Not likely to occur, as high-quality, heavily vegetated streams are not present within the Project Area.
Tonguetied Minnow	<i>Exoglossum laurae</i>	-	SE	Occupy small to medium-sized streams with clean gravel.	Not likely to occur as streams within the Project Area are not clear.



Common Name	Scientific Name	Federal Listing Status	State Listing Status	Habitat	Occurrence in Project Area
Spotted Darter	<i>Etheostoma maculatum</i>	-	SE	Lives in freshwater rivers, often with plenty of boulders or rocks.	Not likely to occur as freshwater rivers are not present within the Project Area.
Goldeye	<i>Hiodon alosoides</i>	-	SE	Found in large streams, rivers and reservoirs as a surface feeder.	Not likely to occur as large streams or rivers are not present within the Project Area.
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	-	SE	Inhabits clean headwater areas of creeks and small rivers with coarse gravel to rock bottoms located in once glaciated terrain.	Not likely to occur as preferred habitat is not present within the Project Area.
Shortnose Gar	<i>Lepisosteus platostomus</i>	-	SE	Found in calm waters in large rivers and their backwaters, as well as oxbow lakes and large, quiet pools, typically around vegetation or downed logs.	Not likely to occur as large rivers are not present within the Project Area.
Popeye Shiner	<i>Notropis ariommus</i>	-	SE	Found in warm, relatively clear flowing waters of large rivers.	Not likely to occur as large, high-quality rivers are not present within the Project Area.
Tippecanoe Darter	<i>Etheostoma tippecanoe</i>	-	ST	Found in medium to large streams and rivers with fast moving water with gravel or cobble bottom.	Not likely to occur as medium or large, fast-moving rivers are not present within the Project Area.
Bigeye Shiner	<i>Notropis bcoops</i>	-	SE	Found in clear, upland streams with high gradients and rock, clear sand or gravel substrates.	Not likely to occur as high quality, upland streams are not present in the Project Area.
Northern Madtom	<i>Noturus stigmosus</i>	-	SE	Occupy rivers and streams with relatively swift currents along with sand, silt, or rocky substrates.	Not likely to occur as fast-moving streams are not present within the Project Area.
Scioto Madtom	<i>Noturus trautmani</i>	E	SE	Found in stream riffles of moderate current over gravel bottoms and water of high quality and free of suspended sediments.	Not likely to occur as streams of moderate current and high quality are not present within the Project Area.
Shovelnose Sturgeon	<i>Scaphirhynchus platyrhynchus</i>	-	SE	Found in open, flowing channels of larger rivers with sandy or gravel bottoms.	Not likely to occur as large rivers are not present within the Project Area.
Paddlefish	<i>Polyodon spathula</i>	-	ST	Found in water deeper than 1.3 meters, such as large river basins and their tributaries.	Not likely to occur as deep streams are not present in the Project Area.

Common Name	Scientific Name	Federal Listing Status	State Listing Status	Habitat	Occurrence in Project Area
<b>Plants</b>					
Gattinger's-foxglove	<i>Agalinis gattingeri</i>	-	ST	Grows in hillside prairies in rocky and sandy soils that are dry, sunny and south facing.	Not likely to occur as hillside prairies are not present within the Project Area.
Cypress-knee Sedge	<i>Carex deccomposita</i>	-	SE	Found rooted to the buttresses and knees of bald cypress trees.	Not likely to occur as cypress trees are not present within the Project Area.
Spreading Rock Cress	<i>Arabis patens</i>	-	SE	Grows in moist rocky woods, limestone outcrops, and shady riverbanks.	Not likely to occur as preferred habitat is not present within the Project Area.

**Table 4-6 State Species of Concern and Special Interest within Range of the Pleasant Prairie Solar Energy Project, Franklin County Ohio**

Common Name	Scientific Name	Common Name	Scientific Name
<b>Special Concern</b>			
Eastern Cricket Frog	<i>Acris crepitans</i>	Four-toed Salamander	<i>Hemidactylium scutatum</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>	American Coot	<i>Fulica americana</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	Common Gallinule	<i>Gallinula galeata</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Great Egret	<i>Ardea alba</i>	Vesper Sparrow	<i>Poocetes gramineus</i>
Common Nighthawk	<i>Chordeiles minor</i>	Sora Rail	<i>Porzana carolina</i>
Sedge Wren	<i>Cistothorus platensis</i>	Prothonotary Warbler	<i>Protonotaria citrea</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Virginia Rail	<i>Rallus limicola</i>
Northern Bobwhite	<i>Colinus virginianus</i>	Cerulean Warbler	<i>Setophaga cerulea</i>
Bobolink	<i>Dolichonyx oryzivorus</i>		
Two-spotted Skipper	<i>Euphyes bimacula</i>		
Muskellunge	<i>Esox masquinongy</i>	Blue Catfish	<i>Ictalurus furcatus</i>
Star-nosed Mole	<i>Condylura cristata</i>	Big Brown Bat	<i>Eptesicus fuscus</i>
<b>Special Interest</b>			
Green-winged Teal	<i>Anas crecca</i>	Northern Waterthrush	<i>Parkesia noveboracensis</i>
American Black Duck	<i>Anas rubripes</i>	Golden-crowned Kinglet	<i>Regulus satrapa</i>
Veery	<i>Catharus fuscescens</i>	Blackburnian Warbler	<i>Setophaga fusca</i>
Hermit Thrush	<i>Catharus guttatus</i>	Magnolia Warbler	<i>Setophaga magnolia</i>
Brown Creeper	<i>Certhia americana</i>	Red-breasted Nuthatch	<i>Sitta canadensis</i>
Least Flycatcher	<i>Empidonax minimus</i>	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Wilson's Snipe	<i>Gallinago delicata</i>	Winter Wren	<i>Troglodytes hiemalis</i>
Dark-eyed Junco	<i>Junco hyemalis</i>	Golden-winged Warbler	<i>Vermivora chrysoptera</i>
Yellow-crowned Night-heron	<i>Nyctanassa violacea</i>	Bell's Vireo	<i>Vireo bellii</i>
Nashville Warbler	<i>Oreothlypis ruficapilla</i>		
Evening Bat	<i>Nycticeius humeralis</i>		
Slender Cleanwing	<i>Hemaris gracilis</i>		



The Project also sent a consultation letter to the ODNR to solicit Project specific information if available; ODNR provided a refined list documenting the potential presence of listed species and the potential surrounding habitat adjacent to or near the Project Area. ODNR provided similar guidance on the potential presence of federally and state-listed bat species, recommending conserving potential bat roost trees, and adhering to a time of year clearing schedule. Additionally, ODNR notes the presence of freshwater mussel species in streams within the vicinity of the Project, and recommends no in-water work in perennial streams from April 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, the Project is not likely to impact aquatic species. Finally, ODNR notes the Project is in range for a variety of migratory and wetland dependent birds, that use the region for breeding. ODNR provides time of year restrictions for construction if nesting habitat is present within the Project Area. See Section 3.2 for additional details on ODNR correspondence.

Given the majority of the Project Area is located within active agricultural lands, significant populations of these species and nesting habitats are unlikely to occur in the Project Area. The Project will aim to minimize any potential impacts to the habitats that may support significant wildlife by avoiding the majority of woodlots, and all high quality streams. Where possible, micro-siting of the Project infrastructure will further reduce or avoid potential impacts.

## **4.5 Wetlands, Waterbodies, and Floodplains**

Prior to field surveys, Cardno conducted a desktop review of the Survey Area using publicly available GIS data to identify and classify potential environmental resources and create field maps for use during survey. Reference material included but was not limited to: the National Land Cover Database (NLCD); the US Department of Agriculture (USDA) NRCS Soil Survey for Franklin County; historic aerial photographs; FWS NWI maps; US Geologic Service (USGS) topographic maps; the USGS NHD; and the OWI.

Surveys were conducted on approximately 2,352 acres in November 2020 within the Project Area to determine the extent of wetlands and waterbodies in accordance with applicable federal and state regulations and guidelines. A Trimble® Global Positioning System (GPS) with sub-meter accuracy was used to collect data points for mapping. Additional details on Cardno's methodology is provided in Appendix D, Pleasant Prairie Solar Energy Project Wetland and Stream Delineation Report. An overview of field-delineated surface waters is included as Figure 7 of Appendix A, Project Area Figures.

### **4.5.1 Navigable Waters**

The Survey Area is located within two watersheds, the Hellbranch Run and Silver Ditch-Big Darby Creek watersheds (Hydrologic Unit Code (HUC)-12), which are located within the larger Little Miami River drainage basin. No navigable waterways are located within the Survey Area. No waters have a designated use in the Water Quality Standards<sup>2</sup>.

During field surveys, Cardno performed a Headwater Habitat Evaluation Index (HHEI) or a QHEI assessment for all field-verified streams to record and score a variety of aspects about the waterbody including substrates, pool depths, and ecological value or condition. The QHEI form is used to describe similar aspects of waterbodies but is focused on larger (often higher quality) waterbodies. While delineating the waterbodies for the Project, Cardno will evaluate the features for suitability as habitat for RTE species.

A Watershed Map of the Project Area is illustrated in Figure 8 of Appendix A, Project Area Figures.

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<sup>2</sup> [https://epa.ohio.gov/portals/35/rules/01-18\\_nov15.pdf](https://epa.ohio.gov/portals/35/rules/01-18_nov15.pdf)

#### **4.5.2      Water Quality**

The primary waterbody within the Project Area and unnamed tributary to Hellbranch Run, which ultimately drains into the Upper Scioto. The unnamed tributary is an intermittent natural stream, flowing east southeast into Hellbranch Run. The unnamed tributary is considered a warmwater habitat and secondary contact recreation water. The watercourse has maintained some natural flow, despite the surrounding agricultural land use, and maintains a narrow strip of riparian vegetation. Portions of the stream may run dry during drier summer months. The unnamed tributary is considered to have poor to moderate water quality and offers little biological habitat for aquatic organisms, this is due to the run-off from agricultural fields.

#### **4.5.3      Floodplains**

Based on review of the Federal Emergency Management Agency Flood Insurance Maps, approximately 0 acre of 100-Year Floodplains are located within the Project Area; therefore, no impacts to the 100-yr floodplain are anticipated from Project infrastructure. The 100-year floodplains are identified on Figure 8 of Appendix A, Project Area Figures.

## 5 Pre-Construction Surveys

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### 5.1 Habitat Assessment

The following is a discussion of the results of field surveys of the Project Area conducted in October 2019. An overview of field-delineated surface waters is included as Figure 7 of Appendix A, Project Area Figures. A Watershed Map of the Project Area is illustrated in Figure 8 of Appendix A, Project Area Figures. A Land Cover Map of the Project Area is illustrated in Figure 2 of Appendix A, Project Area Figures.

#### 5.1.1 Vegetative Community

##### 5.1.1.1 *Agricultural Land*

The predominant land use in the Survey Area is agricultural (crops). The agricultural fields were observed to be primarily a mix of remnants from the previous year's soybean, sod, and corn crops. Additionally, some crop areas were actively planted with winter wheat. It is likely that the type of crop changes seasonally, but the general extent of the cultivated area remains roughly the same.

##### 5.1.1.2 *Disturbed/Developed*

Disturbed/developed lands appear in low densities throughout the Survey Area. These areas are typically residences or farmsteads with lawns or landscaped areas, driveways, and unpaved roads.

##### 5.1.1.3 *Forestland*

Vegetation in the woodlots within the Project Area and adjacent to the Project Area is characterized by a canopy of oaks (*Quercus* spp.), maples (*Acer* spp.), hickories (*Carya* spp.), and elms (*Ulmus* spp.) and a shrub layer of Asian honeysuckle (*Lonicera maackii*). Pollinator habitat along the fencerow along the western boundary, adjacent to the restored native prairie was very evident during surveys. Bees and monarchs were active among the aster species in bloom, including common blue wood aster (*Symphyotrichum cordifolium*), panicled American aster (*Symphyotrichum lanceolatum*), and white oldfield American aster (*Symphyotrichum pilosum*), as well as Canadian Goldenrod (*Solidago canadensis*).

##### 5.1.1.4 *Grasslands/Herbaceous*

Many of the cultivated areas and roadsides have grassy swales, which helped maintain drainage for proper growing conditions. These swales often had a mix of herbaceous species including reed canary grass (*Phalaris arundinacea*) and various other grasses (*Festuca* spp. and *Fescue* spp.) and sedges (*Carex* spp.). The swales appear to be maintained and are mowed seasonally.

#### 5.1.2 Wildlife Observations

The habitats surveyed during field efforts appear to lack significant or obvious evidence of RTE species identified as having the potential to occur within the Project Area, including nests, dens, or obvious hibernacula, whitewashing and scat, and direct species observations. Visual reconnaissance surveys were conducted during the wetland and waterbody delineations and biologists did not observe any RTE species. The delineated waterbodies could potentially provide RTE species habitat, but at reduced quality due to agricultural disturbance and the surrounding land use impacting the water chemistry (i.e., high sediment loading during storms and fertilizer in runoff). During the field surveys, Cardno staff observed a pair of the state-listed endangered northern harriers loafing and foraging within the area. There were no indications of current or past nesting activity at the time of the fall survey.



## 5.2 Surface Water Delineations

### 5.2.1 Wetland Delineation Criteria and Methods

Cardno conducted surface water delineation surveys in the Project Area during November 2020 to determine the extent and jurisdiction of surface waters within the Project Area. A 0.25-mile visual investigation was also conducted around the Project Area for sensitive habitats.

#### 5.2.1.1 *Wetland Delineation Methods*

Wetland delineations were conducted according to the 1987 USACE Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the applicable regional supplements; Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE 2010). Together, these documents are referred to as “The Manual.” The methodology outlined in the Manual requires that three wetland criteria be met in order for a wetland to be determined to be present; that is, the area being evaluated must have a dominance of hydrophytic vegetation, hydric soils, and sufficient hydrology to be identified as a wetland. Appendix D, Wetland and Stream Delineation Report and Forms provides a discussion of the wetland delineation methodologies in greater detail.

#### 5.2.1.2 *Ohio Rapid Assessment Method for Wetland Assessment*

Field delineated wetlands were scored using the OEPA’s ORAM. The ORAM wetland functional assessment was developed to determine the ecological “quality” and level of function of a particular wetland in order to meet requirements under Section 401 of the CWA. Wetlands were scored on the basis of hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into sub-categories under ORAM v5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into “Category 1,” 30 to 59.9 are “Category 2,” and 60 to 100 are “Category 3”. Transitional zones exist between “Categories 1 and 2” from 30 to 34.9 and between “Categories 2 and 3” from 60 to 64.9. However, wetland scores that fall into the transitional range should be assigned to the higher Category unless scientific data has been collected that suggests the wetland should be placed in the lower category. Category 1 are wetlands that are often isolated emergent marshes dominated by cattails with little or no upland buffers located in active agricultural fields. Category 2 are wetlands that do not have RTE species or the habitat for such species. Category 2 wetlands constitute the broad middle category of “good” quality wetlands. A “Modified Category 2” wetland appears to have some signs of degradation but also has the potential to restore some of the lost functionality. Category 3 wetlands are typified by high levels of diversity, a high proportion of native species, and/or high functional values. Category 3 wetlands include wetlands which contain or provide potential habitat for RTE species, are high quality mature forested wetlands, vernal pools, bogs, fens, or which are scarce regionally and/or statewide. Appendix D, Wetland and Stream Delineation Report and Forms discusses wetland assessment methodologies in greater detail.

#### 5.2.1.3 *Wetland Survey Results*

A total of fifteen (15) wetlands were delineated during field surveys, for a total of 7.62 acres of wetland within the Survey Area. One pond with an acreage of 0.52 acre was also delineated. Eleven (11) wetlands were palustrine emergent wetlands (PEM), one was palustrine scrub-shrub (PSS), and three were palustrine forested (PFO). Of the fifteen wetlands delineated, thirteen were considered Category 1 wetlands, and two were considered Category 2 wetlands. No Category 3 wetlands were delineated within the Survey Area. Cardno anticipates that one wetland could be federally jurisdictional, based on potential hydrologic connectivity to a potential WOTUS. Table 5-1 provides a list of the delineated wetlands and associated characteristics. Wetland acreages reported in the summaries below are representative only of the portion of the wetland located within the Project Area.

**Table 5-1 Wetlands Delineated in the Survey Area**

Wetland ID	Latitude of Center Point	Longitude of Center Point	Acres within Survey Area	Wetland Type	ORAM Score	Wetland Category	Anticipated Jurisdictional?	Drainage Basin
P101	39.910082	-83.189534	0.52	PUB	--	--	No	--
W001	39.894665	-83.179141	0.14	PEM	8	Cat 1	No	Hellbranch Run
W002	39.895705	-83.170857	0.18	PEM	21	Cat 1	Yes	Hellbranch Run
W003	39.898370	-83.183609	0.36	PFO	35	Cat 2	No	Hellbranch Run
W004	39.901320	-83.185626	0.06	PEM	18	Cat 1	No	Hellbranch Run
W005	39.928772	-83.200004	0.31	PEM	19	Cat 1	No	Hellbranch Run
W006	39.935056	-83.196295	0.39	PEM	23	Cat 1	No	Hellbranch Run
W007	39.934845	-83.196519	0.05	PEM	23	Cat 1	No	Hellbranch Run
W008	39.948344	-83.202325	0.22	PEM	17	Cat 1	No	Hellbranch Run
W009	39.942822	-83.188305	0.06	PEM	14	Cat 1	No	Hellbranch Run
W010	39.939299	-83.188618	0.36	PEM	16	Cat 1	No	Hellbranch Run
W011	39.938076	-83.215521	0.19	PEM	14	Cat 1	No	Silver Ditch-Big Darby Creek
W012	39.938862	-83.206030	4.56	PFO	34	Cat 2	No	Hellbranch Run
W101	39.892043	-83.184731	0.22	PEM	23	Cat 1	No	Hellbranch Run
W102	39.886078	-83.188860	0.01	PFO	24	Cat 1	No	Hellbranch Run
W103	39.910082	-83.189534	0.51	PSS	24	Cat 1	No	Hellbranch Run
<b>Total Acreage</b>			<b>8.15</b>					

Notes:

- ORAM – Ohio Rapid Assessment Method
- PEM – Palustrine Emergent Wetland
- PFO – Palustrine Forested Wetland
- PSS – Palustrine Shrub Scrub
- PUB – Palustrine Unconsolidated Bottom (pond)

Ponds were features that appeared to hold water throughout the year. Many of the ponds observed in the vicinity of the Survey Area were man-made impoundments, which may be used for holding water for irrigation or recreational fishing and aesthetics.

Additional detail on each feature can be found in Appendix D, Wetland and Stream Delineation Report and Forms.

## 5.2.2 Waterbodies

### 5.2.2.1 *Waterbody Delineation Criteria and Methods*

Linear waterbodies, such as ditches and streams, were surveyed by locating the path (typically the centerline if water depth was shallow, or the top-of-bank if the centerline was not accessible) and documenting widths (both as Ordinary High Water Mark (OHWM) to OHWM and top-of-bank to top-of-bank) at each survey point. Physical flagging was hung along the waterbody features to identify their general course. Observational notes about the characteristics of each waterbody, such as flow regime and substrate, were recorded by the field team to enable the categorization of the types of waterbodies encountered. To be classified as a waterbody, however, each feature must have a defined bed and bank with indications of a channel flow; grassy swales are not waterbodies, and were not identified as such.

Appendix D, Wetland and Stream Delineation Report and Forms provides a discussion of the wetland delineation methodologies in greater detail. Waterbody Qualitative Assessment Methods

Certain perennial features are evaluated using the Qualitative Habitat Evaluation Index (QHEI). Typically, QHEI forms are completed for those perennial features with drainage areas greater than 1 square mile and pools deeper than 40 centimeters (approximately 15 inches). The QHEI form is used to describe similar aspects of waterbodies but is focused on larger (often higher quality) waterbodies. In cases where a feature scored highly on the HHEI forms but failed to meet either of QHEI criteria, they were still evaluated with the QHEI to better record the conditions present. A summary of the HHEI Scoring is provided in Table 5-2.

Appendix D – Wetland Delineation Report, discusses wetland delineation methodologies in greater detail.

**Table 5-2 Headwater Habitat Evaluation Index (HHEI) Scoring**

Final HHEI Score	Definition
<30	Class I PHWH (ephemeral streams, normally dry channel, little to no aquatic life)
30 - 50	Class II PHWH (intermittent flow, summery-dry, warm water streams)
>50	Class II or III PHWH (depending on conditions)
>75	Class III (perennial flow, cool-cold water streams)

Notes:

PHWH – Primary Headwater Habitat Stream

Larger features are evaluated using the QHEI. The QHEI form is used to describe similar aspects of waterbodies, but is focused on larger (often higher quality) waterbodies. Typically, QHEI forms are completed for those perennial features with drainage areas greater than one square mile and pools deeper than 40 centimeters (approximately 15 inches). In cases where a feature scored highly on the HHEI forms but failed to meet either of QHEI criteria, they were still evaluated with the QHEI to better record the conditions present. Table 5-3 provides an overview of the typical score ranges and waterbody classification under QHEI.



**Table 5-3 Qualitative Habitat Evaluation Index (QHEI) Scoring**

Final HHEI Score	Definition
<32	Limited Resource Water (LRW)
32 - 60	Modified Warm Water Habitat (MWH)
60 - 75	Warm Water Habitat (WWH)
>75	Possible Exceptional Warm Water Habitat (EWH)

#### **5.2.2.2 Waterbody Survey Results**

One stream was delineated in the Project Area, and was classified as a warm water habitat (WWH). The stream was flowing at the time of the survey at base flow levels. Turbidity levels were not elevated, indicating minimal runoff from surrounding fields at the time of survey, likely attributed to dry conditions.

Streams were more often considered natural channels that had indications of significant recovery since any historic modification had occurred. All streams were flowing at the time of the survey, with slightly elevated turbidity, which was attributed to runoff from nearby ditches and cultivated areas during recent rains. Streams were more likely to have vegetated riparian buffers along the banks and pools of water, which might support wildlife.

While delineating the waterbodies in the Survey Area, Cardno evaluated the features for suitability as habitat for RTE species, including listed mussels. Due to the modification and disturbance present in the surrounding area, none of the waterbodies were identified as highly likely to serve as habitat for any RTE species. Frequently a waterbody may be able to provide physical habitat, but lack suitable water chemistry due to intensive land use in the upland areas. During the field surveys, Cardno observed no individuals or populations of freshwater mussel species.

None of the delineated streams within the Survey Area meet the requirements for formal mussel survey, having drainage areas greater than 5 square miles.

**Table 5-4 Waterbodies Delineated in the Survey Area**

Stream ID	Type	Linear Feet	HHEI Score	QHEI Score	Flow Regime	Drainage Basin	OEPA Watershed Eligibility	Drainage Area (mi <sup>2</sup> )	Stream Name	Anticipated Jurisdictional	Potential RTE Habitat	Mussel Obs
S001	Stream	1,851	62	--	Intermittent	Upper Scioto	Possibly Eligible	0.76	UNT to Hellbranch Run	Yes	No	No
<b>Total Linear Feet</b>		<b>1,851</b>										

Notes:

HHEI – Headwater Habitat Evaluation Index  
QHEI – Qualitative Habitat Evaluation Index

**HHEI Scoring**

<30: Ephemeral Aquatic Stream (modified channel)
<30: Ephemeral Aquatic Stream (natural channel)
30 - 70: Small Drainage Warm Water Stream (modified channel)
30 - 70: Small Drainage Warm Water Stream (natural channel)
>70: Spring water (perennial), cool-cold water stream

**QHEI Scoring**

< 32: Limited Resource Water (LRW)
32 to 60: Modified Warmwater Habitat (MWH)
60 to 75: Warmwater Habitat (WWH)
> 75: Possible Exceptional Warmwater Habitat (EWH)

### 5.3 Ohio Mussel Survey

All native mussels in the state of Ohio are protected per Ohio Revised Code Section 1533.324, as are the 10 federally protected species, which may occur in the state. To protect these species, the ODNR DOW and USFWS developed a series of survey protocols to identify the presence or absence of mussels in a waterbody.

The protocols identify five types of streams based on their size and potential for federally listed species, as shown in Table 5-5.

**Table 5-5 Stream Classifications according to Mussel Survey Protocol, per ODNR and FWS**

Group	Definition
Unlisted	Streams not listed in the Survey Protocol, having a watershed larger than 10 square miles with the potential for mussels, but no federally listed species are expected
Group 1	Small to mid-sized streams, federally listed species not expected
Group 2	Small to mid-sized streams, federally listed species expected
Group 3	Large rivers, federally listed species not expected
Group 4	Large rivers, federally listed species expected

Formal mussel surveys are required to be completed by trained and accredited individuals, with the group of streams determining exact scale of surveys required. Alternately, ODNR protocols allow visual reconnaissance surveys to be completed for unlisted streams and Group 1 streams, with the results being forwarded to ODNR who then determine need for any additional surveys. All Group 2, 3, and 4 streams will require a full survey prior to any planned impact.

Cardno field staff conducted such visual reconnaissance surveys as part of the typical delineation process. If any mussels are found during stream delineations and if the stream is to be impacted, Cardno identifies the stream for a follow-up survey. During the field surveys, Cardno observed no individuals or populations of freshwater mussel species.

The ODNR/USFWS survey protocol notes that use of horizontal directional drill (HDD) to cross a stream eliminates the need for surveys, and streams with a drainage area less than 5 square miles also do not require surveys. Because any crossings of the stream within the Project Area will be installed via HDD methods and the stream drainage is less than 5 square miles, full mussel surveys are not required for the Project.



## 6 Anticipated Project Impacts

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Compared to the environmental impact of traditional energy sources (i.e., fossil fuel and nuclear), the production of solar power does not affect air quality, groundwater or surface water through air emissions or water discharges.

### 6.1 Project Infrastructure Summary

The proposed Project infrastructure will consist of the fence line, photovoltaic (PV) panel arrays, electrical collection lines, inverters, access roads, a substation and laydown yards. The Project's proposed infrastructure through soil disturbance is anticipated to temporarily impact up to 68 acres during construction and permanently impact up to 47.5 acres during operation to support the 1,386 acre solar array. Additional minor, unquantifiable temporary impacts are anticipated within the 1,729-acre fence line due to general construction activities. These impacts will be managed through the OHC000003 General NPDES permit. The total acres of permanent impact may be reduced with revised Project siting and micro-siting of facilities to further minimize or avoid potential impacts.

Pleasant Prairie Solar Project will likely consist of the following infrastructure:

- > Solar Panels:
  - Typical PV panel size 4 feet by 7 feet, up to 15 feet at highest point
  - Panels will be grouped into a series of circuits (strings or rows)
  - Panel support piles less than 1 s.f. each, directly driven 7 to 12 feet below ground surface (up to 42,500 piles, or up to 0.98 acre total spread across 1,368.1-acre array area)
  - 20 to 25 feet of open space between panel strings
  - Up to 1,729 acres of fenced in area.
- > Project Substation and Support Facilities:
  - Up to 2.07 acre Project Substation
  - Up to 0.11 acre O&M facility
  - Security fencing (6-foot-high chain link with anti-climb mechanism at the top) and access gates
  - The Project will also contain up to eleven on-site solar meteorological stations (SMSs or pyranometer), which would consist of irradiance (solar energy) meters as well as air temperature and wind meters. Six of these MET station will be mounted on solar infrastructure, the other five met stations would be mounted on columns with a footprint of up to approximately 1 s.f. each, 5 s.f. total.
- > Inverters:
  - Inverter pads are anticipated to be 450 s.f. permanent concrete slab or mounted on approximately 8 driven support posts per inverter (up to about 75 inverters total).
  - Permanent impacts are anticipated to be 0.83 acre.
- > Collection Lines:
  - Up to 38.36 miles of buried cable, 20-foot-wide temporary work area (52.57 acres).
  - Buried 36 to 60 inches below grade
  - All jurisdictional perennial streams will be avoided using HDD technology

- > Access Roads:
  - Up to 22.1 miles of access roads
  - Access roads will have an impact width of up to 20 feet during construction (10.6 acres) to accommodate locations requiring cut and fill or clearance for two delivery vehicles. Permanent impacts from access roads will consist of a maintained 16 feet wide access roads post-construction (42.5 acres)
- > Equipment Laydown Areas:
  - These staging areas will be covered with timber matting, gravel with an under lay of geosynthetic fabric, or other suitable material to separate the native soil from the construction materials.
  - Up to 5 acres will be used for laydown areas; for storage of construction equipment and supplies during construction
  - After construction up to 1 acre will be maintained as permanent gravel-covered parking / laydown area.

Table 6-1 provides a summary of the reviewed and proposed Project infrastructure.

**Table 6-1 Summary of Proposed Pleasant Prairie Solar Energy Project Permanent Infrastructure**

Features	Maximum Values
Project Generation Capacity	250 MW
Project Area	2,424.3 acres
Project Area within Fence Line	1,728.7 acres
Solar Arrays	1,386.1 acres
Solar Array Piles	0.98 acre
Project Substation	2.07 acres
O&M Facility	0.11 acre
Gravel-covered Parking / Laydown Area	1 acre
Supporting Facilities (Pyranometer Stations, Inverter Pads)	0.8 acre
Collection Lines (buried)	0 acre (all buried) (38.1 miles)
Permanent Access Roads (gravel-covered)	42.5 acres (22.1 miles)

\* Project impact acres have been rounded to the nearest 10<sup>th</sup> of an acre

## 6.2 Natural Resource Impacts Summary

Overall, the Project will have limited environmental impacts, in part due to the minimization of potential impacts to habitats that may support significant wildlife by avoiding large contiguous woodlots. Impacts to trees are limited to windrows and other isolated woody vegetation. No streams are anticipated to be impacted. The Project is proposed to be primarily built on land that has already been disturbed seasonally/annually for agriculture with limited identified habitat of significant value to RTE species and other wildlife. The Project's most significant ground disturbance will come from the conversion of agricultural land to land to be used for the solar panel arrays (up to 1,729 acres; fenced area) and associated infrastructure.

With respect to converting an agricultural field to solar panels, such a conversion is expected to have a negligible environmental impact. Agriculture fields provide minimal habitat for floral and faunal

communities and are disturbed on a seasonal and/or annual basis by farming activities such as plowing, planting, and harvesting. Solar projects would similarly provide minimal habitat but would not be intensely disturbed on a regular basis. The Project has developed a Landscape and Vegetation Management Plan (an Exhibit to the Certificate Application), that provides details on stabilization, and the planting of native, low-growing, herbaceous vegetation. This land cover will provide a greater diversity of species and will be maintained year round to provide continuous stabilization. The proposed herbaceous vegetation will provide as much or greater vegetative cover as existing crop. The new plant cover will be maintained year round, as opposed to seasonal disturbance during crop harvest, providing continuous ground covering and stabilization. This maintained ground cover will reduce runoff and sedimentation to local waterbodies in comparison to an agricultural field. Solar fields are also managed to stabilize the surrounding area to reduce soiling of the solar PV panels, which can come from dust, snow, and other particles that can settle on the array.

The Project has been designed to avoid and minimize impacts to wetlands, waterbodies, woodlots, and aquatic and terrestrial wildlife species where possible. If the proposed Project were decommissioned, the landscape could be returned to its previous agricultural condition.

A summary of potential impacts to existing environmental features within the Project Area is presented in Tables 6-2 and 6-3. These anticipated impacts are based on the current up to 1,386-acre design layout. This design layout has minimized impacts to resources, has minimized tree clearing, and has avoided all permanent impacts to wetlands and waterbodies within the Project Area.

**Table 6-2 Summary of Proposed Pleasant Prairie Solar Energy Project Temporary Impacts**

Impact Type	Upland Soil (acres)	Forested Uplands Tree Clearing (acres)	Wetland (acres)	Streams (acres)	Streams (linear feet)	Ponds (acres)
Access Roads	10.6	0.0	0.0	0.0	0.0	0.0
Collection Line	52.6	0.0	0.0	0.0	0.0	0.0
Equipment Lay Down Area	5.0	0.0	0.0	0.0	0.0	0.0
Substation	0.0	0.0	0.0	0.0	0.0	0.0
O&M Facility	0.0	0.0	0.0	0.0	0.0	0.0
Array/ Pilings	0.0	0.0	0.0	0.0	0.0	0.0
Inverter Pads	0.0	0.0	0.0	0.0	0.0	0.0
<b>Totals</b>	<b>68.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>



**Table 6-3 Summary of Proposed Pleasant Prairie Solar Energy Project Permanent Impacts**

Impact Type	Upland Soil (acres)	Forested Uplands Tree Clearing (acres)	Wetland (acres)	Streams (acres)	Streams (linear feet)	Ponds (acres)
Access Roads	42.5	0.2	0.0	0.0	0.0	0.0
Collection Line	0.0	0.4	0.0	0.0	0.0	0.0
Equipment Lay Down Area	1.0	0.0	0.0	0.0	0.0	0.0
Substation	2.1	0.0	0.0	0.0	0.0	0.0
O&M Facility	0.1	0.0	0.0	0.0	0.0	0.0
Array/ Pilings	1.0	6.6	0.0	0.0	0.0	0.0
Inverter Pads	0.8	0.0	0.0	0.0	0.0	0.0
<b>Totals</b>	<b>47.5</b>	<b>7.2</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

### 6.3 Land Use

The Project Area primarily consists of active agricultural lands (91 percent), and pasture/hay (4.9 percent) with the wooded areas of the Project Area occurring as isolated woodlots, windrows between crop areas and along roads (0.6 percent). The most significant impact will come from the conversion of agricultural land to accommodate solar panel arrays (see Section 6.2).

#### 6.3.1 Uplands

Solar projects require significant areas of land for the solar panel arrays and associated infrastructure. This Project will locate as much of the infrastructure as possible on uplands, minimizing impacts to surface waters. Impacts to upland soils and tree clearing are discussed below.

##### 6.3.1.1 Soil

The majority of impacts to the Project Area will occur as a result of upland soil disturbance for construction of project supporting infrastructure, both temporary (68 acres) and permanent (47.5 acres).

Solar panels are supported by permanent pilings in the ground. Each support will be directly driven 8 to 10 feet below the ground, with a footprint of less than 1 s.f. each. Approximately 42,500 piles, or up to 1 acre total spread across 1,368.1-acre panel array area. Support infrastructure, including eleven pyranometer stations, five requiring support structure (1 s.f. each, 5 s.f. total), inverter pads (70 total, 0.8 acre total), access roads (42.5 acres), a Project Substation (2.1 acres) and an O&M Facility (0.1 acre) are all included as maximum permanent upland soil impacts.

##### 6.3.1.2 Forested Uplands/Tree Clearing

Forested areas within the Project Area will be preserved where possible, however, the Project anticipates the need to clear select windrows and other woody vegetation in order to construct and operate the Project. Approximately 7 acres of woody vegetation is anticipated to be cleared for the installation of collection lines and other infrastructure. The windrows within the Project Area provide minimal habitat and were used historically as demarcation of property boundaries.

Pleasant Prairie is committed to minimizing tree clearing and observing seasonal tree clearing restrictions designed to protect federally and state-listed bat species (e.g., cutting trees only between October 1 and March 31). Timber and other vegetative debris may be chipped for use in erosion control, landscaping

mulch or otherwise disposed of, in accordance with applicable local regulations and landowner preferences. Appendix E provides a map of Project layout and anticipated impacts.

### **6.3.2 Wetlands and Waterbodies**

Cardno delineated 15 wetlands and one pond during field surveys, for a total of 8.15 acres of wetlands within the Project Area. Eleven of these wetlands were categorized as emergent, three were categorized as forested, and one was categorized as shrub-scrub. One wetland (W-002) was categorized as potentially jurisdictional and scored as lower quality wetlands on the ORAM. Current Project design anticipates no impacts to wetlands.

One pond and one stream were delineated within the Project Area. Based on desktop analysis and field observations, the stream identified is expected to be highly impacted by the surrounding agricultural land use. Due to the modification and disturbance present in the surrounding area, the stream is not likely to serve as habitat for any RTE species. Frequently, a waterbody such as this may be able to provide physical habitat but lacks suitable water chemistry due to intensive land use in the upland areas.

Through careful design and avoidance measures, the Project anticipates no impacts to the waterbody. While no crossings are proposed at this time, the Project is providing a detailed Inadvertent Release of Drilling Fluid Contingency Plan as Appendix F which will be implemented at all HDD stream crossings if needed.

In addition to the above-mentioned measures, the Project will obtain coverage under the NPDES CGP for construction activities over 1 acre, to prevent adverse effects from construction-related stormwater runoff; see section 2.3.2 for additional information on NPDES Compliance.

Additionally, the Project will prepare a SWPPP incorporating the most appropriate SESC measures and BMPs; as well as be compliant with Big Darby Creek Watershed TDMLs to ensure surface waters in proximity to Project disturbance areas are not impacted, see Section 2.3.2.1 for additional details on SWPPP. Surface waters within the Project Area will not be used during or for construction of the Project; however, water may be brought to the Project Area or groundwater wells may be used if needed. The Project plans to restore all disturbed waterbodies from construction to pre-construction conditions.

There will be a small operation and/or maintenance facility (storage shed) as part of this Project. Staff operating out of the operations and maintenance building will use water at a rate comparable to a typical small business or office. Modern, efficient fixtures will be installed and will be maintained in proper working order. As a result, the Project will not necessitate any water withdrawals or wastewater discharges.

There are no impacts to other water users anticipated as a result of Project construction or operation.

### **6.3.3 Aquatic and Wildlife Resources**

The Project is not anticipated to significantly impact wildlife or wildlife habitat. Information on the existing wildlife in the Project Area was obtained from a variety of sources, including observations during site surveys, publicly available data, and correspondence with federal and state agencies. Wildlife within the Project Area could potentially utilize the current site habitat for foraging, migratory stopover, breeding, and/or shelter. Based on the current land use, species present in the Project vicinity are primarily associated with agricultural fields, pasture grasslands, isolated wooded lots, and wetland areas. Typical evidence of wildlife species observed during the field delineations included evidence of common game species, and common woodland and grassland songbirds.

Typical construction-related impacts to wildlife include incidental injury and mortality of juvenile and/or slow moving animals (e.g., salamanders, turtles, etc.) due to construction activity and vehicular movement; construction-related silt and sedimentation impacts on aquatic organisms; habitat disturbance/loss associated with clearing and earthmoving activities; and displacement of wildlife due to



increased noise and human activities. However, the Project has been sited to avoid and/or minimize such impacts. The Project has been designed to locate the majority of infrastructure within active agricultural land, which only provides habitat for a limited number of wildlife species. The few birds and mammals that may forage within these fields should be able to vacate areas that are being disturbed by construction. On a landscape scale, there is abundant availability of similar agricultural fields within the Project Area and beyond

#### **6.3.4 Threatened and Endangered Species**

The Project Area is located within a 0.25 mile of the Battelle Darby Metro Park, which is known to provide habitat to sensitive bird species, and protected mussels within the Big Darby Creek.

Due to the lack of adequate habitat within the immediate Project Area, it is likely many of the individuals would opt for higher quality habitat nearby such as Battelle-Darby Metro Park and other Wildlife Areas or State Parks for roosting, foraging and breeding. Pleasant Prairie has prioritized avoidance measures for sensitive habitats, such as minimizing habitat fragmentation, siting infrastructure in uplands rather than wetlands, and minimizing perennial stream crossings. Based on current Project designs, impacts to these habitats, and those associated with Battelle Darby Metro Park, are not anticipated.

#### **6.3.5 Disposal of Plant-Generated Waste**

The storage and use of fuel, lubricants, and other fluids could create a potential contamination hazard during Project construction. The impact of leaks and spills will be minimized or avoided by restricting the location of refueling activities and by requiring immediate cleanup of spills and leaks of hazardous materials. Construction equipment will be maintained regularly, and the source of any leaks will be identified and repaired immediately. Any soil contaminated by fuel or oil spills would be removed and disposed of at an approved disposal site.

Temporary portable sanitary facilities would be installed during construction and sanitary wastes would be disposed of by a contractor.

Project construction will generate some solid waste, primarily plastic, wood, cardboard and metal packing/packaging materials, construction scrap, and general refuse. Construction waste will be collected and disposed of in dumpsters located at the laydown areas. The dumpsters will be emptied on an as needed basis and dispose materials at a licensed solid waste disposal facility. Waste volumes are expected to be minimal and will not affect local waste disposal facilities.

As indicated above, staff will monitor Project operations from an off-site location, and conduct periodic cleaning and on-site maintenance procedures, as needed. The minimal wastes generated from these activities will be removed from the Project site and disposed of in accordance with federal, state, and local regulations.



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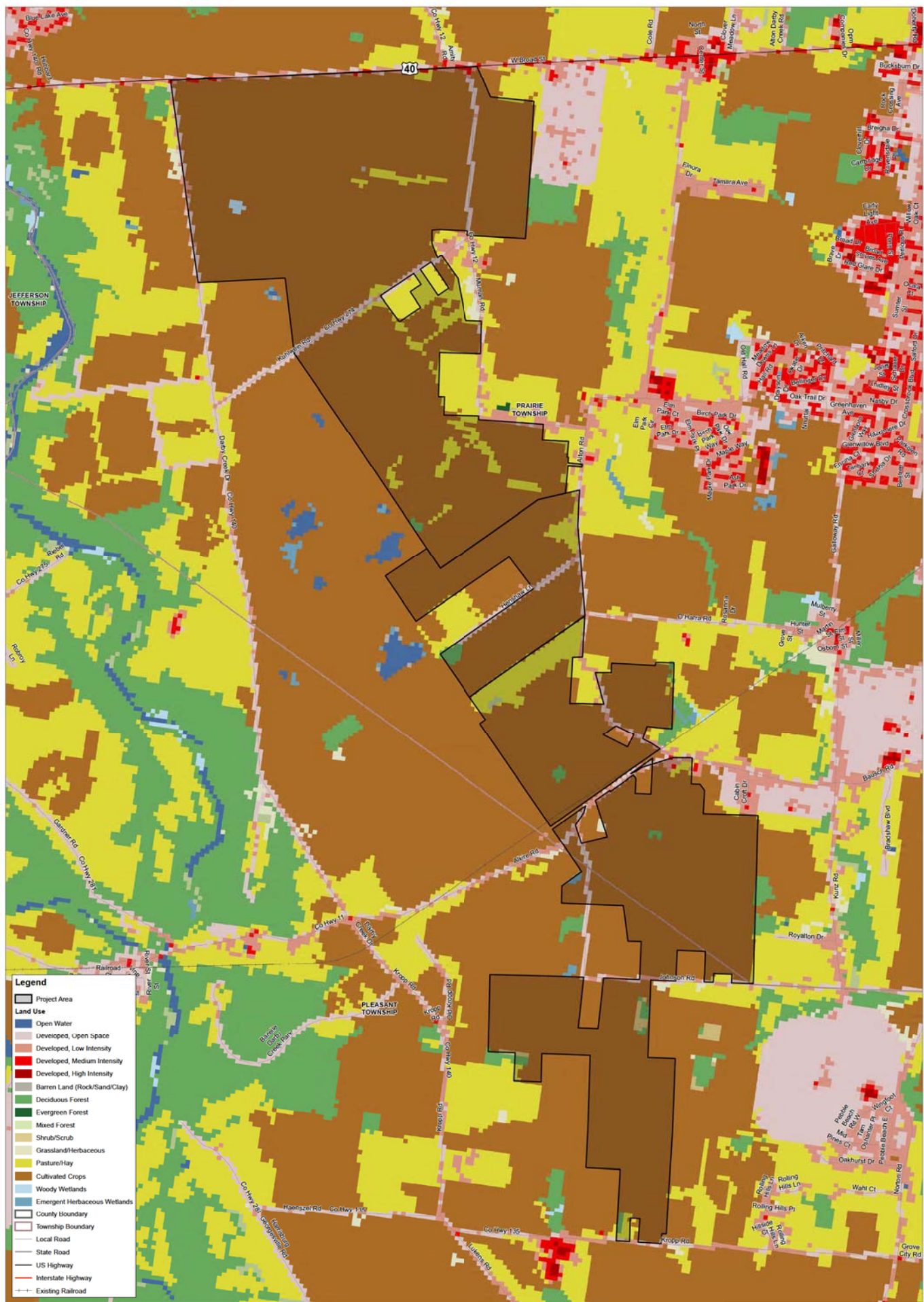
Ecological Assessment  
Pleasant Prairie Solar Energy Project

APPENDIX

A

PROJECT FIGURES





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**Figure A-1 - Land Use**  
Pleasant Prairie Solar Project  
Franklin County, Ohio

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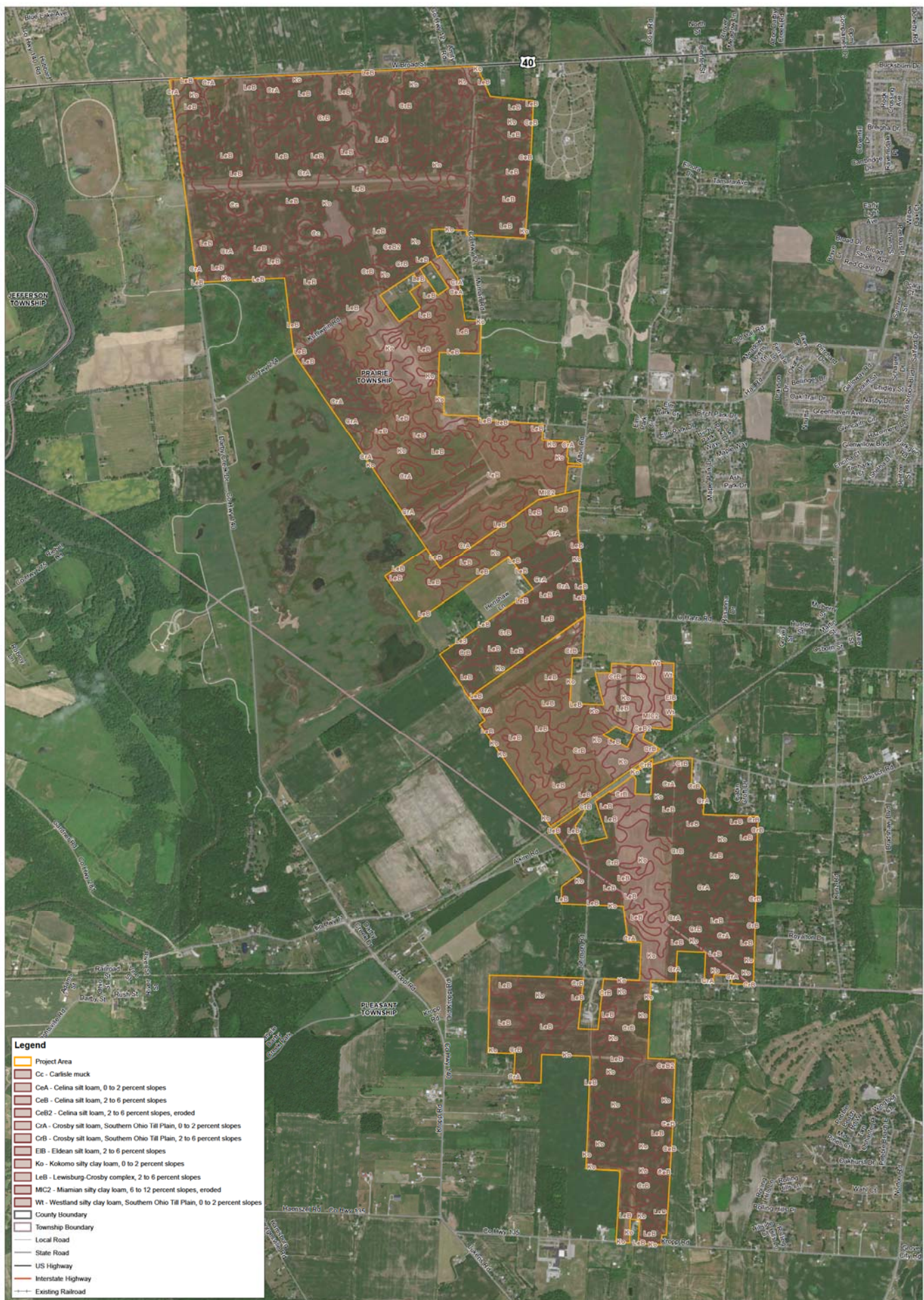


Image: 2019  
 Data Source(s): Invenmap (2020)  
 County boundaries, features  
 ESRI Data and Maps (2014)  
 Township and City boundaries  
 Ohio DOT (2019)  
 Soil USDA - National  
 Resources Conservation  
 Service (2020)  
 Federal U.S. Census Bureau  
 Tiger 2 File (2019)

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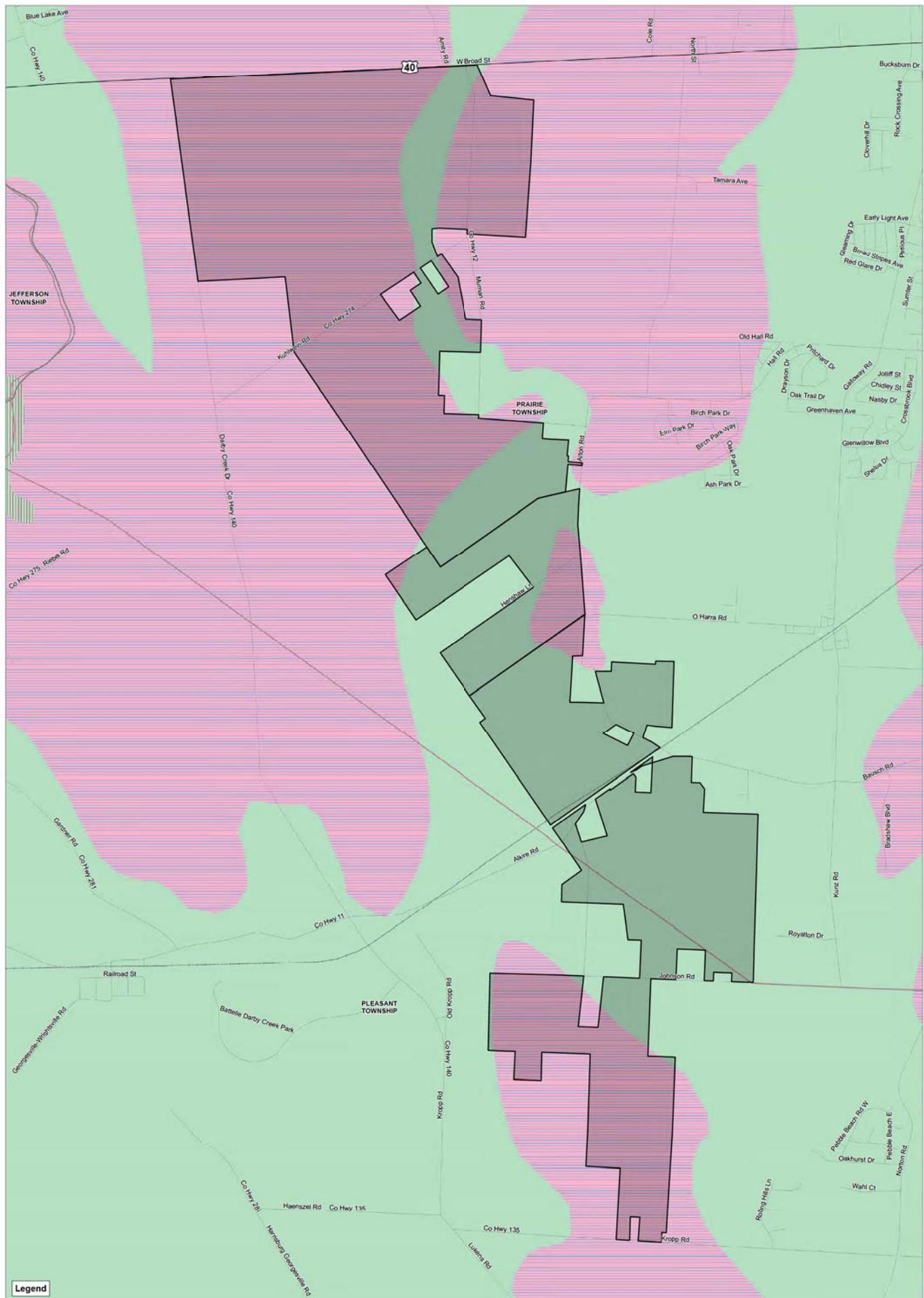
0 500 1,000 1,500 2,000 2,500 3,000 Feet  
 0 500 1,000 1,500 2,000 2,500 Meters



**Figure A-2 - NRCS Soils**  
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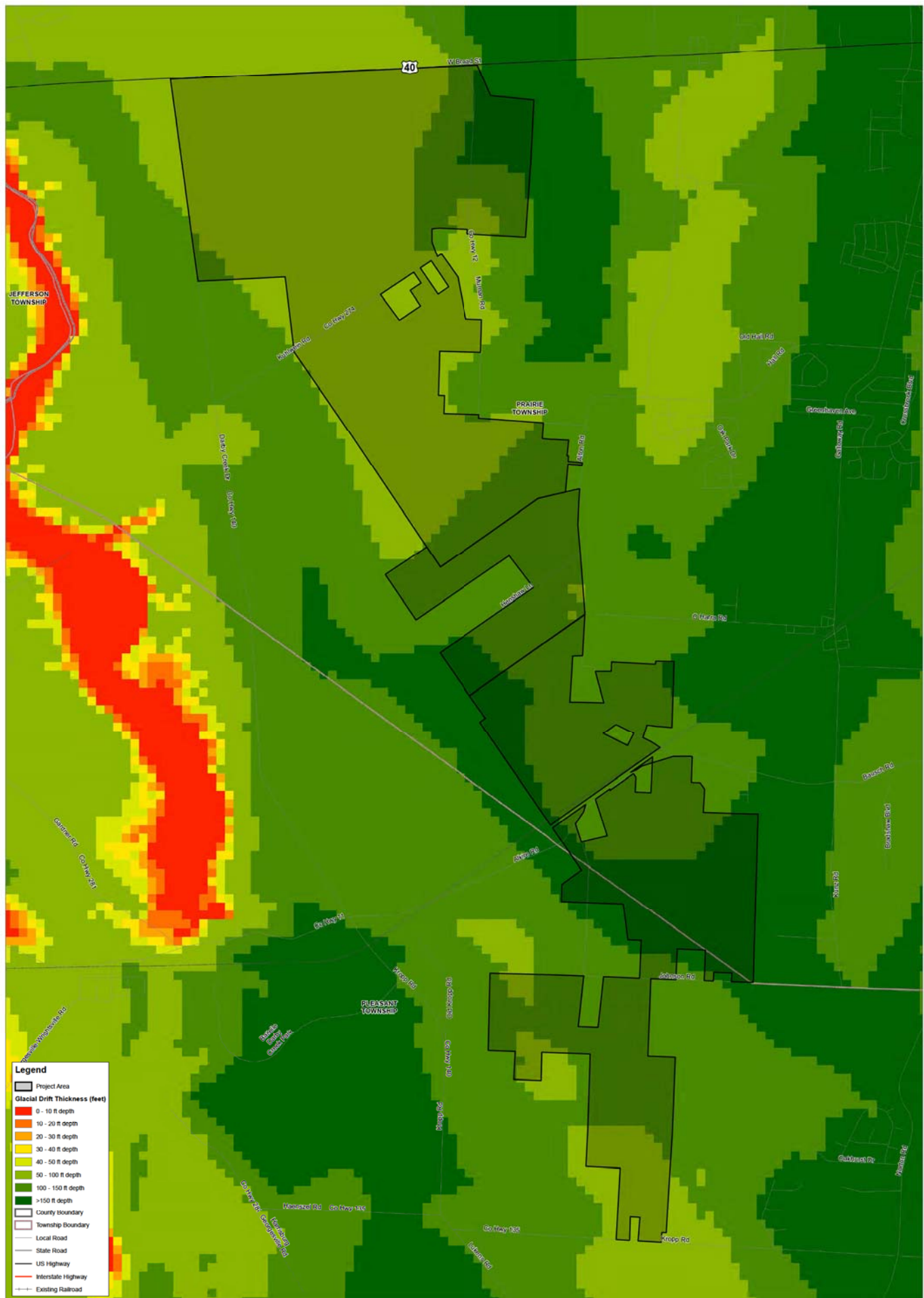
**Figure A-3 - Bedrock Geology**

**Pleasant Prairie Solar Project  
Franklin County, Ohio**



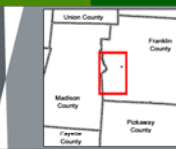
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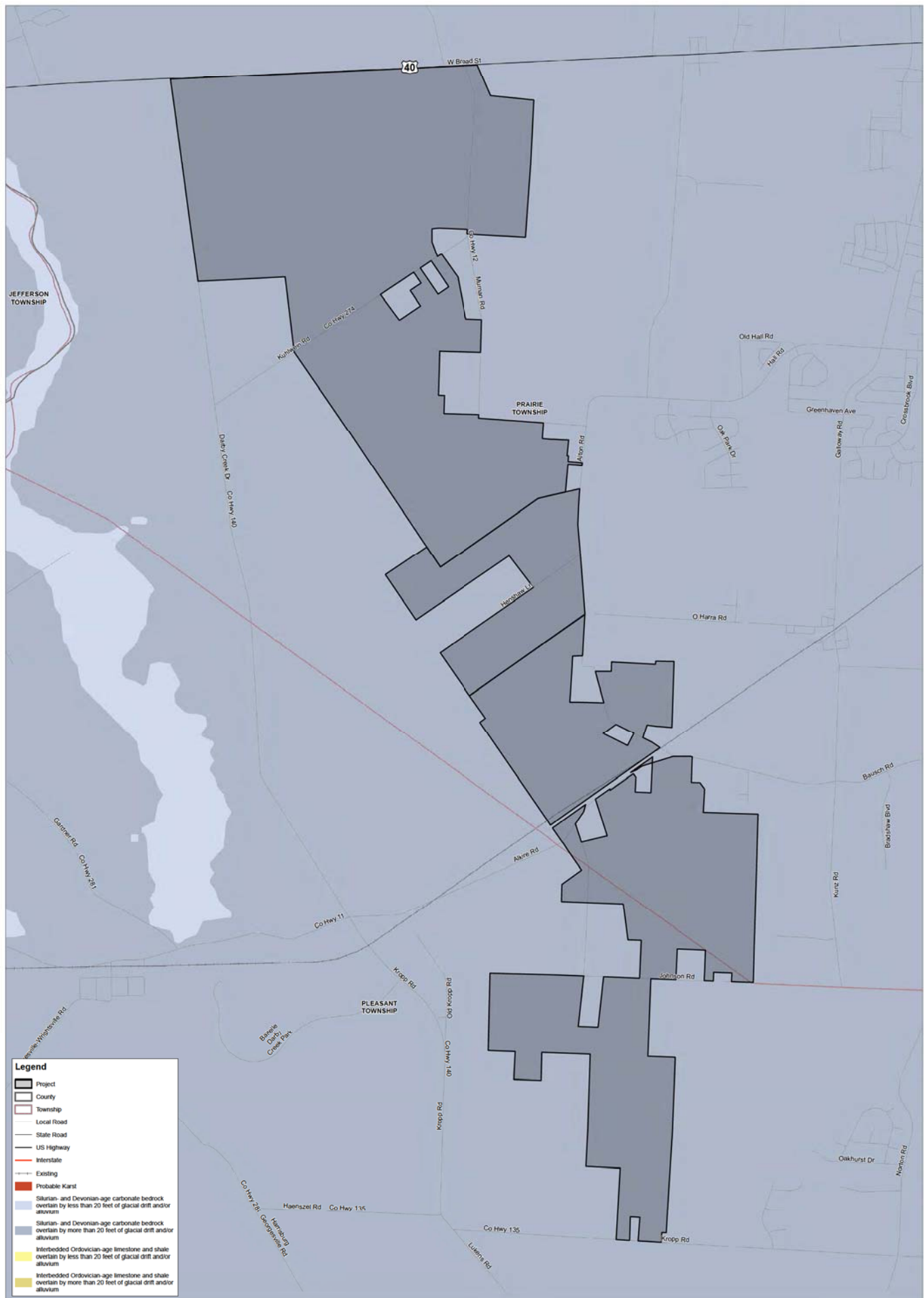
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Data Sources: Interstate (2005)  
County boundaries, Hamden  
ESRI Data and Maps (2014)  
Township and City boundaries  
Ohio DOT (2015)  
Glacial Thickness  
DOH (2004)  
Roads: U.S. Census Bureau  
Tiger Files (2013)



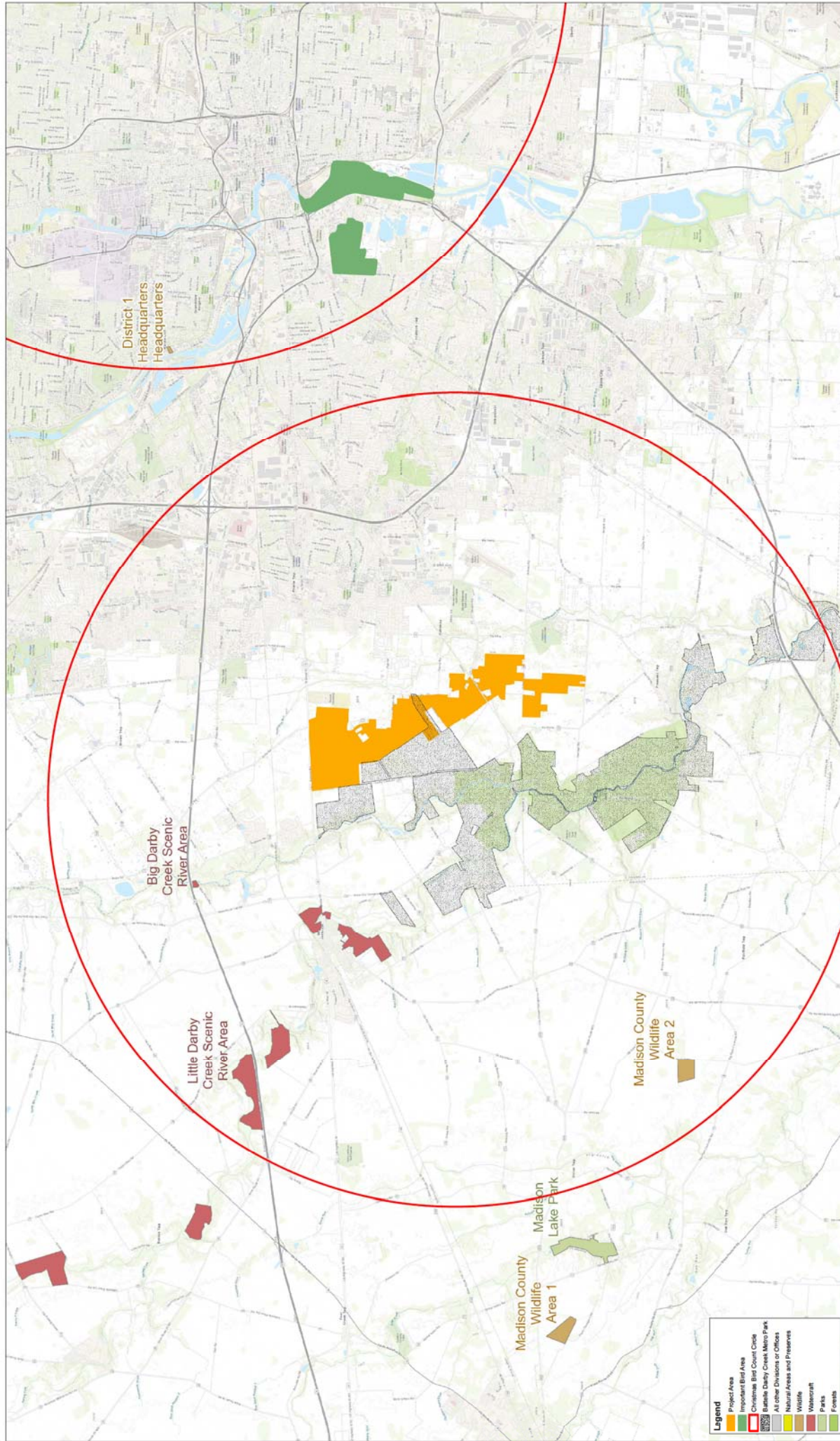
**Figure A-4 - Glacial Drift**  
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**Figure A-6 - Regional Wildlife Areas**  
**Pleasant Prairie Solar Project**  
**Franklin County, Ohio**



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Ben S. Cardno, Inc. (2020)  
 County Office of Information  
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**Case No(s). 20-1679-EL-BGN**

Summary: Application - 22 of 25 (Exhibit R – Part 1 of 4 - Ecological Impact and Directional Drilling Return Plan Report)  
electronically filed by Christine M.T. Pirik on behalf of Pleasant Prairie Solar Energy LLC