Appendix 4-1
Siting Study

Siting Study

New Liberty-East Leipsic 138 kV Upgrade Project

Prepared for:

AEP OHIO TRANSMISSION COMPANY

Submitted to:

American Electric Power

Prepared by:

Jacobs Engineering Group, Inc.
2 Crowne Point Court
Cincinnati, Ohio

December 2022

Final

TABLE OF CONTENTS

Tables

Figures

Attachments

Key Terminology

Alternative Routes	Assemblage of Study Segments that form routes for analysis and comparison.
Conceptual Routes	Initial routes for the project that adhere to a series of general siting and technical guidelines.
Constraints	Specific areas that should be avoided to the extent reasonably practical during the route development and site selection process.
Distribution Line	An electric line that delivers power from a substation to households and businesses.
Diversion	A minor adjustment to the existing route where no other alternative is considered.
Encroachment	Any structure or activity within an existing right-of-way that could interfere with the safe, reliable operation of transmission facilities is called an encroachment and is prohibited under the terms of a right-of-way.
Endpoints	The project starting and ending point(s) ("Project Endpoints), which may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers.
Focus Area	Areas along the existing route where rebuilding may not be feasible due to the presence of constraints.
Greenfield	New transmission line route or substation site constructed in an area or along a route where no previous substation or transmission line route existed.
Incompatible Use	Any structure, activity, or development near a transmission line that could interfere with the safe, reliable operation of transmission facilities.
Land Use	Describes the human use of the land and activities at a given location such as agricultural, residential, industrial, mining, commercial, and recreational uses. It differs from land cover which only describes the physical characteristics (summarized from EPA.gov).
Opportunity Feature(s)	Areas or existing linear features along which the transmission line may have less disruption to area land uses and the natural and cultural environment.
Project	The proposed transmission facilities studied in the siting report.
Proposed Route	The alignment on which the applicant/Siting Team proposes to construct a transmission line. The Proposed Route (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated in a safe, timely, and reliable manner.

Segment Endpoint	The intersection of two or more Study Segments.
Siting Team	A multidisciplinary team of experts in transmission line routing, environmental impact assessment, impact mitigation, engineering, and construction management
Study Area	The territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental impacts and Project costs.
Study Segments	Study Segments are partial alignments that when combined form a complete route.
Study Segment Network	The assemblage of study segments between project endpoints.
Substation or Station	Substations or stations are facilities that transform bulk electric voltage down to distribution levels and/or provide protection and controls for the transmission electric grid. Typical equipment includes switches, circuit breakers, buses, and transformers.
Substation Study Site	Potential substation locations.
Switching Station	A particular type of substation without transformers; cannot increase or reduce the voltage.
Tap Point	The location where power is tapped from an existing transmission line to source a substation or customer.
Transmission Line	An electric line that operates at 69 kilovolts and/or above and has the purpose of moving power from a generation facility to a substation or between substations.
Transmission Line Extension	An electric transmission line from a tap point on an existing transmission line to a substation or customer.

ACRONYMS

AEP	American Electric Power
the Company	AEP Ohio Transmission Company, Inc.
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
GIS	Geographic information system
GPS	global positioning system
HUC	hydrologic unit code
kV	kilovolt
NERC	North American Electric Reliability Corporation
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
OPSB	Ohio Power Siting Board
Project	New Liberty 138 kV Transmission Line Project
ROW	right-of-way
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 Project Description

American Electric Power (AEP) Ohio Transmission Company, Inc (the "Company") plans to rebuild and upgrade the New Liberty-East Leipsic Transmission Line in Putnam and Hancock Counties, Ohio (the "Project") as illustrated on **Figure 1, Project Location Map.** The Project proposes to rebuild approximately 20 miles of a combination of 34.5 kilovolt (kV) and 69 kV transmission lines to 138 kV standards by replacing the aging wooden poles with steel monopoles and new conductors. The Project also includes building a new 138 kV substation, retiring an existing substation, and expanding an existing substation.

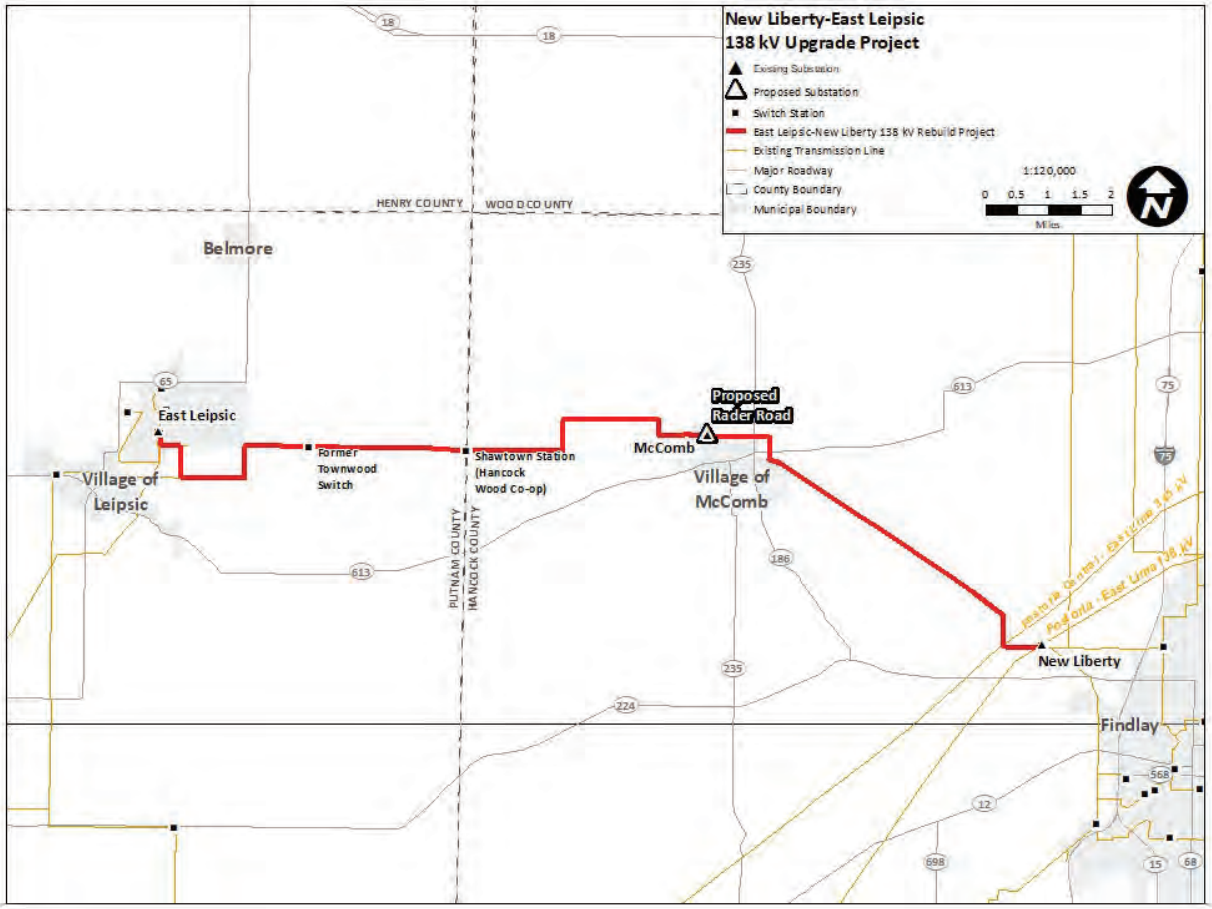


Figure 1. Project Location Map

The four main components of the Project include:

- Upgrading 11-miles of the East Leipsic-Rader Road 69 kV Transmission Line to 138 kV standards;
- Upgrading 7-miles of the Rader Road-New Liberty 34.5 kV Transmission Line to 138 kV standards;
- Building the new Rader Road 138 kV Substation, which will replace the existing McComb Substation; and,
- Expanding the East Leipsic Substation.

The transmission line to be rebuilt begins at the Company's East Leipsic Substation on Road 5 near the Village of Leipsic and travels east to the Rader Road Substation on Road E and County Road 126 in McComb, then continues southeast to the New Liberty Substation on Township Road 94 in Findlay, Ohio. The Project is on the north and east perimeter of the Village of McComb. The Project setting is mostly agricultural land with low density residential development, with the exception of the Village of McComb at the center of the Project area. The Village has a higher density of residential use and a recreation park and reservoir.

The Project involves rebuilding most of the transmission line within the existing right-of-way (ROW); however, new or updated easements will be required from some property owners. The rebuilt Rader Road-New Liberty Transmission Line must cross under two transmission lines (Fostoria Central-East Lima 345 kV Transmission Line and Fostoria-East Lima 138 kV Transmission Line), both of which may need to be raised to meet Company clearance standards.

The Project will strengthen the local electric system by replacing infrastructure that has significant deterioration resulting in service interruptions. Upgrading the power line voltage will support the transmission network and support additional electric load growth in the area. A stronger transmission grid also benefits local distribution companies and electric cooperatives who receive power from the transmission lines.

1.2 Proposed Transmission Facilities Description

The Project will replace existing wooden poles with steel monopole structures ranging between 75 to 95 feet tall. The ROW will be approximately 55 feet wide (where the line is adjacent to road ROW) to 100 feet in other locations. The poles will support a single 138 kV circuit. The exact structure, height, and ROW widths may vary subject to final engineering design.

Examples of the steel monopole structures is shown on **Figure 2,** one with horizontal arms and one with braced horizontal arms. Portions of the transmission line route and structures may be underbuilt with distribution lines, but the extent is not yet known. Replacing existing wooden structures with steel pole structures will bring the transmission line up to modern operating standards.

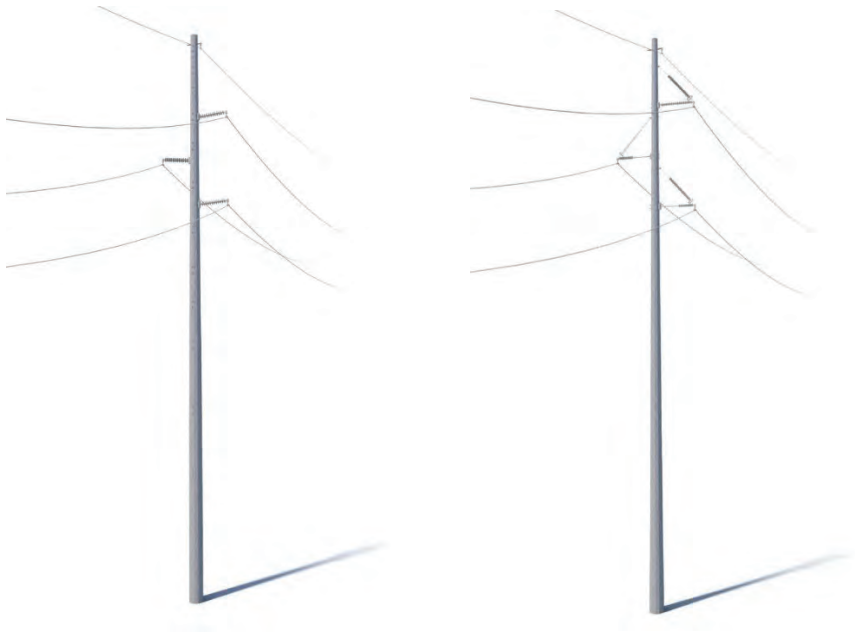


Figure 2. Typical Steel Monopole Transmission Line Structures

1.3 Proposed Construction Activities Description

Ground surveying and environmental field surveys are necessary to prepare for transmission line construction. The typical transmission line construction activities include ROW clearing, erosion and sediment controls installation, temporary access road construction, crane pad grading, foundation installation, structure assembly and erection, conductor and shield wire installation, and restoration after construction. These activities can create temporary inconveniences such as traffic delays and detours, brief electrical outages to customers, increased heavy equipment traffic, dust, and noise.

The Company will make every effort during the construction process to be respectful of the environment. Activities will be conducted in accordance with federal, state, and/or local requirements and best management practices employed. After construction, general maintenance activities include periodic ROW vegetative management and inspections to ensure safe and reliable transmission line operation.

1.4 Project Timeline and Overview of Regulatory Approvals

The Company initiated the transmission line siting process in the winter of 2020-2021. Study segments were developed by the Siting Team in April 2021 and evaluated in June 2021. The study segments were refined and announced through public notice on September 27, 2021 and presented in the first public information meeting during a virtual Town Hall on October 29, 2021. The route options for the sections of the existing transmission line to be rebuilt were presented at a second in-person OPSB-jurisdictional public informational meeting on October 6, 2022. Subsequently, the Company selected a Preferred and Alternate Route and prepared a Certificate Application for Electric Transmission Facilities to the Ohio Power Siting Board (OPSB). Pending approval from the OPSB, construction is expected to begin in Spring 2025, with an in-service date of Summer 2026.

1.5 Goal of the Siting Study

The goal of the East Leipsic – New Liberty 138 kV Transmission Line Upgrade Project Siting Study (the **Siting Study**) is to select a preferred and alternate route for submittal to the OPSB for approval and construction. The siting process includes identifying the constraints and opportunity features along the existing transmission line to identify areas where rebuilding may not be feasible, facilitate the development of transmission line study segments in these areas, evaluate potential impacts associated with the study segments, and identify a preferred and alternate route. The preferred and alternate routes are the routes that (1) are most consistent with the siting guidelines (see Section 2.4); (2) reasonably minimize adverse impacts on the natural and human environments; (3) minimize special design requirements and unreasonable costs; and (4) can be constructed and operated in a safe, timely, and reliable manner. Section 2.0 describes the route development process.

2.0 ROUTE DEVELOPMENT PROCESS

2.1 Siting Team

The route development process begins by assembling a multidisciplinary team (the **Siting Team**) with a wide range of expertise, which includes (but not limited to) transmission line siting, environmental impact assessment, impact mitigation, engineering, construction management, project management, electrical system planning, and public relations. The Siting Team includes AEP employees and outside consultants. Additional expertise is added depending on the Project needs.

The Siting Team works together to develop siting criteria, identify siting constraints and opportunities, collect and analyze environmental and design data, solicit stakeholder input, and coordinate with resource and permitting agencies. Using that information, the Siting Team develops and revises study segments and alternative routes and analyzes and reports on the selection of a proposed route.

2.2 Route Development Process Overview

The route development process (**Figure 3**) is inherently iterative with frequent modifications made throughout the siting study as a result of the constraints identified; input from agencies, landowners, residents, and other stakeholders; periodic re-assessment of routes with respect to the siting criteria; and adjustments to the overall route network. As a result of the evolving nature of the route development process, the Siting Team uses specific vocabulary to describe the routes at different stages of development. The following provides an overview of the route development process and related vocabulary.

Initial route development efforts start by identifying **Project Endpoints.** Endpoints may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers. Route review efforts for a rebuild project start by identifying constraints along the original ROW. These features are typically identified using a combination of readily available public data sources. The Siting Team uses this information to first develop **Focus Areas**, which are areas along the existing route where rebuilding may not be feasible due to constraints. In these areas, an alternative route analysis is necessary. Next, **Constraints and Opportunity Features** are identified in the **Study Area**, which encompasses the Project Endpoints and area in between. The initial constraints and opportunity features are further supplemented with stakeholder input and field inspections.

After the Project Endpoints, Study Area and Constraints and Opportunity Features are identified, the **Siting Team** develops an array of **Conceptual Routes** for the Project adhering to a series of

general siting and technical guidelines **(Step 2)**. The Conceptual Routes step was limited for this Project due to the majority of the line being planned for rebuild on or near the existing alignment.

Where two or more of these Conceptual Routes intersect, **Study Segments** are formed between two common points of intersection. Together, the assemblage of Study Segments is referred to as the **Study Segment Network (Step 3)**.

As the route development process progresses, the Siting Team continues to evaluate new data, such as public and stakeholder input and field inspections, and modifies, if necessary, the Study Segments to develop a **Refined Study Segment Network (Step 4)**. Eventually, **Alternative Routes** are developed by assembling the Study Segments that reasonably meet the **Siting Guidelines (see Section 2.4)** into individual routes for analysis **(Step 5)**. Alternative Routes are assessed and compared with natural and cultural resources, land uses, and engineering and construction concerns. Ultimately, through a quantitative and qualitative analysis and comparison of the Alternative Routes, the Siting Team identifies a **Preferred Route** and **Alternate Route (Step 6),** which are both viable for construction and are selected by the Company for the OPSB to consider for approval and construction (see Section 1.5).

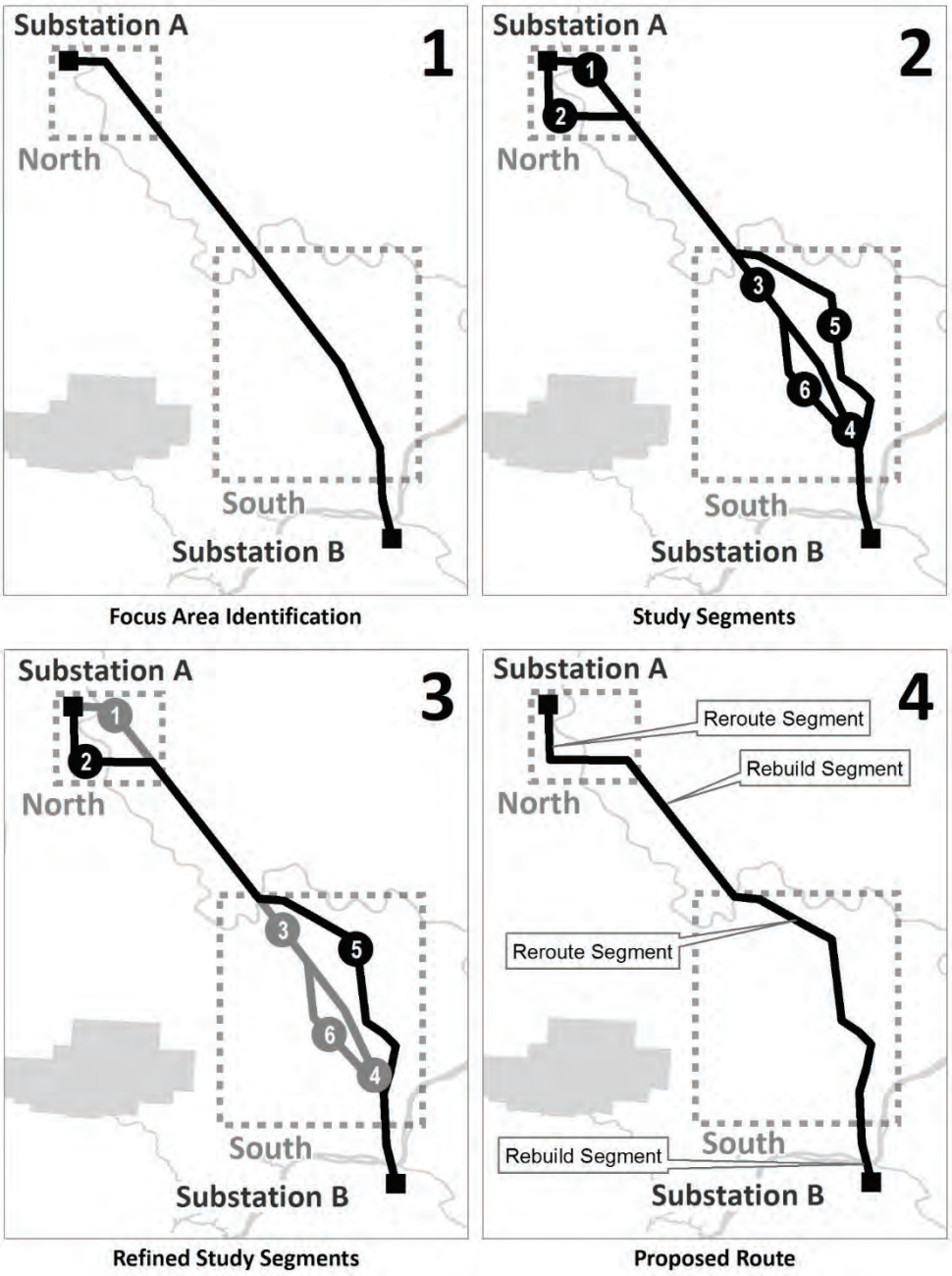


Figure 3. Route Development Process[1]

2.3 Data Collection

The Siting Team reviewed and collected data for existing and historic land uses, natural resources, cultural resources, transportation facilities, and existing utility and linear features

[1] This figure shows the route development process and does not depict routes or segments related to this Project.

within the Study Area. Data collection is described below, and a detailed table of data sources used for this study is in **Attachment B** – GIS Data Sources.

2.3.1 Geographic Information System (GIS) Data Collection

The study made extensive use of information in existing GIS datasets obtained from many sources. Much of this information was obtained from federal, state, and local governments, either through official agency GIS data access websites or provided directly by government agencies. The Siting Team developed some of the data by digitizing information from paper-based maps, interpreting aerial photos, interviewing stakeholders, and performing field inspections. A list of GIS data sources used is provided in **Attachment B (GIS Data Sources).**

GIS data sources vary with respect to their accuracy and precision. For this reason, GIS-based calculations and maps presented throughout this study should be considered reasonable approximations of the resource or geographic feature they represent and not absolute measures or counts. The data and calculations presented in this study allow for relative comparisons among project alternatives. Field reconnaissance is conducted to verify certain features (e.g., locations of residential, commercial, and industrial buildings).

2.3.2 Federal and State Government Coordination

The Siting Team obtained information from or contacted federal and state agencies to inform them of the Project and request data for the route development process. Copies of agency correspondence are included as **Attachment C**. The agencies contacted included:

- U.S. Fish and Wildlife Service (USFWS) Ohio Field Office
- Ohio Department of Natural Resources (ODNR) Division of Wildlife

2.3.3 Local Government Coordination

The Siting Team contacted several local government agencies/officials to obtain input on the proposed Project and aid the route development process. The following entities were invited to the informational meetings:

- Village of Leipsic
- Village of McComb
- Van Buren Township
- Pleasant Township
- Portage Township
- Liberty Township
- City of Findlay

- Putnam County
- Hancock County

2.3.4 Field Reconnaissance

Siting Team members conducted a field inspection in the Study Area on June 16, 2021. Team members examined Study Segments by automobile from public roads and other points of public access and correlated observed features to information shown on aerial photography, United States Geological Survey (USGS) 7.5-minute topographic maps, road maps, and the range of GIS sources.

Prior to the field inspections, some key features such as residences, outbuildings, places of worship, cemeteries, and commercial and industrial areas were mapped in GIS based on Environmental Systems Research Institute (ESRI) World Imagery (2021) and U.S. Geological Survey's GNIS (2021) GIS data. These features were field-verified and updated in the GIS database during field inspection, typically by using laptops and tablets running GIS software supported by real-time global positioning system (GPS).

2.3.5 Public and Stakeholder Input

Public and stakeholder input is critical to the route development process. Landowners and stakeholders provide information and recommendations that aid the Siting Team in developing and refining study segments and Alternate Routes. Typically, a project-specific outreach plan is developed and can include open houses, websites, mailings, and advertising. More information on how public and stakeholder input was used for the Project can be found in Section 4.1 and Section 7.0.

2.4 Siting Guidelines

2.4.1 General Guidelines

To the extent reasonable and practical, the Siting Team used the following general siting guidelines to help develop study segments and routes:

- Maximize the separation distance from and/or minimize impact on dwellings and community facilities, cemeteries, schools, daycare facilities, hospitals, historic resources, and designated landmarks.
- Avoid or minimize conflict with existing land uses and/or future developments.
- Consider paralleling property lines, land use breaks, and land cover edges.
- Consider stakeholder input.

- Minimize environmental impact and construction/maintenance costs by selecting shorter, direct routes.
- Consider safety with respect to construction, maintenance, and operation of the facilities.
- Minimize environmental impact by considering routes that minimize the overall length of access roads, length on steep slopes, and waterbody crossings.
- Consider state-specific regulatory siting guidelines.

2.4.2 Technical Guidelines

Technical guidelines are driven by the physical characteristics and engineering limitations of the structures and lines; design criteria necessary to meet the Company's design standards, North American Electric Reliability Corporation (NERC) reliability standards, and National Electric Safety Code (NESC) standards; and industry best practices for construction. The technical guidelines were informed by (1) the technical expertise of engineers and other industry professionals responsible for the reliable, safe and economical construction, operation, and maintenance of electric system facilities, (2) NERC reliability standards as implemented by PJM (the regional transmission organization that monitors the electric grid in 13 states), and (3) industry best practices.

The Siting Team considered the following technical guidelines during study segment and alternative route development to the extent practical:

- Place the alignment a minimum of 5 feet outside of the existing road ROW, where possible.
- Minimize structure angles greater than 65 degrees.
- Minimize distribution underbuild or co-location on transmission structures if possible.

3.0 ALTERNATIVE ROUTE IDENTIFICATION

3.1 Project Endpoints

The Project extends from the existing East Leipsic Substation (adjacent to the Pro-Tec, Inc. manufacturing facility) to the proposed Rader Road Substation to be constructed adjacent to the existing McComb Substation (to be retired) on the same parcel. The Project then continues to the existing New Liberty Substation for a total length of 17.6 miles (see **Map 1, Attachment A**). The Shawtown Station (Hancock Wood Cooperative) is the only active switch on the transmission line.

The proposed Rader Road Substation will be built on Company property immediately adjacent to the McComb Station. The McComb Station name will be retired and renamed Rader Road Substation. The East Leipsic Station will be expanded with additional equipment. No other substation sites were considered for either Rader Road Substation or the East Leipsic Substation expansion as the two substation sites are suitable and compatible with adjacent land uses. Further, the two existing substation sites will effectively serve the local industries, residents, and other customers in this region after the substation upgrades and/or replacement. The Company does not plan to file a Construction Notice (Ohio Administrative Code [OAC] Chapter 4906-6-05) or Letter of Notification (OAC Chapter 4906-6-05) with the OPSB for the two substations because the substation work (Rader Road construction and East Leipsic expansion) and the transmission line connections are not jurisdictional by rule.

3.2 Study Area Description

The study area is the territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and reasonably minimizes environmental impacts and Project costs. The study area was defined to include the Project components, likely practical conceptual routes between the endpoints, and likely Focus Areas. The Study Area for the proposed rebuild includes 17.6 miles of existing transmission line ROW and an approximate 1,000-foot buffer to each side of the existing centerline (see **Map 1, Attachment A**).

The Siting Team identified and mapped siting constraints and opportunity features in the Study Area as described below.

3.2.1 Constraints

Constraints are specific areas that should be avoided to the extent practical during the route development process. To identify Study Segments, the Siting Team initially identified significant constraints (those having higher degree of impacts) using readily available public data sources including, but not limited to, the following:

- Populated areas, including towns, small villages, urban areas, and other high concentrations of residential, commercial, and industrial development areas
- Roadway ROWs
- National Register of Historic Places (listed and eligible)
- Recreational areas such as parks and large recreational reservoirs
- Streams and wetlands (there were no flood zones or sensitive natural habitat areas in the study area).

Additional site-specific constraints were identified (e.g., stakeholder input, and field inspections). Through the iterative process of route development (described in Section 2.0), the Study Segments were adjusted to avoid site-specific constraints where feasible, including, but not limited to, the following:

- Individual residences (single-family houses, mobile homes, and multi-family buildings)
- Recreational area (McComb Park)
- Outbuildings and barns
- Radio and communications towers

3.2.2 Opportunity Features

Opportunity features are typically existing corridors, areas, or edges where a transmission line would be a compatible land use. Opportunity features typically considered include other linear infrastructure and utility corridors, rail lines, and roads, but may also include land cover edges, unused portions of industrial or commercial areas, or parcel boundaries. Siting opportunities identified in the Study Area are listed below.

- Existing AEP transmission line ROWs
- Open land or parcels
- Paralleling, but not within road ROWs

The Study Area is largely agricultural with denser residential development in the vicinity of the Village of McComb. The opportunities that influenced the development of study segments consisted of the Company's existing transmission line ROW, potential for paralleling existing roadways (where surrounded by agricultural land) and crossing agricultural fields where feasible.

McComb Community Park, including the water reservoir, presented a challenge as the existing line runs through a parking lot and is adjacent to a small open pavilion and playground. The siting evaluation is discussed in more detail below.

3.3 Focus Areas

In the early stages of the siting process, the Siting Team predominantly considered rebuilding on or near the existing centerline. In some areas, however, rebuilding on or near the centerline was not feasible. Specific Focus Areas were defined where constraints were present and the existing alignment would not satisfy the Company's current operational criteria (e.g., distance between

the conductor line and residential structures). The following Focus Areas were identified and depicted on **Map 1, Attachment A**:

- Focus Area 1: Focus Area 1 encompasses the East Leipsic Substation and extends to the site of the former Townwood Switch (now a vacant lot). Focus Area 1 was developed to reduce the transmission line length as the current transmission line ROW, as the rebuilt line no longer needs to connect to the Townwood Switch.
- Focus Area 2: The area encompasses the Shawtown Station and switch (Hancock Wood Cooperative) and was developed to address a single residential structure encroaching into the existing transmission line ROW.
- Focus Area 3: Focus Area 3 encompasses the area surrounding the McComb Station. The McComb Station is being rebuilt as the Rader Road Substation and converted to 138 kV substation. Focus Area 3 was developed to address conflicts with roadway ROW, a potential clearance issue with an outbuilding, and the new transmission line configuration into the Rader Road Substation.
- Focus Area 4: Focus Area 4 encompasses the portion of the transmission line through McComb Park. Focus Area 4 was developed was developed to increase the distance between the transmission line and the parking lots, open pavilion, and playground within the park.
- Focus Area 5: Focus Area 5 is at the intersection of Township Road 135 and Township Road 37. Focus Area 5 was developed to avoid a residential encroachment in the existing transmission line ROW.

3.4 Study Segment Development

The Siting Team developed a series of Study Segments within each Focus Area based on the route development process and criteria described in Section 2.0. **Map 2 of Attachment A** shows the resulting network of Study Segments used to collect public and stakeholder input.

3.4.1 Focus Area 1 – East Leipsic to Former Townwood Switch

Focus Area 1 is on the western edge of the Project area, within and near the Village of Leipsic and encompassing the existing transmission route between the East Leipsic Substation and the former Townwood Switch. The Siting Team developed 12 study segments, one of which includes rebuilding on the existing centerline. Currently, the existing transmission line adds substantial length (2.0 miles) to the Project compared to the shortest study segment option. Study Segments were developed within this Focus Area to minimize the transmission line length and to avoid constraints along Road E (cellular tower and a building at the Leipsic Upground Reservoir). Study

Segments 1 and 3 provide study segment options to enter and exit the existing East Leipsic Station. Study Segments 4, 5, 7, 8, and 9 were developed to parallel Road E and are positioned on the north and south side of the roadway. Study Segment 2 is a greenfield route in open agricultural fields north of Road E on land owned by Pro-Tec, Inc. Study Segment 6 follows the existing transmission line parallel to Route 5, Road E4, and Road 4. Study Segments 10, 11, and 12 provide options for the study segments to join the existing centerline.

3.4.2 Focus Area 2 – Shawtown Station (Hancock Wood Cooperative)

Focus Area 2 is in the Village of McComb and encompasses the existing transmission route between the Shawtown Station and the intersection of Township Road 103 and Township Road 117. This Focus Area was developed to avoid a residence encroachment within the existing transmission line alignment. Segments 13 and 14 provide opportunities to use the open agricultural parcel to the north while Study Segment 15 stays on the current transmission alignment adjacent to the residence, which encroaches on the Company's ROW (at current alignment and pole heights). The Study Segment then connects back to the existing transmission line which parallels the south side of Township Road 103.

3.4.3 Focus Area 3 – Rader Road

Focus Area 3 is between the intersection of Township Road 104 and Township Highway 123 and the McComb Station. The McComb Station is being rebuilt, converted to a 138 kV station, and renamed to Rader Road Substation. Nine Study Segments were developed within this Focus Area to address the existing line being in or close to road ROW, an outbuilding for a manufacturing facility, and to address the new transmission line configuration into the Rader Road Substation. Study Segment 16 was developed to avoid the manufacturing building on the west side of Township Road 123. Segments 16 and 19 then follow the existing transmission route on the north side of Township Road 105. Study Segments 17, 18, and 20 were developed to use the open agricultural parcel to the north to avoid the above-mentioned constraints and to reduce the route length.

The new Rader Road Substation will expand the existing station footprint to the vacant space to the north and east. Study Segments 21, 22, 23, and 24 were developed to provide alternative routes into and out of the new Rader Road Substation site and alternatives to tie-in to the existing 69 kV route alignment heading east.

3.4.4 Focus Area 4 – Reservoir Area

Focus Area 4 is located by the McComb Upground Reservoir and Village of McComb Community Park. The existing transmission line route traverses through or near the parking lot and an open-sided pavilion, and a playground is located within the Company's existing transmission ROW. Study Segments 25, 26, 28, and 30 were developed to provide options to reroute the transmission line around the park. Study Segment 27 diverts the transmission line slightly to the east to increase the distance between the line and a business structure (auto repair shop). Study Segment 29 follows the existing transmission line route.

3.4.5 Focus Area 5 – Residential Area

Focus Area 5 is near the intersection of Township Highway 135 and Township Road 97 Study Segments 31, 32, 33, 35, and 36 were developed to reroute the transmission line around an existing residence and minimize impacts to the agricultural land use by routing the line along the road ROW instead of through the field. Study Segment 34 uses the existing transmission route through an agricultural field.

4.0 REFINEMENT OF REBUILD SEGMENTS AND STUDY SEGMENTS

In assessing the suitability of using the existing East Leipsic – New Liberty ROW (the Rebuild Segments), the Siting Team undertook the following activities:

- Company engineers conducted desktop and field examinations and concluded that rebuilding the existing transmission lines within or near the existing ROW is reasonable for the sections that are outside of the five Focus Areas described above. The existing transmission line route is generally the shortest, most direct route paralleling existing roads and facilitating access for construction and maintenance. The exception is the detour of the existing transmission line within Focus Area 1.

- Company ROW agents reviewed the existing ROW easements and determined that they generally permit line rebuilds and upgrades.

- The Siting Team reviewed the existing ROW outside of the five Focus Areas and concluded it minimizes impacts on the human, visual, and natural environments. New routes would result in more impacts, given that new ROW and associated access roads would be needed.

- Meetings with local officials and stakeholders and two open houses were conducted to gain input on the rebuild segments; no opposition was identified.

4.1 Public and Stakeholder Input

Public, government, and private stakeholder input is critical to the route development process. Landowners and stakeholders provide information and recommendations that aid the Siting Team in developing and refining the study segment network and developing Alternative Routes. The goal of early engagement is to gather public input to refine study segments and ultimately, develop alternative routes.

4.1.1 Stakeholder Input

The Company hosted virtual meetings in the Summer of 2021 with government stakeholders (Ohio Department of Transportation [ODOT], Village of McComb, Village of Leipsic, and Putnam County) to introduce the Project and give stakeholders an opportunity to provide input on the Project. ODOT, the Village of McComb, and Putnam County did not have major feedback or concerns regarding the Project. The Village of Leipsic indicated plans to run a large supply water line from Yellow Creek Reservoir to the west along County Highway E. The Project is not expected to have an impact on the Village of Leipsic's utility plans.

4.1.2 Public Input from Virtual Open House

The COVID-19 pandemic limited the opportunity for in-person meetings in 2020 and 2021; therefore, the public open house was modified to an online meeting format to limit large gatherings. The Company hosted a virtual open house with an interactive map and website (November 2021 through December 2021) which illustrated the proposed rebuild route and the study segments within the five Focus Areas. The virtual open house was hosted online through www.AEPOhio.com/EastLeipsic-NewLiberty.

In September 2021, informational packets introducing the Project were send to landowners crossed by the existing transmission lines or proposed study segments, as well as owners of adjacent land parcels. The packet included a Project fact sheet (which illustrated general facts about the Project and provided the Project website) and a comment card with a postage-paid return envelope.

As part of the public engagement process, nine comments were received from the landowners that received the Project information package or other interested parties along the rebuild or Study Segment Network. These comments were digitized in a format which shows the comment attributed to the property owner's parcel.

The Siting Team reviewed and discussed all the comments received via email or through the virtual public informational website for the Project. Within Focus Area 1 (East Leipsic to Townwood Switch), five comments were received. Four landowners expressed concerns about

impacts to farm operations and would prefer the Company retain the existing transmission line ROW. Another comment was received from the Village of East Leipsic notifying the Company of their plans to run a water utility line along Road E. There were no comments received for Focus Areas 2 or 3.

Within Focus Area 4 (Reservoir Area) one landowner commented about drainage issues along Study Segment 28 and 30 and indicated they preferred the transmission line not be placed along State Route 613.

Within Focus Area 5 (one residential encroachment), two homeowners provided feedback during the comment period. One expressed concern regarding soil compaction and damage to their fields during construction. The other homeowner lives along Study Segment 36 and stated they would prefer not to have the transmission line in front of their house. Both homeowners who provided input preferred the rebuild segments on the existing transmission alignment.

5.0 ALTERNATIVE ROUTE COMPARISON

Study segments were not adjusted or eliminated following input received from the first public open house. As such, all study segments were assembled into Alternative Routes for comparison. The Alternative Routes comparison provides a quantitative and qualitative analysis of potential impacts to local communities, the environment, and cultural resources as well as engineering and constructability concerns. The Alternative Routes were reviewed in detail and compared using a combination of information collected in the field, GIS data sources, public input, supporting documents, and the collective knowledge and experience of the Siting Team.

The Siting Team compiled the Study Segments into 21 unique Alternative Routes for analysis and comparison within each of the Focus Areas. **Table 1** provides the Study Segments that make up each Alternative Route. Refer to **Map 2, Attachment A** for location of Study Segments and to **Map 3, Attachment A,** which illustrates the Alternative Routes created from the Study Segments.

Table 1. Alternative Routes

Focus Area	Alternative Route	Study Segments
Focus Area 1 – East Leipsic to Former Townwood Switch	Alternative Route A	1, 2, 10, 12
	Alternative Route B	1, 2, 11
	Alternative Route C	1, 3, 4, 9, 11
	Alternative Route D	1, 3, 4, 9, 10, 12
	Alternative Route E	1, 3, 5, 7, 8, 9, 11
	Alternative Route F	1, 3, 5, 7, 8, 9, 10, 12
	Alternative Route G	1, 3, 5, 6, 8, 9, 11
	Alternative Route H	1, 3, 5, 6, 8, 9, 10, 12
Focus Area 2 – Shawtown (Hancock Wood Co-Op)	Alternative Route I	13, 14
	Alternative Route J	13, 15
Focus Area 3 – Rader Road	Alternative Route K	17, 20, 21
	Alternative Route L	17, 18, 19, 21

	Alternative Route M	16, 19, 21
	Alternative Route N	22, 24
	Alternative Route O	22, 23
Focus Area 4 – Reservoir Area	Alternative Route P	25, 26, 30
	Alternative Route Q	25, 27, 28, 30
	Alternative Route R	25, 27, 29
Focus Area 5 – Residential Area	Alternative Route S	31, 32, 36
	Alternative Route T	31, 33, 35, 36
	Alternative Route U	31, 33, 34

5.1 Natural Environment

The natural environment includes water, soil, sensitive species, and wildlife habitat. Potential impacts are based on publicly available maps and data as well as coordination with federal, state and local agencies (**Map 4, Attachment A**). The Siting Study goal is to avoid or minimize impacts on the natural environment to the extent practicable during construction and operation and maintenance of the transmission facilities. A comparison of the natural environment considerations for the Alternative Routes is presented in **Table 3, Attachment D**.

Several data sources were reviewed to assess the presence of water resources in the study area, including the USGS National Hydrography Dataset, Federal Emergency Management Agency (FEMA) mapping, and the USFWS National Wetlands Inventory (NWI). **Table 2** lists the hydrologic unit codes (HUCs), watershed names, and name streams crossed by for each of the Alternative Routes.

Table 2. HUCs and Waterbodies Crossed by the Alternative Routes

HUC 12-Digit Code	HUC 12-Digit Name	Waterbodies
Focus Area 1		
041000090504	Upper Yellow Creek	Little Yellow Creek
		Yellow Creek
Focus Area 2		
041000090504	Upper Yellow Creek	West Creek
041000090506	Lower Yellow Creek	
Focus Area 3		
041000100101	Rader Creek	UNT Rader Creek
Focus Area 4		
041000100101	Rader Creek	No mapped streams
Focus Area 5		
041000100103	Rocky Ford	No mapped streams
*Determined from National Hydrography Dataset (NHD; USGS, 2021)		

Table 2. HUCs and Waterbodies Crossed by the Alternative Routes		
HUC 12-Digit Code	**HUC 12-Digit Name**	**Waterbodies**
UNT = Unnamed tributary		

USFWS NWI data were reviewed for potential wetlands that may occur within the Focus Areas; There were no mapped NWI wetlands in the five Focus Areas.

The FEMA Flood Insurance Rate Maps (FIRM) were reviewed to identify the 100-year floodplain or floodways within the Focus Areas. Within Focus Area 1, the 100-year floodplain is mapped along Yellow Creek. No other floodplains were identified within the other Focus Areas.

Consultation was initiated with the ODNR Department of Wildlife and the USFWS Ohio Field Office on state and federally threatened or endangered species that have the potential to occur in the Project area. The ODNR Department of Wildlife replied to the consultation request on April 1, 2022, and the USFWS on April 14, 2022. ODNR indicated that the Project is within the range of 12 state-listed species. The USFWS indicated the potential presence of Indiana bat and northern long-eared bat in the vicinity of the Project area. Tree clearing would not be required along any of the Alternative Routes; therefore, it is not anticipated bats would be impacted by the Project. Refer to **Attachment C** for copies of agency documentation.

ODNR indicated the Project is within the range of several federal endangered and state endangered/threatened mussel species including clubshell (*Pluerobema clava*), rayed bean (*Villosa fabalis*), purple lilliput (*Toxolasma lividum*), pondhorn (*Unimerus tetralasmus*), and black sandshell (*Ligumia recta*). It is not anticipated that any in-water work would be required for the Project as the transmission line can span over waterbodies.

The Project is also within the range of western banded killifish (*Fundulus diaphanous menona*), Kirtland's snake (*Clonophis kirtlandii*), black-crowned night-heron (*Nycticorax nycticorax*), least bittern (*Ixobrychus exilis*), and northern harrier (*Circus hudsonis*). The preferred habitat types are not present or will be avoided; therefore, the Project is not anticipated to impact these species.

Alternative Route Comparison

Mapped waterbodies and one floodplain associated with Yellow Creek are within the Focus Areas. The quantitative comparison of impacts did not influence the selection of the proposed route in each Focus Area as best management practices can be successfully used to mitigate and minimize impacts on sensitive resources in any of the Alternative Routes. In addition, none of the Alternative Routes would require tree clearing because they are all on non-forested land.

5.2 Human Environment

The human environment includes the use of the land and activities at a given location such as agricultural, forestry, residential, industrial, mining, commercial, institutional, scenic assets, and recreational uses. One of the Siting Study goals is to avoid or minimize conflicts with existing and proposed land uses. A comparison of the human environment considerations for the Alternative Routes is presented at the end of this section in **Table 4, Attachment D.** Land use, ecological resources, and historic resources within the Study Area are shown on **Map 4, Attachment A.**

The Study Area is largely characterized by agricultural fields, a few farm residences, residential areas (Village of McComb), and commercial developments. The existing transmission line traverses through the Village of McComb Community Park. The Siting Team determined that residences and ancillary structures are the primary land use constraint in the Study Area, specifically, residential encroachments near the Village of McComb, a residence located east of the Leipsic Reservoir, and a residence on County Road 97. Much of the existing transmission is in agricultural fields and open land and parallels existing roadways.

Alternative Route Comparison

<u>Focus Area 1 – East Leipsic to Townwood Switch</u>

Alternatives A and B include the greenfield route to the north of Road E and through agricultural fields. These Alternative Routes would be new transmission line, which would impact new landowners and require new rights or land acquisition, not parallel to existing linear infrastructure. Alternative Routes A and B also impact the most cropland because they traverse through or near the middle of large cropland parcels, versus being aligned with Road E on the edge of cropland parcels. Landowners within this Focus Area voiced concerns about interruptions to farming operations if Alternative Routes A and B were considered. Due to the impact to new landowners and agricultural operations, Alternatives A and B were dismissed.

Alternative Routes C, D, E, and F parallel Road E. The only variations between these alternatives are slight deviations around obstructions or use of the north versus south side of the road.

Alternatives G and H follow the existing 69 kV transmission line along Road 5, Road E4, and Road 4. Using this transmission line adds approximately one mile to the route compared to Alternatives A, B, C, E and F. Alternatives G and H have the longest transmission line length and cross the most parcels; however, they use existing ROW.

Alternative Route F has the least impact on the human environment. This alternative is positioned on the south side of Road E; therefore, it would impact the fewest number of parcels and avoids

bisecting existing croplands compared to other Alternative Routes in the Focus Area. Therefore, from a human environment perspective, Alternative Route F is preferred.

Focus Area 2 – Shawtown (Hancock Wood Co-Op)

Two Alternative Routes are proposed in Focus Area 2 to avoid a residential encroachment. Alternative Route I parallels the north side of Road 103, whereas Route J parallels the south side of Road 103 and follows the existing transmission ROW. Route J crosses six small parcels (along existing ROW which would need to be expanded) while Route I crosses one agricultural parcel. Both routes avoid the residential structure. Route I's alignment is preferred because of the single parcel being affected.

Focus Area 3 – Rader Road

Focus Area 3 includes agricultural land uses to the west and industrial and commercial land uses in the vicinity of the proposed Rader Road Substation. Alternatives K and L would cross the most length of cropland and impact the most parcels. Alternative L and M have the greatest number of businesses/commercial buildings near the route. In the western portion of the focus area, Alternative M is located on the east side or Road 123, opposite the existing 69 kV transmission line, to avoid the encroachment of one residence. Alternative M would have the least impact to the human environment as it crosses the fewest parcels and impacts the fewest agricultural land acreage. Alternative M is aligned adjacent to the commercial outbuilding (on Hearthside Food Solutions property) and AEP engineers concurred with the alignment concerning acceptable clearances. Although Alternative K would avoid the outbuilding, the route would present new impacts to agricultural land use and easements with new landowners.

Alternatives N and O are alternative routes to exit the proposed Rader Road Substation; as such, these routes were assessed separately from Alternatives K, L, and M. Comparatively, these two routes are not significantly different. However, Route N would eliminate a 90 degree turn angle which exits the proposed Rader Road Substation.

Focus Area 4 – Reservoir Area

Focus Area 4 is in the vicinity of the Village of McComb Community Park and north of McComb Upground Reservoir. The existing transmission line ROW runs through the community park's parking lot and near a pavilion. The area north of the park consists of four commercial businesses and one residence along State Route 613.

Alternative P parallels the north side of State Route 613, Alternative Q crosses commercial and residential parcels south of State Route 613 and parallels a railroad, and Alternative R follows the existing transmission line route by crossing the McComb Community Park. Quantitatively, there

are few differences between the three Alternative Routes. Alternative Q crosses slightly more parcels than Alternative P. Both would require new acquisition of easements from up to four property owners for the greenfield segments. Alternative R will impact the fewest number of parcels because the transmission line is on parcels already crossed by the existing transmission line. Both Alternatives P and Q avoid impacting the McComb Community Park.

Alternative Route R is viewed as more preferred as it avoids impacting new landowners, utilizes the existing railroad ROW crossing, and utilizes the most existing transmission ROW.

Focus Area 5 – Residential Area

Focus Area 5 is within residential and agricultural land uses and is at the eastern extent of the Project. The purpose of the route adjustments were to avoid the residence in proximity to the existing transmission line (approximately 25 feet). All Alternative Routes include the diversion around the residential property; however, Alternative Routes S and T follow the road ROW, while Alternative U follows the existing transmission line through the agricultural field.

Alternative Routes S and T are approximately the same length. Alternative Route U crosses the least number of parcels and impacts parcels already crossed by the existing ROW. In contrast, Alternative Routes S and T cross parcels not currently affected by existing infrastructure, but minimize impacts to agricultural areas by paralleling roads. Alternative Route U is preferred over Routes S and T because it avoids the clearance issue for the residence, is the shortest route, and uses the most existing transmission ROW.

5.3 Historic and Archaeological Resources

As part of the due diligence review, the Siting Team investigated the presence of cultural resources within the Project area, which included a 1-mile buffer around the Alternative Routes considered. A records search was conducted using the records available through the Ohio Historic Preservation Office online GIS database. The literature review was directed toward identifying previously inventoried archaeological sites, historical built-environment structures or resources, cemeteries, and other cultural resources. The review included a search of the National Historic Landmarks list, National Register of Historic Places (NRHP), previous Cultural Resources Management report, and the various Ohio databases.

According to the Ohio Archaeological Inventory, a total of 28 known archaeological sites have been identified in a 1-mile study buffer surrounding the Alternative Routes. No archaeological sites were located within the defined ROW.

According to Ohio Genealogical Society data, there are two known cemeteries within 1 mile of the proposed route alternatives: McComb Cemetery and Hancock County Infirmary Cemetery. Neither resource is closer than 0.31 mile from any proposed route alternatives; therefore, they will not be impacted by the current project.

According to the Ohio Historical Inventory, no NRHP-listed properties or districts are within 1 mile of the proposed route. Two NRHP-eligible properties and four unevaluated historic structures are located within 1 mile of the proposed route alternatives. None of these structures are closer than 0.4 mile (0.7 kilometer) from any proposed route alternatives; therefore, they will not be impacted by the current project.

Alternative Route Comparison

No cemeteries or historical properties will be impacted by any Alternative Routes. Focus Area 1 is adjacent to one NRHP-ineligible site (PU0168), but the site will not be impacted by the Project. Consequently, cultural resources do not represent a significant constraint for the Project. Given the presence of archaeological sites within the study area, however, it is possible that unrecorded sites exist within or adjacent to the project footprint, especially where it crosses streams and waterbodies.

5.4 Constructability

Constructability is the ability to efficiently and cost effectively engineer, construct, operate, and maintain a proposed transmission line. Major factors include safety, steep topography, condensed ROWs, sharp turn angles, access, ability to parallel or use existing ROWs, features, and proximity to major highways or communication towers. A comparison of the constructability considerations for the Alternative Routes is presented in **Table 5, Attachment D.**

Potential engineering and construction challenges are important to consider when siting a transmission line. Heavy angles, nearby communication towers, and antennas along with narrow ROW alignments are all elements that could ultimately require extensive or non-standard engineering and lead to increases in impacts and overall cost.

Most of the existing transmission line parallels existing roadways. The Siting Team attempted to minimize engineering challenges during route development by siting Alternative Routes outside of roadway ROW. Where possible, the Siting Team also considered using existing transmission ROW, paralleling existing electric lines, or distribution underbuild. Paralleling existing transmission lines is listed as a routing opportunity; however, paralleling other extra high voltage (EHV) transmission lines can also pose reliability concerns.

Steep slopes, landslide risks, karst, foundation issues, and general geotechnical constraints are considered when siting a transmission line. The Study Area is in an area with flat terrain with no significant topography or geotechnical considerations. As such, there were no major constructability geotechnical issues expected.

Alternative Route Comparison

Focus Area 1 – East Leipsic to Former Townwood Switch

The purpose of developing Alternative Routes within this focus area was to reduce transmission line length and avoid impacting an existing communications tower. As expected, the routes which follow the existing transmission line along Road 5, Road E4, and Road 4 have the longest transmission line length. These include Alternative Routes G and H. Alternative Routes C through H parallel approximately the same length of existing 69 kV transmission line and parallel existing road ROW. Alternative Routes C and D parallel an existing electrical distribution line (Hancock Wood Cooperative) on the north side of Road E and, according to AEP, it is not feasible to underbuild to integrate the existing distribution line compared to other Alternative Routes.

Focus Area 2 – Shawtown Station (Hancock Wood Cooperative)

There are no major constructability concerns in this focus area. Alternative Routes I and J are nearly identical for constructability criteria.

Focus Area 3 – Rader Road

Alternative Routes K, L, and M enter the proposed Rader Road Substation from the west and Alternative Routes N and O exit the proposed station to the east. Alternative Route M has the most turn angles, uses the most existing 69 kV transmission line ROW, and avoids a clearance conflict (per AEP's engineer) with an outbuilding (Hearthside Food Solutions) along Meyer Lane. All other routes avoid the outbuilding, but also require a greater greenfield distance across agricultural land, and requiring easements from new landowners, to construct the transmission line.

Focus Area 4 – Reservoir Area

Alternative Route P is parallel to East Main Street (State Route 613) and potentially interferes with an existing barn/hut structure north of the road. Alternative Route Q parallels and crosses an existing railroad track in a location without existing transmission ROW, thus it may require significant permitting effort with the railroad entity. Alternative P would also cross the railroad at the same point and have the same permitting risk. Alternative R uses the existing transmission line ROW and crosses through a parking lot and adjacent to a pavilion and playground, which is

an encroachment in the existing ROW, in the McComb Community Park and recreational area. AEP's engineer concurred that there would be no constructability issues with Alternative R and that clearance conflicts would not be an issue with the final engineering design.

Focus Area 5 –Residential Area

The purpose of developing alternative routes within this focus area, was to avoid structural encroachments and impact to a residential landowner. All route options divert around the residence located on the south side of County Road 97. Alternative Route U uses the existing transmission line ROW through an agricultural field, and Alternative Routes S and T parallel the road ROW.

6.0 IDENTIFICATION OF THE PREFERRED AND ALTERNATE ROUTE

After the Alternative Route comparison and evaluation, the Siting Team identified Alternate and Preferred Routes that would be presented to the public during the OPSB-jurisdictional meeting. A discussion on Alternative Routes selected or eliminated for each of the five Focus Areas are provided below (refer to **Map 3, Attachment A** for the Alternative Routes).

Focus Area 1 (East Leipsic to Former Townwood Switch)

Alternative Routes within the Focus Area 1 were developed to reduce transmission line length between the East Leipsic Substation and the former Townwood Switch and avoid an existing communications tower. Alternative Routes A and B use open agricultural land. However, after receiving public stakeholder input, Routes A and B were removed due to landowner concerns.

Alternative Routes C and D parallel the north side of the Road E, where there is an existing electrical distribution line (Hancock Wood Cooperative). These routes were removed from further consideration as underbuilding the Hancock Wood Cooperative distribution line was determined by AEP to not be a feasible solution compared to other alternatives.

Routes E and F were selected as the Alternative Routes for presentation at the public information meeting.

Focus Area 2 (Shawtown Substation – Hancock Wood Cooperative)

Focus Area 2 was developed to avoid a residence encroachment on the south side of Route 103. Only two Alternative Routes were considered including a route that uses the north side of the road (Route I) and the south side of the road (Route J). Both routes involve crossing the roadway twice. Route I is preferred as it crosses only one parcel on the north side of Route 103 versus Route J which crosses six parcels (along existing ROW which would need to be expanded).

Focus Area 3 (Rader Road Substation)

There were three Alternative Routes developed west of the proposed Rader Road Substation. The Siting Team selected Route K (greenfield route) and Route M (existing 69 kV ROW), as the two options to proceed for public input. Pursuant to OAC Rule 4906-3-05, route shall be considered as alternatives if not more than 20 percent of the routes are in common. Route L was not selected due to approximately 27 percent route commonality with Route M.

To the east of Rader Road Substation, only two options (N and O) were developed. Route N was identified as preferred compared to Route O because the latter route requires a 90 degree turn angle.

Focus Area 4 (Reservoir Area)

Three Alternative Routes were developed for this Focus Area to potentially reduce impacts to the public park. Route R and Q were selected as the Preferred and Alternate Routes presented to the public. Route P was not selected, as it follows road ROW (Road 613/East Main) and would potentially interfere with an existing barn/hut structure north of the road.

Focus Area 5 (Residential Area)

Three Alternative Routes were developed within this Focus Area to avoid impacting a residence on the south side of Route 97. All three divert around the residence to meet the Company's criteria for offsets from residential structures. Route S was removed from further consideration due to the additional turn angles and road crossings proposed. Route U and Route T were advanced as these routes either follow the existing ROW or offer the most streamlined construction without impacting residential properties.

7.0 OPSB PUBLIC INFORMATION MEETING

The Company held the OPSB-jurisdictional public meeting on October 6, 2022, to obtain input from property owners, other stakeholders, and the general public. The rebuild sections of the route and the Alternative Routes presented in the meeting are illustrated on **Map 3 of Attachment A.** The meeting format included set up of stations/tables to provide information related to engineering and design of the structures, environmental and forestry concerns, Project need, real estate and ROW issues, and the siting process. The impacted and adjacent landowners were notified about the time and location of the meeting through the mailing of notification letters, a public notice in the local newspaper, and on the Company's project-specific website (https://aeptransmission.com/ohio/NewLiberty-EastLeipsic/).

Printed maps were provided at the open house for the public to review and were used to record written comments concerning sensitive resources in their local environment. Members of the Siting Team answered questions about the Project, and aided attendees in locating their property or other features of concern on aerial maps showing the array of rebuild segments and Alternative Routes within the five Focus Areas. Participants were encouraged to document the location of their houses, places of business, property of concern, or other sensitive resources on the printed maps. After the public open house, handwritten comments were digitized and entered into a GIS database.

Comment sheets were distributed to meeting attendees. The Siting Team reviewed the comment sheets and input them into a GIS record layer for the project fields. There were 28 property owners and other stakeholders in attendance and a total of nine comment cards were received.

No comments were received from the public concerning Focus Areas 1, 2, and 3. For Focus Area 4 (Reservoir Area), the mayor of McComb expressed the Village Council's preference for the Alternative Route P, which avoids the McComb Community Park. For Focus Area 5, two property owners suggested a modified alignment around the single residence. All the Alternative Routes parallel the property line to enhance a future sale of the parcel. This suggested alignment adds a 90-degree angle structure and both property owners in the vicinity agreed as provided in their written comments. Other comments from property owners pertained to the rebuild sections of the line and all were supportive of the Project. Some of the commenters did express their concerns and preferences on mitigating soil compaction and placement of the new poles to minimize impacts to agricultural crop production.

7.1 Incorporation of Public Information Meeting Feedback

The Siting Team discussed each of the public comments received at the October 6, 2022, meeting as well as e-mail comment submissions received following the meeting. Focus Areas 4 and 5 and the associated Alternative Routes were specifically discussed in detail based on public input. For Focus Area 4, the team initially decided to adopt Alternative Route Q which the Company maintains the ROW through the park and avoids new impacts. In comparison, Route Q includes one new 90-degree pole structure and would require land easements from four property owners for this new greenfield alignment.

The Company's real estate group contacted the owners for their input on the Alternative Route Q. Two or more of the property owners expressed their objection of Alternative Route Q in verbal communications. The property owners stated they had future development plans for the portion of their property that would be crossed by Alternative Q (north of the railroad) and that the new line would interfere with a storage area used for their business operations. The Siting Team selected the existing transmission line route through the park as the Preferred Route (Alternative Route R) based on the potential for land acquisition issues associated with Alternative Route Q.

For Focus Area 5, the Siting Team considered the adjustment to the Alternative Route proposed by the affected owner of the residence and the adjacent property owner (residence north of County Road 97). The proposed adjustment adds one new 90-degree structure (dead-end structure) but requires minimal additional length and easement modifications. The team decided to adopt this adjustment as proposed.

Additionally, the Siting Team discussed one Alternative Route modification in Focus Area 1 due to the cumulative amount of commonality between the two Alternative Routes in this Focus Area. The OPSB's commonality rule requires that two routes submitted in a certificate application must have less than 20 percent commonality. A route modification was necessary in Focus Area 1 as the area offered several opportunities for adjustments versus other Focus Areas. A new 0.5-

mile segment along the existing transmission line route, on the north side of Road E, was selected as one of the two Alternative Routes in this area. This new segment uses the existing transmission line centerline, which would be removed if not selected as the approved route by the OPSB. The route crosses Road E twice to avoid the communications tower located on the north side of Road E.

8.0 ROUTE SELECTION

The principal goal in selecting the Preferred and Alternate Routes, for purposes of submitting the OPSB application for Certificate, is to minimize overall impacts on natural and human environments while avoiding indirect routes, unreasonable costs, and special design requirements. However, in practice, it is not usually possible to always minimize all potential impacts. There are often inherent tradeoffs in potential impacts to every siting decision. For example, a route that avoids crossing a parking lot within a recreation area (where ROW currently exists, and encroachments are minimal) may be less impactful than a new greenfield route that impacts multiple property owners who may oppose the route due to future development plans or other reasons. Additionally, the new route would require new easement agreements. Therefore, an underlying goal of a siting study is to reach a reasonable balance between minimizing potential impacts on one resource versus increasing the potential impacts on another.

Following an extensive data gathering, route development, and comparative analysis process, the Siting Team identified the Preferred and Alternate Routes as shown in **Map 5, Attachment A**. The following summarizes the rationale for selection of the Preferred Route, and thus, the route that the Siting Team considered to best minimize the overall impacts of the Project. The majority of the Preferred Route and Alternate Route is proposed to be rebuilt on or near the existing transmission line centerline and will be placed just outside of public road ROW. The rebuild sections account for 12.7 miles of the total project length of 16.6 miles. The sections proposed to be built in new ROW off of the existing transmission line center line is 3.95 miles in length.

- Focus Area 1 – The Preferred Route is aligned for the most direct route (new ROW on agricultural land along Road E), eliminating one mile of additional length along the existing transmission line route and with no additional impacts to residences or other sensitive resources. The Preferred Route also avoids conflicts with a communications tower and a building associated with the Leipsic Reservoir. Refer to **Map 5 (page 1 and 2)** for the Preferred Route in Focus Area 1. The Alternate Route segment also follows Road E but utilizes the north side of the road for 0.5 miles, which was established after the second public information meeting.

- Focus Area 2 – The Preferred Route is parallel to a road on agricultural land (one property owner) and will avoid an encroachment where the existing line is too close to a residence.

Refer to **Map 5 (page 4)** for the Preferred Route. The Alternate Route is shown on the same map.

- Focus Area 3 – The Preferred Route eliminates an encroachment for four residences compared to the Alternate Route. The three residential encroachments on the north side of the Village of McComb will be avoided with the Preferred Route, albeit resulting in new ROW (for 0.75 mile) alignment further into the agricultural land parcel. According to AEP's engineer, the preliminary evaluation (early phase of siting study) of the existing 69 kV line segment, which included the three residential encroachments, could potentially be constructed to avoid clearance requirement issues. Thus, the alternative route segment that is positioned further north into the agricultural field (0.75-mile length) was only added after the study segment and alternative route development phases. The alternative route that is further into the field was selected as the Preferred Route within Focus Area 3.

  Additionally, a portion of the Preferred Route will rebuild on centerline in the western portion or the focus area, thus avoiding some impacts to agricultural land operations. Refer to **Map 5 (page 6 and 7)** for the Preferred Route and Alternate Route.

- Focus Area 4 – The Preferred Route will mostly stay on existing centerline including through the Village of McComb Community Park. The Preferred Route alignment avoids new easements that would be required for the Alternate Route. Based on the Company's initial contact with the Alternate Route landowners (where new easements would be required), the landowners opposed the Alternate Route as discussed above. The rebuild alignment through the park grounds can be constructed in compliance with the Company's design criteria and would not require the removal of any recreational equipment according to AEP's engineer. Refer to **Map 5 (page 7)** for the Preferred Route and Alternate Route.

- Focus Area 5 – The Preferred Route uses input received from the property owner, including maximizing the distance from their residence and paralleling the road and parcel boundaries. A second nearby property owner, who commented on the adverse aesthetic impacts from an alternative route along public road (County Road 97), also supported the Preferred Route. The Preferred Route in the focus area also minimizes the route length but will require one additional dead-end angle structure. Refer to **Map 5 (page 8)** which depicts the Preferred Route; the alignment was established as a new Alternative Route following the public information meeting. The Alternate Route is also shown in **Map 5 (page 8)**.

The rationale presented is derived from the accumulation of the siting decisions made throughout the process, the knowledge and experience of the Siting Team, comments from the public, local municipal officials and stakeholders, and the comparative analysis of potential impacts presented in Section 5.0.

Collectively, the Siting Team believes that both the Preferred and Alternate Routes meet the goal of minimizing impacts on land use, and the natural and cultural resources along the route, while avoiding unnecessary length, extreme costs, acquiring ROW easements from property owners not affected by the existing transmission 34 kV and 69 kV line, and non-standard design requirements.

The Preferred and Alternate Routes will be submitted to the OPSB in the Company's certificate application in January 2023.

9.0 REFERENCES

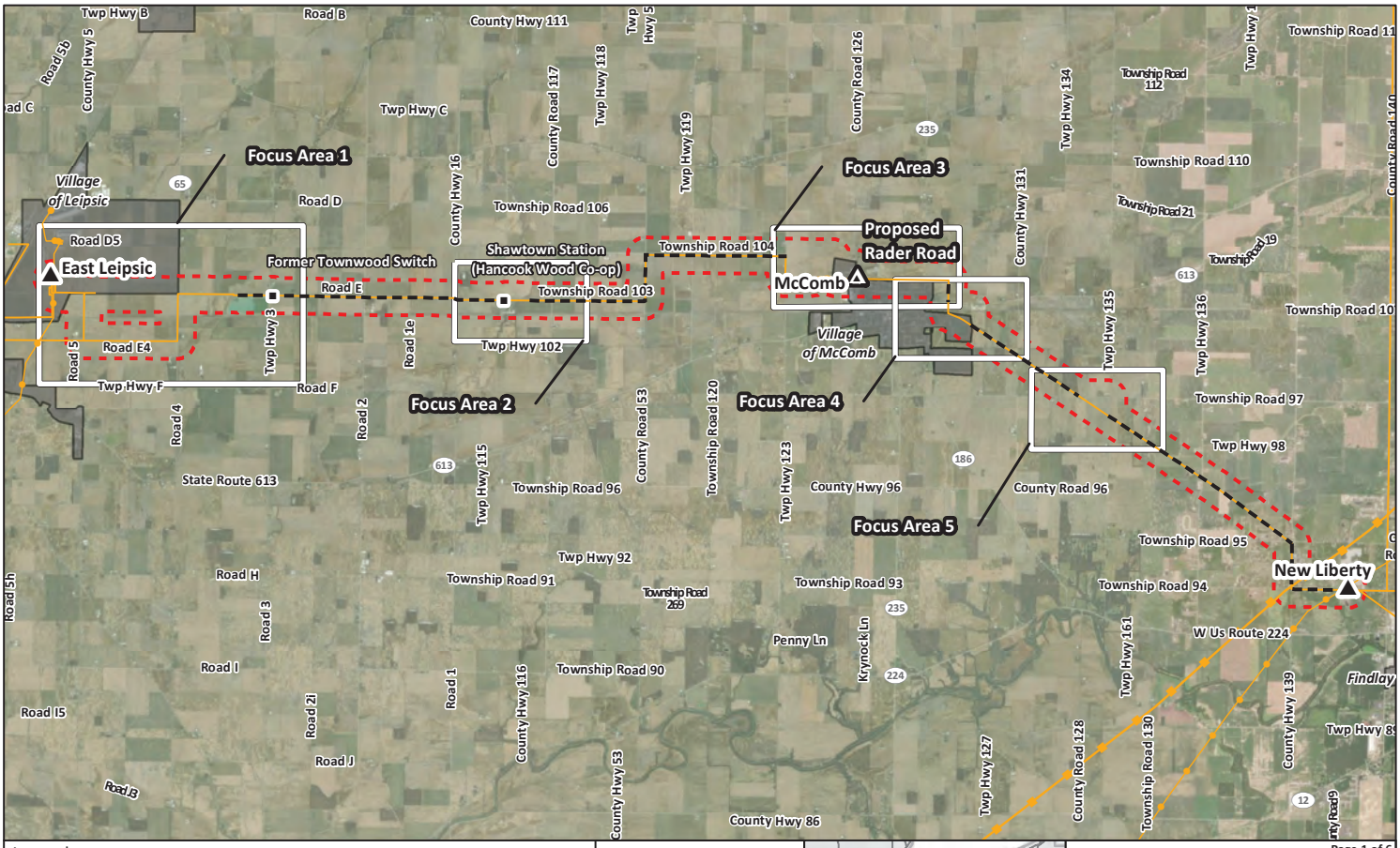
Environmental Systems Research Institute (ESRI). 2021. World Imagery Clarity Basemap.

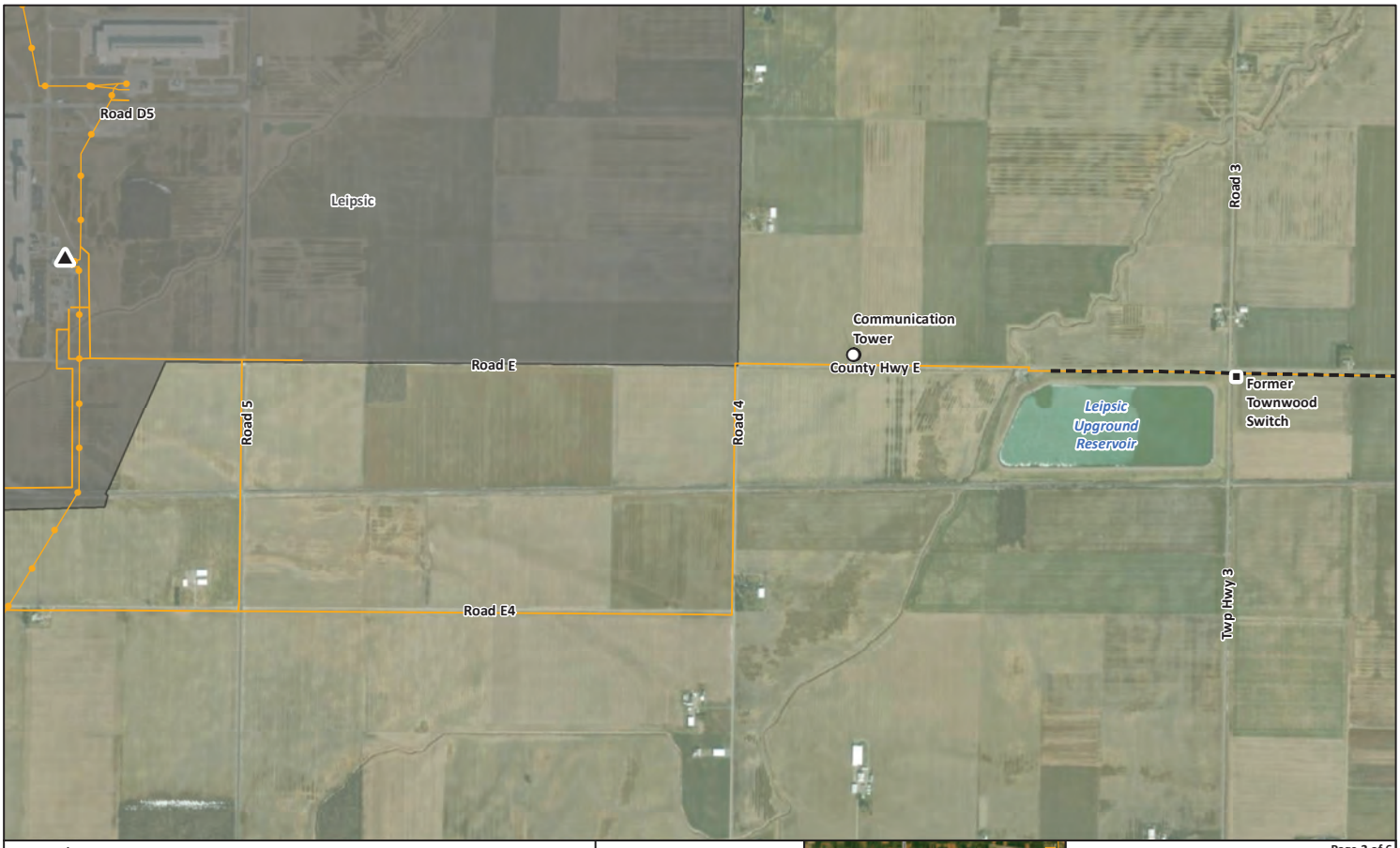
Federal Emergency Management Agency (FEMA). 2021. FEMA Flood Map Service Center FIRMette Web. Accessed April 2021 2021.https://msc.fema.gov/portal/home

USGS. 2021. Global Names Information System (GNIS).

USGS. 2021. USGS TNM Hydrography (NHD), accessed April 2021 at https://apps.nationalmap.gov/services/.

Attachment A: Maps


Focus Area 1
Focus Area 2
Focus Area 3
Focus Area 4
Focus Area 5
East Leipsic
McComb
New Liberty
Proposed Rader Road
Village of Leipsic
Village of McComb
Former Townwood Switch
Shawtown Station (Hancock Wood Co-op)
Twp Hwy B
Road B
County Hwy 111
Twp Hwy C
Road D
Road D5
Road E
Road E4
Twp Hwy F
Road F
Township Road 106
Township Road 104
Township Road 103
Twp Hwy 102
State Route 613
Township Road 96
County Hwy 96
County Road 96
Twp Hwy 92
Township Road 91
Township Road 93
Township Road 94
Township Road 95
Township Road 97
Twp Hwy 98
Road H
Road I
Road I5
Road J
Road J3
Penny Ln
Township Road 90
County Hwy 86
W Us Route 224
Findlay
Township Road 110
Township Road 112
Township Road 21
Township Road 19
Township Road 11
Township Road 10
Twp Hwy 1
Twp Hwy 5
Twp Hwy 3
Road 1e
Road 4
Road 2
Road 3
Road 1
Road 2i
Road 5h
Road 5b
County Hwy 5
County Hwy 16
County Road 117
Twp Hwy 118
Twp Hwy 119
County Road 126
Twp Hwy 134
County Hwy 131
Twp Hwy 135
Twp Hwy 136
Twp Hwy 115
County Road 53
Township Road 120
Twp Hwy 123
Twp Hwy 127
County Road 128
Township Road 130
Twp Hwy 161
County Hwy 139
County Hwy 116
Krynock Ln
Legend
Existing Substation
Proposed Substation
Switch Station
Existing Transmission Line to be Rebuilt
Existing Transmission (69 kV or lower)
Existing Transmission (138 kV)
Existing Transmission (345 kV +)
Study Area
Focus Area
Municipal Boundary
Basemap Source:
ESRI World Imagery, 2021
1:95,000
Ohio State Plane North
NAD 83
December 16, 2022
Cleveland
Columbus
Cincinnati
Page 1 of 6
Map 1
Study Area/Focus Areas
New Liberty-East Leipsic
138 kV Upgrade Project
0
0.5
1
1.5
2
Miles



Legend

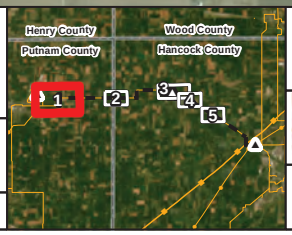
- Existing Substation
- Switch Station
- Communication Tower
- Existing Transmission Line to be Rebuilt
- Existing Transmission (69 kV or lower)
- Existing Transmission (138 kV)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:18,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 1 - Study Area/Focus Areas
Focus Area 1:
East Leipsic to Former Townwood Switch

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet

Legend

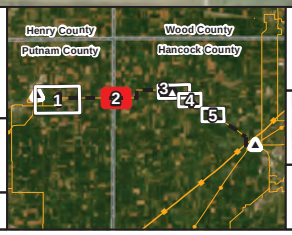
- Switch Station
- Existing Transmission Line to be Rebuilt
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

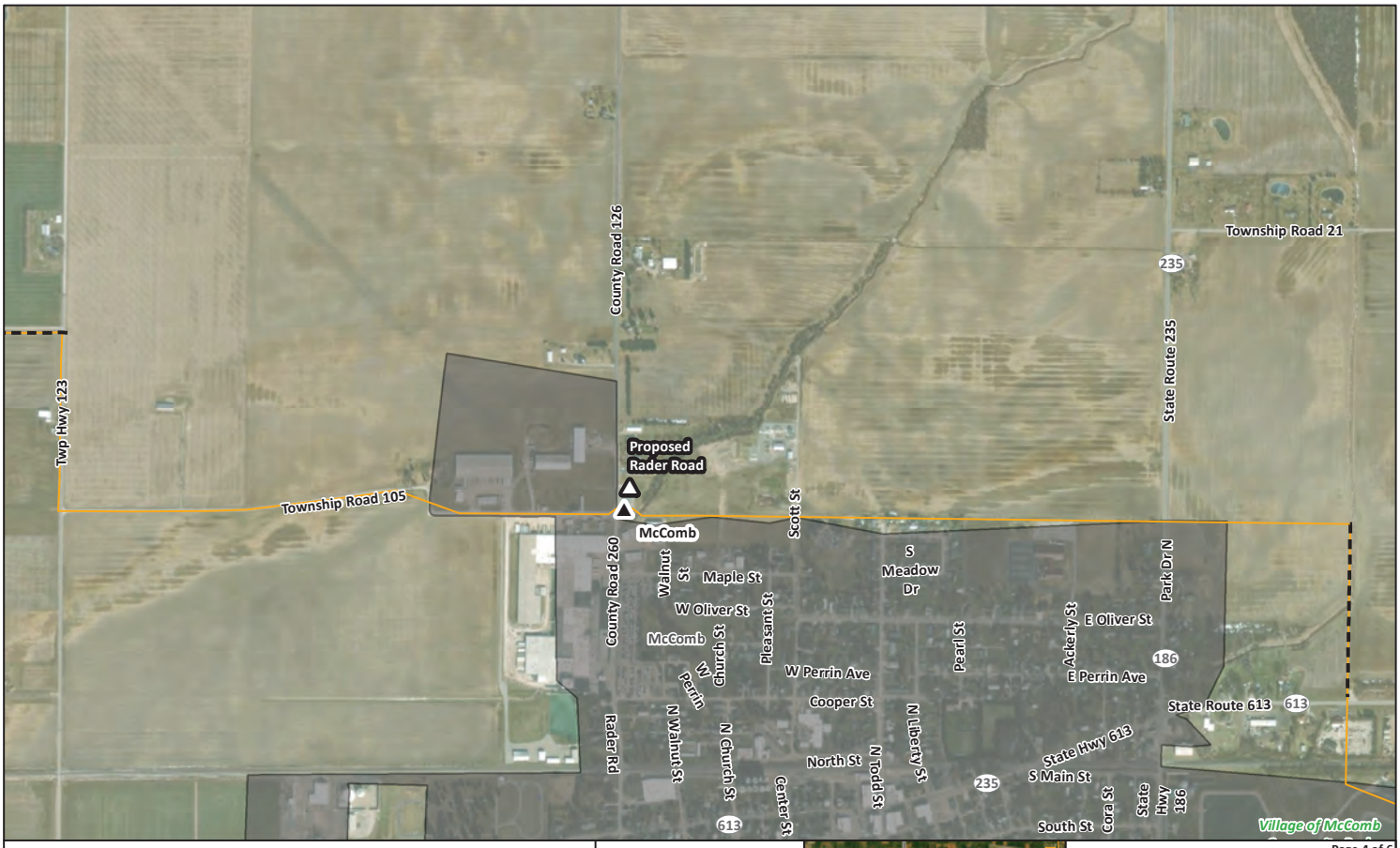
December 16, 2022



Map 1 - Study Area/Focus Areas
Focus Area 2:
Shawtown (Hancock Wood Co-Op)

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

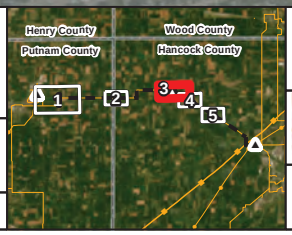
- Existing Substation
- Proposed Substation
- Existing Transmission Line to be Rebuilt
- Existing Transmission (69 kV or lower)
- Existing Transmission (345 kV +)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:12,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 1 - Study Area/Focus Areas
Focus Area 3:
Rader Road

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet

Legend

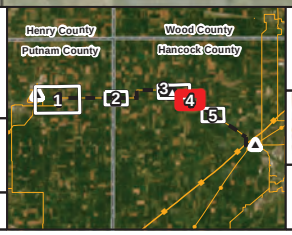
- Existing Transmission Line to be Rebuilt
- Existing Transmission (69 kV or lower)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 1 - Study Area/Focus Areas
Focus Area 4:
Reservoir Area

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet

Legend

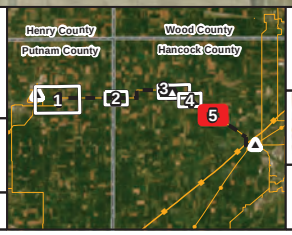
- Existing Transmission Line to be Rebuilt
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 1 - Study Area/Focus Areas
Focus Area 5:
Residential Area

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet

Legend

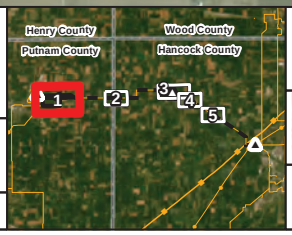
- Existing Substation
- Communication Tower
- Existing Transmission Line to be Rebuilt
- Study Segment
- Existing Transmission (69 kV or lower)
- Existing Transmission (138 kV)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:18,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 2

Study Segment Network/Rebuild Segments
Focus Area 1:
East Leipsic to Former Townwood Switch

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet

Legend

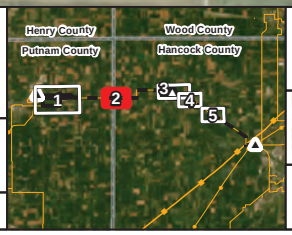
- Existing Transmission Line to be Rebuilt
- Study Segment
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 16, 2022

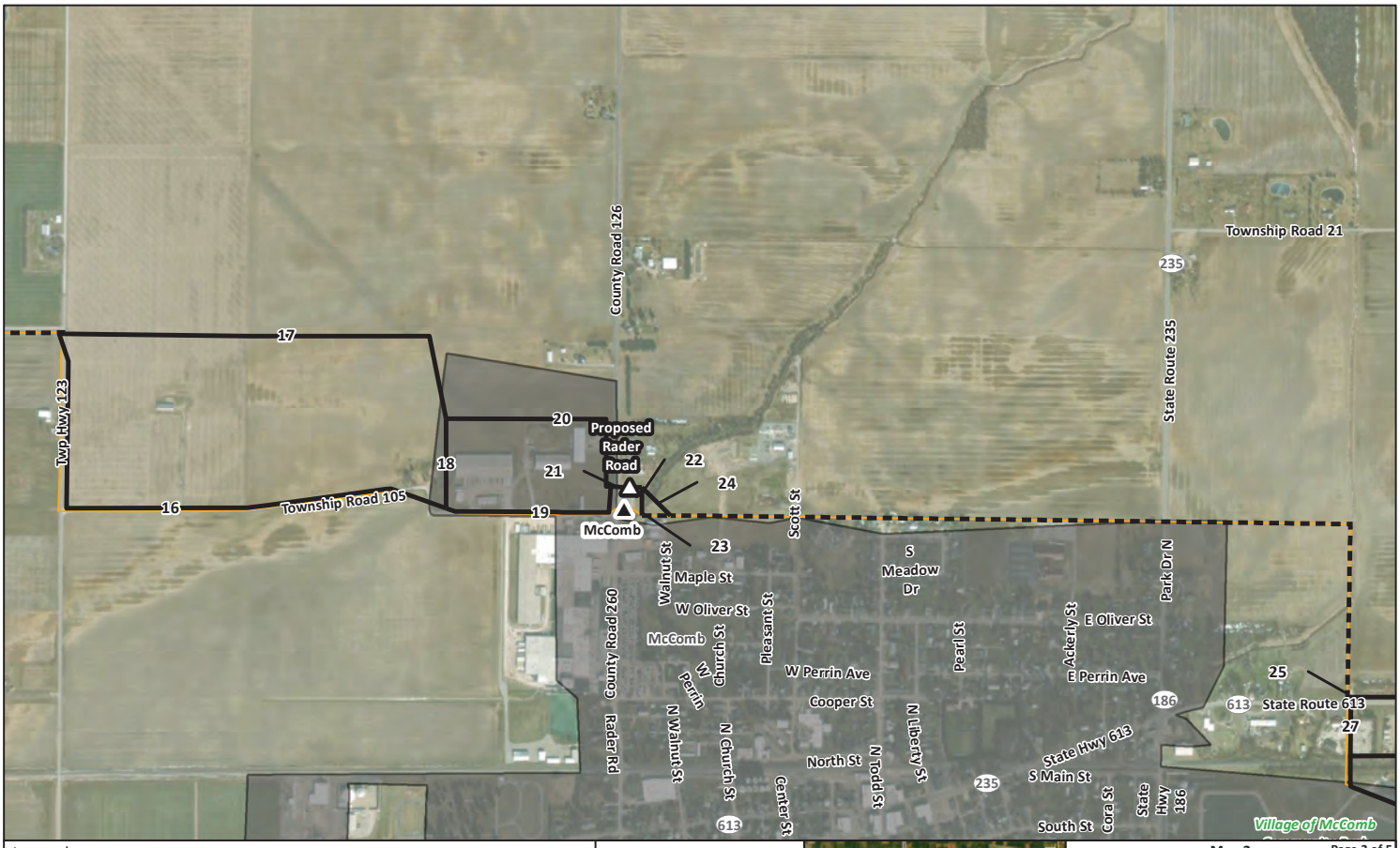


Map 2

Study Segment Network/Rebuild Segments
Focus Area 2:
Shawtown (Hancock Wood Co-Op)

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

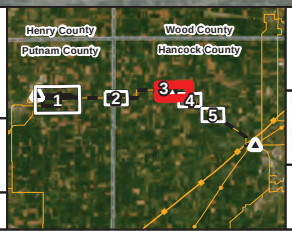
- Existing Substation
- Proposed Substation
- Existing Transmission Line to be Rebuilt
- Study Segment
- Existing Transmission (69 kV or lower)
- Existing Transmission (345 kV +)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:12,000

Ohio State Plane North
NAD 83

December 16, 2022

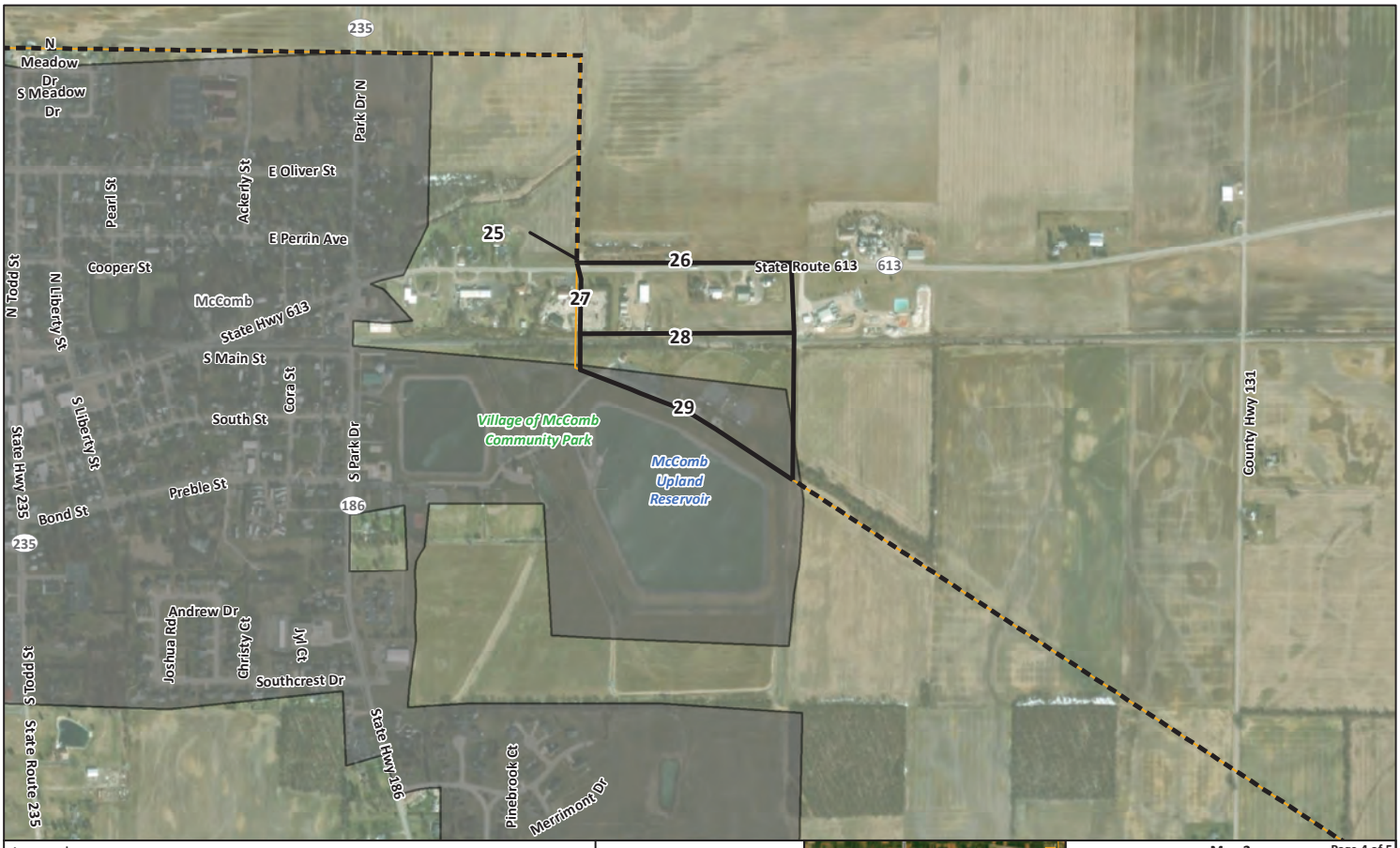


Map 2

Study Segment Network/Rebuild Segments
Focus Area 3:
Rader Road

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

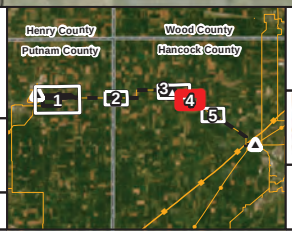
- Existing Transmission Line to be Rebuilt
- Study Segment
- Existing Transmission (69 kV or lower)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 2

Study Segment Network/Rebuild Segments
Focus Area 4:
Reservoir Area

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet

Legend

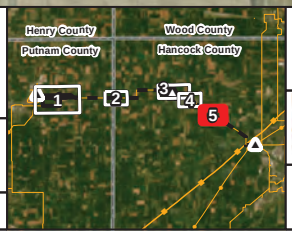
- Existing Transmission Line to be Rebuilt
- Study Segment
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 16, 2022

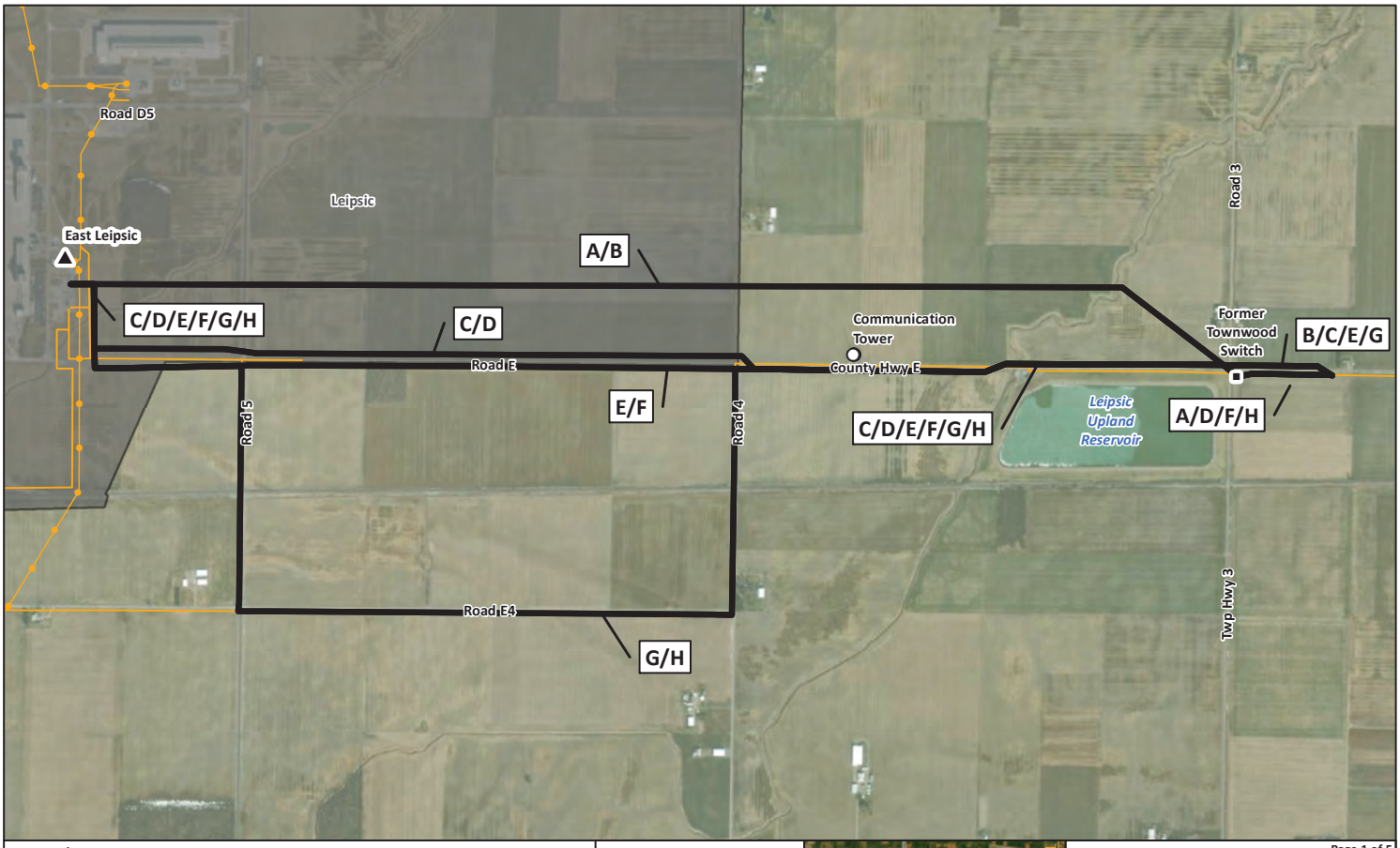


Map 2

Study Segment Network/Rebuild Segments
Focus Area 5:
Residential Area

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

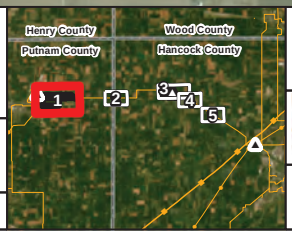
- Existing Substation
- Switch Station
- Communication Tower
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Existing Transmission (138 kV)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:18,000

Ohio State Plane North
NAD 83

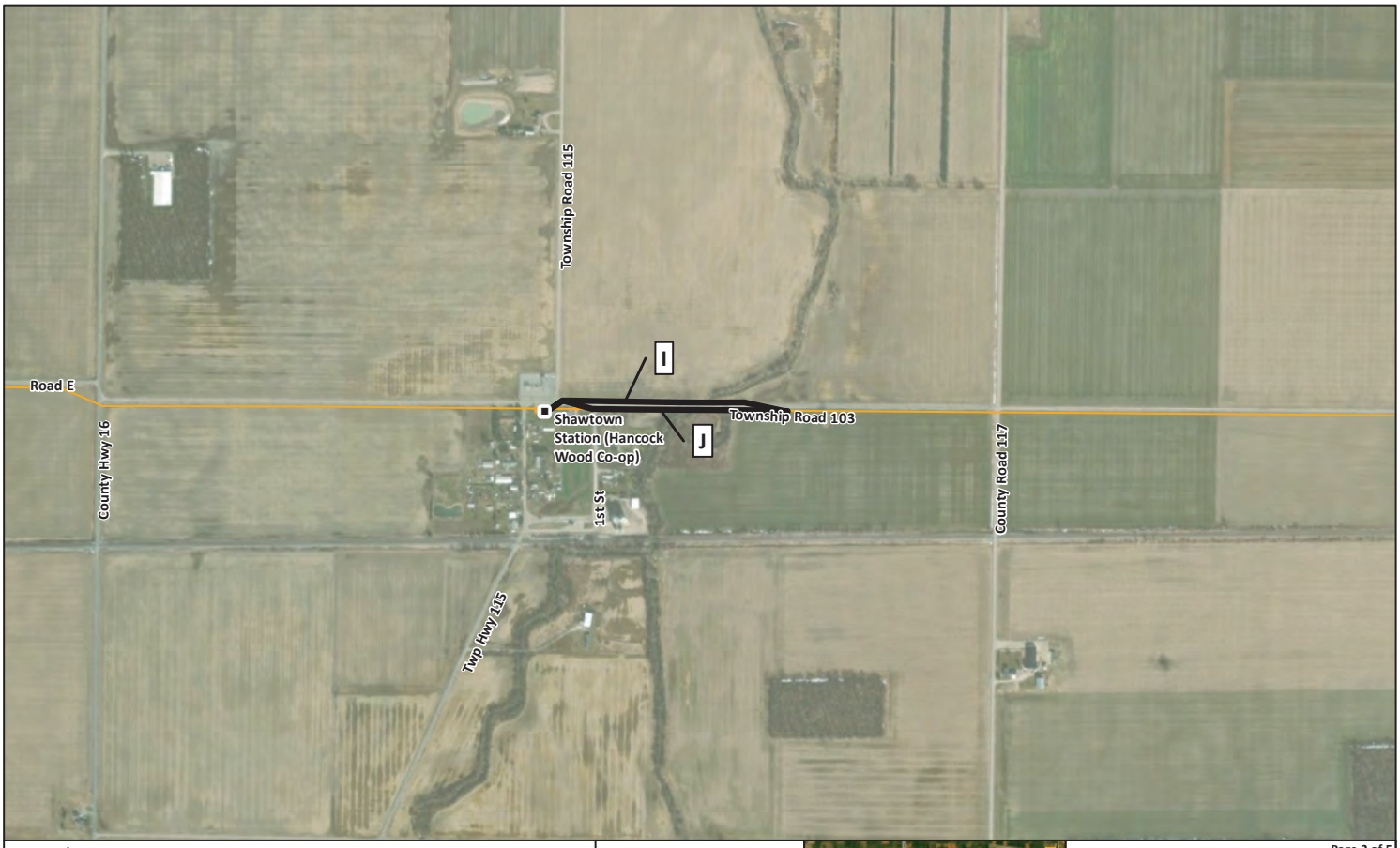
December 16, 2022



Map 3 - Alternative Routes
Focus Area 1:
East Leipsic to Former Townwood Switch

New Liberty-East Leipsic
138 kV Upgrade Project

0 500 1,000 1,500 2,000
Feet



Legend

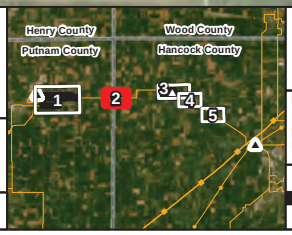
- Switch Station
- Project Alternatives
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

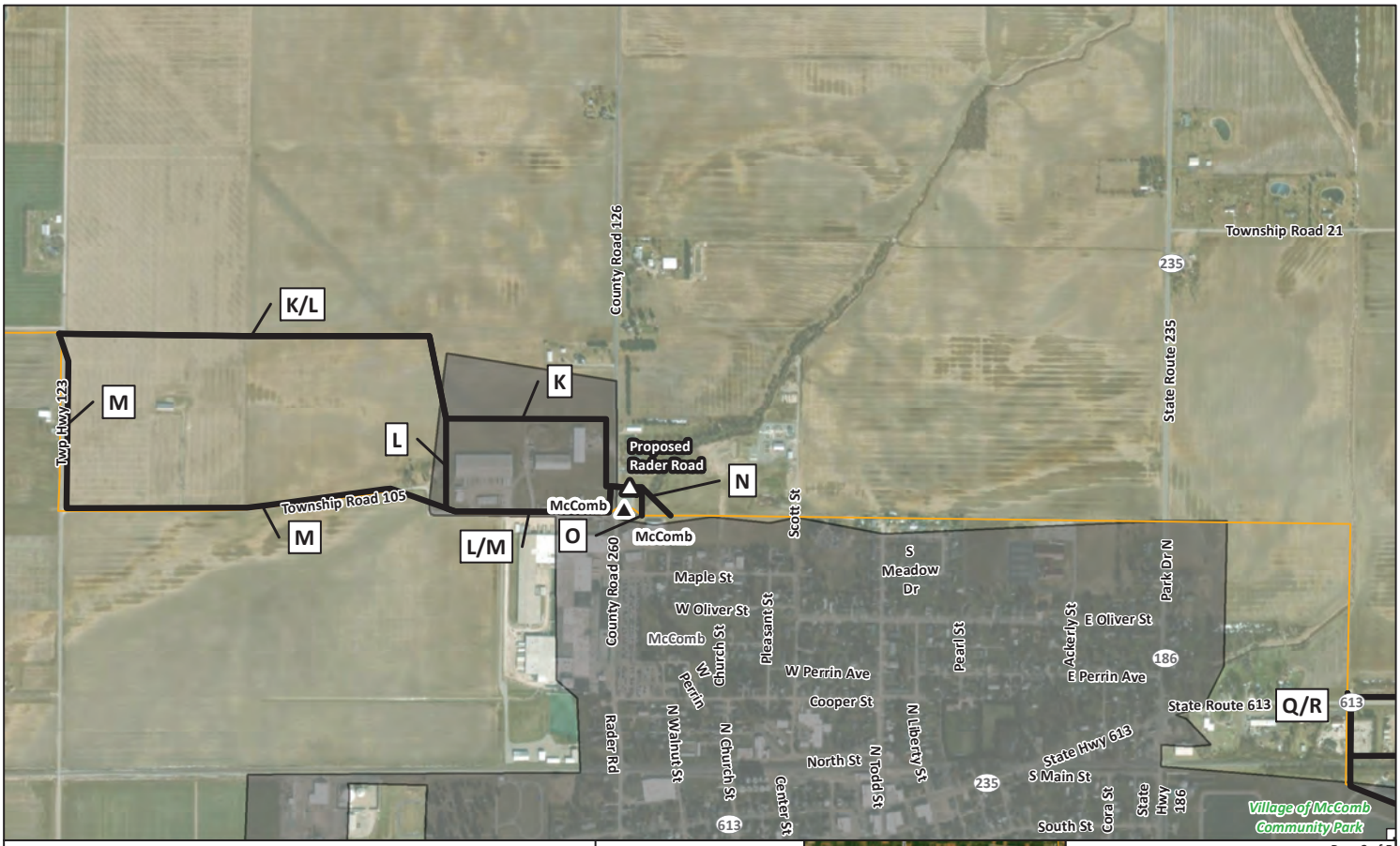
December 16, 2022



Map 3 - Alternative Routes
Focus Area 2:
Shawtown (Hancock Wood Co-Op)

New Liberty-East Leipsic
138 kV Upgrade Project

500 1,000 1,500 2,000
Feet



Legend

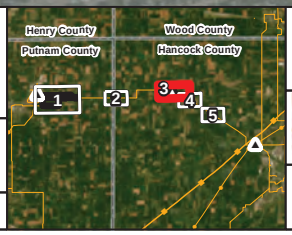
- Existing Substation
- Proposed Substation
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Existing Transmission (345 kV +)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:12,000

Ohio State Plane North
NAD 83

December 16, 2022



Page 3 of 5

Map 3 - Alternative Routes
Focus Area 3:
Rader Road

New Liberty-East Leipsic
138 kV Upgrade Project

0 500 1,000 1,500 2,000
Feet

Legend

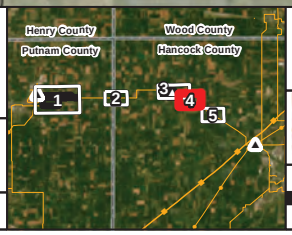
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

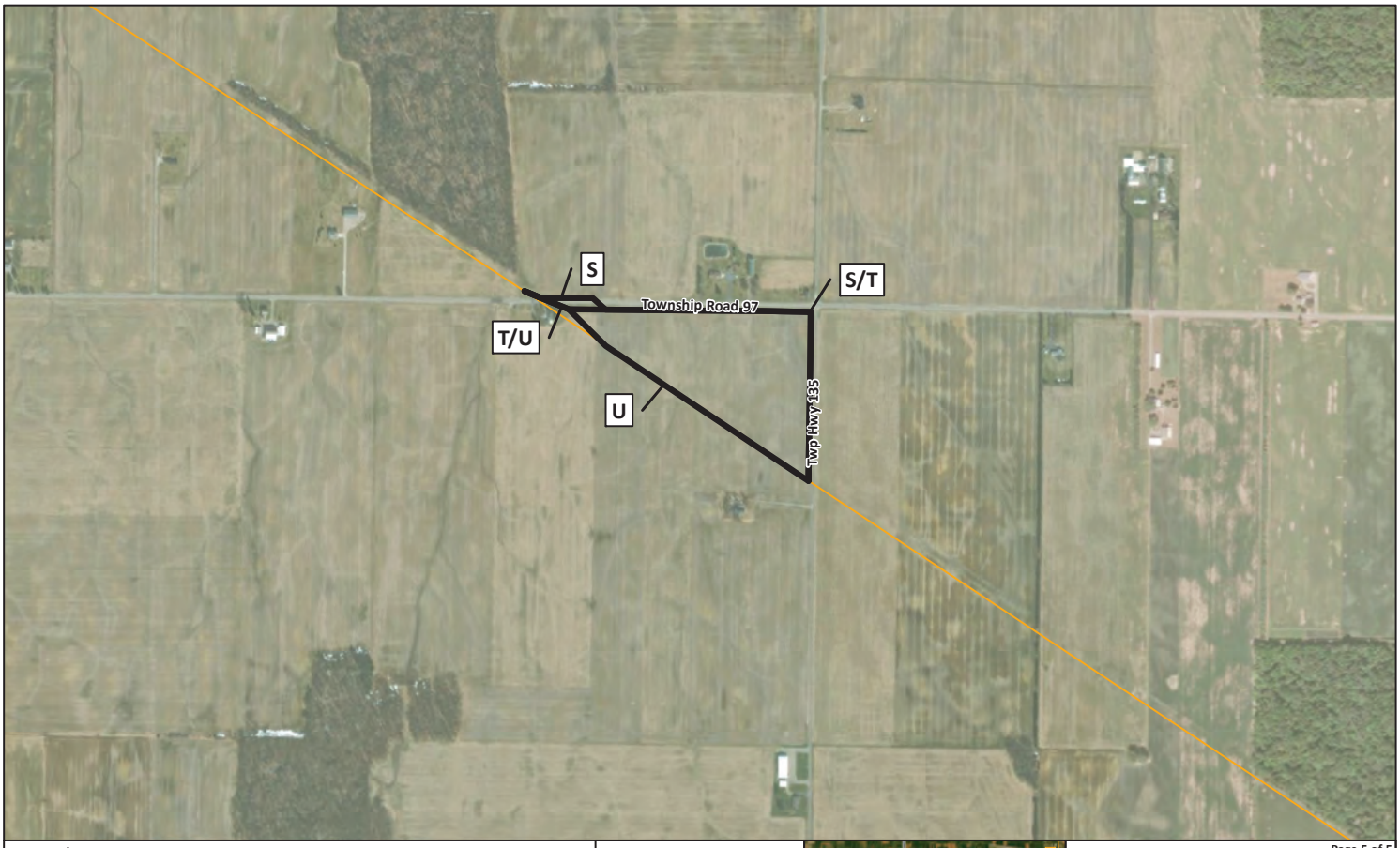
December 16, 2022



Map 3 - Alternative Routes
Focus Area 4:
Reservoir Area

New Liberty-East Leipsic
138 kV Upgrade Project

500 1,000 1,500 2,000
Feet



Legend

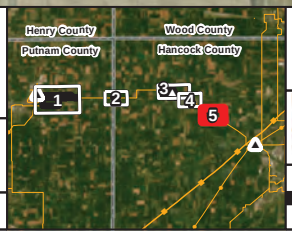
- Project Alternatives
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

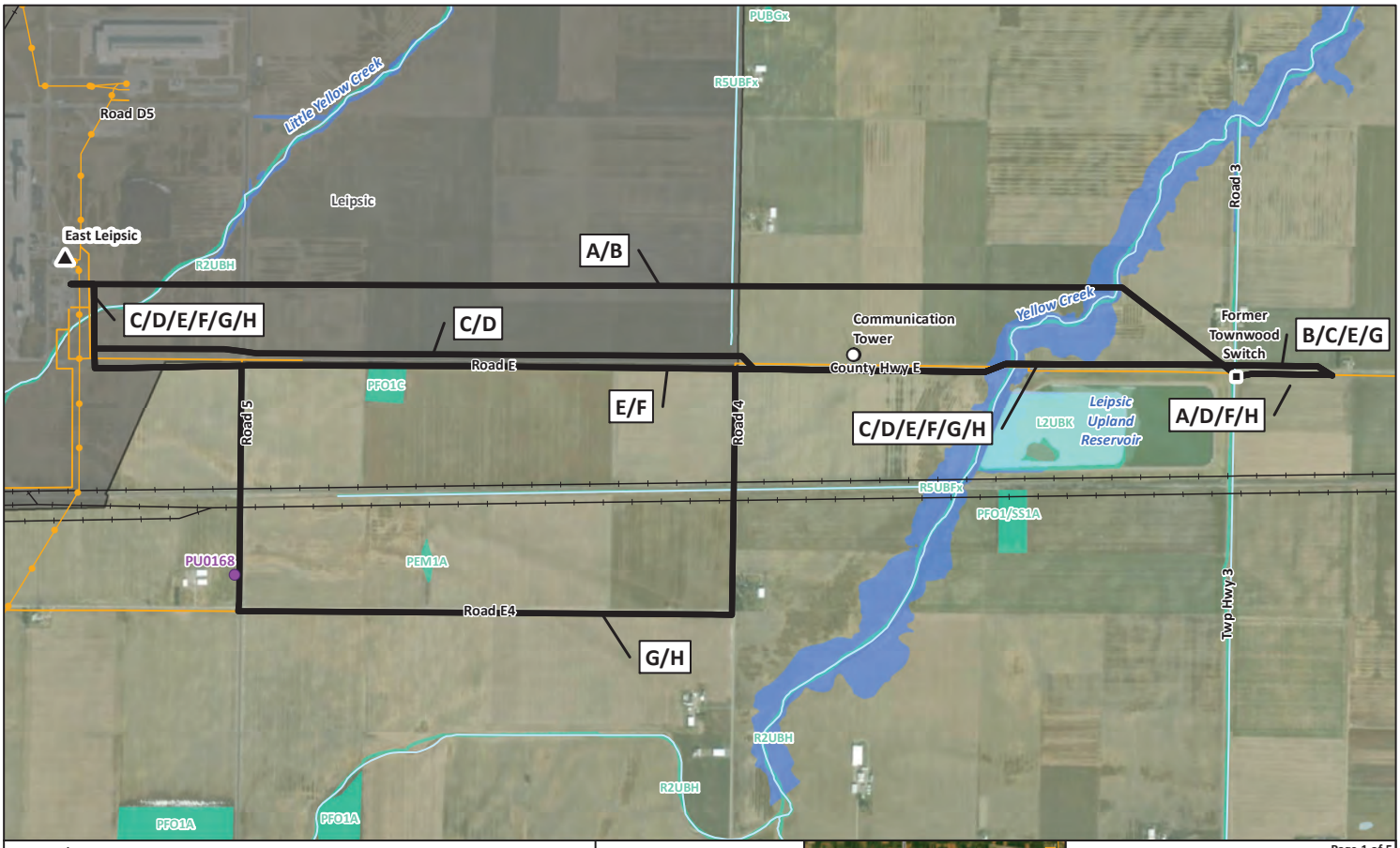
December 16, 2022



Map 3 - Alternative Routes
Focus Area 5:
Residential Area

New Liberty-East Leipsic
138 kV Upgrade Project

500 1,000 1,500 2,000
Feet



Legend

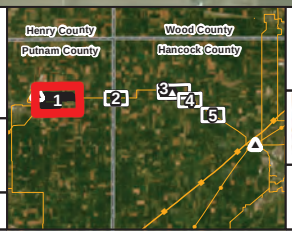
- Existing Substation
- Switch Station
- Communication Tower
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Existing Transmission (138 kV)
- Historic Site
- Railroad
- Stream/River (USGS)
- Waterbody (USGS)
- Wetland (NWI)
- Floodplain (FEMA)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:18,000

Ohio State Plane North
NAD 83

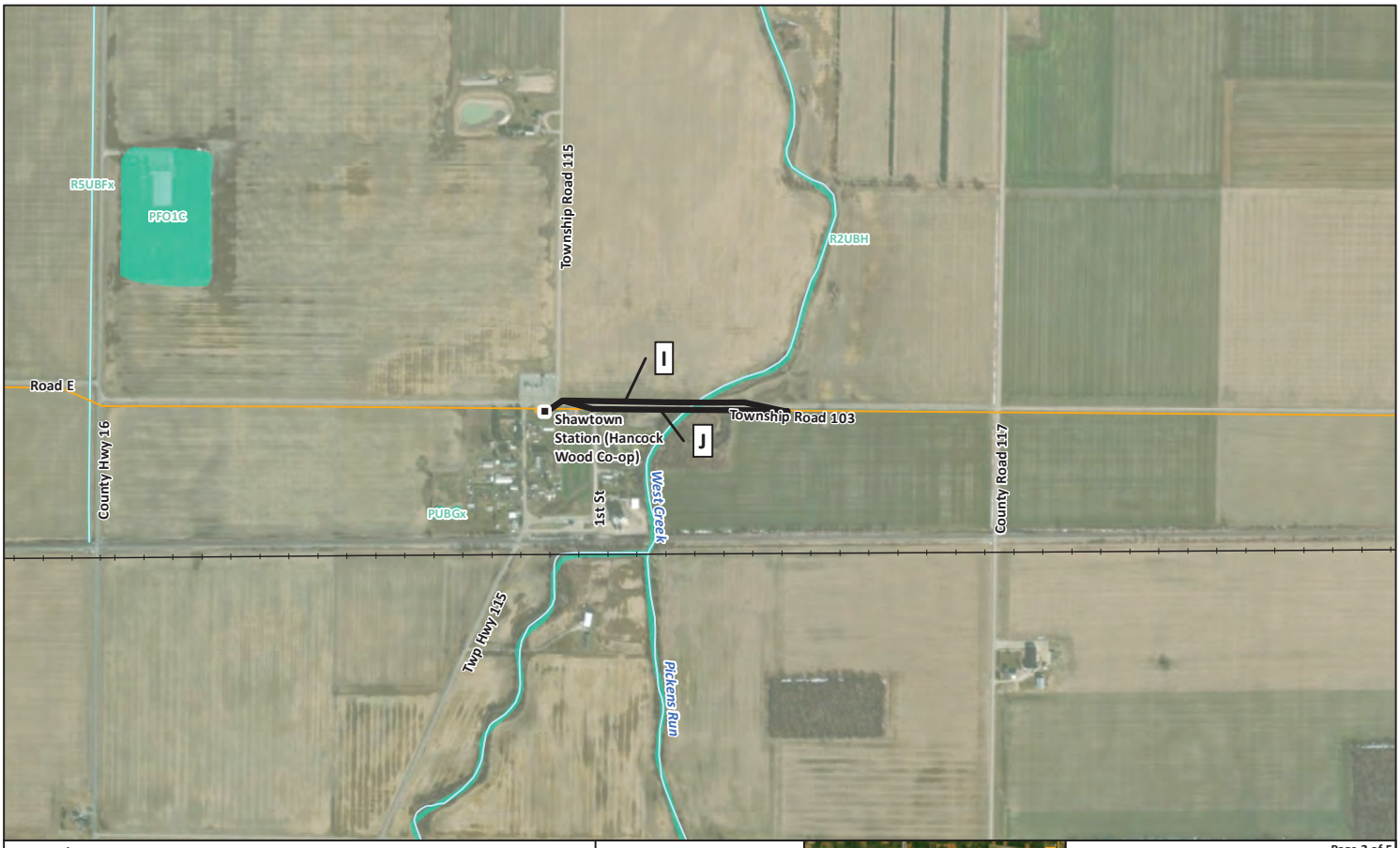
December 16, 2022



Map 4 - Resources
Focus Area 1:
East Leipsic to Former Townwood Switch

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

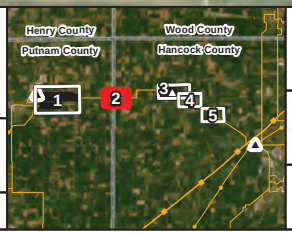
- Switch Station
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Railroad
- Stream/River (USGS)
- Wetland (NWI)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

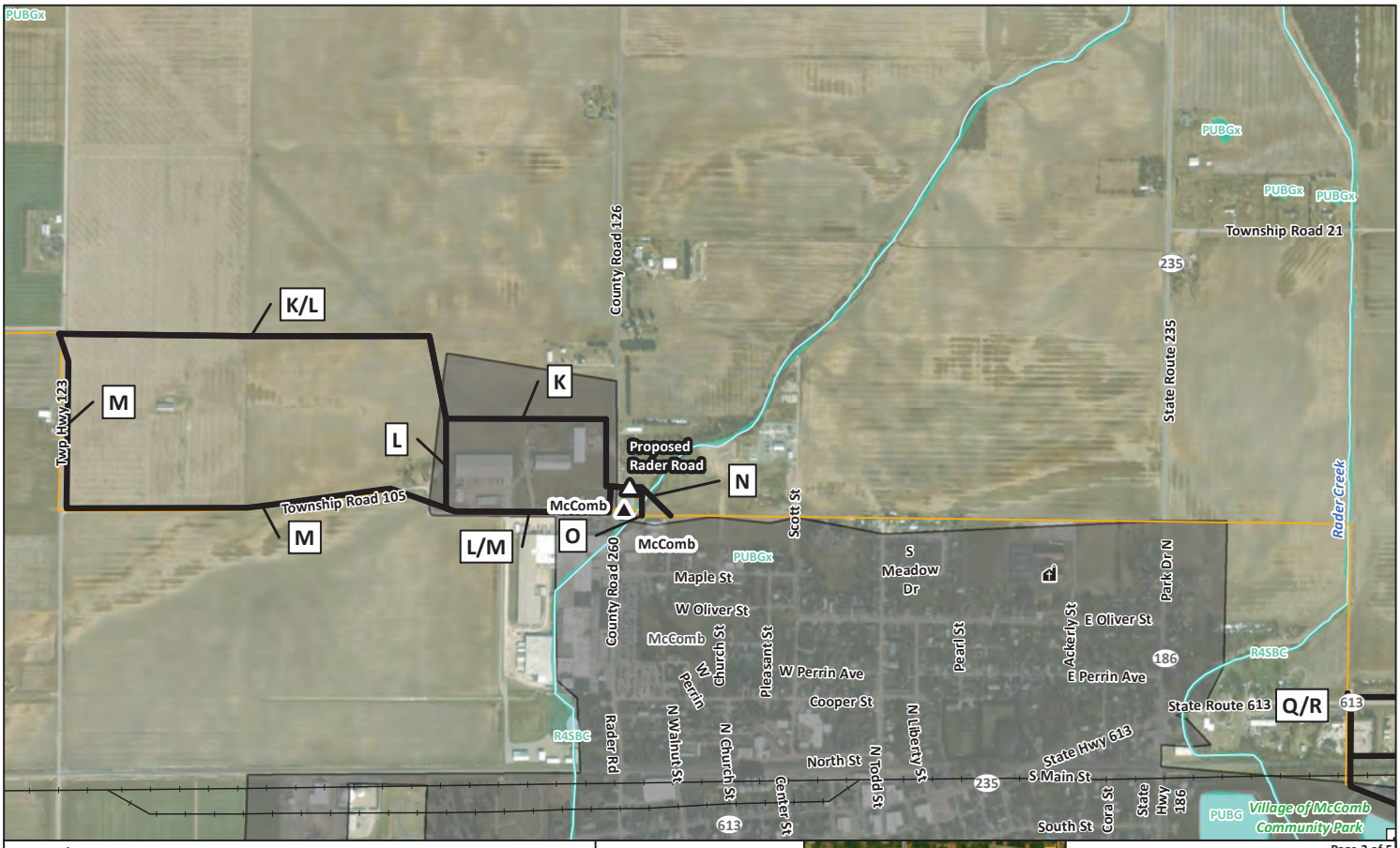
December 16, 2022



Map 4 - Resources
Focus Area 2:
Shawtown (Hancock Wood Co-Op)

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

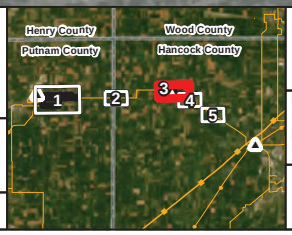
- Existing Substation
- Proposed Substation
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Existing Transmission (345 kV +)
- Place of Worship
- Railroad
- Stream/River (USGS)
- Waterbody (USGS)
- Wetland (NWI)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:12,000

Ohio State Plane North
NAD 83

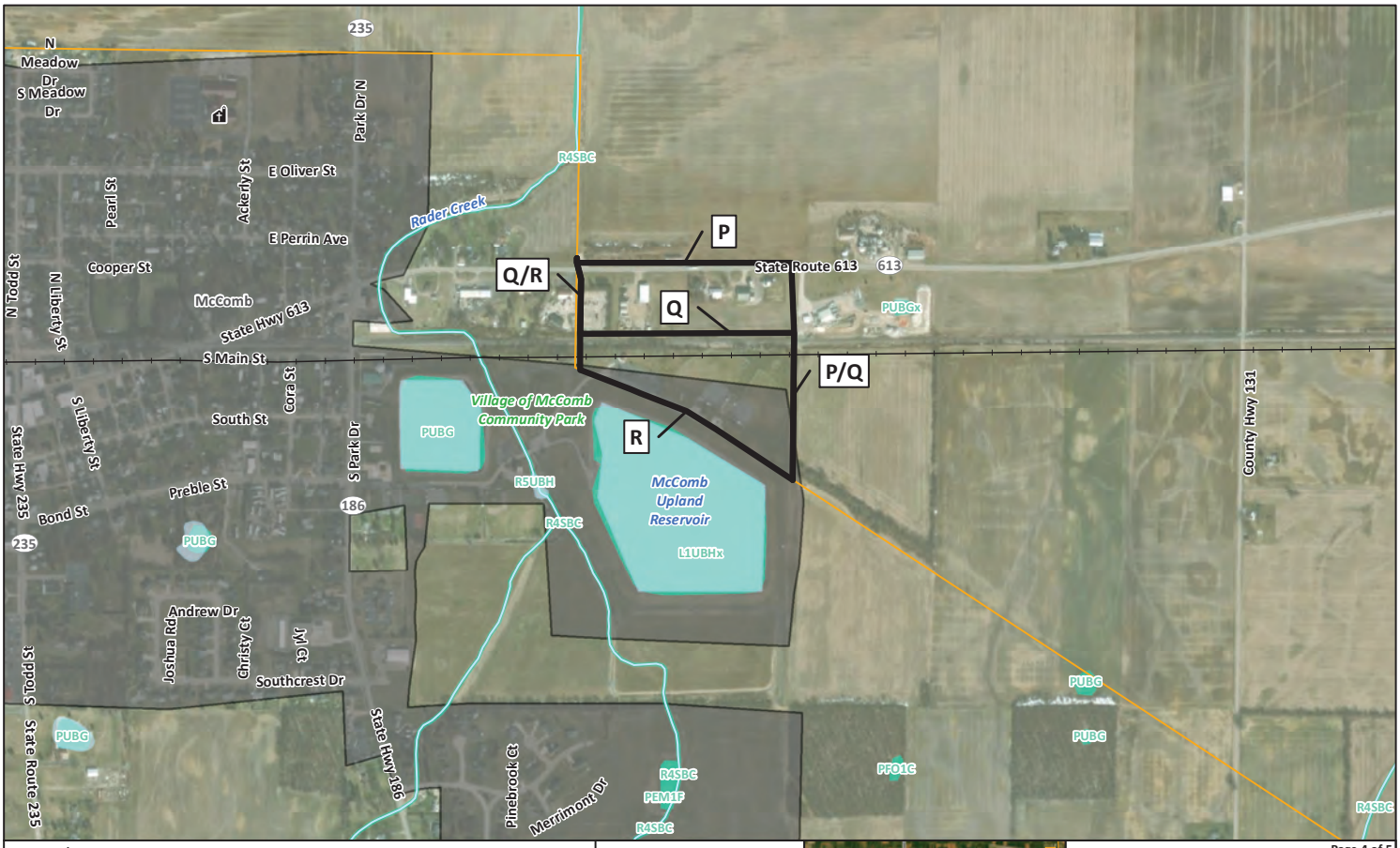
December 16, 2022



Map 4 - Resources
Focus Area 3:
Rader Road

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

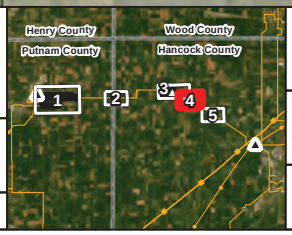
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Place of Worship
- Railroad
- Stream/River (USGS)
- Waterbody (USGS)
- Wetland (NWI)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

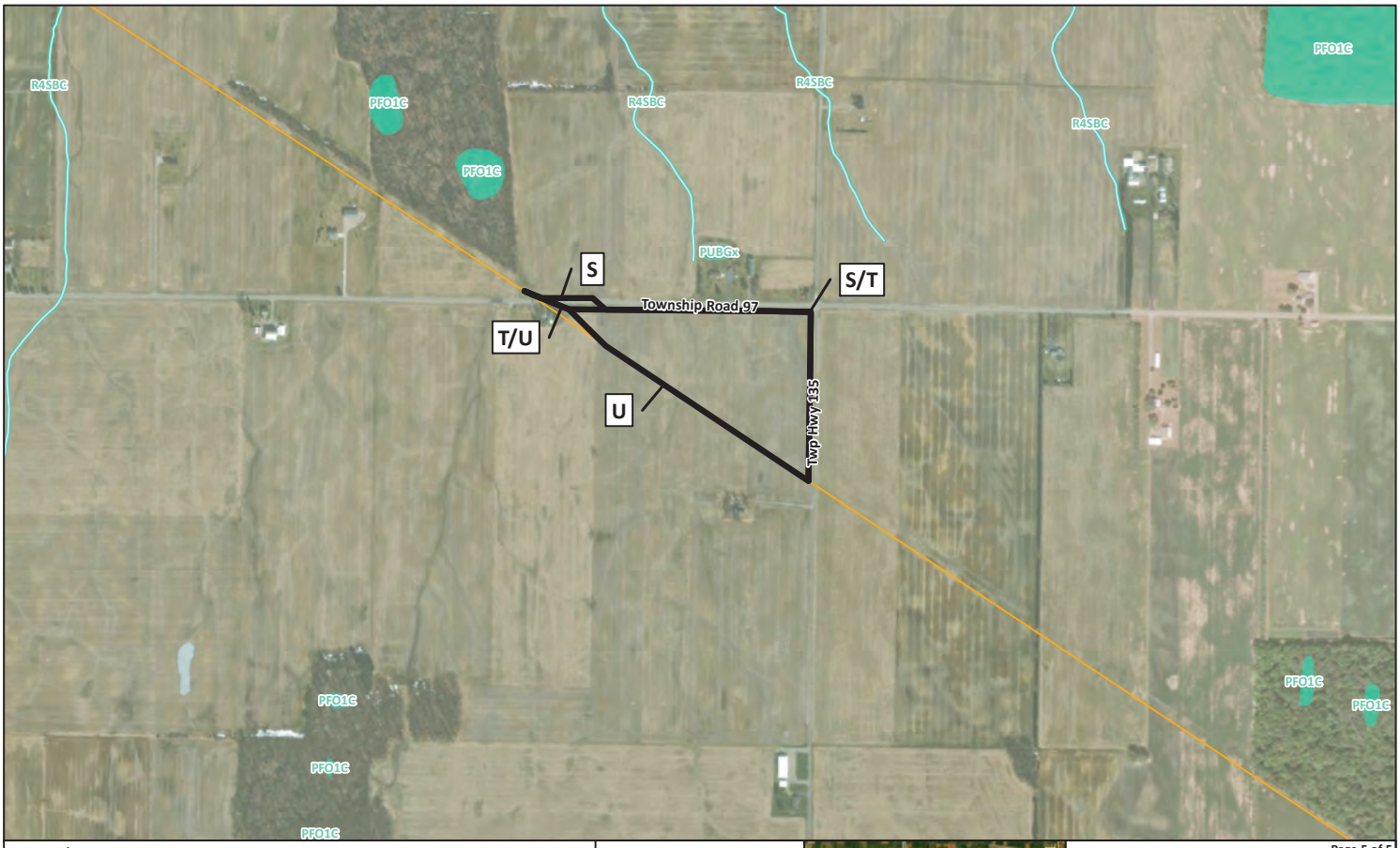
December 16, 2022



Map 4 - Resources
Focus Area 4:
Reservoir Area

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet



Legend

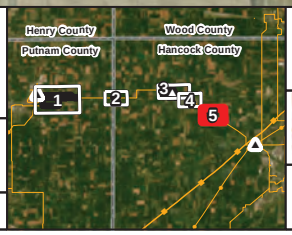
- Project Alternatives
- Existing Transmission (69 kV or lower)
- Stream/River (USGS)
- Waterbody (USGS)
- Wetland (NWI)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

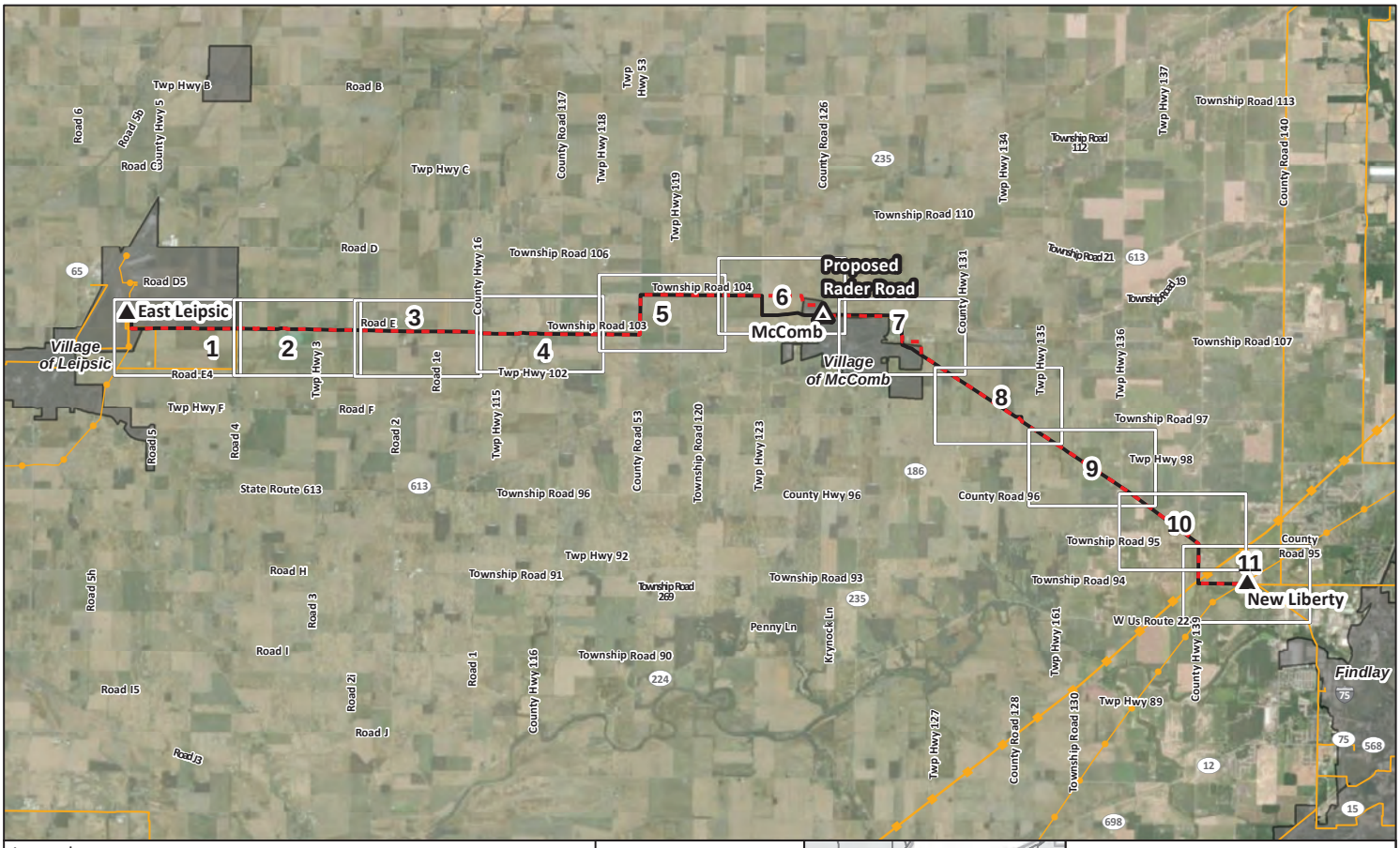
December 16, 2022



Map 4 - Resources
Focus Area 5:
Residential Area

New Liberty-East Leipsic
138 kV Upgrade Project

0 400 800 1,200 1,600
Feet


East Leipsic
Village of Leipsic
McComb
Village of McComb
Proposed Rader Road
New Liberty
Findlay
1
2
3
4
5
6
7
8
9
10
11
Twp Hwy B
Road B
Road 6
Road 5b
Road C
County Hwy 5
Twp Hwy C
County Road 117
Twp Hwy 118
Twp Hwy 53
County Road 126
Twp Hwy 119
Twp Hwy 134
Township Road 112
Twp Hwy 137
Township Road 113
County Road 140
Township Road 110
Road D
Road D5
County Hwy 16
Township Road 106
Township Road 104
Township Road 103
Township Road 21
Township Road 19
County Hwy 131
Township Road 107
Road E
Road E4
Twp Hwy 3
Road 1e
Twp Hwy 102
Twp Hwy 135
Twp Hwy 136
Twp Hwy F
Road F
Road 5
Road 4
Road 2
Twp Hwy 115
County Road 53
Township Road 120
Twp Hwy 123
Township Road 97
Twp Hwy 98
State Route 613
Township Road 96
County Hwy 96
County Road 96
Township Road 95
County Road 95
Twp Hwy 92
Road H
Road 5h
Road 3
Township Road 91
Township Road 269
Township Road 93
Township Road 94
W Us Route 22
Penny Ln
Kryncock Ln
Twp Hwy 161
County Hwy 139
Road I
Road 1
Township Road 90
Road 5i
Road 2i
County Hwy 116
Road J
Twp Hwy 127
County Road 128
Township Road 130
Twp Hwy 89
Road B
Legend
Existing Substation
Proposed Substation
Preferred Route
Alternate Route
Existing Transmission (69 kV or lower)
Existing Transmission (138 kV)
Existing Transmission (345 kV +)
Figure Key
Municipal Boundary
Basemap Source:
ESRI World Imagery, 2021
1:110,000
Ohio State Plane North
NAD 83
December 16, 2022
Cleveland
Columbus
Cincinnati
Map 5
Preferred & Alternate Routes
Overview
New Liberty-East Leipsic
138 kV Upgrade Project
0
0.75
1.5
2.25
3
Miles

Legend

- Existing Substation
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)
- Existing Transmission (138 kV)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 18, 2022

Map 5
Preferred & Alternate Routes
Page 1

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet

Legend

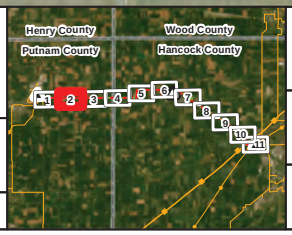
- Switch Station
- Communication Tower
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 18, 2022



Map 5
Preferred & Alternate Routes
Page 2

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet

Legend

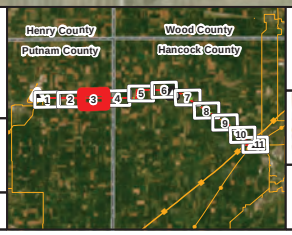
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

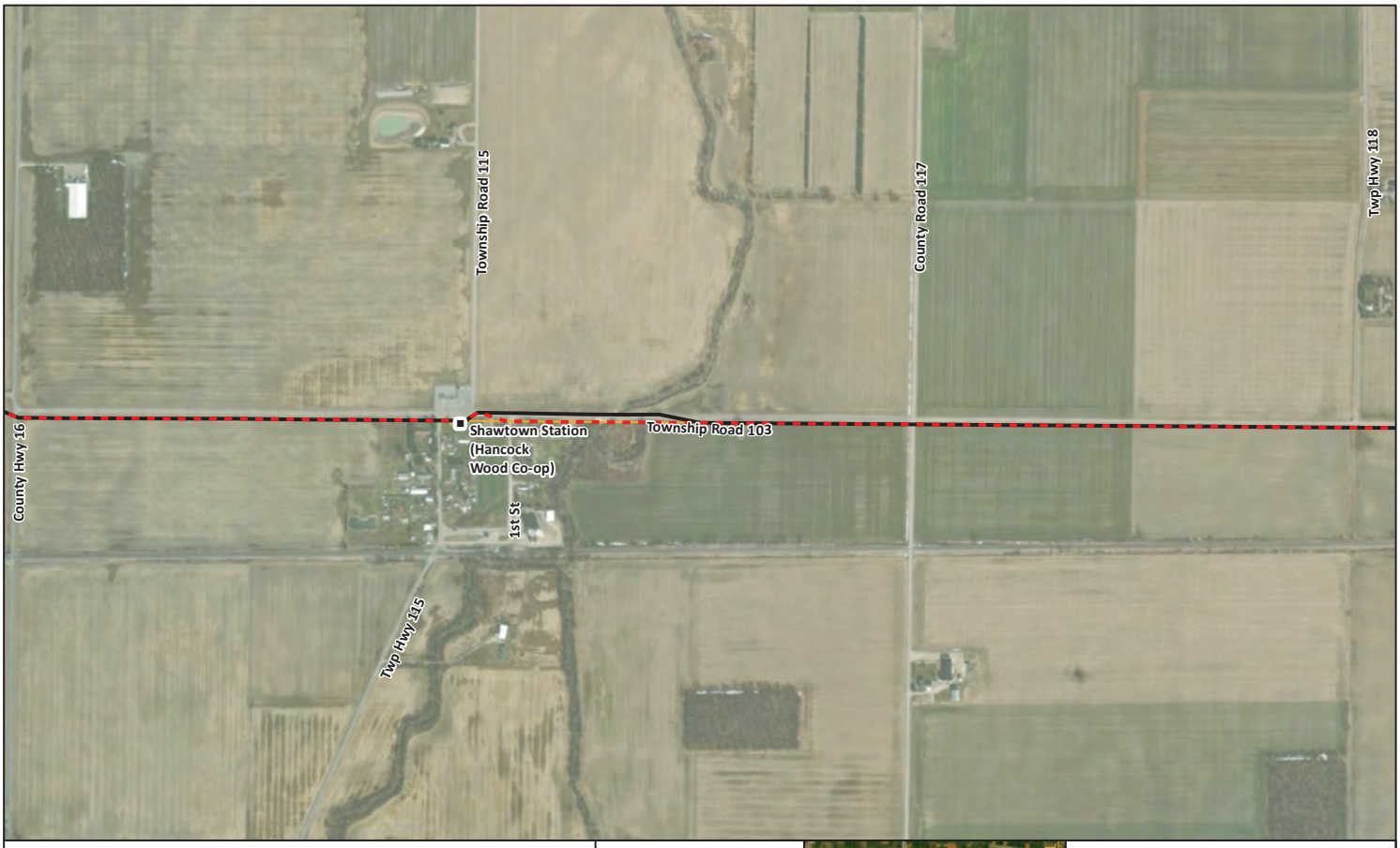
December 16, 2022



Map 5
Preferred & Alternate Routes
Page 3

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet



Legend

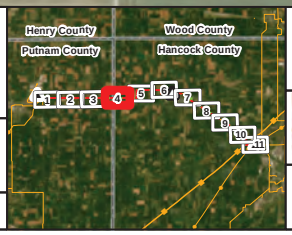
- Switch Station
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 5
Preferred & Alternate Routes
Page 4

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet

Legend

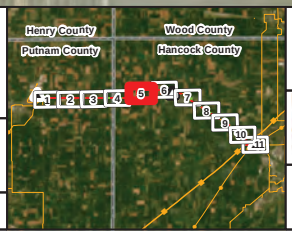
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

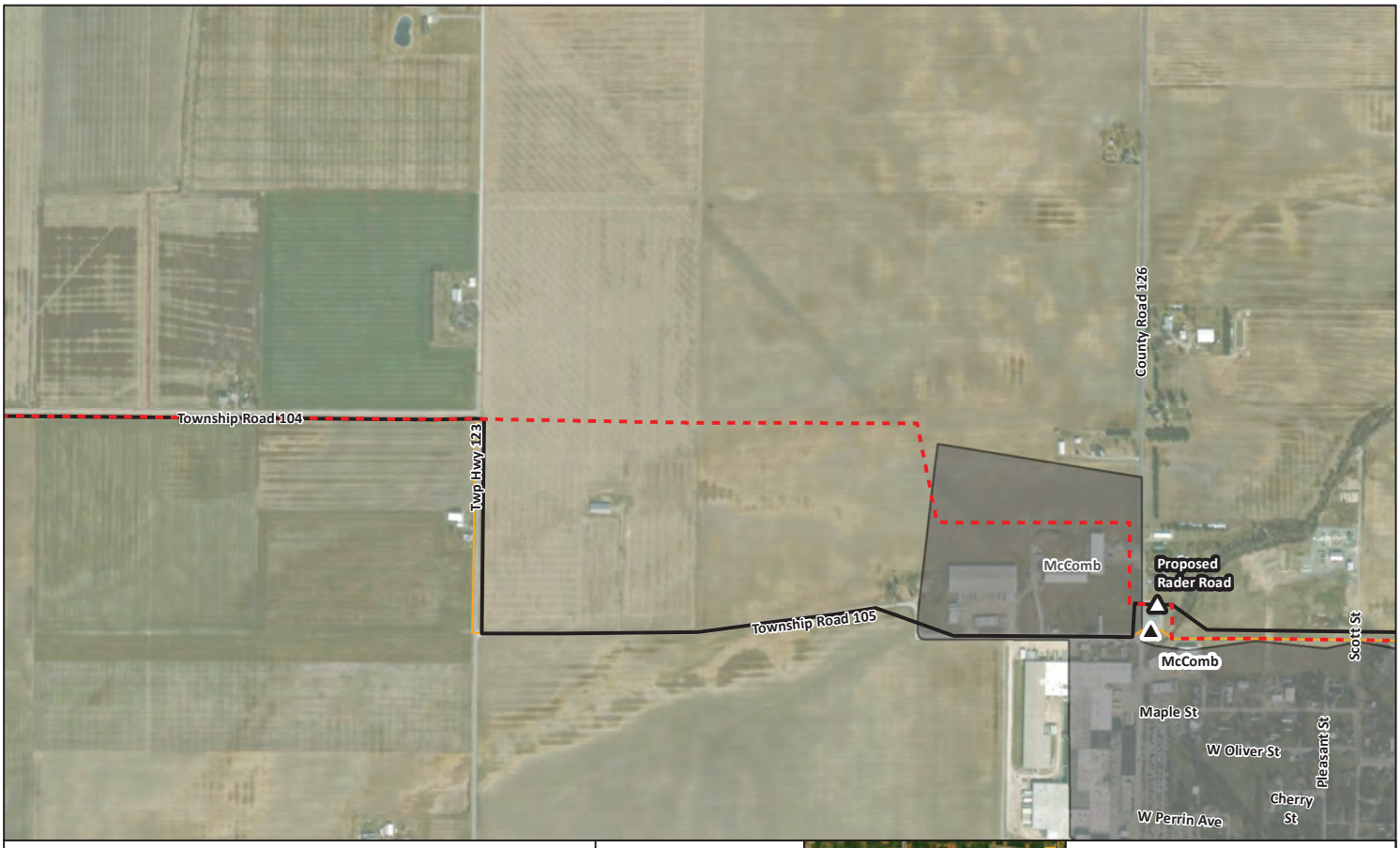
December 16, 2022



Map 5
Preferred & Alternate Routes
Page 5

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet



Legend

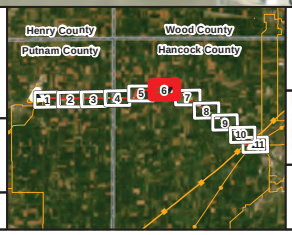
- Existing Substation
- Proposed Substation
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)
- Existing Transmission (345 kV +)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 16, 2022



Map 5
Preferred & Alternate Routes
Page 6

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet

Legend

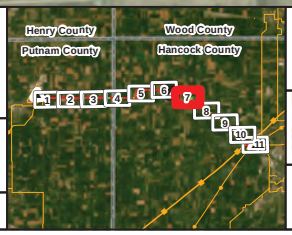
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)
- Municipal Boundary

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

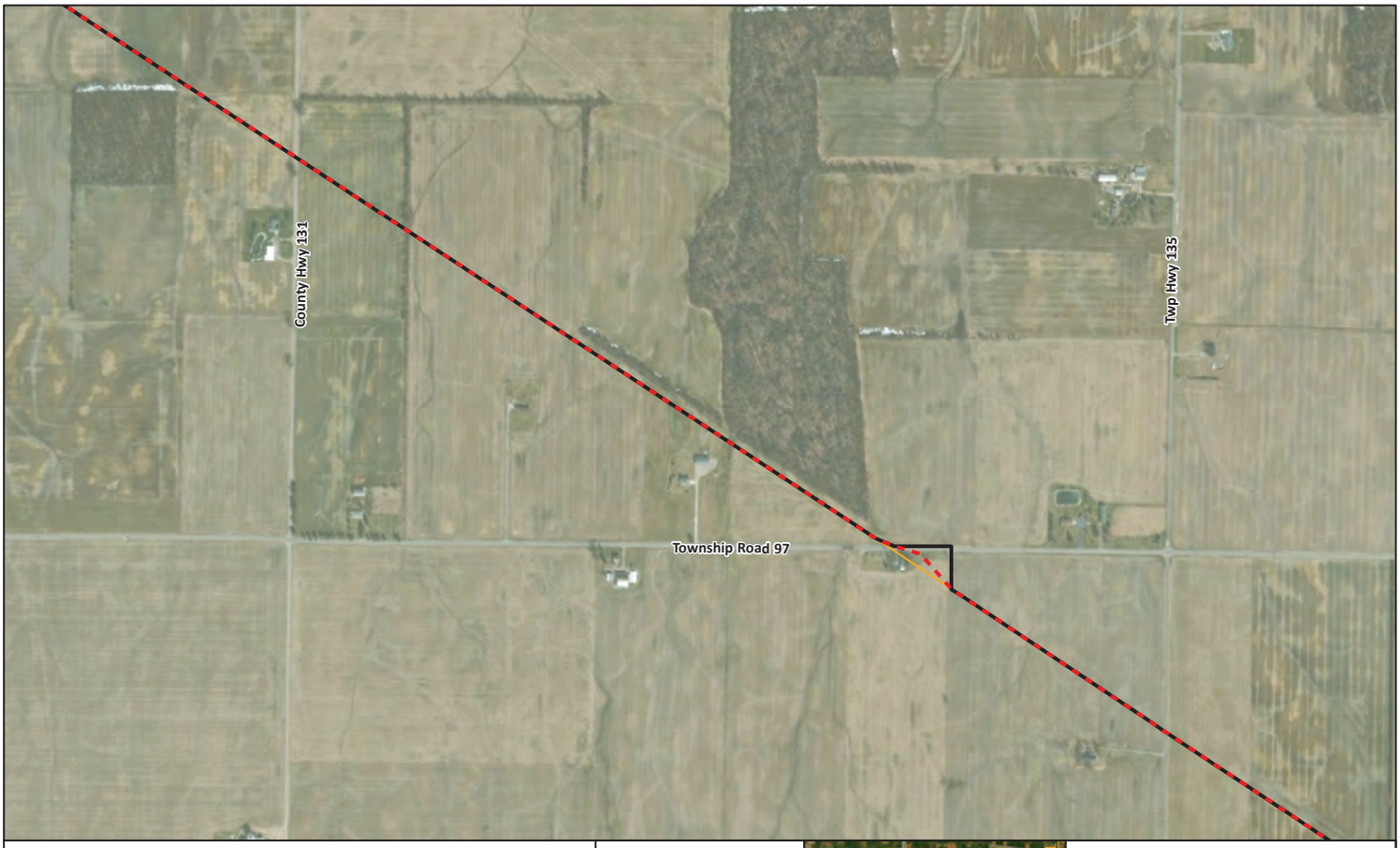
December 16, 2022



Map 5
Preferred & Alternate Routes
Page 7

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet



Legend

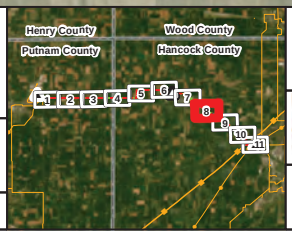
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

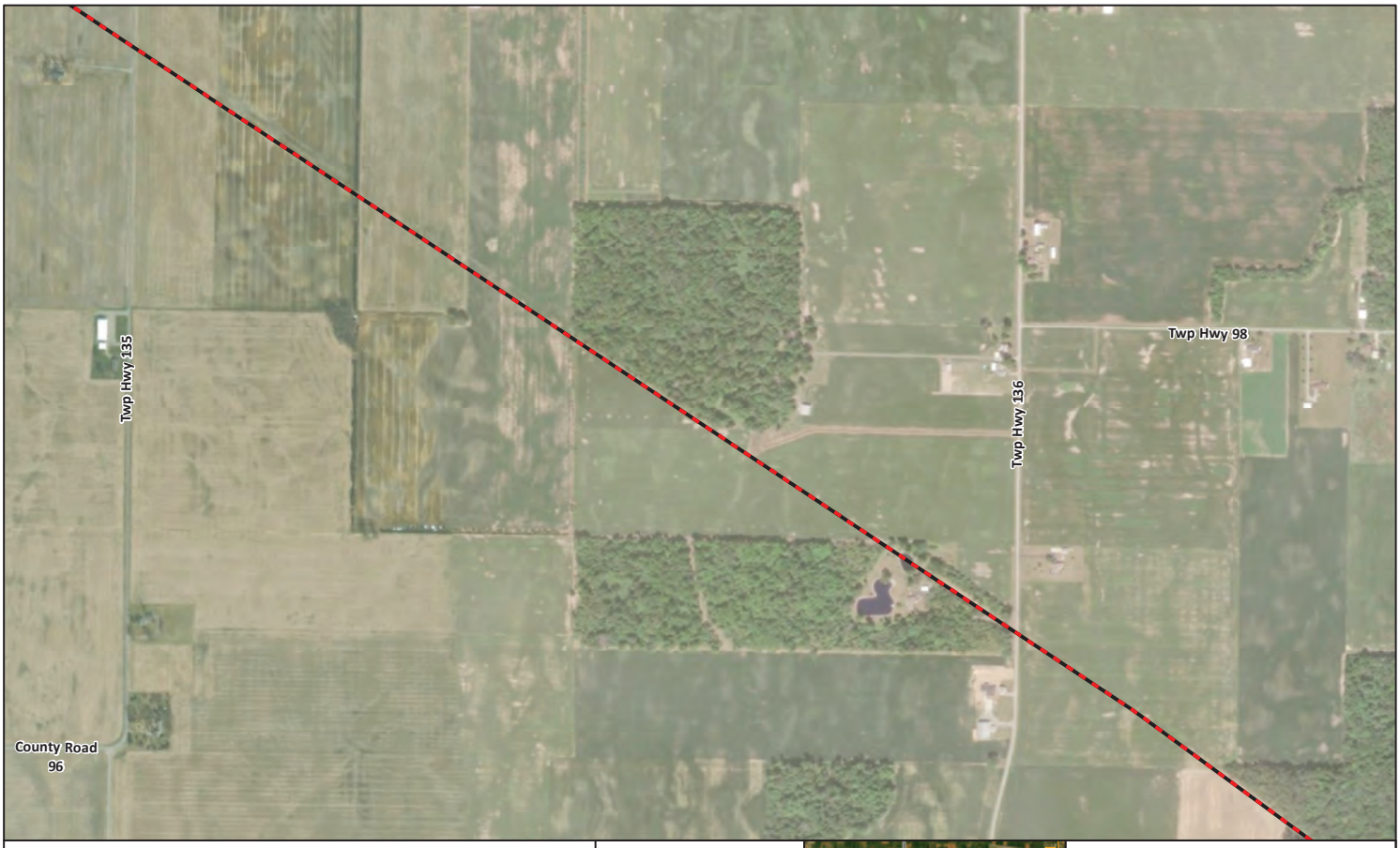
December 16, 2022



Map 5
Preferred & Alternate Routes
Page 8

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet



Legend

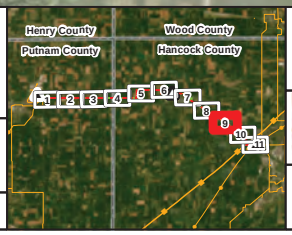
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

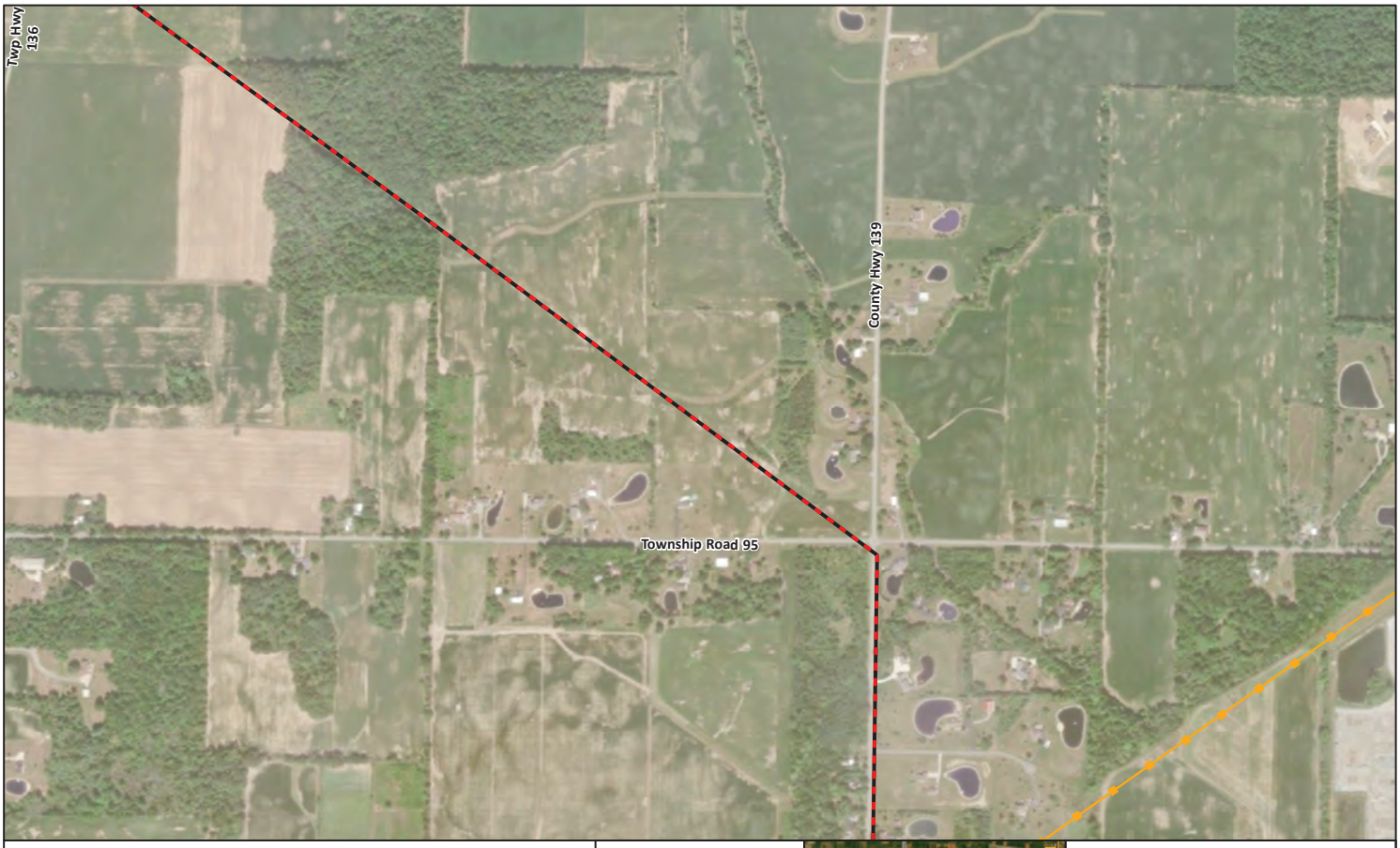
December 16, 2022



Map 5
Preferred & Alternate Routes
Page 9

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet



Legend

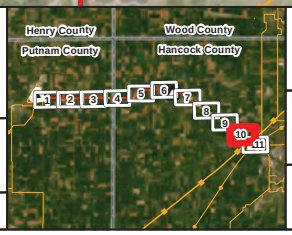
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)
- Existing Transmission (345 kV +)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

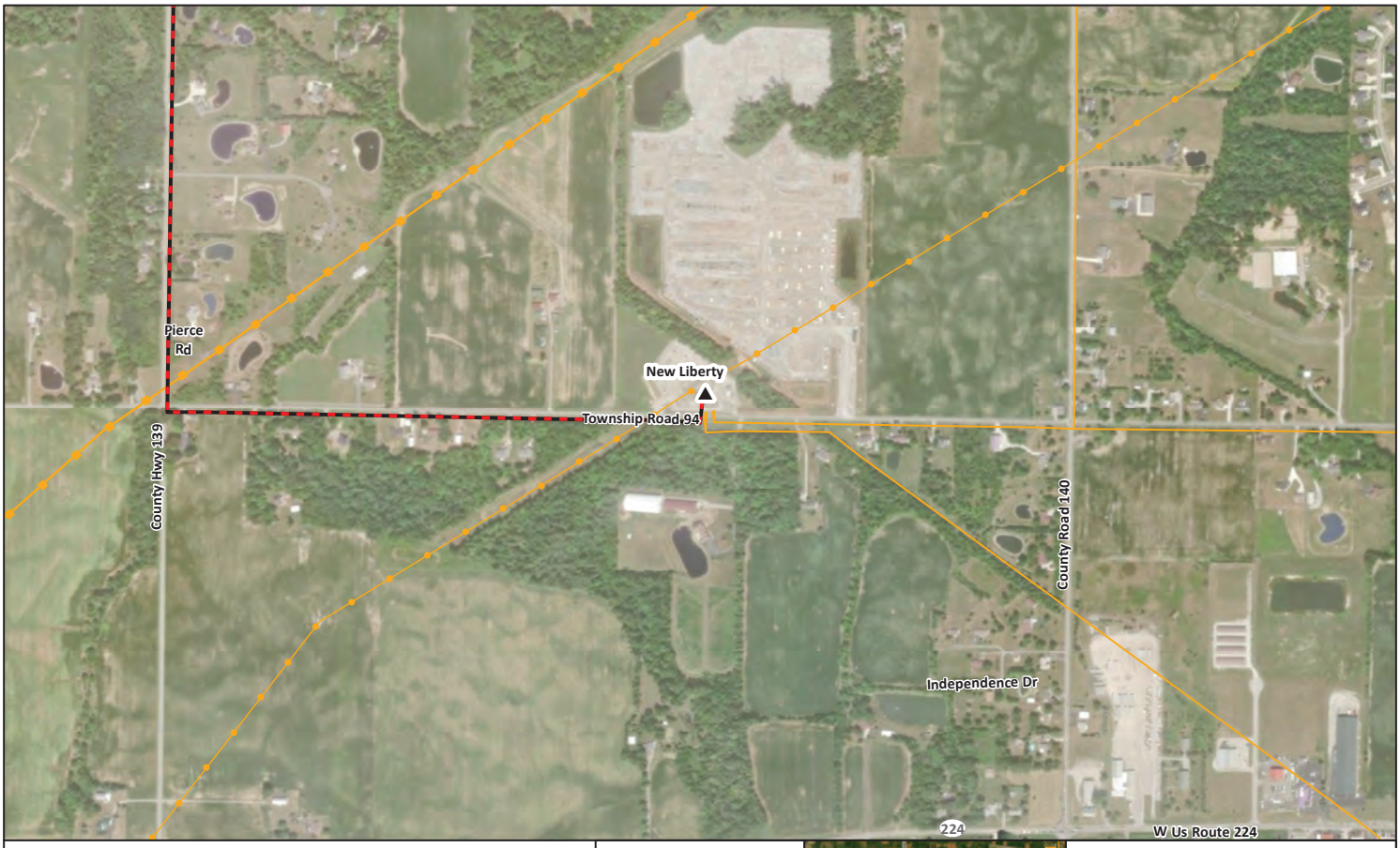
December 16, 2022



Map 5
Preferred & Alternate Routes
Page 10

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet



Legend

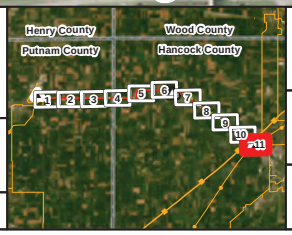
- Existing Substation
- Preferred Route
- Alternate Route
- Existing Transmission (69 kV or lower)
- Existing Transmission (138 kV)
- Existing Transmission (345 kV +)

Basemap Source:
ESRI World Imagery, 2021

1:10,000

Ohio State Plane North
NAD 83

December 18, 2022



Map 5
Preferred & Alternate Routes
Page 11

New Liberty-East Leipsic
138 kV Upgrade Project

0 300 600 900 1,200
Feet

Attachment B: GIS Data Sources

Attachment B. GIS Data Sources		
Siting Criteria	**Source**	**Description**
Land Use and Human Environment		
Number of parcels crossed by the ROW	Hancock County, Putnam County (2021)	Count of the number of parcels crossed by the ROW
Number of residences within 100, 250, and 500 feet of the route centerline	Digitized from ESRI World Imagery (2021) and field verified from points of public access	Count of the number of residences within the ROW and within 100, 250, and 500 feet of potential routes
Number of commercial buildings within 250 and 500 feet of the route centerline	Digitized from ESRI World Imagery (2021) and field verified from points of public access	Count of the number of commercial buildings within the ROW and within 250 and 500 feet of potential routes
Land use acreage and distance crossed by the ROW	National Land Cover Database (NLCD) (2016)	The NLCD 2016 (NLCD 2016) compiled by the Multi-Resolution Land Characteristics (MRLC) Consortium includes 15 classes of land cover from Landsat satellite imagery
Acres of conservation easements crossed	National Conservation Easement Database (NCED) (2020)	Private conservation easements crossed by the routes from the NCED which is comprised of voluntarily reported conservation easement information from land trusts and public agencies
Acres of agricultural district land crossed	NLCD (2016)	Protected land that is devoted exclusively to agricultural production or devoted to and qualified for compensation under a federal land retirement or conservation program that is at least 10 acres in size, or produces an average yearly gross income of at least $2,500 during a 3-year period
Number of archeological resources within the ROW and within one mile	NRHP (2021), State of Ohio (2021)	Previously identified archeological resources listed or eligible on the National Register of Historic Places (NRHP) acquired through NRHP
Number of historic architectural resources within the ROW, within one mile	NRHP (2021), State of Ohio (2021	Previously identified historic architectural resource sites and districts listed or eligible on the NRHP acquired through NRHP and the state of Ohio.

Attachment B. GIS Data Sources		
Siting Criteria	**Source**	**Description**
Institutional uses (schools, places of worship and cemeteries) within 1,000 feet of the route centerline	U.S. Geological Survey's GNIS (2021)	This dataset includes the locations of cemeteries, churches, hospitals, parks, and schools. Features within 1,000 feet of potential routes were field verified.
Airfield and heliports within 1,000 miles of the route centerline	GNIS (2021) and the Federal Aviation Administration (FAA) database (2021)	Distance from airfields and heliports
Natural Environment		
Forest clearing within the ROW	Digitized based on ESRI World Imagery (2021)	Acres of forest within the ROW
Number of National Hydrography Dataset (NHD) stream and waterbody crossings within the ROW	USGS (2021)	The NHD is a comprehensive set of digital spatial data prepared by the USGS that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells
Acres of National Wetland Inventory (NWI) wetland crossings within the ROW	U.S. Fish and Wildlife Service (USFWS) (2021)	The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats
Acres of 100-year floodplain crossing within the ROW	U.S. Federal Emergency and Management Agency (FEMA) (2021)	Acres of 100-year floodplain within the ROW
Miles of public lands crossed by the route	The Protected Areas Database of the United States (PAD-US) (2022)	Miles of federal, state and local lands crossed by the ROW
Threatened, endangered, rare or sensitive species occurrence within the Project vicinity	USFWS (2021)	Known occurrences; locations of potential habitat based on land use
Percent of hydric soils within the ROW	United States Department of Agriculture (USDA-NRCS), Natural Resources Conservation Service	Percent of soil associations crossed by the ROW characterized as hydric, predominantly hydric, partially hydric and non-hydric

Attachment B. GIS Data Sources		
Siting Criteria	**Source**	**Description**
	Soil Survey Geographic (SSURGO) Database (2020)	
Percent of prime farmland soils and soils of statewide importance within the ROW	USDA-NRCS SSURGO Database (2021)	Percent of soil associations crossed by the ROW characterized as prime farmland or farmland of statewide importance
Technical		
Route length	Measured in GIS	Length of route in miles
Number and severity of angled structures	Developed in GIS	Anticipated number of angled structures less than 3 degrees, 3 to 45 degrees and more than 45 degrees based on preliminary design
Number of road crossings	ESRI road file (2020)	Count of federal, state and local roadway crossings
Number of pipeline crossings	U.S. Department of Transportation National Pipeline Mapping System (2021)	Number of known pipelines crossed by the transmission ROW
Number of transmission line crossings	AEP Ohio Transco	Number of high voltage (100 kV or greater) transmission lines crossed by the ROW
Distance of steep slopes crossed	Derived from seamless Digital Elevation Models (DEMs) obtained from the U.S. Geologic Survey (2021)	Miles of slope greater than 20 percent crossed by the routes
Length of transmission line parallel	AEP Ohio Transco	Miles of the route parallel to existing high voltage transmission lines
Length of pipeline parallel	U.S. Department of Transportation National Pipeline Mapping System (2021)	Miles of the route parallel to existing pipelines
Length of road parallel	ESRI road file (2020)	Miles of the route parallel to existing roadways

GIS References

Dewitz, J., 2019, National Land Cover Database (NLCD) 2016 Products: U.S. Geological Survey data release, https://doi.org/10.5066/P96HHBIE

Federal Aviation Administration (FAA). 2021) Data & Research Portal. https://www.faa.gov/data_research Accessed April 2021.

Hancock County Auditor 2021. County Parcel Data. Accessed April 2021 https://app.regrid.com/us/oh/hancock#b=admin

National Conservation Easement Database. 2020. https://www.conservationeasement.us/

Ohio Archaeological Inventory (OAI). 2021. Archaeological Sites Database. Accessed April 2021 through the Ohio State Historic Preservation Office GIS Viewer (restricted).

Ohio Historic Preservation Office. 2021. Archaeological Sites GIS Database (Restricted). Accessed April 2021

Putnam County Auditor 2021. County Parcel Data. Accessed April 2021 http://www.putnamcountygis.com/

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database. Available online at https://sdmdataaccess.sc.egov.usda.gov. Accessed April 2021.

U.S. Department of Transportation. National Pipeline Mapping System. Accessed April 2021. https://www.npms.phmsa.dot.gov/default.aspx

U. S. Fish and Wildlife Service (USFWS). 2021. Publication date (found in metadata). National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Accessed April 2021.

U.S. Geological Survey (USGS). 2021. 3D Elevation Program 1-Meter Resolution Digital Elevation Model (published 20200606), April 20219 at URL https://www.usgs.gov/the-national-map-data-delivery

USGS Gap Analysis Project (GAP). 2022. Protected Areas Database of the United States (PAD-US) 3.0: U.S. Geological Survey data release, https://doi.org/10.5066/P9Q9LQ4B.

Attachment C: Agency Correspondence

From:	Ohio, FW3
To:	Lubbers, Jake
Cc:	nathan.reardon@dnr.state.oh.us; Parsons, Kate
Subject:	[EXTERNAL] New Liberty-East Leipsic Project, Hancock and Putnam Counties, Ohio
Date:	Thursday, April 14, 2022 2:46:39 PM
Attachments:	image.png image.png

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

Project Code: 2022-0013594

Dear Mr. Lubbers,

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

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

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

Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.
If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

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

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

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

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

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

Sincerely,

Patrice Ashfield
Field Office Supervisor

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

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

April 1, 2022

Jake Lubbers
Jacobs
2 Crowne Point Court, Suite 100
Cincinnati, OH 45241

Re: 22-0220; AEP New Liberty-East Leipsic Project

Project: The proposed project includes the expansion of two stations (approximately 8 acres) and the rebuild of approximately 18 miles of transmission line from 69kV to 138kV within a 100-foot right-of-way (ROW).

Location: The proposed project is located in Liberty Township, Portage Township, Pleasant Township, and Village of McComb in Hancock County, and Van Buren Township and Village of Leipsic in Putnam County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has the following data at or within one mile of the project area:

Sora Rail (*Porzana carolina*), state species of concern
Virginia Rail (*Rallus limicola*), state species of concern
Elktoe (*Alasmidonta marginata*), state species of concern
Creek Heelsplitter (*Lasmigona compressa*), state species of concern
Kidneyshell (*Ptychobranchus fasciolaris*), state species of concern
Deertoe (*Truncilla truncata*), state species of concern

The review was performed on the project area specified in the request as well as an additional one-mile radius. Records searched date from 1980. Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area.

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

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

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH $\geq$ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

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

The project is within the range of the following listed mussel species.
Federally Endangered
clubshell (*Pleurobema clava*)
rayed bean (*Villosa fabalis*)

State Endangered
purple lilliput (*Toxolasma lividum*)

State Threatened
pondhorn (*Uniomerus tetralasmus*)
black sandshell (*Ligumia recta*)

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2020), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) 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 (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2020) can be found at: https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf

The project is within the range of the western banded killifish (*Fundulus diaphanus menona*), a state endangered fish. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact this or other aquatic species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet meadows and other wetlands. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the black-crowned night-heron *(Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

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

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

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

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

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

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

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

Mike Pettegrew
Environmental Services Administrator

Attachment D: Constraints Tables

Table 3. Natural Environment Evaluation Criteria																						
Alternative Route		Focus Area 1 - E. Leipsic to Townwood Switch								Focus Area 2 - Shawtown (Hancock Wood Co-Op)		Focus Area 3 - Rader Road			Focus Area 3 - Rader East from Substation		Focus Area 4 - Reservoir Area			Focus Area 5 - Residential Area		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
General	**Units**																					
Route Length (miles)	miles	2.6	2.6	2.7	2.7	2.8	2.7	3.8	3.7	0.3	0.3	1.0	1.0	1.0	0.1	0.05	0.5	0.5	0.4	0.5	0.5	0.4
Water Resources																						
Total streams crossed	count	3	4	4	3	3	2	4	3	1	1	0	0	0	1	1	0	0	0	0	0	0
High/Exceptional/Special Protection streams crossed	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
If relevant, riparian buffers crossed	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forested wetlands in the ROW (NWI)	count	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEM/PSS wetlands in the ROW (NWI)	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waterbody (lakes, rivers, etc.) crossings	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FEMA-designated floodplain crossed by ROW	count	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Geological and Soil Resources																						
Prime and unique farmland foil in the ROW[1]	acres	32	32	33	33	34	34	46	46	4	4	12	12	13	1	1	6	6	1	7	6	5
Farmland of statewide importance in the ROW[2]	acres	32	32	33	33	34	34	46	46	4	4	12	12	13	1	1	6	6	2	7	6	5
Karst topography in the ROW (ODNR)	acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Known caves or mines in the ROW (ODNR)	acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wildlife and Habitat																						
Length of clearing parallel to existing linear infrastructure	miles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designated natural areas crossed by the ROW	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designated natural areas within 250 feet of the ROW	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops

[2] Soils that do not meet the prime farmland category but are still recognized for their productivity by states may qualify as soils of statewide importance

Table 4. Human Environment Evaluation Criteria																						
Alternative Route		Focus Area 1 - E. Leipsic to Townwood Switch								Focus Area 2 - Shawtown (Hancock Wood Co-Op)		Focus Area 3 - Rader Road					Focus Area 4 - Reservoir Area			Focus Area 5 - Residential Area		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
General	**Unit**																					
Length	miles	2.6	2.6	2.7	2.7	2.8	2.7	3.8	3.7	0.3	0.3	1.0	1.0	1.0	0.1	0.0	0.49	0.49	0.40	0.52	0.52	0.39
Number of parcels crossed	count	13	11	14	16	16	18	24	26	14	14	12	16	11	4	4	10	11	7	7	7	3
Landowners within ROW (100 ft Corridor)	count	8	6	8	10	9	11	11	13	5	5	7	7	5	3	3	7	9	6	6	6	3
Municipalities, Counties, and Townships Crossed																						
Leipsic	miles	1.4	1.4	1.5	1.5	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
McComb	miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Residential																						
Barns, outbuildings, sheds, garages and silos in the ROW (excludes abandoned features)	count	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	1	0	0	0	0
Residences/single-family dwellings within ROW	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residences/single-family dwellings within 100 feet of centerline	count	0	0	0	0	0	0	1	1	0	0	1	1	2	1	1	1	0	0	1	1	1
Residences/single-family dwellings within 250 feet of centerline	count	1	2	2	1	2	1	3	2	2	3	1	1	2	1	1	3	1	0	2	2	1
Residences/single-family dwellings within 500 feet of centerline	count	2	2	2	2	2	2	3	3	7	7	2	1	2	5	4	4	4	2	3	3	3
Commercial/Industrial																						
Businesses/commercial buildings within the ROW	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Businesses/commercial buildings within 250 feet of the centerline	count	0	0	1	1	1	1	1	1	0	0	1	1	1	2	2	1	1	1	0	0	0
Businesses/commercial buildings within 500 feet of the centerline	count	2	2	3	3	3	3	3	3	0	0	9	11	11	5	7	1	1	1	0	0	0
Mining areas crossed	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quarries crossed	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural																						
Pasture/rangeland crossed in ROW (based on NLCD data)	acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cropland crossed in ROW (based on NLCD data)	acres	30	30	23	22	14	14	17	17	1	1	10	8	3	0	0	1	1	0	2	2	4
Tree farms/orchards crossed in ROW	acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural easements crossed in ROW	acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community/Recreational Facilities																						
Schools within 1,000 feet of centerline	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designated places of worship within 1,000 feet of centerline	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cemeteries within 250 feet of centerline	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hospitals and assisted living facilities within 250 feet of centerline	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parks and recreation areas crossed by the ROW	count	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0
Scenic byways crossed	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Protected Land																						
Federal/state land crossed by ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conservation easements crossed by the ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Local public lands crossed by ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cultural Resources																						
NRHP-listed and eligible architectural resources within one mile of the centerline	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
National Historic Landmarks within one mile of the centerline	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRHP-listed Historic Districts within one mile of the centerline	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRHP-listed and eligible archaeological sites within ROW	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

a The number of parcels crossed refers to the number of individual plots of owned land recorded by each County. The number of landowners within the ROW represent the number of individual landowners, who each may own one or more parcels.

b Commercial development includes retail, service, office, restaurants, and lodging establishments.

Table 5. Constructability Evaluation Criteria																						
		Focus Area 1 - E. Leipsic to Townwood Switch								Focus Area 2 - Shawtown (Hancock Wood Co-Op)		Focus Area 3 - Rader Road					Focus Area 4 - Reservoir Area			Focus Area 5 - Residential Area		
Alternative Route		**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**
General	**Units**																					
Length	miles	2.6	2.6	2.7	2.7	2.8	2.7	3.8	3.7	0.3	0.3	1.0	1.0	1.0	0.1	0.0	0.5	0.5	0.4	0.5	0.5	0.4
Transportation Resources																						
Interstate highways crossed	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State highways crossed	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
Local roads and streets crossed	count	4	4	5	5	6	6	6	6	2	2	2	2	3	0	0	0	0	0	2	2	1
Railroads crossed	count	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	1	1	1	0	0	0
Utility Resources																						
Oil and gas pipelines crossed	count	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil and gas wells within 250 feet from edge of ROW	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Communication towers within 1,000 feet of the centerline	count	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing 69 kV Transmission Lines Crossed	count	1	1	1	1	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
Engineering and Geotechnical Considerations																						
Steep slopes crossed by ROW (>20%), percent of total length	count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy angles, greater than 30 degrees	count	2	2	2	2	2	2	6	6	2	2	4	4	5	1	1	2	2	1	4	2	1
Rights-of-Way Rebuild/Parallel																						
Existing 34 kV transmission lines paralleled	miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.05	0.04	0.08	0.16	0.44	0.11	0.13	0.42
Existing 69 kV transmission lines paralleled	miles	0.29	0.29	1.57	1.57	1.88	1.88	3.76	3.76	0.31	0.31	0.04	0.31	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Existing 138 kV transmission lines paralleled	miles	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Existing distribution lines paralleled or underbuilt	miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Existing Insert voltage kV transmission lines rebuilt	miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oil and Gas Pipeline paralleled	miles	0.04	0.04	0.34	0.34	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interstate highways, U.S. highways, State highways, and local roads	miles	0.38	0.37	1.69	1.70	2.67	2.68	3.73	3.74	0.35	0.36	0.19	0.38	1.14	0.00	0.00	0.28	0.04	0.04	0.59	0.59	0.12
Railroad paralleled	miles	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00
Total length paralleled	miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total percentage paralleled	percent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total length rebuilt	miles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total percentage rebuilt	percent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix 5-1
Long-Term Forecast Report of AEP Ohio Transmission Company, Inc.

PUCO FORM FE-T9
AEP OHIO TRANSMISSION COMPANY
Specifications of Planned Transmission Lines

12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure.
13.	MISCELLANEOUS:	Line will be rebuilt at 69 kV design operated one side 69 kV and another 69 kV. Only showing Ohio facilities
1.	LINE NAME AND NUMBER:	East Leipsic - New Liberty (b3273) TP2020017
2.	POINTS OF ORIGIN AND TERMINATION	East Leipsic, New Liberty INTERMEDIATE STATION - Shawtown Sw, McComb
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	17.6 mi / 100 ft / 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138 kV / 138 kV
5.	APPLICATION FOR CERTIFICATE:	2022
6.	CONSTRUCTION:	2023-2025
7.	CAPITAL INVESTMENT:	$31.0M
8.	PLANNED SUBSTATION:	N/A
9.	SUPPORTING STRUCTURES:	Steel
10.	PARTICIPATION WITH OTHER UTILITIES	N/A
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	Rebuild of existing 34.5 kV line to 138 kV to solve asset renewal issues and baseline criteria
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure, reliability, and operational issues
13.	MISCELLANEOUS:	
1.	LINE NAME AND NUMBER:	Newcomerstown - Broom Rd (b3274), TP2021013
2.	POINTS OF ORIGIN AND TERMINATION	Newcomerstown , Broom Rd INTERMEDIATE STATION - Kimbolton, Salt Fork Sw
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	16 mi / 60 ft / 1 circuit (proposed only 8.9 miles)
4.	VOLTAGE: DESIGN / OPERATE	69 kV / 69 kV
5.	APPLICATION FOR CERTIFICATE:	N/A
6.	CONSTRUCTION:	2024-2025
7.	CAPITAL INVESTMENT:	$15.0M

AEP Transmission Zone: Baseline Leipsic area

Process Stage: Second Review

Criteria: AEP FERC 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: None

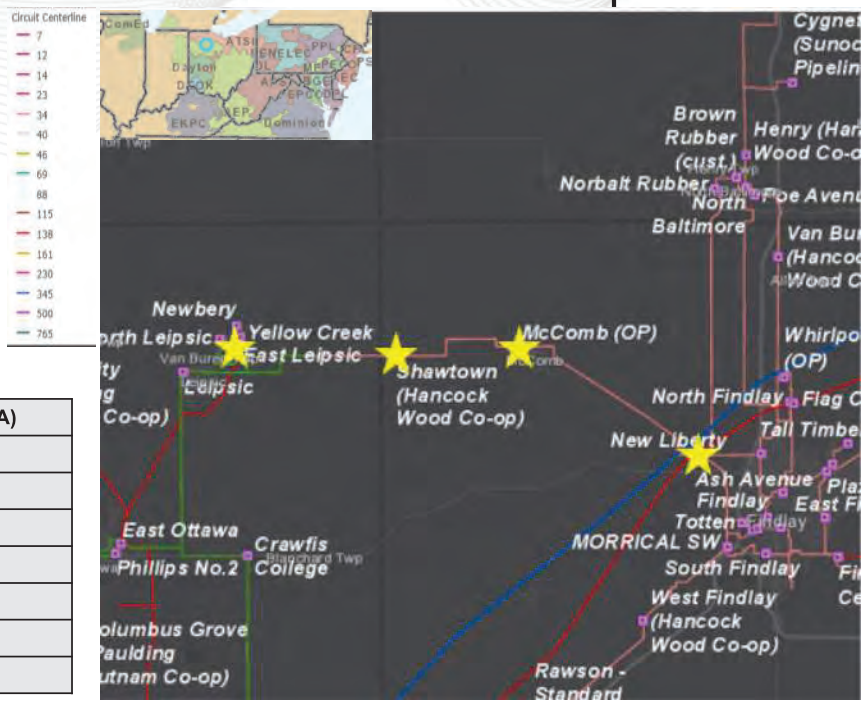
Problem Statement:

AEP-T63,AEP-T64,AEP-T65,AEP-T66,AEP-T67,AEP-T68,AEP-T69,AEP-T70,AEP-T71,AEP-T72,AEP-T73

The East Ottawa – Leipsic – Deshler Tap 69kV line, East Leipsic - North Leipsic 69KV line, East Leipsic 138/69kV transformer, Cairo – East Lima 69kV line, and McComb OP – New Liberty 34.5kV line are overloaded for a tower contingency and multiple N-1-1 contingency pairs.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05E OTTAWA -05LEIPSIC 69KV	68/73/90/91
05LEIPSIC – 05DSCHLERT 69KV	73/73/91/91
05DSCHLERT – 05NLEIP SW 69KV	73/73/91/91
05E.LEIPSC – 05NLEIP SW 69KV	73/73/91/91
05MCCOMB OP – 05NEW LIBR 34.5kV	20/20/28/28
05CAIRO – 05E LIMA 69kV	50/50/63/63
05E.LEIPSIC2 -05E.LEIPSC 138/69kV	59/69/69/75



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency

AEP Transmission Zone: Baseline Leipsic area

Recommended Solution: Proposal #2020_1-957

Rebuild and convert the existing 17.6 miles East Leipsic – New Liberty 34.5 kV circuit to 138 kV using 795 ACSR (**B3273.1**) **Estimated Cost: $31.351M**

Convert the existing 34.5kV equipment to 138kV and Expanded the existing McComb station to the north and east to allow for new equipment to be installed. Install two new 138kV box bays to allow for line positions and two new 138-12kV XFs. (**B3273.2**) **Estimated Cost: $0.868M**

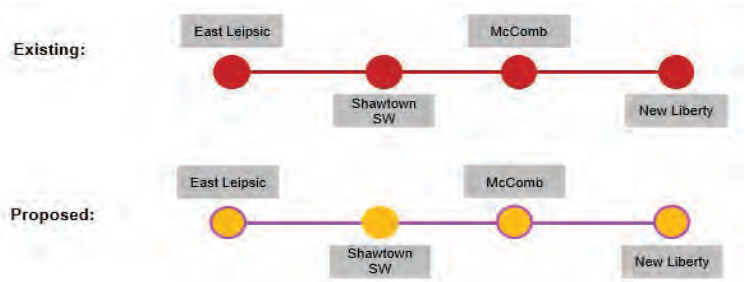
Expand the existing East Leipsic station to the north to allow for another 138kV line exit to be installed. New line exit will involve installing a new 138kV CB, disconnect switches and new dead end structure along with extending existing 138kV bus work. (**B3273.3**) **Estimated Cost: $1.3M**

Add one 138kV circuit breaker and disconnect switches in order to add an additional line position at New Liberty station. Install line relaying potential devices and retire 34.5 kV breaker F. (**B3273.4**) **Estimated Cost: $0.899M**

Total Estimated Cost: $34.418M

Preliminary Facility Rating: :

Branch	SN/SE/WN/WE (MVA)
New Liberty to McComb OP 138kV	257/360/325/404
McComb OP to Shawtown 138kV	257/360/325/404
East Leipsic to Shawtown 138kV	257/360/325/404



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency

AEP Transmission Zone: Baseline Leipsic area

Additional Benefits:

- This project completely addresses the needs reviewed with stakeholders under need number AEP-2020-OH020 in the March 19, 2020 SRRTEP Western meeting.
  - Considering the two loads served from the line at Shawtown and McComb stations, retirement of the facilities is not an option for the line reviewed as need AEP-2020-OH020. In order to address the need, the same solution proposed as proposal No. 2020_1-957 would be the proposed supplemental solution. If a proposal other than proposal No. 957 is chosen, AEP will move forward with to propose this as a supplemental solution in addition to whichever baseline proposal is selected.

AEP-2020-OH020 Attachment M-3 need

AEP no longer maintains 34.5kV installations as part of their standards. The rebuild of the facility for the need would require the use of their 69KV standard or 138kV standard. A rebuild of the facilities for the need using the138kV standard is estimated by the transmission owner to cost $34M

There is no 69 kV established on the New Liberty side of the system. If 69 kV construction is used, there would also be the need to establish a new 69 kV yard at New Liberty with a 138/69 kV transformer at some point in the future. The downtown Findlay area (served partially from New Liberty) is all currently constructed using 34.5 kV requirements with 138 kV sources. So rebuilding at 138 kV reduces the need for additional transformation in the future as additional 34.5 kV facilities reach the end of their life.

AEP Transmission Zone: Baseline Leipsic area

Additional Benefits: (continued)

This project also solves FG#

AEP-VM137,AEP-VM138,AEP-VM139,AEP-VM140,AEP-VM141,AEP-VM142,AEP-VM143,AEP-VM144,AEP-VM145,AEP-VM146,AEP-VM147,AEP-VM148,AEP-VM149,AEP-VM150,AEP-VM151,AEP-VM152,AEP-VM153,AEP-VM154,AEP-VM155,AEP-VM156,AEP-VM157,AEP-VM158,AEP-VM159,AEP-VM160,AEP-VM161,AEP-VM162,AEP-VM163,AEP-VM164,AEP-VM165,AEP-VM166,AEP-VM167,AEP-VM168,AEP-VM169,AEP-VM170,AEP-VM171,AEP-VM172,AEP-VM173,AEP-VM174,AEP-VM175,AEP-VM176,AEP-VM177,AEP-VM178,AEP-VM179,AEP-VM180,AEP-VM181,AEP-VM182,AEP-VM183,AEP-VM184,AEP-VM185,AEP-VM186,AEP-VM187,AEP-VM188,AEP-VM189,AEP-VM190,AEP-VM191,AEP-VM192,AEP-VM193,AEP-VM194,AEP-VM195,AEP-VM196,AEP-VM197,AEP-VM198,AEP-VM199,AEP-VM200,AEP-VM201,AEP-VM202,AEP-VM203,AEP-VM204,AEP-VM205,AEP-VM206,AEP-VM207,AEP-VM208,AEP-VM209,AEP-VM210,AEP-VM211,AEP-VM212,AEP-VM213,AEP-VM214,AEP-VM215,AEP-VM216,AEP-VM217,AEP-VM218,AEP-VM219,AEP-VM220,AEP-VM221,AEP-VM222,AEP-VM223,AEP-VM224,AEP-VD114,AEP-VD115,AEP-VD116,AEP-VD117,AEP-VD118,AEP-VD119,AEP-VD120,AEP-VD121,AEP-VD122,AEP-VD123,AEP-VD124,AEP-VD125,AEP-VD126,AEP-VD127,AEP-VD128,AEP-VD129,AEP-VD130,AEP-VD131,AEP-VD132,AEP-VD133,AEP-VD134,AEP-VD135,AEP-VD136,AEP-VD137,AEP-VD138,AEP-VD139,AEP-VD140,AEP-VD141,AEP-VD142,AEP-VD143,AEP-VD144,AEP-VD145,AEP-VD146,AEP-VD147,AEP-VD148,AEP-VD149,AEP-VD150,AEP-VD151,AEP-VD152,AEP-VD153,AEP-VD154,AEP-VD155,AEP-VD156,AEP-VD157,AEP-VD158,AEP-VD159,AEP-VD160,AEP-VD161,AEP-VD162,AEP-VD163,AEP-VD164,AEP-VD165,AEP-VD166,AEP-VD167,AEP-VD168,AEP-VD169,AEP-VD170,AEP-VD171,AEP-VD172,AEP-VD173,AEP-VD174,AEP-VD175,AEP-VD176,AEP-VD177,AEP-VD178,AEP-VD179,AEP-VD180,AEP-VD181,AEP-VD182,AEP-VD183,AEP-VD184,AEP-VD185,AEP-VD186,AEP-VD187,AEP-VD188,AEP-VD189,AEP-VD190,AEP-VD191,AEP-VD192,AEP-VD193,AEP-VD194,AEP-VD195,AEP-VD196,AEP-VD197,AEP-VD198,AEP-VD199,AEP-VD357,AEP-VD374, which are low voltage magnitude and voltage drop violations at buses COLGRVE 69KV, GLANDORF 69KV, Philips 69KV, East Ottawa 69KV, Leipsic 69KV, East Leipsic 69KV, North Leipsic 69KV, Deshler Tap 69KV, Miller 69KV, Crawfish College 69KV, Cairo 69KV, Shawtown 34.5KV, McComb 34.5kV, East Leipsic 138kV, Rockport 138kV, Newbery 138kV, Yellow Creek 138kV, and Baseline 138kV

Proposal Window Exclusion: Below 200kV Exclusion

Required In-Service: 6/1/2025

Projected In-Service: 1/31/2024

Previously Presented: 11/4/2020

Appendix 6-1
List of Public Official Points of Contact

Appendix 6-1
New Liberty-East Leipsic 138-kV Transmission Line Upgrade Project
Public Officials Contacted and Officials to be Served A Copy of Certified Application

Municipality/County/Agency	Department	Title	Name	Telephone	Street Address	City	State	Zipcode
Village of Leipsic	Administration	Fiscal Officer	Renee Spangler	419-943-2009	142 E. Main Street	Leipsic	OH	45856
Village of Leipsic	Council	Council Member	Dave Heitmeyer	419-943-2009	142 E. Main Street	Leipsic	OH	45856
Village of Leipsic	Council	Council Member	Sue Christman	419-943-2009	142 E. Main Street	Leipsic	OH	45856
Village of Leipsic	Council	Council Member	Jason Goodwin	419-943-2009	142 E. Main Street	Leipsic	OH	45856
Village of Leipsic	Council	Council Member	Sue Schroeder	419-943-2009	142 E. Main Street	Leipsic	OH	45856
Village of Leipsic	Council	Council Member	Rick Recker	419-943-2009	142 E. Main Street	Leipsic	OH	45856
Village of Leipsic	Council	Council Member	Rick Moyer	419-943-2009	142 E. Main Street	Leipsic	OH	45856
Van Buren Township	Township Officials	Chairman	John Wilson	419-348-3870	7190 Township Road 32	Jenera	OH	45841
Van Buren Township	Township Officials	Trustee	David Weihrauch	419-722-8137	23673 Township Road 10	Jenera	OH	45841
Van Buren Township	Township Officials	Trustee	Aaron Smith	419-306-2768	6924 State Route 103	Jenera	OH	45841
Van Buren Township	Fiscal Officer	Fiscal Officer	Todd Rossman	Not listed	7097 Township Road 28	Jenera	OH	45841
Pleasant Township	Township Officials	Trustee	Roger Rader	419-293-2205	3141 Township Road 118	McComb	OH	45858
Pleasant Township	Township Officials	Trustee	Gregg Like	419-293-1013	1182 Township Road 106	McComb	OH	45858
Pleasant Township	Township Officials	Trustee	Max Rader	419-889-5394	3300 Township Road 119	McComb	OH	45858
Pleasant Township	Fiscal Officer	Fiscal Officer	Jackie Newcomer Rader	419-293-2366	3785 County Road 53	McComb	OH	45858
Portage Township	Township Officals	Trustee	Rod Barnhisel	419-348-8973	9313 County Road 203	Van Buren	OH	45889
Portage Township	Township Officals	Trustee	Dennis Jones	419-293-2251	6141 Township Road 21	McComb	OH	45858
Portage Township	Township Officals	Trustee	Gene Barker	419-348-4683	7355 Township Road 21	McComb	OH	45858
Portage Township	Fiscal Officer	Fiscal Officer	Amy F. Barnhisel	419-306-4683	913 County Road 203	Van Buren	OH	45889
Liberty Township	Township Officials	Trustee	Jeffrey Hunker	419-348-9691	7018 Township Road 136	Findlay	OH	45840
Liberty Township	Township Officials	Trustee	Evan Stump	419-421-1153	1961 West Sandusky	Findlay	OH	45840
Liberty Township	Township Officials	Trustee	Gregg Moorhead	419-722-0677	9161 Township Road 58	Findlay	OH	45840
Liberty Township	Fiscal Officer	Fiscal Officer	Melissa Ellerbrock	419-348-8317	406 Colorado Avenue	Findlay	OH	45840
Village of McComb	Council	President of Council	Sara Klay	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Village of McComb	Council	Council Member	Mike Fasig	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Village of McComb	Council	Council Member	Jamie Gill	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Village of McComb	Council	Council Member	Brad Brown	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Village of McComb	Council	Council Member	Tyler Brumbaugh	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Village of McComb	Council	Council Member	Beth Fenstermaker	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Village of McComb	Fiscal Officer	Fiscal Officer	Melissa Patch	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Village of McComb	Utility Clerk	Utility Clerk	Hayley Aller	419-273-0321	210 E. Main Street P.O. Box 340	McComb	OH	45858
Putnam County	Auditor	Auditor	Robert L. Benroth	419-523-6686	245 E. Main Street, Ste. 201	Ottawa	OH	45875
Putnam County	Commissioners	Commissioner	Vincent Schroeder	419-523-3656	245 E. Main Street, Ste. 101	Ottawa	OH	45875
Putnam County	Commissioners	Commissioner	Michael Lammers	419-523-3656	245 E. Main Street, Ste. 101	Ottawa	OH	45875
Putnam County	Commissioners	Commissioner	John Schlumbohm	419-523-3656	245 E. Main Street, Ste. 101	Ottawa	OH	45875
Putnam County	Engineer	County Engineer	Michael L. Lenhart, P.E., P.S.	419-523-6931	245 E. Main Street, Ste. 205	Ottawa	OH	45875
Putnam County	Planning Commission	Director	Nolan Croy	Not listed	245 E. Main Street	Ottawa	OH	45875
Hancock County	Auditor	Auditor	Charity A. Rauschenberg, CPA	419-424-7015	Hancock County Courthouse 300 S. Main Street Room 21 & Room 22	Findlay	OH	45840
Hancock County	Commissioners	Commissioner	Timothy K. Bechtol	419-424-7044	514 S. Main Street, 2nd Floor	Findlay	OH	45840
Hancock County	Commissioners	Commissioner	William L. Bateson	419-424-7044	514 S. Main Street, 2nd Floor	Findlay	OH	45840
Hancock County	Commissioners	Commissioner	Michael W. Pepple	419-424-7044	514 S. Main Street, 2nd Floor	Findlay	OH	45840
Hancock County	Engineer	Hancock County Engineer	Douglas E. Cade P.E., P.S.	419-422-7433	1900 Lima Avenue	Findlay	OH	45840
Hancock County	Hancock Regional Planning Commission	Director	Matt Cordonnier	419-424-7094	City of Findlay Building 318 Dorney Plaza #306	Findlay	OH	45840
ODOT	District 1 - Lima	District Deputy Director	Chris Hughes, P.E.	419-222-9055	1885 N. McCullough Street	Lima	OH	45801
Public Library	Putnam County District Library			419-523-3747	305 W Main St	Leipsic	OH	45856
Public Library	McComb Library			419-293-2425	113 S Todd St	McComb	OH	45858
Public Library	Findlay-Hancock Public Library			419-422-1712	206 Broadway St	Findlay	OH	45840
Soil and Water Conservation District	Putnam County Soil and Water Conservation District			419-523-5159	1206 E Second St Suite 2	Ottawa	OH	45875-2069
Soil and Water Conservation District	Hancock Soil and Water Conservation District			419-422-6569	7868 County Road 140, Suite E	Findlay	OH	45840

Appendix 6-2
Public Open House Informational Materials

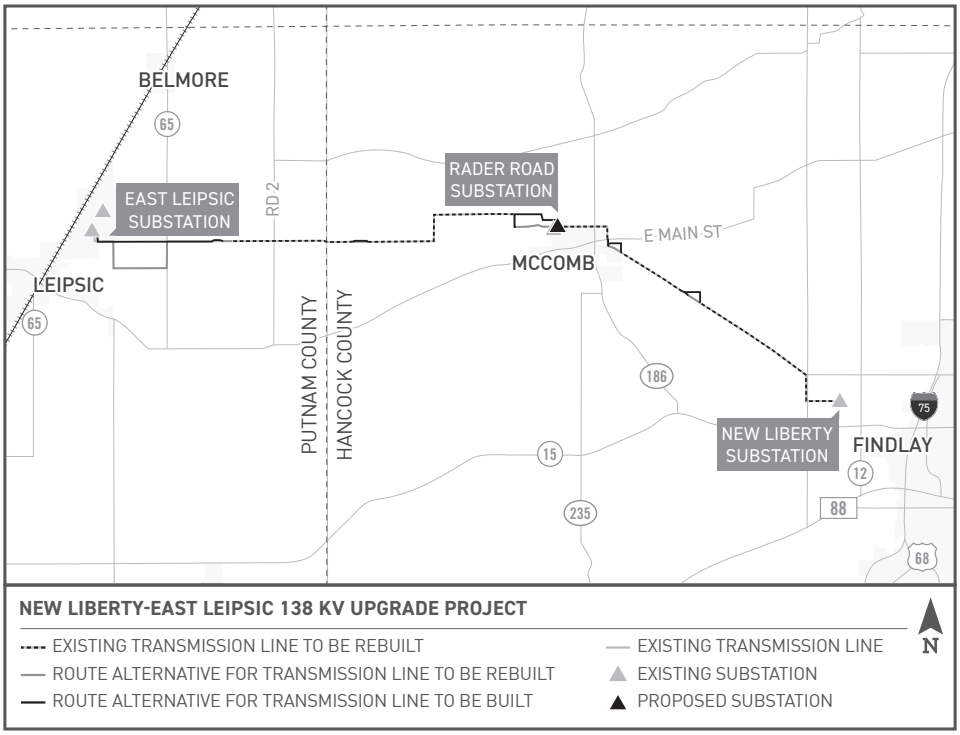
NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

AEP Ohio Representatives Schedule Open House and Virtual Open House to Discuss Proposed Transmission Line Project in Northern Ohio.

Company representatives announced the New Liberty - East Leipsic 138 kV Upgrade Project (formerly East Leipsic-New Liberty 138-kV Transmission Line Rebuild Project) in the summer of 2021.

The project involves:
- Upgrading about 20 miles of 34.5-kilovolt (kV) transmission line to 138-kV standards
- Replacing aging wooden poles with single steel poles and new wire
- Retiring the McComb Substation and building Rader Road Substation on the same property
- Expanding East Leipsic Substation

The project strengthens the local electric system by replacing infrastructure that has shown significant deterioration resulting in service interruptions. Upgrading the power line voltage ensures the transmission network supports additional electrical load growth in the area. A stronger transmission grid also benefits local distribution companies and electric cooperatives that receive power from the transmission lines, so that they may provide reliable power to their customers, with fewer interruptions.



AEP Ohio representatives invite community members and landowners in the project area to learn more at an upcoming open house. The public event takes place on Thursday, Oct. 6 from 5:30 p.m. to 7:30 p.m. at the Findlay Elks Lodge, located at 900 West Melrose Avenue in Findlay.

Since there's no formal presentation, attendees can arrive at any time to review maps and talk with project team members. The project team particularly welcomes input on the two route alternatives for the 20-mile power line.

For the community's safety, The AEP Ohio project team will provide masks and hand sanitizer at the open house. If you are experiencing fever, cough, body aches, or other COVID-19 symptoms, please stay home for the safety of your neighbors and AEP staff.

Those who are not able to attend the open house may visit the **VIRTUAL OPEN HOUSE** at AEPOhio.com/NewLiberty-EastLeipsic to access information, view an interactive map, enter our virtual open house and submit comments by October 21.

AEP Ohio Transmission Co., Inc., officials expect to file an application for a Certificate of Environmental Compatibility and Public Need for the New Liberty - East Leipsic 138 kV Upgrade Project with the state of Ohio Power Siting Board (OPSB) this fall.

The OPSB is legally obligated to review the application and, if certain legal criteria are met, it may approve the project. OPSB approval is obtained through the issuance of a Certificate of Environmental Compatibility and Public Need. For more information on the OPSB, its composition, and the process it follows in reviewing the application for the project, please visit www.opsb.ohio.gov. You can also contact OPSB staff via e-mail at contactopsb@puco.ohio.gov, by phone at 866-270-6722, or by mailing correspondence to 180 East Broad Street, 11th Floor, Columbus, OH 43215.

Please visit AEPOhio.com/NewLiberty-EastLeipsic for more information. To ask a question or make a comment about the project, please call Maggie Beggs at (380) 205-5178 or send an email inquiry to mrbeggs@aep.com. Send mail inquiries to the following address:

AEP Ohio
Attention: Maggie Beggs
8500 Smiths Mill Road
New Albany, Ohio 43054

AEP OHIO
An AEP Company
BOUNDLESS ENERGY

AEP Ohio
8500 Smiths Mill Rd
New Albany, OH 43054

September 15, 2022

ATTN: IMPORTANT INFORMATION ABOUT YOUR PROPERTY
«OWNER»
«ADDRESS»
«CITY», «STATE» «ZIP»

RE: Notice of Public Information Meeting for a Proposed Major Utility Facility
AEP Ohio Transmission Company, Inc
New Liberty - East Leipsic 138 kV Upgrade Project & Open House Invitation
Case No. 22-0856-EL-BTX

Dear Neighbor,

You are receiving this letter because public records indicate you own property or live near AEP Ohio's New Liberty - East Leipsic 138 kV Upgrade Project (formerly East Leipsic-New Liberty 138-kV Transmission Line Rebuild Project). We are writing to invite you to a project open house and update you on the next steps in the project.

As you may recall in previous communications, the project involves:

- Upgrading about 20 miles of 34.5-kilovolt (kV) transmission line to 138-kV standards
- Replacing aging wooden poles with single steel poles and new wire
- Retiring the McComb Substation and building Rader Road Substation on the same property
- Expanding East Leipsic Substation

The project strengthens the local electric system by replacing infrastructure that has shown significant deterioration resulting in service interruptions. Upgrading the power line voltage ensures the transmission network supports additional electrical load growth in the area. A stronger transmission grid also benefits local distribution companies and electric cooperatives that receive power from the transmission lines, so that they may provide reliable power to their customers, with fewer interruptions.

We are hosting an in-person open house and virtual open house and invite you to learn more and share your input on the two route alternatives for the 20-mile power line. Please join us from **5:30 to 7:30 p.m.** on **Thursday, October 6,** at **Findlay Elks Lodge** located at **900 West Melrose Avenue in Findlay.** Visitors can view detailed maps and talk with team members about the two route alternatives for the 20-mile power line. There is no formal presentation, so you can arrive at any time during the event.

At AEP Ohio, safety is our first priority. The project team will provide masks and hand sanitizer at the open house. We ask that if you are experiencing fever, cough, body aches, or other COVID-19 symptoms, please stay home for the safety of your neighbors and our staff.

If you are feeling unwell, you may visit the **VIRTUAL OPEN HOUSE at AEPOhio.com/NewLiberty-EastLeipsic** to access information, view an interactive map, enter our virtual open house and submit comments.

AEP Ohio
8500 Smiths Mill Rd
New Albany, OH 43054

If you prefer, you can share your input by using any of the additional communication methods below:

- Complete the enclosed comment card with your input and mail it back in the self-addressed, stamped envelope provided;
- Call Maggie Beggs at (380) 205-5178;
- Send an email to Maggie Beggs at: mrbeggs@aep.com;
- Send your comments directly to the Ohio Power Siting Board (OPSB) at 180 East Broad Street, Columbus, OH 43215-3793. You may also visit opsb.ohio.gov or contact the OPSB at (866) 270-6772 or contactopsb@puc.state.oh.us.

When sharing your input on the two route options, please feel free to include information about your property, such as:

- Historically significant buildings or landmarks such as cemeteries;
- Natural features such as wetlands or springs;
- Future plans for your property.

In order to construct the project, AEP Ohio must obtain the approval of the OPSB. Following the public input period, the AEP Ohio project team prepares and submits an application to the OPSB that includes information on both a preferred and alternate route for the proposed 20-mile power line between East Leipsic and New Liberty substations. Public feedback helps us finalize a preferred and alternate line route to submit to the OPSB this fall.

The OPSB is legally obligated to review the application and, if certain legal criteria are met, it may approve the project. OPSB approval is obtained through the issuance of a Certificate of Environmental Compatibility and Public Need. For more information on the OPSB, its composition, and the process it follows in reviewing the application for the project, please visit www.opsb.ohio.gov. You can also contact OPSB staff via e-mail at contactopsb@puco.ohio.gov, by phone at 866-270-6722, or by mailing correspondence to 180 East Broad Street, 11th Floor, Columbus, OH 43215.

The OPSB will host a separate public hearing on the project in the future. You may request notice of the public hearing using any of the communication methods mentioned earlier in this letter. You can file a petition to intervene in the OPSB process with the siting board up to 30 days after the public hearing notice. The OPSB determines the final line route.

Please review the enclosed fact sheet for more information and share your input by October 21, 2022. Feel free to contact me if you have any questions.

Sincerely,

Maggie Beggs

Maggie Beggs
Project Outreach Specialist
AEP Ohio

NEW LIBERTY-EAST LEIPSIC
138 KV UPGRADE PROJECT

AEP Ohio representatives plan to increase electric reliability in Putnam and Hancock counties by upgrading the local electric transmission system. Upgrades improve reliability by increasing the voltage to meet the area's electrical needs and replacing deteriorating infrastructure with more modern equipment.

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

WHAT

This project involves:

- Upgrading about 20 miles of power line to operate at 138-kilovolt (kV) standards
- Replacing aging wooden poles with single steel poles and new wire
- Replacing the McComb Substation with the new Rader Road Substation
- Expanding East Leipsic Substation

WHY

The project strengthens the local electric system by replacing deteriorating infrastructure that has caused several service interruptions over recent years. Plans to replace the aging equipment with modern facilities reduces the likelihood of future power outages caused by failing equipment.

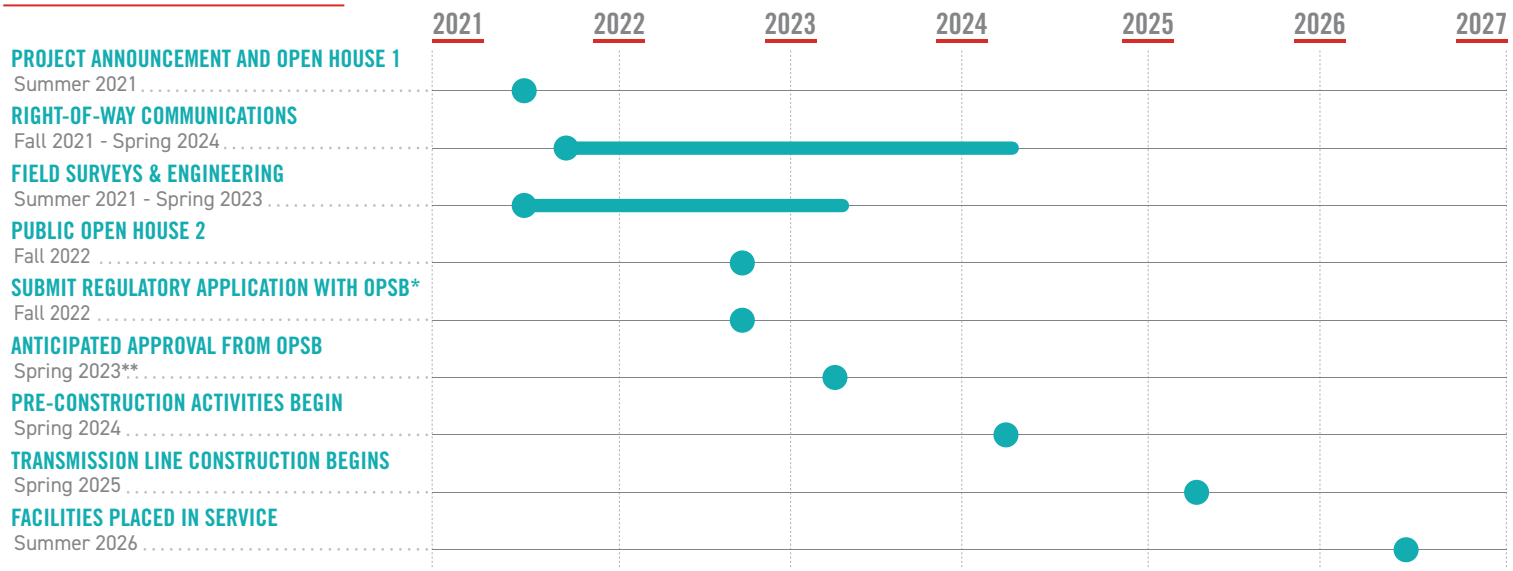
Increasing the power line voltage to 138-kV ensures that the local electric system adequately supports the growing electrical load in the area.

A stronger electric transmission system supports local electric cooperatives and electric distribution providers, who receive power from the transmission lines, so that they may provide reliable power to their customers, with fewer interruptions.

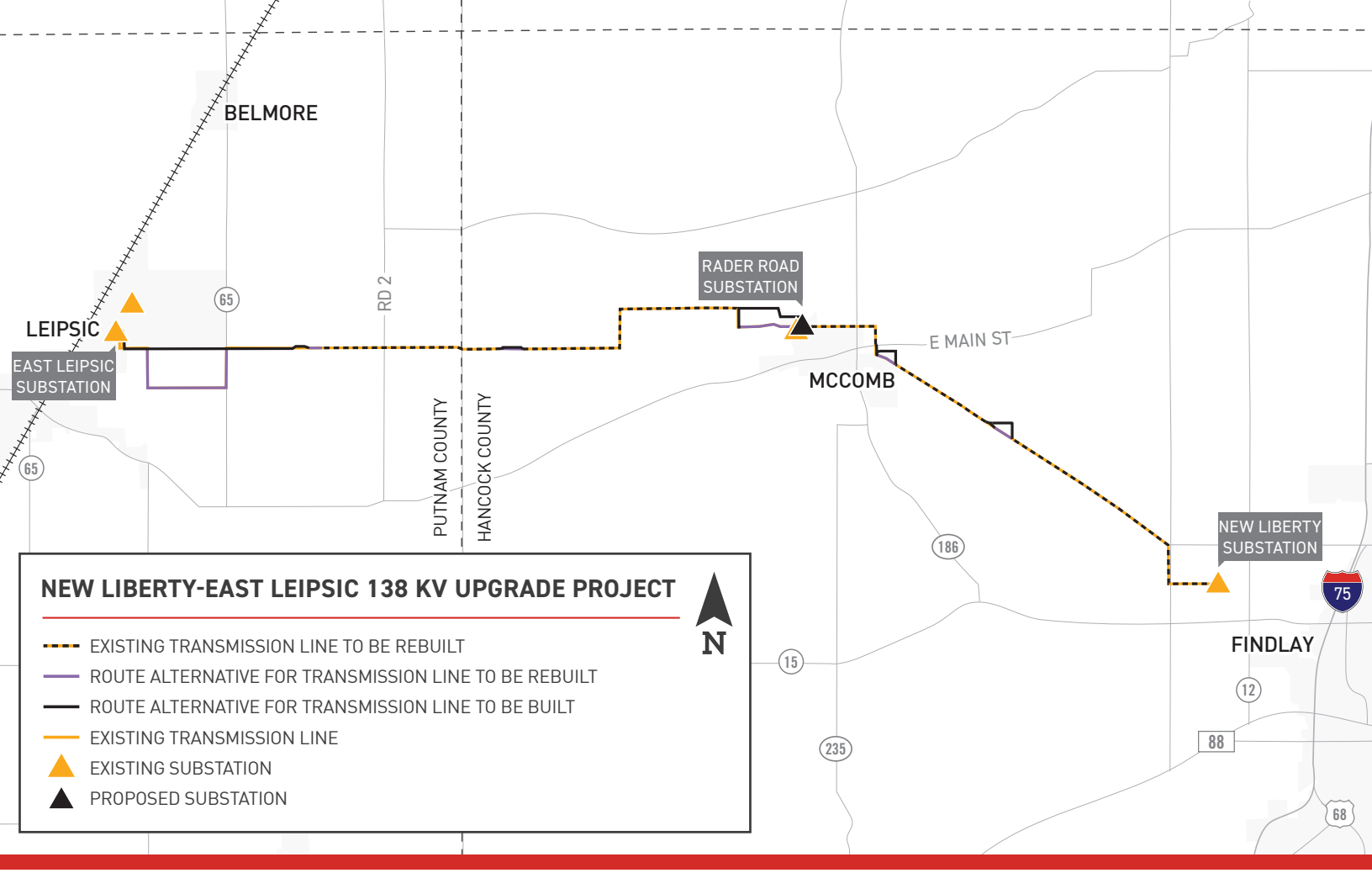
WHERE

The existing transmission line begins at the company's East Leipsic Substation off Road 5 in Leipsic and travels east to the Radar Road Substation off County Road 126 in McComb, then continues southeast to the New Liberty Substation off Township Road 94 in Findlay.

PROJECT SCHEDULE



*Ohio Power Siting Board **Timeline Subject to Change

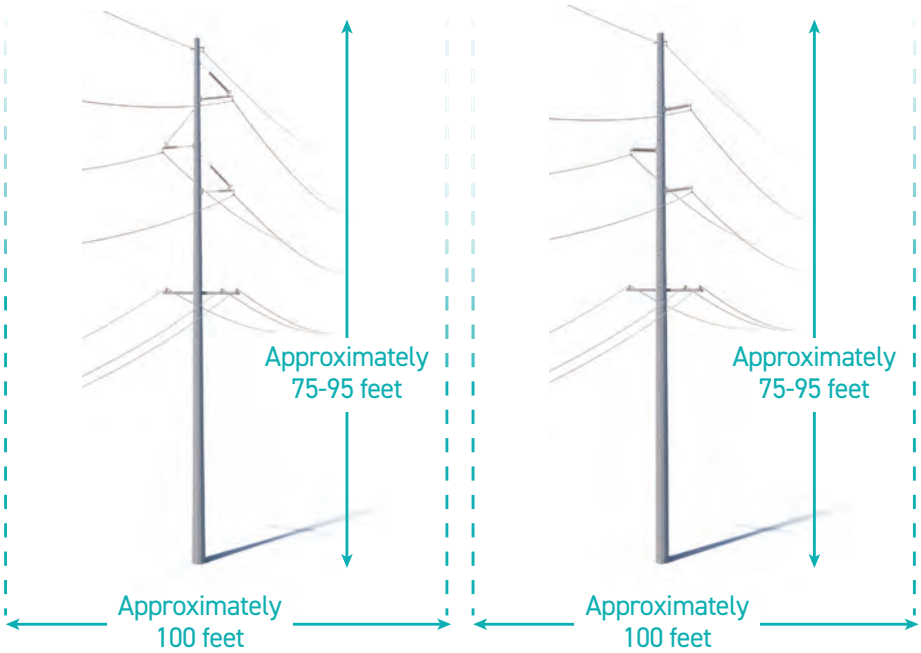


TYPICAL STRUCTURES

The project involves the use of single steel poles.

Typical Pole Height Range: 75-95 feet*

Typical Right-of-Way Width: 100 feet*



*Exact structure, height and right-of-way requirements may vary

AEP OHIO VALUES YOUR INPUT ABOUT THIS PROJECT. PLEASE SEND COMMENTS AND QUESTIONS TO:

AEP Ohio
c/o Maggie Beggs
8600 Smiths Mill Rd
New Albany OH 43054

mrbeggs@aep.com
380-205-5178
AEPOhio.com/NewLiberty-EastLeipsic

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

09/13/2022

EAST LEIPSIC-NEW LIBERTY

138-KV TRANSMISSION LINE REBUILD PROJECT

AEP Ohio representatives plan to increase electric reliability in Putnam and Hancock counties by upgrading the local electric transmission system. Upgrades improve reliability by increasing the voltage to meet the area's electrical needs and replacing deteriorating infrastructure with more modern equipment.

WHAT

This project involves:

- Upgrading about 20 miles of power line to operate at 138-kilovolt (kV) standards
- Replacing aging wooden poles with single steel poles and new wire
- Replacing the McComb Substation with the new Rader Road Substation
- Expanding East Leipsic Substation

WHY

The project strengthens the local electric system by replacing deteriorating infrastructure that has caused several service interruptions over recent years. Plans to replace the aging equipment with modern facilities reduces the likelihood of future power outages caused by failing equipment.

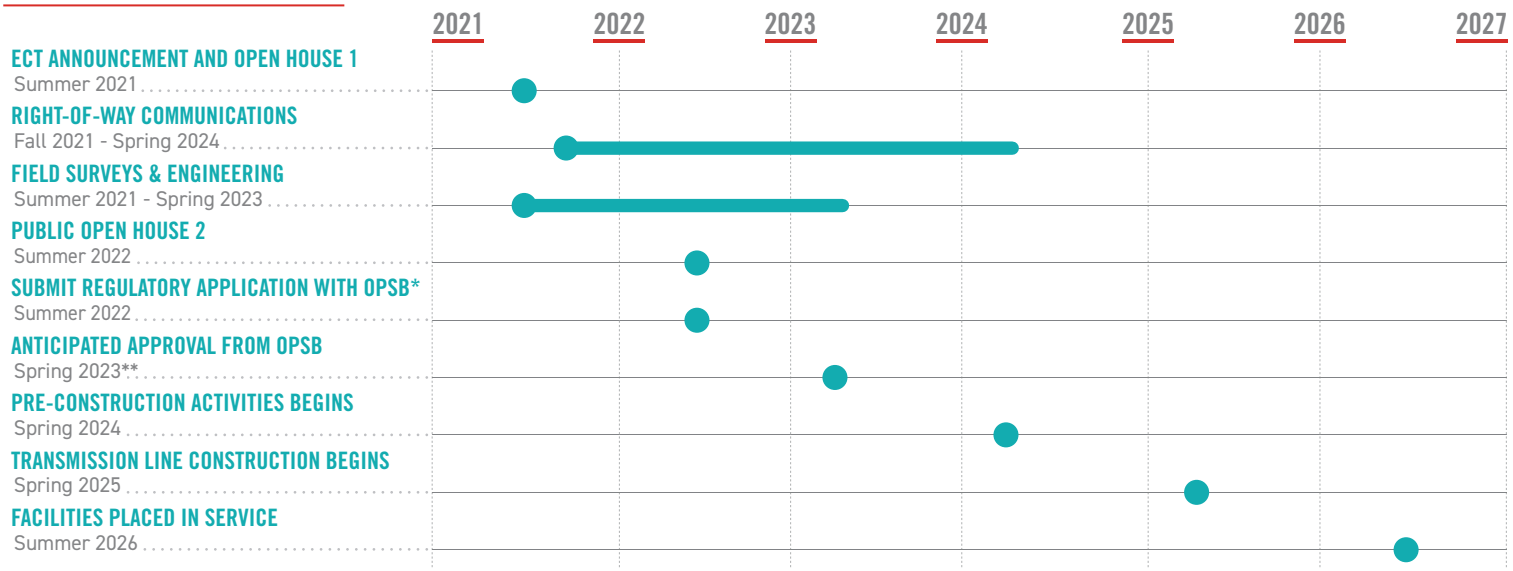
Increasing the power line voltage to 138-kV ensures that the local electric system adequately supports the growing electrical load in the area.

A stronger electric transmission system supports local electric cooperatives and electric distribution providers, who receive power from the transmission lines, so that they may provide reliable power to their customers, with fewer interruptions.

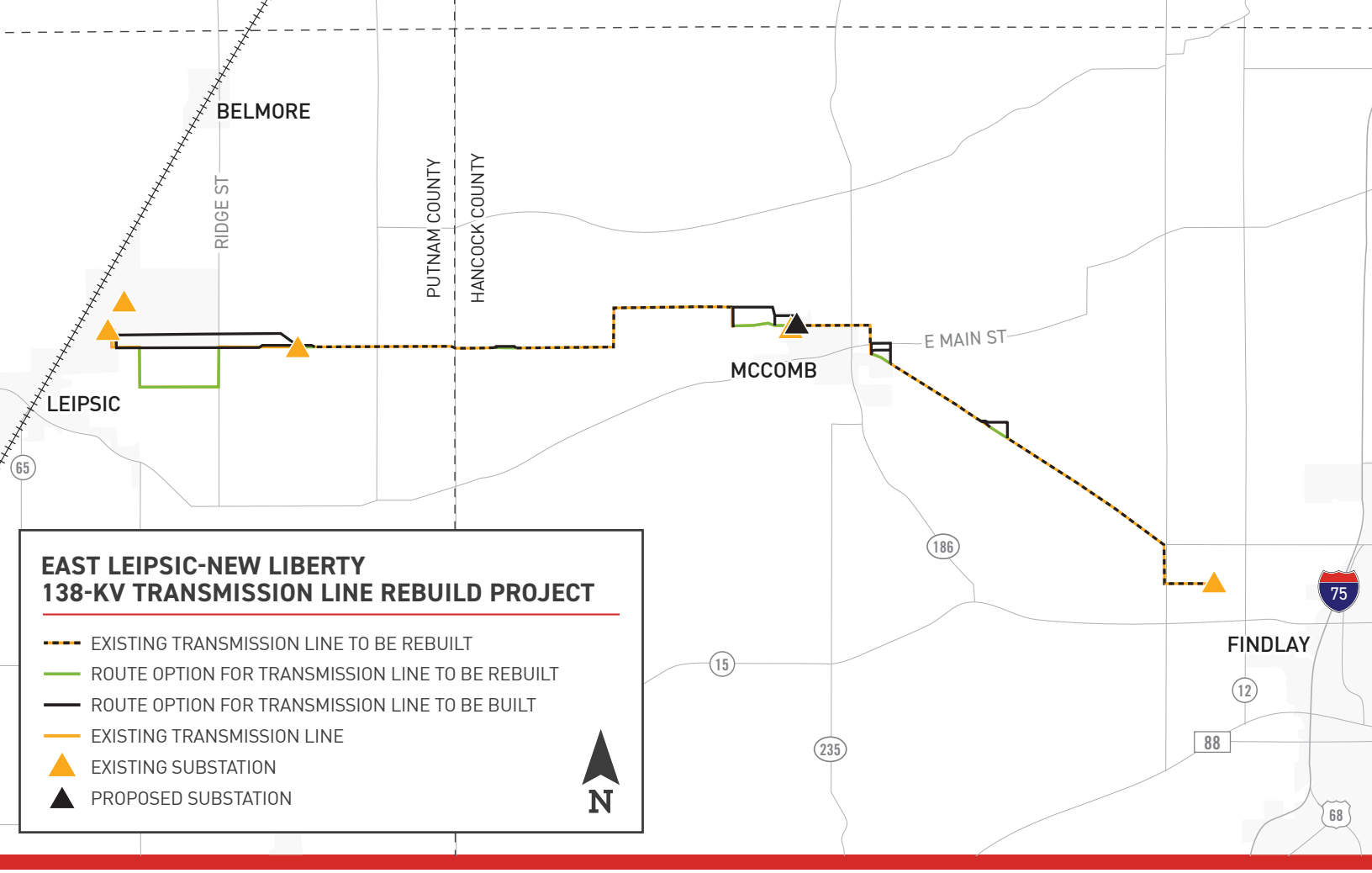
WHERE

The existing transmission line begins at the company's East Leipsic Substation off Road 5 in Leipsic and travels east to the Radar Road Substation off County Road 126 in McComb, then continues southeast to the New Liberty Substation off Township Road 94 in Findlay.

PROJECT SCHEDULE



*Ohio Power Siting Board **Timeline Subject to Change

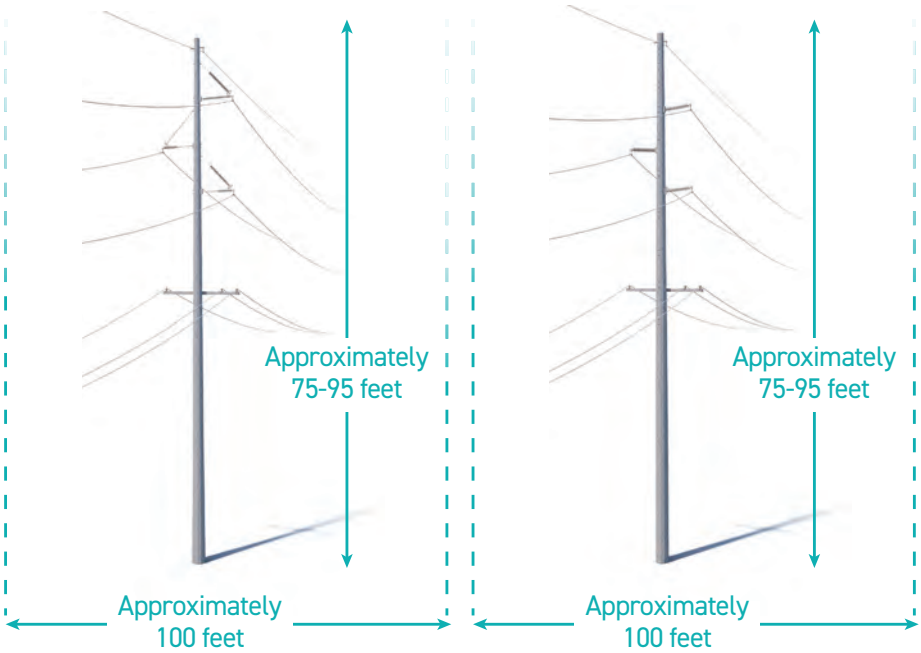


TYPICAL STRUCTURES

The project involves the use of single steel poles.

Typical Pole Height Range: 75-95 feet*

Typical Right-of-Way Width: 100 feet*



*Exact structure, height and right-of-way requirements may vary

AEP OHIO VALUES YOUR INPUT ABOUT THIS PROJECT. PLEASE SEND COMMENTS AND QUESTIONS TO:

AEP Ohio
c/o Maggie Beggs
8600 Smiths Mill Rd
New Albany OH 43054

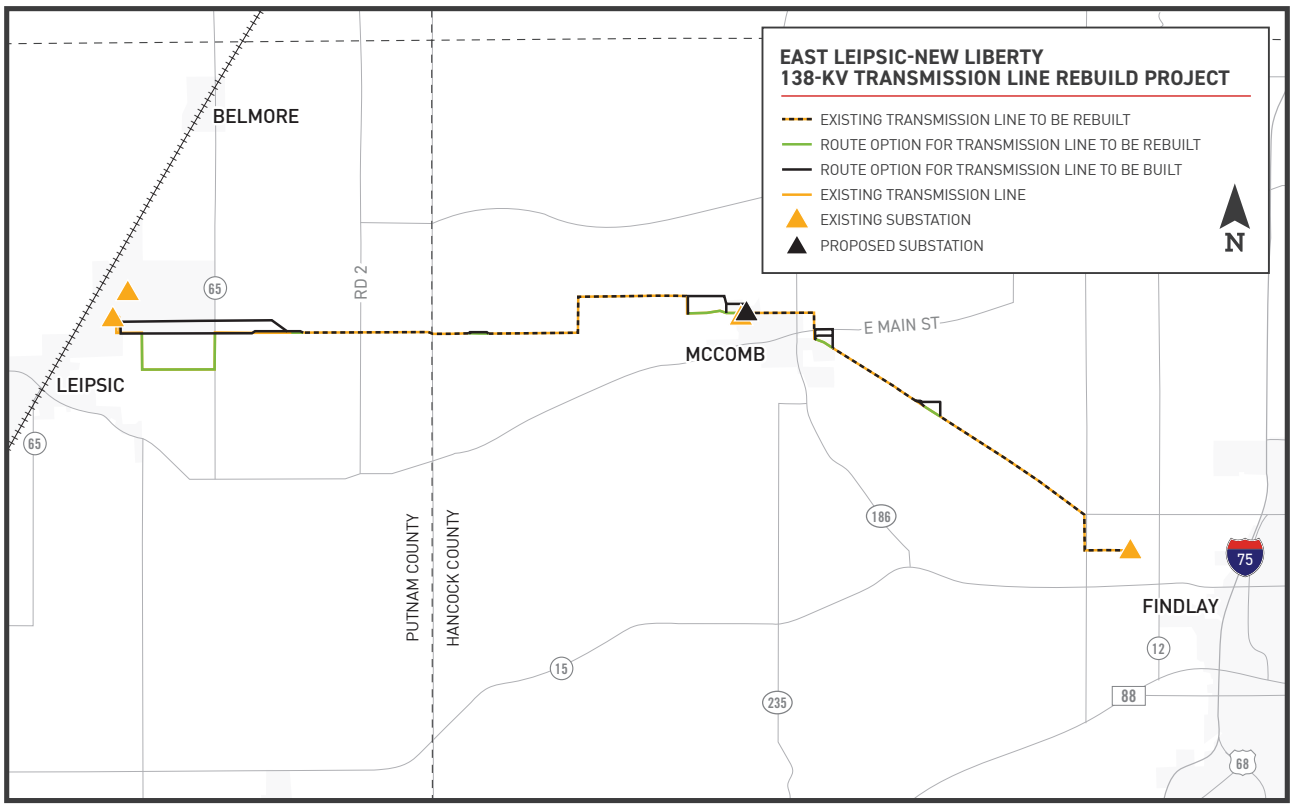
mrbeggs@aep.com
380-205-5178
AEPOhio.com/EastLeipsic-NewLiberty

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

09/14/2021

EAST LEIPSIC-NEW LIBERTY
138-KV TRANSMISSION LINE REBUILD PROJECT

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™



December 12, 2022

IMPORTANT MESSAGE ABOUT YOUR PROPERTY
«OWNER»
«ADDRESS»
«CITY», «STATE» «ZIP»

Subject: East Leipsic-New Liberty 138-kV Transmission Line Rebuild Project Announcement - Invitation to Virtual Open House

Dear Neighbor,

You are receiving this letter because you own property or live the area where AEP Ohio representatives plan to upgrade the local power grid.

The East Leipsic-Rader Road-New Liberty 138-kV Transmission Line Project involves:

- Upgrading about 20 miles of electric transmission line
- Replacing aging wooden poles with single steel poles and new wire
- Replacing McComb Substation off County Road 126 with the Rader Road Substation on the same company-owned property
- Expanding East Leipsic Substation located off Township Road 94 in Findlay

The project improves power grid reliability in Putnam and Hancock counties by replacing deteriorating infrastructure that has experienced several service interruptions over recent years. Increasing the power line voltage to 138-kilovolt ensures that the local electric system adequately supports the growing electrical load in the area. A stronger electric transmission system supports local electric cooperatives and electric distribution providers, who receive power from the transmission lines, so that they may provide reliable power to their customers, with fewer interruptions.

Company representatives plan to rebuild a majority of the power line in or near the existing right-of-way, which may require acquiring new or updating existing property easements. Easements are defined land rights that the property owners grant the utility to allow for the safe construction, operation, and maintenance of the power line.

Surveys along the power line route where the company has existing easements are scheduled to start in the next few weeks, depending on weather and other factors, and conclude in a few months.

We are committed to keeping you informed about this project. We invite you to learn more and share your input in the ways listed below. We particularly welcome your input on route options where the line deviates from its existing location.

PROJECT WEBSITE WITH VIRTUAL OPEN HOUSE:
Please visit **AEPOhio.com/EastLeipsic-NewLiberty** to access project information, view an interactive map, enter our virtual open house and submit comments through a “Contact Us” link.

Our team plans to use your input to determine a power line route that minimizes impact to the community and environment. When sharing your input please feel free to include information about your property, such as:

- Historically significant buildings or landmarks such as cemeteries
- Natural features such as wetlands or springs
- Future plans for your property

We look forward to receiving your feedback.

Please share your input by Friday, October 29. We welcome and encourage your feedback about this project.

Sincerely,

Maggie Beggs
Project Outreach Specialist
AEP Ohio
(380) 205-5178
mrbeggs@aep.com

December 12, 2022

IMPORTANT MESSAGE ABOUT YOUR PROPERTY
«OWNER»
«ADDRESS»
«CITY», «STATE» «ZIP»
Landowner ID: «AEP_ID»
Map Page: «MAP_TILE»

Subject: East Leipsic-New Liberty 138-kV Transmission Line Rebuild Project Announcement - Invitation to Virtual Open House

Dear Neighbor,

You are receiving this letter because you own property or live the area where AEP Ohio representatives plan to upgrade the local power grid.

The East Leipsic-Rader Road-New Liberty 138-kV Transmission Line Project involves:

- Upgrading about 20 miles of electric transmission line
- Replacing aging wooden poles with single steel poles and new wire
- Replacing McComb Substation off County Road 126 with the Rader Road Substation on the same company-owned property
- Expanding East Leipsic Substation located off Township Road 94 in Findlay

The project improves power grid reliability in Putnam and Hancock counties by replacing deteriorating infrastructure that has experienced several service interruptions over recent years. Increasing the power line voltage to 138-kilovolt ensures that the local electric system adequately supports the growing electrical load in the area. A stronger electric transmission system supports local electric cooperatives and electric distribution providers, who receive power from the transmission lines, so that they may provide reliable power to their customers, with fewer interruptions.

We are committed to keeping you informed about this project. We invite you to learn more and share your input in the ways listed below. We particularly welcome your input on route options where the line deviates from its existing location.

MATERIALS ENCLOSED WITH THIS LETTER:

- Review the enclosed fact sheet for more project information
- Locate your property on the enclosed map (please reference the **Landowner ID** at the top of this letter to find your property on the map) and feel free to write notes on the map for our project team to review
- Complete the enclosed comment card and mail it back to us (along with the map if you've written notes on it) in the self-addressed, stamped envelope provided

PROJECT WEBSITE WITH VIRTUAL OPEN HOUSE:
Please visit **AEPOhio.com/EastLeipsic-NewLiberty** to access project information, view an interactive map, enter our virtual open house and submit comments through a "Contact Us" link.

Our team plans to use your input to determine a power line route that minimizes impact to the community and environment. When sharing your input please feel free to include information about your property, such as:

- Historically significant buildings or landmarks such as cemeteries
- Natural features such as wetlands or springs
- Future plans for your property

We look forward to receiving your feedback.

Please share your input by Friday, October 29. **We welcome and encourage your feedback about this project.**

We look forward to receiving your feedback.

Sincerely,

Maggie Beggs
Project Outreach Specialist
AEP Ohio
(380) 205-5178
mrbeggs@aep.com

Appendix 8-1
Agency Correspondence Letters

From:	Ohio, FW3
To:	Lubbers, Jake
Cc:	nathan.reardon@dnr.state.oh.us; Parsons, Kate
Subject:	[EXTERNAL] New Liberty-East Leipsic Project, Hancock and Putnam Counties, Ohio
Date:	Thursday, April 14, 2022 2:46:39 PM
Attachments:	image.png image.png

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

Project Code: 2022-0013594

Dear Mr. Lubbers,

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

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

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

Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.
If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

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

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

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

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

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

Sincerely,

Patrice Ashfield
Field Office Supervisor

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

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

April 1, 2022

Jake Lubbers
Jacobs
2 Crowne Point Court, Suite 100
Cincinnati, OH 45241

Re: 22-0220; AEP New Liberty-East Leipsic Project

Project: The proposed project includes the expansion of two stations (approximately 8 acres) and the rebuild of approximately 18 miles of transmission line from 69kV to 138kV within a 100-foot right-of-way (ROW).

Location: The proposed project is located in Liberty Township, Portage Township, Pleasant Township, and Village of McComb in Hancock County, and Van Buren Township and Village of Leipsic in Putnam County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has the following data at or within one mile of the project area:

Sora Rail (*Porzana carolina*), state species of concern
Virginia Rail (*Rallus limicola*), state species of concern
Elktoe (*Alasmidonta marginata*), state species of concern
Creek Heelsplitter (*Lasmigona compressa*), state species of concern
Kidneyshell (*Ptychobranchus fasciolaris*), state species of concern
Deertoe (*Truncilla truncata*), state species of concern

The review was performed on the project area specified in the request as well as an additional one-mile radius. Records searched date from 1980. Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area.

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

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

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH $\geq$ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

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

The project is within the range of the following listed mussel species.
Federally Endangered
clubshell (*Pleurobema clava*)
rayed bean (*Villosa fabalis*)

State Endangered
purple lilliput (*Toxolasma lividum*)

State Threatened
pondhorn (*Uniomerus tetralasmus*)
black sandshell (*Ligumia recta*)

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2020), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) 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 (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2020) can be found at: https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf

The project is within the range of the western banded killifish (*Fundulus diaphanus menona*), a state endangered fish. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact this or other aquatic species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet meadows and other wetlands. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the black-crowned night-heron *(Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

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

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

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

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

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

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

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

Mike Pettegrew
Environmental Services Administrator

In reply, refer to
2022-HAN-54538

May 6, 2022

Mr. Ryan J. Weller
Weller & Associates, Inc.
1395 West Fifth Avenue
Columbus, Ohio 43212

RE: East Leipsic-Rader Road 69kV to a 138kV Conversion/Rebuild Project, Van Buren Township, Putnam County, and Pleasant Township, Hancock County, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received April 8, 2022 regarding the proposed East Leipsic-Rader Road 69kV to a 138kV Conversion/Rebuild Project, Van Buren Township, Putnam County, and Pleasant Township, Hancock County, Ohio. We appreciate the opportunity to comment on this project. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Section 149.53 of the Ohio Revised Code and the Ohio Power Siting Board rules for siting this project (OAC 4906-5). The comments of the Ohio SHPO are also submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. 306108 [36 CFR 800]).

The following comments pertain to the *Phase I Archaeological Survey for the 17.7 km (11 mi) East Leipsic-Rader Road 69kV to a 138kV Conversion/Rebuild Project in Van Buren Township, Putnam County, and Pleasant Township, Hancock County, Ohio* by Ryan J. Weller (Weller & Associates, Inc. 2022).

A literature review, visual inspection, surface collection, shovel probe and shovel test unit excavation was completed as part of the investigations. One (1) previously identified archaeological site is located within the project area. Ohio Archaeological Inventory (OAI) 33PU0168 was not reidentified during this survey. The site was previously recommended not eligible for listing in the National Register of Historic Place (NRHP). Six (6) new archaeological sites were identified during survey, OAI# 33PU0235-33PU0236 and 33HK1038-33HR1041. Our office agrees the archaeological sites are not eligible for listing in the NRHP and no additional archeological investigation is needed.

The following comments pertain to the *History/Architecture Investigations for the 17.7 km (11 mi) East Leipsic-Rader Road 69kV to a 138kV Conversion/Rebuild Project in Van Buren Township, Putnam County, and Pleasant Township, Hancock County, Ohio* by Scott McIntosh (Weller & Associates, Inc. 2022).

A literature review and field survey were completed as part of the investigations. Forty-one (41) resources 50 years of age or older were identified within the Area of Potential Effects (APE). Weller recommends that none of the resources are eligible for listing in the NRHP. Our office agrees with Weller's recommendations regarding eligibility.

Based on the information provided, we agree that the project as proposed will have no effect on historic properties. No further coordination with this office is necessary, unless the project changes or unless new or additional historic properties are discovered during implementation of this project. In such a situation, this office should be contacted. If you have any questions, please contact me at (614) 298-2022, or by e-mail at khorrocks@ohiohistory.org, or Joy Williams at jwilliams@ohiohistory.org. Thank you for your cooperation.

Sincerely,

Krista Horrocks, Project Reviews Manager
Resource Protection and Review

RPR Serial No: 1092860-1092861

In reply, refer to
2022-HAN-54568

May 11, 2022

Mr. Ryan J. Weller
Weller & Associates, Inc.
1395 West Fifth Avenue
Columbus, Ohio 43212

RE: Rader Road-New Liberty 69kV to 138kV Transmission Line Rebuild/Upgrade Project in Pleasant, Portage, and Liberty Townships, Hancock County, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received April 13, 2022 regarding the proposed Rader Road-New Liberty 69kV to 138kV Transmission Line Rebuild/Upgrade Project in Pleasant, Portage, and Liberty Townships, Hancock County, Ohio. We appreciate the opportunity to comment on this project. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Section 149.53 of the Ohio Revised Code and the Ohio Power Siting Board rules for siting this project (OAC 4906-5). The comments of the Ohio SHPO are also submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. 306108 [36 CFR 800]).

The following comments pertain to the *Phase I Archaeological Survey for the 11.3 km (7.0 mi) Rader Road-New Liberty 69kV to 138kV Transmission Line Rebuild/Upgrade Project in Pleasant, Portage, and Liberty Townships, Hancock County, Ohio* by Ryan J. Weller (Weller & Associates, Inc. 2022).

A literature review, visual inspection, surface collection, shovel probe and shovel test unit excavation was completed as part of the investigations. No previously identified archaeological sites are located within the project area. Six (6) new archaeological sites were identified during survey, Ohio Archaeological Inventory (OAI) 33HK1042-33HK1047. None of the sites are recommended eligible for listing in the National Register of Historic Places (NRHP). Our office agrees with this recommendation and no additional archeological investigation is needed.

The following comments pertain to the *History/Architecture Investigations for the Investigations for the 11.3 km (7.0 mi) Rader Road-New Liberty 69kV to 138kV Transmission Line Rebuild/Upgrade Project in Pleasant, Portage, and Liberty Townships, Hancock County, Ohio* by Scott McIntosh (Weller & Associates, Inc. 2022).

A literature review and field survey were completed as part of the investigations. Seventy-five (75) resources 50 years of age or older were identified within the Area of Potential Effects. Weller recommends that none of the resources are eligible for listing in the NRHP. Our office agrees with Weller's recommendations regarding eligibility.

Based on the information provided, we agree that the project as proposed will have no effect on historic properties. No further coordination with this office is necessary, unless the project changes or unless new or additional historic properties are discovered during implementation of this project. In such a situation, this office should be contacted. If you have any questions, please contact me at (614) 298-2022, or by e-mail at khorrocks@ohiohistory.org, or Joy Williams at jwilliams@ohiohistory.org. Thank you for your cooperation.

Sincerely,

Krista Horrocks, Project Reviews Manager
Resource Protection and Review

RPR Serial No: 1092902-1092903

Appendix 8-2
Wetland and Waterbody Delineation Report

Ecological Survey Report

East Leipsic-New Liberty
138 kV Transmission Line Project

Putnam and Hancock Counties, Ohio

Prepared for

AEP TRANSMISSION
An AEP Company
BOUNDLESS ENERGY

December 2022

Jacobs
2 Crowne Point Court
Suite 100
Cincinnati, OH 45241

Contents

Tables

Appendices

1 Introduction

This report summarizes the results of the ecological survey conducted in Putnam and Hancock Counties, Ohio by Jacobs Engineering Group Inc. (Jacobs) for the American Electric Power Ohio Transco (AEP) East Leipsic-New Liberty 138 kV Transmission Line Project (Project). AEP is proposing to convert approximately 18 miles of 69 kV transmission line to 138 kV transmission line and to expand two stations (Figure 1). The environmental survey corridor (ESC) consists of the existing right-of-way (ROW) and several reroute alignments. This environmental survey report contains the following components:

- Appendix A, Figure 1 provides an overview map of the ESC overlain on a topographic map.
- Appendix A, Figure 2 shows Natural Resource Conservation Service (NRCS) soil map units, National Hydrography Dataset (NHD) streams, National Wetland Inventory (NWI) polygons, and Federal Emergency Management Agency (FEMA) 100-year floodplain information.
- Appendix A, Figure 3 provides the location of all features mapped during the delineation by Jacobs' biologists within the ESC. This includes all wetlands, streams, ponds, and data points.
- Appendix A, Figure 4 shows the land use within the ESC.
- U.S. Army Corps of Engineers (USACE) wetland determination field data forms and photographs are in Appendix B.
- Ohio Rapid Assessment Method for Wetlands (ORAM) forms are in Appendix C.
- Photographs of designated use streams are in Appendix D.
- Qualitative Habitat Evaluation Index (QHEI) stream data forms and photographs are in Appendix E.
- Primary Headwater Habitat Evaluation Index (HHEI) stream data forms and photographs are in Appendix F.
- Jacobs' pond evaluation forms and photographs are in Appendix G.
- Representative photographs of land use types are in Appendix H.
- Documentation for federal and state-listed species agency coordination is in Appendix I.

2 Background Information

The ESC begins at East Leipsic Station off of Township Road E (41.1115, -83.9645) and ends at New Liberty Station on Township Road 94 (41.0663, -83.6963). It crosses the Village of Leipsic and Van Buren Township in Putnam County and the Village of McComb and townships of Liberty, Portage, and Pleasant in Hancock County, Ohio (Figure 1).

The U.S. Geological Survey (USGS) 7.5-minute topographic maps of the area (Leipsic, McComb, and Findlay, OH) indicate that the prominent drainage features in the Project area include Little Yellow Creek, Yellow Creek, West Creek, Needles Creek, Rader Creek, and unnamed tributaries of Blanchard River (USGS 2022). Topographic relief is limited to relatively gradual elevation changes and generally increases in elevation moving southeast, with elevations ranging between 734 feet and 811 feet above sea level throughout the ESC (Figure 1).

Land use and natural habitats observed within the ESC include agriculture, commercial lawn, forested, gravel areas, hayfield, herbaceous maintained ROW road, residential, forested, commercial lawn, park, old field gravel lot, hayfield, scrub/shrub, gravel station pad, railroad, herbaceous maintained ROW, and scrub/shrub maintained ROW.

2.1 Precipitation

Precipitation history from the Findlay Water Pollution Control Center weather station (the nearest weather station with both historical and recent precipitation records) was reviewed before completing the environmental surveys to determine if climatic conditions were normal during surveys. Monthly precipitation ranged from below normal to above normal in the months leading up to the survey in March 2022 (Table 2.1; USDA 2022). This precipitation history was taken into consideration during the survey.

Table 2.1 Precipitation Data in Findlay, OH

East Leipsic-New Liberty 138 kV Transmission Line Project

	December 2021	January 2022	February 2022	March 2022	Totals
Recent Monthly Sum (inches)[1]	3.66	0.81	2.98	2.68	10.13
Historic Normal Range (inches)[1]	2.07-3.20	1.49-2.59	1.32-2.43	1.96-3.17	6.84-11.39
Climatic Condition	above average	below average	above average	average	average

[1]USDA 2022

2.2 Drainage Basins

The ESC is within the Lower Maumee, Cedar-Portage, and Blanchard drainage basins (8-digit Hydrologic Unit Codes [HUCs] 04100009, 04100010, and 04100008, respectively). More specifically it crosses five 12-digit HUC watersheds outlined in Table 2.2.

Table 2.2 Drainage Basins Crossed by the Project

East Leipsic-New Liberty 138 kV Transmission Line Project

12-Digit HUC Name	12-Digit HUC
Upper Yellow Creek	04100009-05-04
Lower Yellow Creek	04100009-05-06
Needles Creek	04100010-01-02
Rader Creek	04100010-01-01
Rocky Ford	04100010-01-03
Howard Run-Blanchard River	04100008-03-04

Source: USGS 2018

3 Wetland and Waterbody Delineation

3.1 Desktop Review

Prior to conducting the field investigations, Jacobs reviewed the following resources to identify the potential for wetlands within the ESC:

- Aerial photo-based map (Esri 2022)
- USGS Topographic maps (USGS 2022)
- Web Soil Survey (NRCS 2021)
- NHD map (USGS 2018)
- NWI map (USFWS 2021)

According to the NRCS soil survey of Putnam and Hancock Counties (NRCS 2021), the ESC contains 37 soil map units. Of these, seven are listed as predominantly hydric, 19 are listed as predominantly non-hydric, and 11 are listed as not hydric (Table 3.1). Not hydric or predominantly non-hydric soils make up approximately 253 acres, which is 33 percent of the ESC. Approximately 509 acres, or 67 percent, of the ESC is comprised of predominantly hydric soils (Figure 2).

Generally, hydric soils are those soils that indicate through their color and structure that they have experienced dominantly reducing (i.e., oxygen poor) conditions. Oxygen-poor conditions result from inundation and/or saturation by water. Partially hydric soils have both hydric and non-hydric soil components identified in the soil map unit.

Table 3.1 Soil Map Units

East Leipsic-New Liberty 138 kV Transmission Line Project

Symbol	Soil Description	Hydric Classification	Acreage within ESC
ArA	Aurand loam, 0 to 2 percent slopes	Predominantly non-hydric	4.40
BmB	Belmore loam, 2 to 6 percent slopes	Not hydric	1.12
CtA	Cygnet loam, 0 to 2 percent slopes	Predominantly non-hydric	5.67
DfA	Del Rey-Blount complex, 0 to 3 percent slopes	Predominantly non-hydric	5.56
DnA	Digby loam, 0 to 2 percent slopes	Predominantly non-hydric	4.11
FoB	Fox loam, 2 to 6 percent slopes	Not hydric	2.51
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	Predominantly non-hydric	44.56
Gwd5C2	Glynwood clay loam, 6 to 12 percent slopes, eroded	Not hydric	0.81
Gwe1B1	Glynwood silt loam, end moraine, 2 to 6 percent slopes	Predominantly non-hydric	23.36
HaB	Haney sandy loam, 2 to 6 percent slopes	Not hydric	2.62
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly hydric	383.50
HdB	Haney loam, 2 to 6 percent slopes	Not hydric	0.81
HnA	Haskins loam, 0 to 2 percent slopes	Predominantly non-hydric	21.26
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly hydric	16.92
HpB	Houcktown loam, 2 to 6 percent slopes	Predominantly non-hydric	2.01
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes	Predominantly non-hydric	38.86
JfB	Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes	Predominantly non-hydric	16.94

Table 3.1 Soil Map Units

East Leipsic-New Liberty 138 kV Transmission Line Project

Symbol	Soil Description	Hydric Classification	Acreage within ESC
Md	Mermill loam	Predominantly hydric	17.99
MfA	Mermill clay loam, 0 to 1 percent slopes	Predominantly hydric	25.03
MvB	Mortimer silt loam, 2 to 6 percent slopes	Predominantly non-hydric	3.17
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly non-hydric	10.77
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	Predominantly non-hydric	15.39
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded	Predominantly non-hydric	1.31
NtA	Nappanee silt loam, 0 to 2 percent slopes	Predominantly non-hydric	6.42
NtB	Nappanee silt loam, 2 to 6 percent slopes	Predominantly non-hydric	0.82
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes	Not hydric	2.15
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	Predominantly hydric	60.34
RgB	Rawson sandy loam, 2 to 6 percent slopes	Predominantly non-hydric	1.49
RmB	Rawson loam, 2 to 6 percent slopes	Not hydric	1.59
SeB	Shawtown loam, 2 to 6 percent slopes	Not hydric	3.17
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes	Predominantly non-hydric	24.13
SnA	Sloan loam, 0 to 1 percent slopes, occasionally flooded	Predominantly hydric	3.38
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded	Predominantly hydric	2.09
StB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded	Predominantly non-hydric	<0.01
UcA	Udorthents, loamy, 0 to 2 percent slopes	Not hydric	4.60
UcD	Udorthents, loamy, 2 to 25 percent slopes	Not hydric	3.65
W	Water	Not hydric	0.40

NWI data were obtained from the U.S. Fish and Wildlife Service (USFWS) for review of potential wetlands that may occur within the ESC. The NWI data (USFWS 2021) identify the type of wetland or open water present at a location using the USFWS classification system (FGDC 2013). The presence of an NWI feature is not a definitive indicator that a wetland or waterbody is present. The information on NWI maps is obtained largely from aerial interpretation, may be outdated, and is only sporadically field-checked. Additional detail regarding the mapped NWI wetlands within the ESC is provided in Table 4.1.2.

The ESC crosses the FEMA 100-year floodplain of Yellow Creek (FEMA 2018).

3.2 Field Survey Methodology

Jacobs' biologists surveyed the ESC on March 28-30, 2022, by walking the area and evaluating for wetlands and other waterbodies. The boundaries of each wetland and waterbody within the ESC were delineated and recorded using handheld global navigation satellite system (GNSS) units. For streams identified within the ESC, the ordinary high water mark (OHWM) was used as the jurisdictional boundary.

Wetland data were recorded on USACE Regional Supplement wetland determination data forms and ORAM forms, stream data were recorded on Headwater Habitat Evaluation Index (HHEI) forms and Qualitative Habitat Evaluation Index (QHEI) forms, and pond data were recorded on Jacobs pond forms. All other land use, habitat, and other supplemental data were collected in a digital geodatabase during the environmental survey.

3.2.1 Wetland Delineation

Wetland boundaries were field-delineated according to Section 404 of the Clean Water Act and the routine onsite methodology described in the Technical Report Y-87-1 *Corps of Engineers' Wetlands Delineation Manual*, subsequent guidance documents (Environmental Laboratory 1987) and, depending on location, either *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE 2010) or *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE 2012). Wetland delineation data were recorded on the appropriate USACE Regional Supplement wetland determination data form, depending on location. Representative wetland and upland data points were recorded during the wetland delineation to determine the presence/absence of wetlands and/or document upland conditions within the Project area. Upland data points were determined not to be within wetlands because they did not have positive indicators of one or more of the three wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils.

Wetland quality was evaluated using the Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (OEPA 2001). Wetlands are scored based on size, surrounding land use, hydrology, habitat alteration, special wetland communities, and plant communities. Each of these subject areas is further divided into subcategories 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".

3.2.2 Stream Assessment

Jurisdictional streams were identified as those waters that possessed a continuously defined bed and bank, OHWM indicators, and lacked a dominance of upland vegetation in the channel. The OHWM is defined as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE 2005). Channels that parallel a roadway or railroad were identified as upland drainage features and were not considered to be jurisdictional unless they had an identifiable OHWM, were identified on the USGS topographic map, or represented a presumed relocation of a natural channel.

During the field survey, functional stream assessments were conducted using the methods described in the OEPA's *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index* (OEPA 2006) and in the OEPA's *Field Methods for Evaluating Primary Headwater Streams in Ohio* (OEPA 2020). The Qualitative Habitat Evaluation Index (QHEI) is used to characterize larger streams (drainage areas greater than 1 square mile or maximum pool depth greater than 40 centimeters), while the Primary Headwater Habitat Evaluation Index (HHEI) is appropriate for first-order and second-order headwater streams (drainage areas less than or equal to 1 square mile and maximum pool depth less than or equal to 40 centimeters).

4 Field Survey Results

Jacobs biologists identified 14 wetlands, 22 streams, and six ponds in the ESC. These features are displayed on the Delineated Features Map (Figure 3). Jacobs defaults to the USACE and OEPA for the final determination of hydrologic connectivity and jurisdiction.

4.1 Wetlands

Fourteen wetlands, totaling 8 acres, ranging in size from 0.06 to 2.25 acres, were delineated within the ESC (Table 4.1, next page). The reported wetland acreage only corresponds to areas delineated within the ESC as some wetlands extended beyond the survey boundary. Of the 14 wetlands, two were palustrine emergent (PEM), three were palustrine scrub-shrub (PSS), five were palustrine forested (PFO), two were PEM/PFO complexes, one was a PSS/PFO complex, and one was a PEM/PSS/PFO complex. Completed USACE wetland and upland determination forms, plus representative photographs, are provided in Appendix B.

4.1.1 Wetland ORAM Results

Five Category 1 wetlands and nine Category 2 wetlands were identified within the ESC (Table 4.1.1). Completed ORAM forms are included in Appendix C.

Five wetlands were classified as Category 1 based on ORAM scores ranging from 16 to 25. Generally, these wetlands scored low due to a variety of factors including narrow buffers with moderately high intensity of surrounding land use, precipitation as the only source of water, shallow maximum water depth, modifications to the natural hydrologic regime, disturbed substrate, poor to fair habitat development, habitat alteration, sparse coverage of invasive plants, and weak microtopography.

Nine wetlands were classified as Category 2 based on ORAM scores ranging from 31.5 to 54.5. Compared to the Category 1 wetlands, these had wider buffer widths on average, some additional sources of water, substrate that has generally recovered from disturbance, fair to good habitat development, habitat that has generally recovered from alteration, and higher quality and/or amount of microtopography.

No Category 3 wetlands were identified within the ESC.

Table 4.1.1 Wetland ORAM Summary

East Leipsic-New Liberty 138 kV Transmission Line Project

Wetland Type	ORAM Category			Number of Wetlands	Delineated Area (ac)[1]
	Category 1	Category 2	Category 3		
PEM	2	0	0	2	0.64
PSS	3	0	0	3	0.73
PFO	0	5	0	5	2.48
PEM/PFO	0	2	0	2	0.97
PSS/PFO	0	1	0	1	0.93
PEM/PSS/PFO	0	1	0	1	2.25
Totals	5	9	0	14	8.00

[1]Acreage within the ESC.

Table 4.1 Delineated Wetlands

East Leipsic-New Liberty 138 kV Transmission Line Project

Wetland ID	Location		Isolated?	Habitat Type[1]	Delineated Area (ac)[2]	ORAM		Nearest Structure # (Existing / Proposed)	Existing Structure # in Wetland	Proposed Structure # in Wetland	Structure Installation Method	Proposed Impacts	
	Latitude	Longitude				Score	Category					Temporary Matting Area (ac)	Permanent Impact Area (ac)
Wetland EN-01	41.10898	-83.95208	No	PFO	1.14	38.0	2	69 kV str. 12 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-02	41.10908 41.10931	-83.89859 -83.89845	No	PFO PSS	0.84 0.09	34.5	2	69 kV str. 128 / TBD	69 kV str. 128	TBD	TBD	TBD	TBD
Wetland EN-03	41.10918 41.10889	-83.86731 -83.86773	No	PEM PFO	<0.01 0.27	32.0	2	69 kV str. 161 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-04	41.11312	-83.78817	Yes	PEM	0.10	16.0	1	34 kV str. 147 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-05	41.10850	-83.77784	No	PSS	0.39	24.0	1	34 kV str. 128 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-06	41.10569	-83.77329	No	PSS	0.07	25.0	1	34 kV str. 119 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-07	41.09748	-83.75677	No	PEM	0.54	17.5	1	34 kV str. 95 / TBD	34 kV str. 95	TBD	TBD	TBD	TBD
Wetland EN-08	41.09685	-83.75429	No	PFO	0.76	42.5	2	34 kV str. 92 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-09	41.08729	-83.73459	No	PFO	0.19	48.5	2	34 kV str. 63 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-10	41.08439	-83.73012	No	PSS	0.27	25.0	1	34 kV str. 56 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-11	41.08368 41.08346	-83.72795 -83.72809	No	PEM PFO	0.35 0.34	31.5	2	34 kV str. 54 / TBD	34 kV str. 54	TBD	TBD	TBD	TBD
Wetland EN-12	41.08015	-83.72042	No	PFO	0.33	54.5	2	34 kV str. 43 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-13	41.07954	-83.71932	No	PFO	0.06	42.0	2	34 kV str. 42 / TBD	None	TBD	TBD	TBD	TBD
Wetland EN-14	41.07918 41.07928 41.07967	-83.71928 -83.71966 -83.72009	No	PEM PFO PSS	1.00 0.88 0.38	41.5	2	34 kV str. 39 and 43 / TBD	34 kV str. 39 and 43	TBD	TBD	TBD	TBD
			Total Wetland Acreage:		8.00					Proposed Impacts Totals:		TBD	TBD

[1]FGDC 2013.
[2]Acreage within the ESC.

4.1.2 NWI Field Verification

The NWI data indicated that there are 25 mapped features within the ESC: two freshwater forested/shrub wetlands, four freshwater ponds, one lake, and 18 riverine systems (Figure 2; USFWS 2021). Wetlands and/or waterbodies were confirmed at 23 of these sites, and the remaining two mapped NWI features were in uplands documented with photographs (Table 4.1.2).

Table 4.1.2 Mapped National Wetland Inventory Features

East Leipsic-New Liberty 138 kV Transmission Line Project

Wetland Classification Code[1]	NWI Description	Figure #	Related Field Inventoried Resource	Comments
R2UBH	Riverine lower perennial unconsolidated bottom, permanently flooded	2.1	Stream EN-02	
PFO1C	Palustrine forested, broad-leaved deciduous, seasonally flooded	2.1	Wetland EN-01	
R5UBFx	Riverine unknown perennial unconsolidated bottom, semipermanently flooded, excavated	2.1	None	Upland drainage feature present with poorly defined bed/bank, upland vegetation, and no OHWM.
R5UBFx	Riverine unknown perennial unconsolidated bottom, semipermanently flooded, excavated	2.2	Stream EN-03	
R2UBH	Riverine lower perennial unconsolidated bottom, permanently flooded	2.3	Stream EN-05	
R2UBH	Riverine lower perennial unconsolidated bottom, permanently flooded	2.3	Stream EN-06	
PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	2.3	Pond EN-02	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.3	Stream EN-07	
R5UBFx	Riverine unknown perennial unconsolidated bottom, semipermanently flooded, excavated	2.4	Stream EN-10	
R2UBH	Riverine lower perennial unconsolidated bottom, permanently flooded	2.5	Stream EN-11	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.6	Stream EN-12	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.7	Stream EN-13	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.7	Stream EN-14	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.7	Stream EN-15	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.8	Stream EN-16	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.9	Stream EN-17	
L1UBHx	Lacustrine limnetic unconsolidated bottom, permanently flooded, excavated	2.9	Pond EN-03	
PUBG	Palustrine unconsolidated bottom, intermittently exposed	2.10	Pond EN-04	

Table 4.1.2 Mapped National Wetland Inventory Features

East Leipsic-New Liberty 138 kV Transmission Line Project

Wetland Classification Code[1]	NWI Description	Figure #	Related Field Inventoried Resource	Comments
R4SBC	Riverine intermittent streambed, seasonally flooded	2.10	None	Upland drainage feature present with poorly defined bed/bank, upland vegetation, and no OHWM.
R4SBC	Riverine intermittent streambed, seasonally flooded	2.11	Stream EN-18	
PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	2.12	Pond EN-05	
PFO1C	Palustrine forested, broad-leaved deciduous, seasonally flooded	2.12	Wetland EN-14	
PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	2.13	Pond EN-06	
R4SBC	Riverine intermittent streambed, seasonally flooded	2.13	Stream EN-19	
R5UBH	Riverine unknown perennial unconsolidated bottom, permanently flooded	2.14	Stream EN-20	

[1]FGDC 2013.

4.2 Streams

Twenty-two streams, totaling 20,557 linear feet, were identified within the ESC (Table 4.2, next page). Of the 22 streams, eight were identified as perennial streams, 12 were identified as intermittent streams, and two were identified as ephemeral streams.

4.2.1 Ohio Administrative Code Chapter 3745-1 Designated Use

The OEPA has established water use designation for streams throughout Ohio as outlined in the Ohio Administrative Code (OAC) Chapter 3745-1-07. There were five delineated streams that had a designated use as regulated under OAC Chapter 3745-1 (Table 4.2.1). Jacobs defaults to the assigned OAC designations and therefore did not assess these streams. Representative photographs are provided in Appendix D.

Table 4.2.1 OAC Chapter 3745-1 Stream Designations

East Leipsic-New Liberty 138 kV Transmission Line Project

Stream Name	OAC Designation
Little Yellow Creek	Limited Resource Water
Yellow Creek	Warmwater Habitat
West Creek	Warmwater Habitat
Needles Creek	Warmwater Habitat
Rader Creek	Warmwater Habitat

Source: OEPA 2017

Table 4.2 Delineated Streams

East Leipsic-New Liberty 138 kV Transmission Line Project

Stream ID	Location		Stream Type[1]	Stream Name	Delineated Length (ft)[2]	Bankfull Width (ft)	OHWM Width (ft)	Field Evaluation			Ohio EPA 401 Eligibility	Stream Crossing?	Proposed Impacts	
	Latitude	Longitude						Method	Score	Category / Rating / OAC Designation			Fill Type	Area (acre)
Stream EN-01	41.11120	-83.96362	Intermittent	UNT to Little Yellow Creek	423	20	1	HHEI	43	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-02	41.11054	-83.96361	Perennial	Little Yellow Creek	338	12	8	OAC	-	LRW	Eligible	TBD	TBD	TBD
Stream EN-03	41.10557	-83.93849	Intermittent	UNT to Yellow Creek	301	9	6	HHEI	47	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-04	41.10929	-83.94263	Intermittent	UNT to Yellow Creek	8,238	20	3	HHEI	31	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-05	41.10960	-83.92753	Perennial	Yellow Creek	357	30	20	OAC	-	WWH	Eligible	TBD	TBD	TBD
Stream EN-06	41.10950	-83.91911	Perennial	UNT to Yellow Creek	394	20	5	QHEI	29.5	Very Poor	Eligible	TBD	TBD	TBD
Stream EN-07	41.10938	-83.90484	Intermittent	UNT to Yellow Creek	2,896	9	6	HHEI	58	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-08	41.10915	-83.90006	Intermittent	UNT to Yellow Creek	172	8	6	HHEI	59	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-09	41.10943	-83.89509	Intermittent	UNT to Yellow Creek	2,802	14	10	HHEI	58	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-10	41.10919	-83.88094	Intermittent	UNT to Yellow Creek	325	9	5	HHEI	55	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-11	41.10934	-83.86751	Perennial	West Creek	693	18	11	OAC	-	WWH	Eligible	TBD	TBD	TBD
Stream EN-12	41.10930	-83.85182	Intermittent	UNT to Needles Creek	300	10	4	QHEI	32.5	Poor	Eligible	TBD	TBD	TBD
Stream EN-13	41.11662	-83.83653	Intermittent	UNT to Needles Creek	301	8	5	QHEI	33	Poor	Eligible	TBD	TBD	TBD
Stream EN-14	41.11664	-83.83242	Perennial	Needles Creek	300	7	4.5	OAC	-	WWH	Eligible	TBD	TBD	TBD
Stream EN-15	41.11696	-83.82037	Intermittent	UNT to Needles Creek	114	8	5	HHEI	54	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-16	41.11352	-83.79796	Perennial	UNT to Rader Creek	466	15	10	QHEI	54	Fair	Eligible	TBD	TBD	TBD
Stream EN-17	41.11245	-83.77962	Perennial	Rader Creek	932	50	10	OAC	-	WWH	Eligible	TBD	TBD	TBD
Stream EN-18	41.08610	-83.73218	Intermittent	UNT to Blanchard River	90	30	10	HHEI	52	Modified Class II	Eligible	TBD	TBD	TBD

Table 4.2 Delineated Streams

East Leipsic-New Liberty 138 kV Transmission Line Project

Stream ID	Location		Stream Type[1]	Stream Name	Delineated Length (ft)[2]	Bankfull Width (ft)	OHWM Width (ft)	Field Evaluation			Ohio EPA 401 Eligibility	Stream Crossing?	Proposed Impacts	
	Latitude	Longitude						Method	Score	Category / Rating / OAC Designation			Fill Type	Area (acre)
Stream EN-19	41.07139	-83.70790	Intermittent	UNT to Blanchard River	577	25	10	QHEI	56	Good	Eligible	TBD	TBD	TBD
Stream EN-20	41.06589	-83.70572	Perennial	UNT to Blanchard River	311	12	10	QHEI	41	Poor	Eligible	TBD	TBD	TBD
Stream EN-21	41.06558	-83.69881	Ephemeral	UNT to Blanchard River	110	1.5	1.5	HHEI	32	Modified Class II	Eligible	TBD	TBD	TBD
Stream EN-22	41.06556	-83.69777	Ephemeral	UNT to Blanchard River	117	2	1.5	HHEI	22	Modified Class I	Eligible	TBD	TBD	TBD
				Total Stream Length:	20,557								Total Proposed Impacts Area:	TBD

[1]Flow regime is defined as perennial, intermittent, or ephemeral and is determined using field observations and USGS topographic maps.
[2]Stream length within the ESC.

4.2.2 QHEI Results

Six streams, totaling 2,349 linear feet within the ESC, were evaluated using QHEI methodology. Of the six streams, one was classified as good, one was fair, three were poor, and one was very poor warmwater (Table 4.2.2). Completed QHEI forms and representative photographs are provided in Appendix E.

Table 4.2.2 QHEI Summary

East Leipsic-New Liberty 138 kV Transmission Line Project

Flow Regime	QHEI Class					Number of Streams	Length (ft) within ESC
	Very Poor Warmwater	Poor Warmwater	Fair Warmwater	Good Warmwater	Excellent Warmwater		
Ephemeral	0	0	0	0	0	0	0
Intermittent	0	2	0	1	0	3	1,178
Perennial	1	1	1	0	0	3	1,171
Total	1	3	1	1	0	6	2,349

4.2.3 HHEI Results

Eleven headwater streams, totaling 15,587 linear feet within the ESC, were evaluated using HHEI methodology. Of the 11 streams, ten were classified as modified class II and one was classified as modified class I (Table 4.2.3). Completed HHEI forms and representative photographs are provided in Appendix F.

Table 4.2.3 HHEI Summary

East Leipsic-New Liberty 138 kV Transmission Line Project

Flow Regime	HHEI Class					Number of Streams	Length (ft) within ESC
	Modified Class I PHW	Class I PHW	Modified Class II PHW	Class II PHW	Class III PHW		
Ephemeral	1	0	1	0	0	2	227
Intermittent	0	0	9	0	0	9	15,360
Perennial	0	0	0	0	0	0	0
Total	1	0	10	0	0	11	15,587

4.3 Ponds/Open Water

Six ponds totaling 1.41 acres were identified within the ESC (Table 4.3). Jacobs' Pond/Open Water forms with representative photographs are provided in Appendix G.

Table 4.3 Delineated Ponds

East Leipsic-New Liberty 138 kV Transmission Line Project

Pond Name	Location		Delineated Area (ac)[1]
	Latitude	Longitude	
Pond EN-01	41.10899	-83.92400	0.07
Pond EN-02	41.10899	-83.90867	0.02
Pond EN-03	41.10691	-83.77695	0.40
Pond EN-04	41.10314	-83.76843	0.45
Pond EN-05	41.08419	-83.72919	0.21
Pond EN-06	41.07249	-83.70761	0.26
		Total Pond Acreage:	1.41

[1]Acreage within the ESC.

4.4 Land Use/Habitat

In addition to the delineated wetland and waterbody features, Jacobs observed the following land use types and natural habitats within the ESC: agriculture, commercial lawn, forested, gravel areas, hayfield, herbaceous maintained ROW road, residential, park, old field scrub/shrub, railroad, and scrub/shrub maintained ROW, (Figure 4). Based on Jacobs' observations, the primary land use in the ESC is agriculture. Land use descriptions and percentages within the ESC are outlined in Table 4.4 and representative photographs of land use types are in Appendix H.

Table 4.4 Land Use and Natural Habitat

East Leipsic-New Liberty 138 kV Transmission Line Project

Land Use and Natural Habitats	Land Use and Habitat Description	Approximate Acreage in ESC	Approximate Percentage of ESC
Agriculture	Areas currently used or recently used for farming purposes and may include existing row crop and similar areas.	569.7	75%
Commercial Lawn	Areas where residential and commercial properties are present. This includes associated yards, outbuildings (garages, sheds, etc.), gardens, golf courses, and other maintained landscaped areas associated with the residential and commercial property. These landscaped areas contain frequently mowed grasses and forbs.	17.7	2%
Delineated Pond	Areas of permanent or nearly permanent water, often constructed for water retention or cattle watering purposes, but sometimes naturally formed.	1.0	<1%
Delineated Stream	Areas with a defined bed and bank, or evidence of an ordinary high water mark which lacked a dominance of upland vegetation in the channel.	4.5	1%
Delineated Wetland	Areas that satisfy wetland criteria as defined in the USACE Delineation Manual (Environmental Laboratory 1987) and regional supplements.	6.4	1%
Forested	Areas that are dominated by primarily upland forested vegetation, such as maples (*Acer* spp.), oaks (*Quercus* spp.), shagbark hickory (*Carya ovata*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), and other upland tree species. This community may have some upland vegetation in the shrub or herbaceous strata, but the predominant vegetation is comprised of upland tree species.	27.2	4%
Gravel Lot	Areas that are developed and are dominated by gravel fill.	10.9	1%
Gravel Station Pad	Areas that include an existing substation and the surrounding gravel pad.	4.3	1%
Hayfield	Open field herbaceous areas that may be used to graze livestock or for the cultivation of hay.	9.5	1%
Herbaceous Maintained ROW	Areas that are regularly maintained and dominated by primarily upland herbaceous vegetation, such as smooth brome (*Bromus inermis*), tall fescue (*Schedonorus arundinaceus*), Queen Anne's lace (*Daucus carota*), tall goldenrod (*Solidago altissima*), common mullein (*Verbascum thapsus*), and others. This community may have some wetland vegetation and/or upland shrub vegetation present to a lesser extent.	1.7	<1%

Table 4.4 Land Use and Natural Habitat

East Leipsic-New Liberty 138 kV Transmission Line Project

Land Use and Natural Habitats	Land Use and Habitat Description	Approximate Acreage in ESC	Approximate Percentage of ESC
Scrub/Shrub Maintained ROW	Areas that are regularly maintained and dominated by primarily upland shrub vegetation, such as sumacs (*Rhus* spp.), raspberries (*Rubus* spp.), multiflora rose (*Rosa multiflora*), hawthorns (*Crataegus* spp.), saplings of trees identified in upland forested species description, and other upland shrub species.	0.9	<1%
Old Field	Areas that may have been previously cultivated but are now dominated by perennial grasses and other herbaceous plants.	0.6	<1%
Park	Areas that tend to be dominated by maintained lawns where the public can hike, fish, or engage in other outdoor activities.	13.4	2%
Railroad	Areas where existing railroad infrastructure is present.	2.8	<1%
Residential	Areas where residential properties are present. This includes yards, outbuildings (garages, sheds, etc.), gardens, and other maintained landscaped areas that contain frequently mowed grasses and forbs.	37.9	5%
Road	Areas where public or private dirt, gravel, or paved roads are present.	47.7	6%
Scrub/Shrub	Areas that are dominated by primarily upland shrub vegetation, such as sumacs (*Rhus* spp.), raspberries (*Rubus* spp.), multiflora rose (*Rosa multiflora*), apple or crabapples (*Malus* spp.), hawthorns (*Crataegus* spp.), saplings of trees identified in upland forested species description, and other upland shrub species. This community may have some upland vegetation in the herbaceous or tree strata, but the predominant vegetation is comprised of upland shrub species.	6.4	1%

5 Protected Species

Jacobs requested information on federal listed species from the USFWS and received a response on April 14, 2022 (Appendix I). USFWS indicated that the project is within the range of two federal listed species: the Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*Myotis septentrionalis*) (Table 5).

In addition, Jacobs also requested information on state-listed species from the Ohio Department of Natural Resources (ODNR) and received a response on April 1, 2022 (Appendix I) indicating that the project is within range of 14 federal and state threatened or endangered species (Table 5).

Table 5 Protected Species Summary

East Leipsic-New Liberty 138 kV Transmission Line Project

Common Name (*Scientific Name*)	State Listed Status	Federal Listed Status	Typical Habitat*	Habitat Observed	Avoidance Dates*	Agency Comment*	Potential Impacts
Indiana bat (*Myotis sodalis*)	E	E	A wide variety of forested/ wooded habitats	Yes – limited number of wooded areas were identified which appear to be potentially suitable habitat	April 1 to September 30	USFWS: Avoid removal of trees ≥3" dbh; if not, seasonal clearing recommended; if not, summer presence/absence survey ODNR: conserve trees with loose, shaggy bark and/or dbh ≥20"; seasonal cutting for other trees; survey if cutting during summer; desktop habitat assessment recommended	Agency guidelines on tree clearing will be followed, therefore no impacts to this species are anticipated.
Northern long-eared bat (*Myotis septentrionalis*)	E	T	A wide variety of forested/ wooded habitats, plus roosting in human-made structures	Yes – limited number of wooded areas were identified which appear to be potentially suitable habitat	April 1 to September 30	USFWS: Avoid removal of trees ≥3" dbh; if not, seasonal clearing recommended ODNR: conserve trees with loose, shaggy bark and/or dbh ≥20"; seasonal cutting for other trees; survey if cutting during summer; desktop habitat assessment recommended	Agency guidelines on tree clearing will be followed, therefore no impacts to this species are anticipated.
Little brown bat (*Myotis lucifugus*)	E	-	Trees with loose bark and cavities during spring and summer	Yes – limited number of wooded areas were identified which appear to be potentially suitable habitat	April 1 to September 30	USFWS: none ODNR: conserve trees with loose, shaggy bark and/or dbh ≥20"; seasonal cutting for other trees; survey if cutting during summer; desktop habitat assessment recommended	Agency guidelines on tree clearing will be followed, therefore no impacts to this species are anticipated.

Table 5 Protected Species Summary

East Leipsic-New Liberty 138 kV Transmission Line Project

Common Name (*Scientific Name*)	State Listed Status	Federal Listed Status	Typical Habitat*	Habitat Observed	Avoidance Dates*	Agency Comment*	Potential Impacts
Tricolored bat (*Perimyotis subflavus*)	E	-	Trees with loose bark and cavities during spring and summer	Yes – limited number of wooded areas were identified which appear to be potentially suitable habitat	April 1 to September 30	USFWS: none ODNR: conserve trees with loose, shaggy bark and/or dbh ≥20"; seasonal cutting for other trees; survey if cutting during summer; desktop habitat assessment recommended	Agency guidelines on tree clearing will be followed, therefore no impacts to this species are anticipated.
Clubshell (*Pleurobema clava*)	E	E	Small to medium rivers and streams; sand and gravel in riffle/runs [1]	Yes – perennial streams may provide potentially suitable habitat	N/A	USFWS: none ODNR: must not have an impact on native mussels; in-water work requires surveys or indication that impacts will not occur	No in-water work is proposed in a perennial stream. No impacts to mussel species and their habitat are anticipated.
Rayed bean (*Villosa fabalis*)	E	E	Small headwater creeks to larger rivers; gravel and sand; often associated with vegetation [1]	Yes – perennial streams may provide potentially suitable habitat	N/A	USFWS: none ODNR: must not have an impact on native mussels; in-water work requires surveys or indication that impacts will not occur	No in-water work is proposed in a perennial stream. No impacts to mussel species and their habitat are anticipated.
Purple lilliput (*Toxolasma lividum*)	E	-	All substrates; headwaters of small to medium rivers [1]	Yes – perennial streams may provide potentially suitable habitat	N/A	USFWS: none ODNR: must not have an impact on native mussels; in-water work requires surveys or indication that impacts will not occur	No in-water work is proposed in a perennial stream. No impacts to mussel species and their habitat are anticipated.
Pondhorn (*Uniomerus tetralasmus*)	T	-	Slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams; fine silt or mud [1]	Yes – perennial streams and ponds may provide potentially suitable habitat	N/A	USFWS: none ODNR: must not have an impact on native mussels; in-water work requires surveys or indication that impacts will not occur	No in-water work is proposed in a perennial stream. No impacts to mussel species and their habitat are anticipated.
Black sandshell (*Ligumia recta*)	T	-	Medium to large rivers with strong currents; sand, gravel, or silt [1]	Yes – perennial streams and ponds may provide potentially suitable habitat	N/A	USFWS: none ODNR: must not have an impact on native mussels; in-water work requires surveys or indication that impacts will not occur	No in-water work is proposed in a perennial stream. No impacts to mussel species and their habitat are anticipated.

Table 5 Protected Species Summary

East Leipsic-New Liberty 138 kV Transmission Line Project

Common Name (*Scientific Name*)	State Listed Status	Federal Listed Status	Typical Habitat*	Habitat Observed	Avoidance Dates*	Agency Comment*	Potential Impacts
Western banded killifish (*Fundulus diaphanous menona*)	E	-	Perennial streams	Yes – perennial streams may provide potentially suitable habitat	March 15 to June 30	USFWS: none ODNR: not likely to impact if no in-water work in perennial streams	No in-water work is proposed in a perennial stream. No impacts to this species or its habitat are anticipated.
Kirtland's snake (*Clonophis kirtlandii*)	T	-	Wet meadows and other wetlands	No – potentially suitable habitat for this species was not observed	N/A	USFWS: none ODNR: due to location, habitat, and type of work, not likely to impact species	Potentially suitable habitat for this species was not observed. No impacts to this species and its habitat are anticipated.
Black-crowned night-heron (*Nycticorax nycticorax*)	T	-	Roost in trees near wetlands or large waterbodies; forage in wetlands; nest in small trees, shrubs, or on ground	No – potentially suitable habitat for this species was not observed	May 1 to July 31	USFWS: none ODNR: if habitat is not impacted, project is not likely to impact species	Potentially suitable habitat for this species was not observed within the ESC. No impacts to this species and its habitat are anticipated.
Least bittern (*Ixobrychus exilis*)	T	-	Dense emergent wetlands with thick stands of cattails or sedges interspersed with woody vegetation and open water	No – potentially suitable habitat for this species was not observed	May 1 to July 31	USFWS: none ODNR: if habitat is not impacted, project is not likely to impact species	Potentially suitable habitat for this species was not observed within the ESC. No impacts to this species and its habitat are anticipated.
Northern harrier (*Circus hudsonis*)	E	-	Breed in large marshes and grasslands; nest in loose colonies on the ground	No – potentially suitable habitat for this species was not observed	April 15 to July 31	USFWS: none ODNR: if habitat is not impacted, project is not likely to impact species	Potentially suitable habitat for this species was not observed within the ESC. No impacts to this species and its habitat are anticipated.

E = Endangered; T = Threatened
* Source: Appendix I unless otherwise noted
[1] NatureServe 2022

6 Conclusion

Jacobs conducted environmental surveys of AEP's East Leipsic-New Liberty 138 kV Transmission Line Project on March 28-30, 2022. A total of 14 wetlands, 22 streams, and six ponds were delineated within the ESC. The 14 wetlands, totaling 8.00 acres, included one Category 2 PEM/PSS/PFO wetland complex, one Category 2 PSS/PFO complex, two Category 2 PEM/PFO wetland complexes, five Category 2 PFO wetlands, three Category 1 PSS wetlands, and two PEM Category 1 wetlands. No category 3 wetlands were identified within the ESC. The 22 streams, totaling 20,557 linear feet, included eight perennial streams, 12 intermittent streams, and two ephemeral streams. The six ponds totaled 1.41 acres within the ESC. Jacobs defaults to the USACE and OEPA for the final determination of hydrologic connectivity and jurisdiction. Further coordination is recommended prior to the submittal of any permit or construction activities.

The results of the wetland and waterbody survey described in this report conducted by Jacobs are limited to what was identified within the ESC, as depicted in Figure 3. The information contained in this ecological survey report is for a study area that may be much larger than the actual Project limits-of-disturbance for construction; therefore, lengths and acreages listed in this report may likely not constitute the actual impacts of the Project at the time of construction. If permits are determined to be necessary, actual impacted lengths and/or acreages will be submitted in subsequent permit applications.

The wetland and waterbodies delineation survey results presented within this report apply to the site conditions at the time of our assessment. Changes within the ESC that may occur with time due to natural processes or human impacts at the project site or on adjacent properties, could invalidate the findings of this report, especially if Jacobs is unaware and has not had the opportunity to revisit the ESC. Additionally, changes in applicable standards and regulations may also occur as a result of legislation or the expansion of knowledge over time. Therefore, the findings of this wetland and waterbodies delineation report may be invalidated, wholly or in part, by changes that are beyond the control of Jacobs.

7 References

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Vicksburg, Mississippi. Army Engineer Waterways Experiment Station. Technical Report Y-87-1.

Esri. 2022. World Imagery [basemap]. https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9. Accessed March 2022.

Federal Emergency Management Agency (FEMA). 2018. Flood Map Service Center. https://msc.fema.gov/portal/home. Accessed March 2022.

Federal Geographic Data Committee (FGDC). 2013. Classification of Wetlands and Deepwater Habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, D.C.

Natural Resources Conservation Service (NRCS). 2021. Soil Survey Geographic (SSURGO) database for Putnam and Hancock Counties, Ohio.

Ohio Environmental Protection Agency (OEPA). 2001. Ohio Rapid Assessment Method for Wetlands v. 5.0: User's Manual and Scoring Forms.

Ohio Environmental Protection Agency (OEPA). 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Division of Surface Water, Columbus, Ohio.

Ohio Environmental Protection Agency (OEPA). 2017. Ohio Administrative Code Chapter 3745-1: Water Quality Standards. https://codes.ohio.gov/ohio-administrative-code/chapter-3745-1. Accessed March 2022.

Ohio Environmental Protection Agency (OEPA). 2020. Field Methods for Evaluating Primary Headwater Streams in Ohio. Version 4.1. Ohio EPA Division of Surface Water, Columbus, Ohio.

United States Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter No. 05-05. SUBJECT: Ordinary High Water Mark Identification.

U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0). Vicksburg, MS. U.S. Army Engineer Research and Development Center. ERDC/EL TR-10-16.

U.S. Army Corps of Engineers (USACE). 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0). Vicksburg, MS. U.S. Army Engineer Research and Development Center. ERDC/EL TR-12-1.

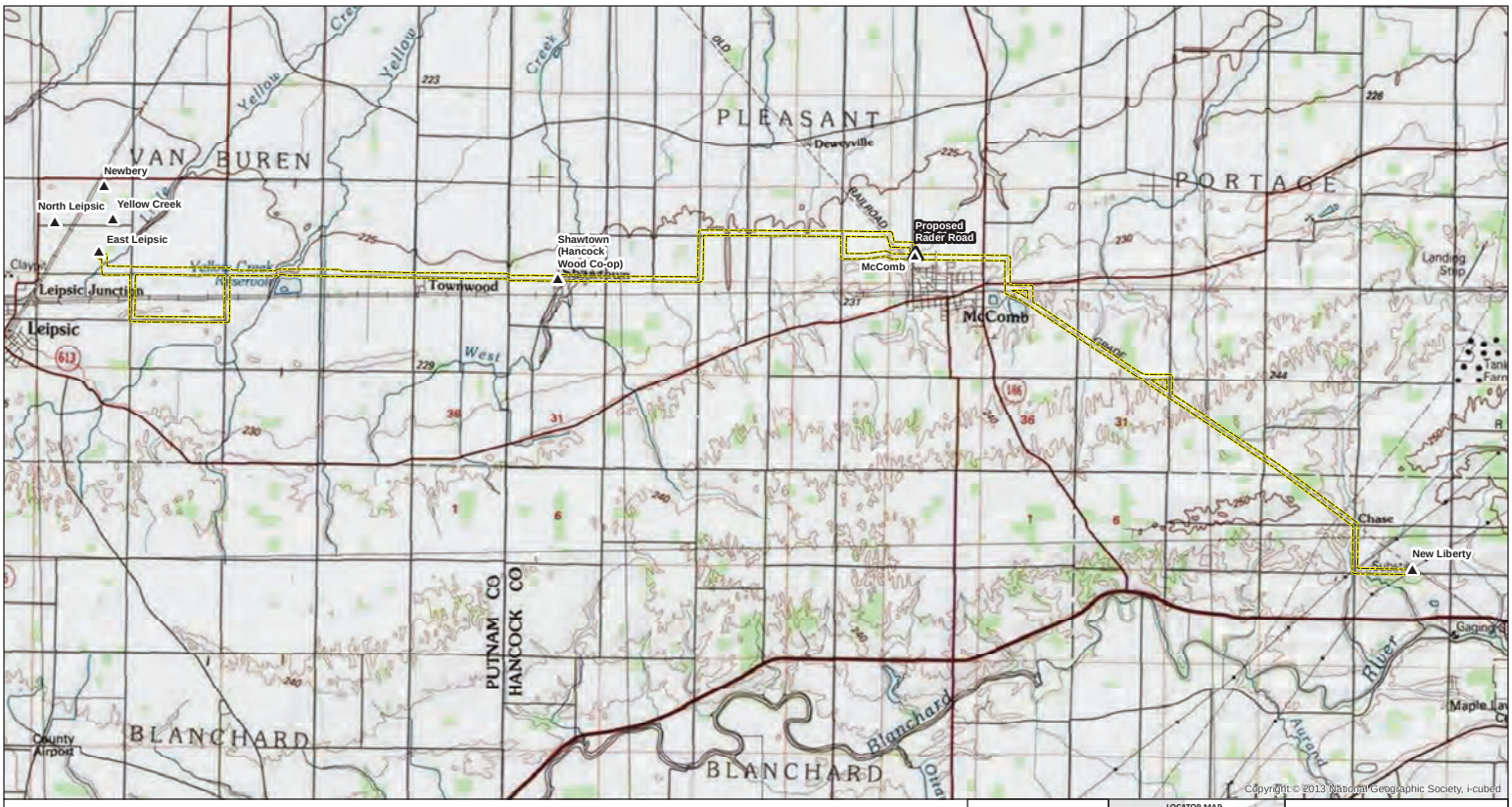
U.S. Department of Agriculture (USDA). 2022. USDA Field Office Climate Data: FINDLAY WPCC, OH WETS Station, 1971-2000. http://agacis.rcc-acis.org/?fips=39063. Accessed March 2022.

USFWS. 2021. National Wetlands Inventory. https://www.fws.gov/wetlands/data/Mapper.html. Accessed March 2022.

U.S. Geological Survey (USGS). 2018. National Hydrography Dataset. http://nhd.usgs.gov/data.html. Accessed March 2022.

U.S. Geological Survey (USGS). 2022. topoView. https://ngmdb.usgs.gov/topoview/. Accessed March 2022.

Appendix A
Figures



Legend

- ▲ Existing Substation
- △ Proposed Substation
- Environmental Survey Corridor

Data Sources:
AEP, 2022; ESRI USA Topo Maps

NAD 83
State Plane Ohio North

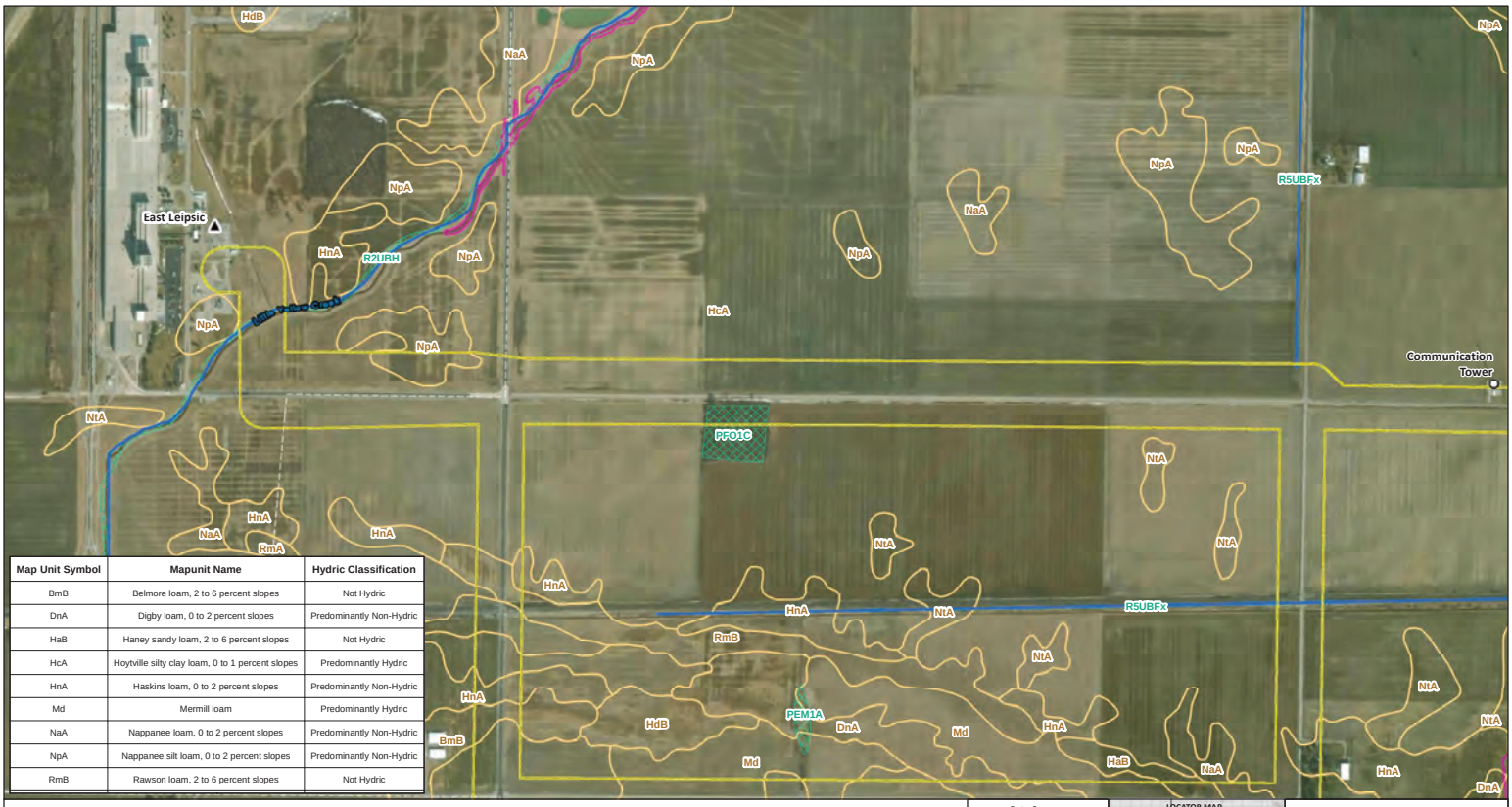
December 22, 2022

LOCATOR MAP

Figure 1
Project Overview

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 0.25 0.5 0.75 1
Miles



Map Unit Symbol	Mapunit Name	Hydric Classification
BmB	Belmore loam, 2 to 6 percent slopes	Not Hydric
DnA	Digby loam, 0 to 2 percent slopes	Predominantly Non-Hydric
HaB	Haney sandy loam, 2 to 6 percent slopes	Not Hydric
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
HnA	Haskins loam, 0 to 2 percent slopes	Predominantly Non-Hydric
Md	Mermill loam	Predominantly Hydric
NaA	Nappanee loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpA	Nappanee silt loam, 0 to 2 percent slopes	Predominantly Non-Hydric
RmB	Rawson loam, 2 to 6 percent slopes	Not Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

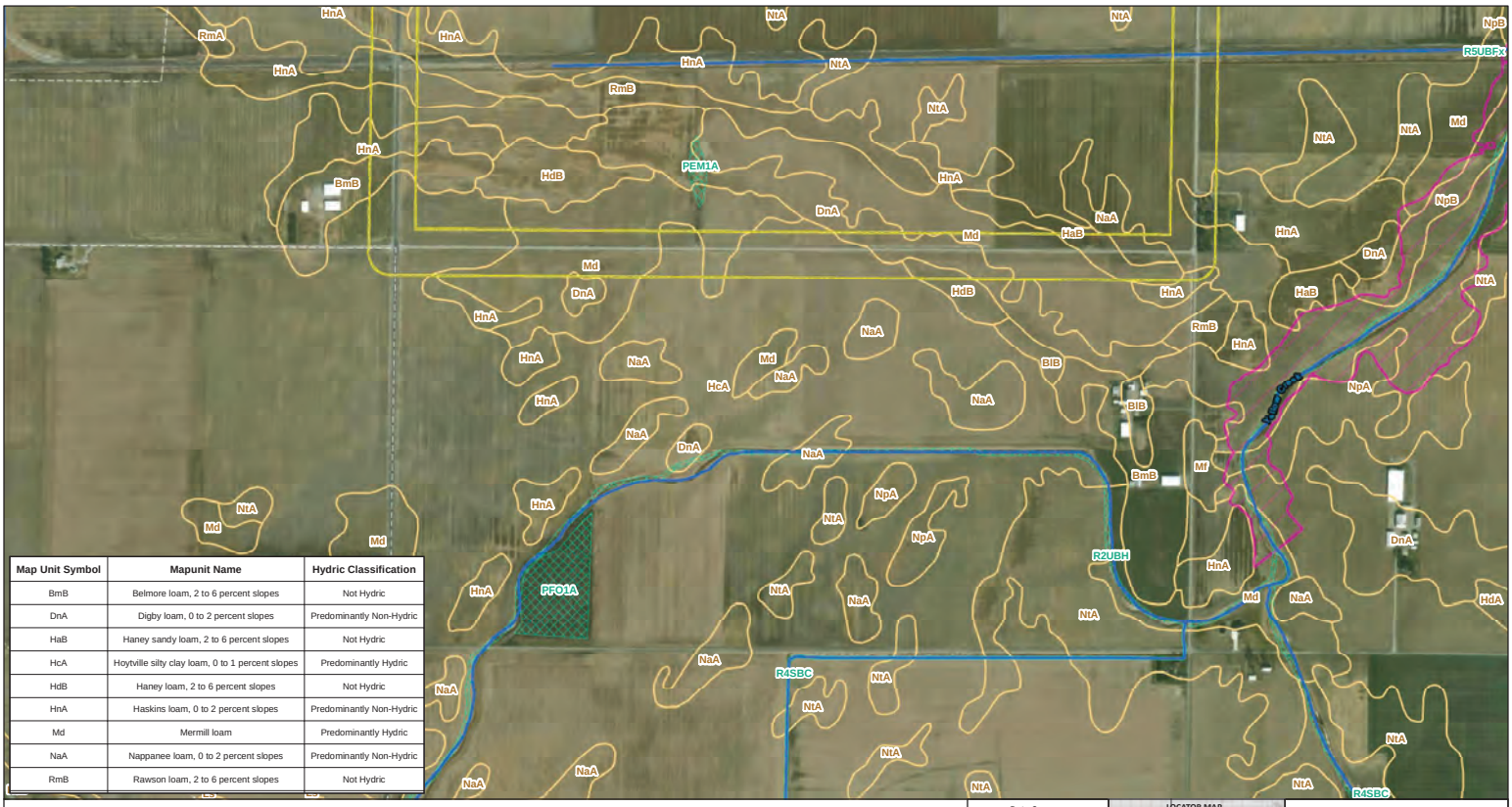
December 22, 2022

LOCATOR MAP

Figure 2.1
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Map Unit Symbol	Mapunit Name	Hydric Classification
BmB	Belmore loam, 2 to 6 percent slopes	Not Hydric
DnA	Digby loam, 0 to 2 percent slopes	Predominantly Non-Hydric
HaB	Haney sandy loam, 2 to 6 percent slopes	Not Hydric
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
HdB	Haney loam, 2 to 6 percent slopes	Not Hydric
HnA	Haskins loam, 0 to 2 percent slopes	Predominantly Non-Hydric
Md	Mermill loam	Predominantly Hydric
NaA	Nappanee loam, 0 to 2 percent slopes	Predominantly Non-Hydric
RmB	Rawson loam, 2 to 6 percent slopes	Not Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

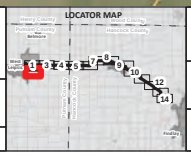
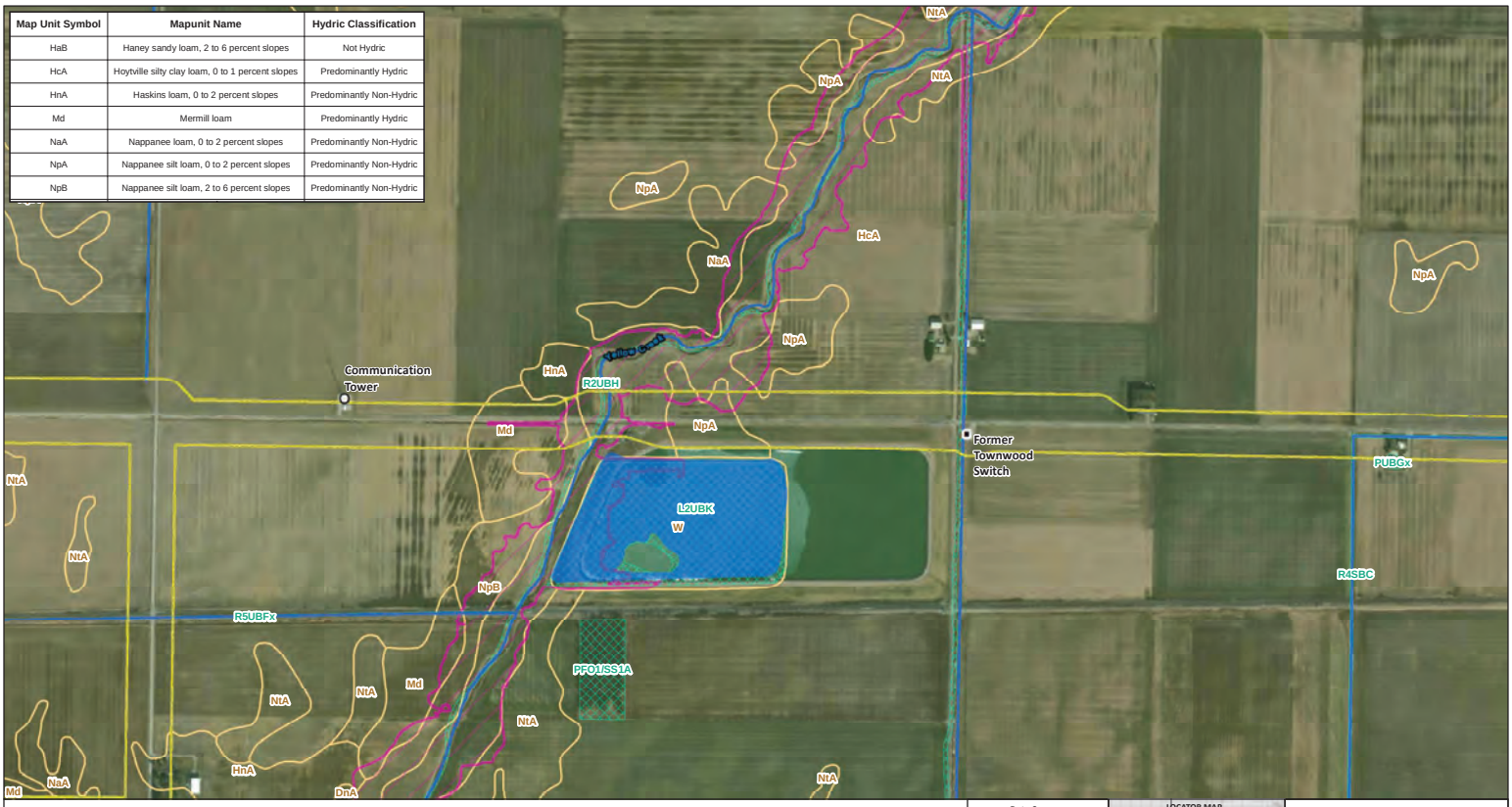


Figure 2.2
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Map Unit Symbol	Mapunit Name	Hydric Classification
HaB	Haney sandy loam, 2 to 6 percent slopes	Not Hydric
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
HnA	Haskins loam, 0 to 2 percent slopes	Predominantly Non-Hydric
Md	Mermill loam	Predominantly Hydric
NaA	Nappanee loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpA	Nappanee silt loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpB	Nappanee silt loam, 2 to 6 percent slopes	Predominantly Non-Hydric



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

Figure 2.3
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Map Unit Symbol	Mapunit Name	Hydric Classification
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 2.4
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Map Unit Symbol	Mapunit Name	Hydric Classification
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
MfA	Mermill clay loam, 0 to 1 percent slopes	Predominantly Hydric
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded	Predominantly Non-Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

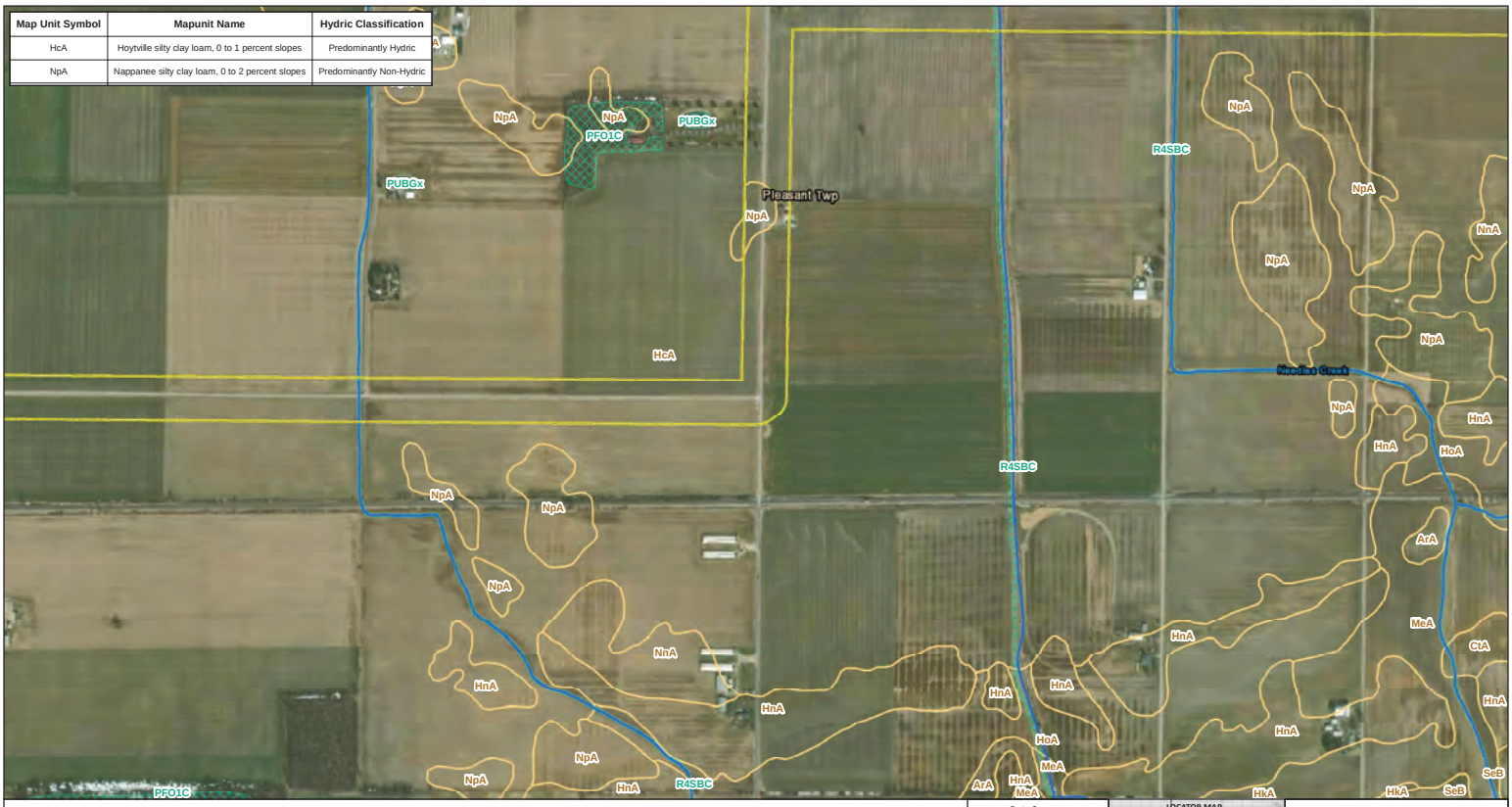
LOCATOR MAP

Figure 2.5
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Map Unit Symbol	Mapunit Name	Hydric Classification
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

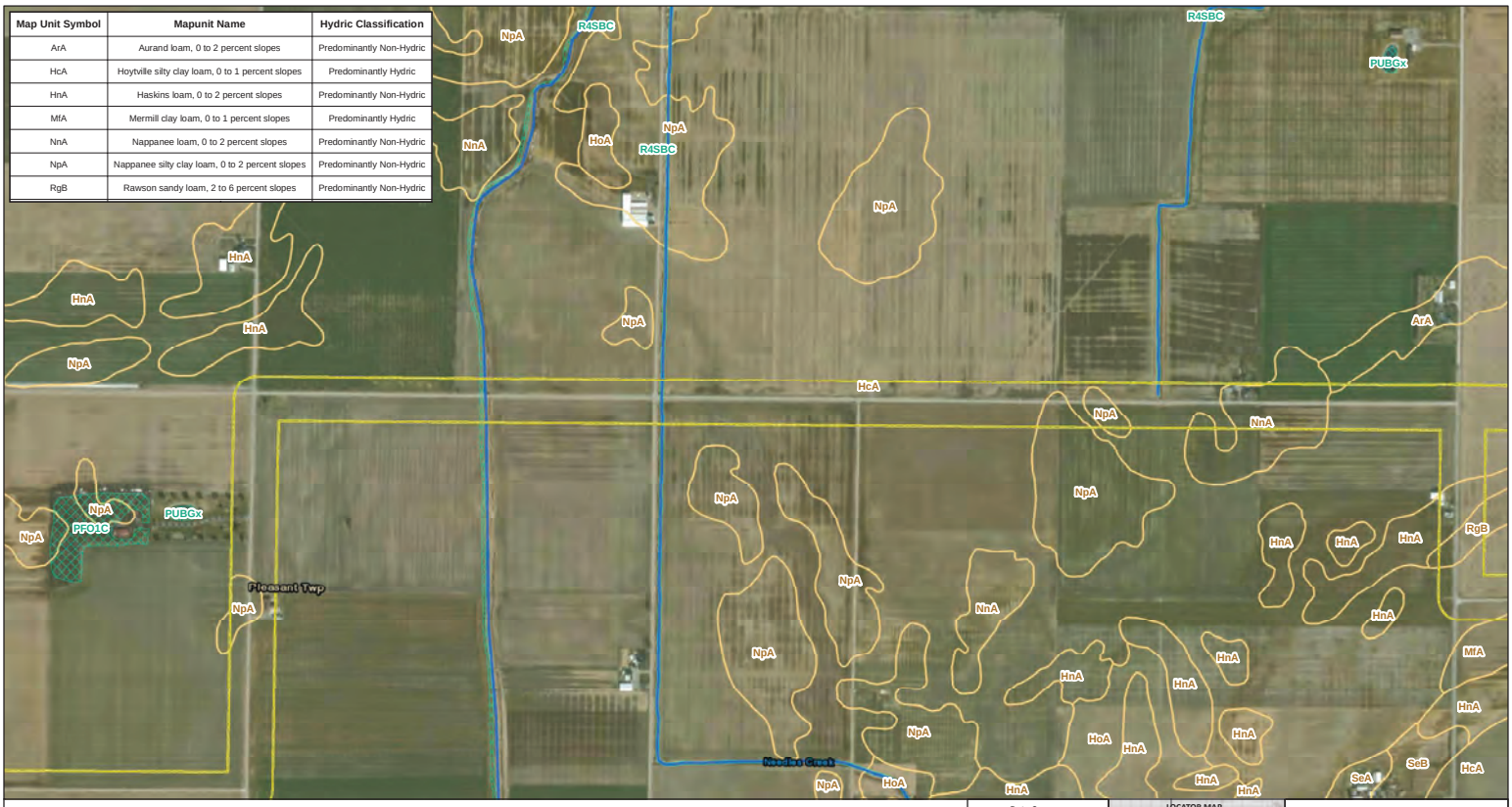
LOCATOR MAP

Figure 2.6
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Map Unit Symbol	Mapunit Name	Hydric Classification
ArA	Aurand loam, 0 to 2 percent slopes	Predominantly Non-Hydric
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
HnA	Haskins loam, 0 to 2 percent slopes	Predominantly Non-Hydric
MfA	Mermill clay loam, 0 to 1 percent slopes	Predominantly Hydric
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric
RgB	Rawson sandy loam, 2 to 6 percent slopes	Predominantly Non-Hydric



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

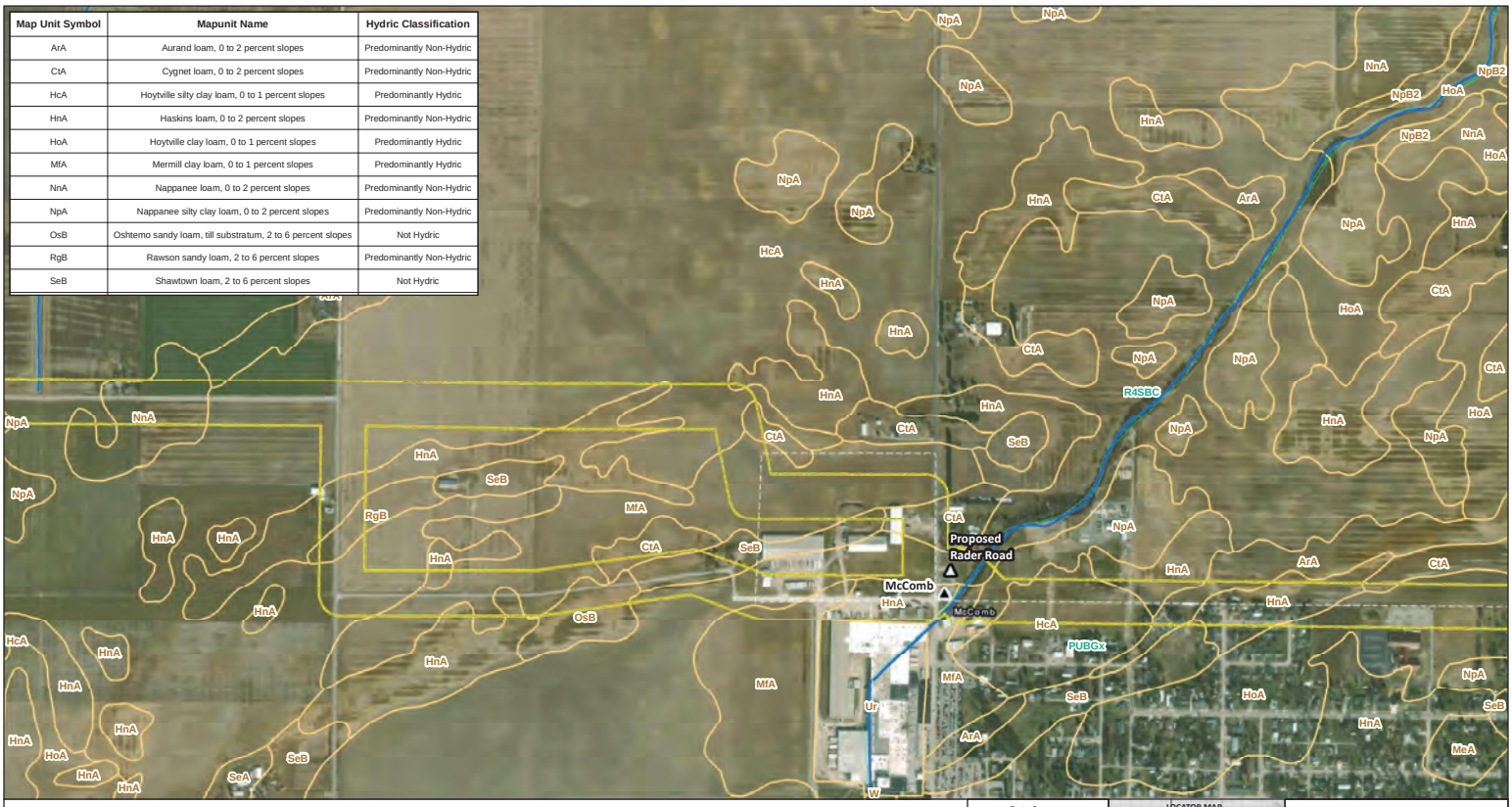
LOCATOR MAP

Figure 2.7
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Map Unit Symbol	Mapunit Name	Hydric Classification
ArA	Aurand loam, 0 to 2 percent slopes	Predominantly Non-Hydric
CtA	Cygnet loam, 0 to 2 percent slopes	Predominantly Non-Hydric
HcA	Hoytville silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
HnA	Haskins loam, 0 to 2 percent slopes	Predominantly Non-Hydric
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly Hydric
MfA	Mermill clay loam, 0 to 1 percent slopes	Predominantly Hydric
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes	Not Hydric
RgB	Rawson sandy loam, 2 to 6 percent slopes	Predominantly Non-Hydric
SeB	Shawtown loam, 2 to 6 percent slopes	Not Hydric



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

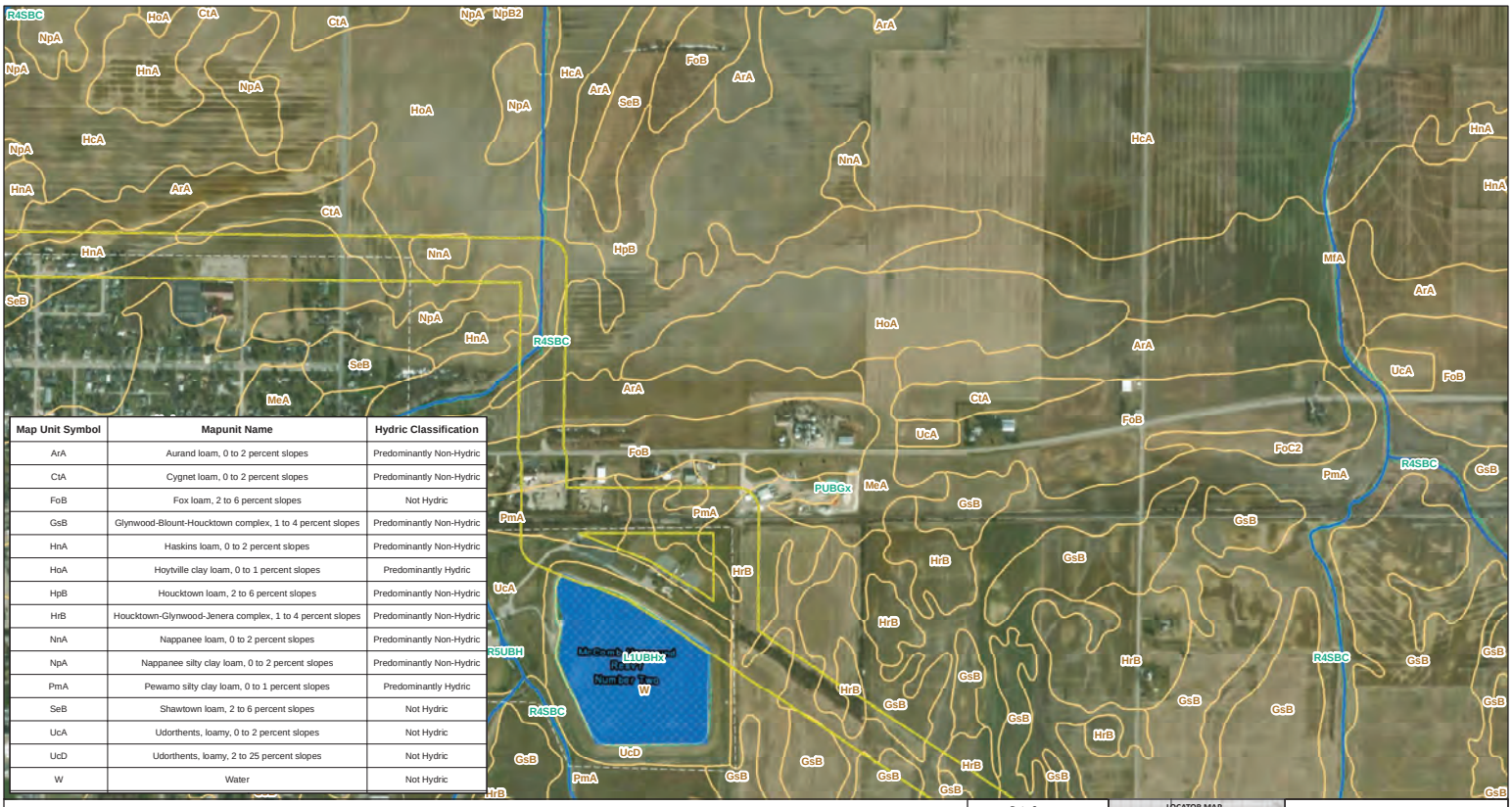
December 22, 2022

LOCATOR MAP

Figure 2.8
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Map Unit Symbol	Mapunit Name	Hydric Classification
ArA	Aurand loam, 0 to 2 percent slopes	Predominantly Non-Hydric
CtA	Cygnet loam, 0 to 2 percent slopes	Predominantly Non-Hydric
FoB	Fox loam, 2 to 6 percent slopes	Not Hydric
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	Predominantly Non-Hydric
HnA	Haskins loam, 0 to 2 percent slopes	Predominantly Non-Hydric
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly Hydric
HpB	Houcktown loam, 2 to 6 percent slopes	Predominantly Non-Hydric
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes	Predominantly Non-Hydric
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Non-Hydric
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
SeB	Shawtown loam, 2 to 6 percent slopes	Not Hydric
UcA	Udorthents, loamy, 0 to 2 percent slopes	Not Hydric
UcD	Udorthents, loamy, 2 to 25 percent slopes	Not Hydric
W	Water	Not Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

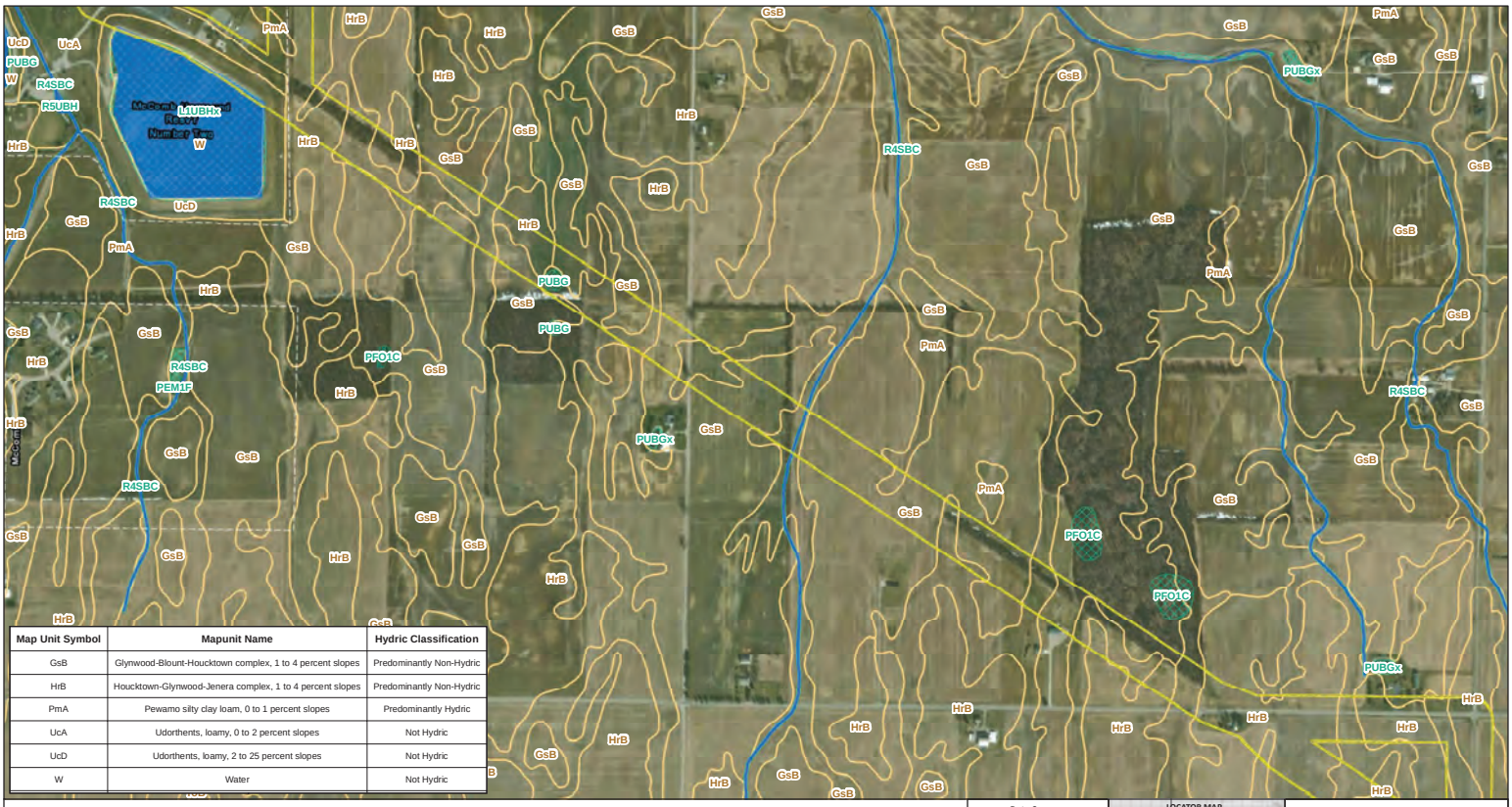
December 22, 2022

LOCATOR MAP

Figure 2.9
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Map Unit Symbol	Mapunit Name	Hydric Classification
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	Predominantly Non-Hydric
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes	Predominantly Non-Hydric
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
UcA	Udorthents, loamy, 0 to 2 percent slopes	Not Hydric
UcD	Udorthents, loamy, 2 to 25 percent slopes	Not Hydric
W	Water	Not Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

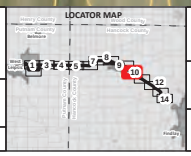
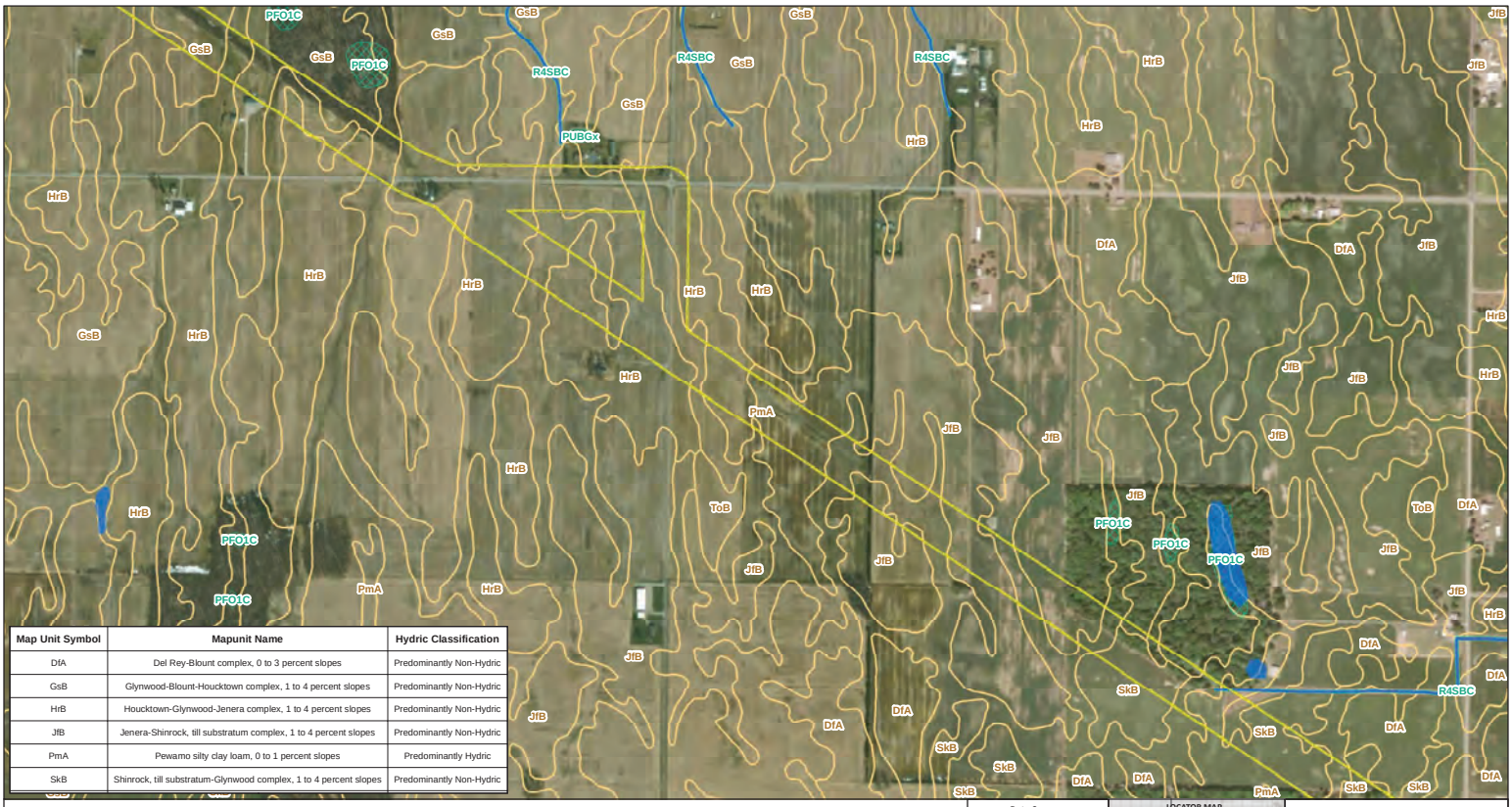


Figure 2.10
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Map Unit Symbol	Mapunit Name	Hydric Classification
DfA	Del Rey-Blount complex, 0 to 3 percent slopes	Predominantly Non-Hydric
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	Predominantly Non-Hydric
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes	Predominantly Non-Hydric
JfB	Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes	Predominantly Non-Hydric
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes	Predominantly Non-Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

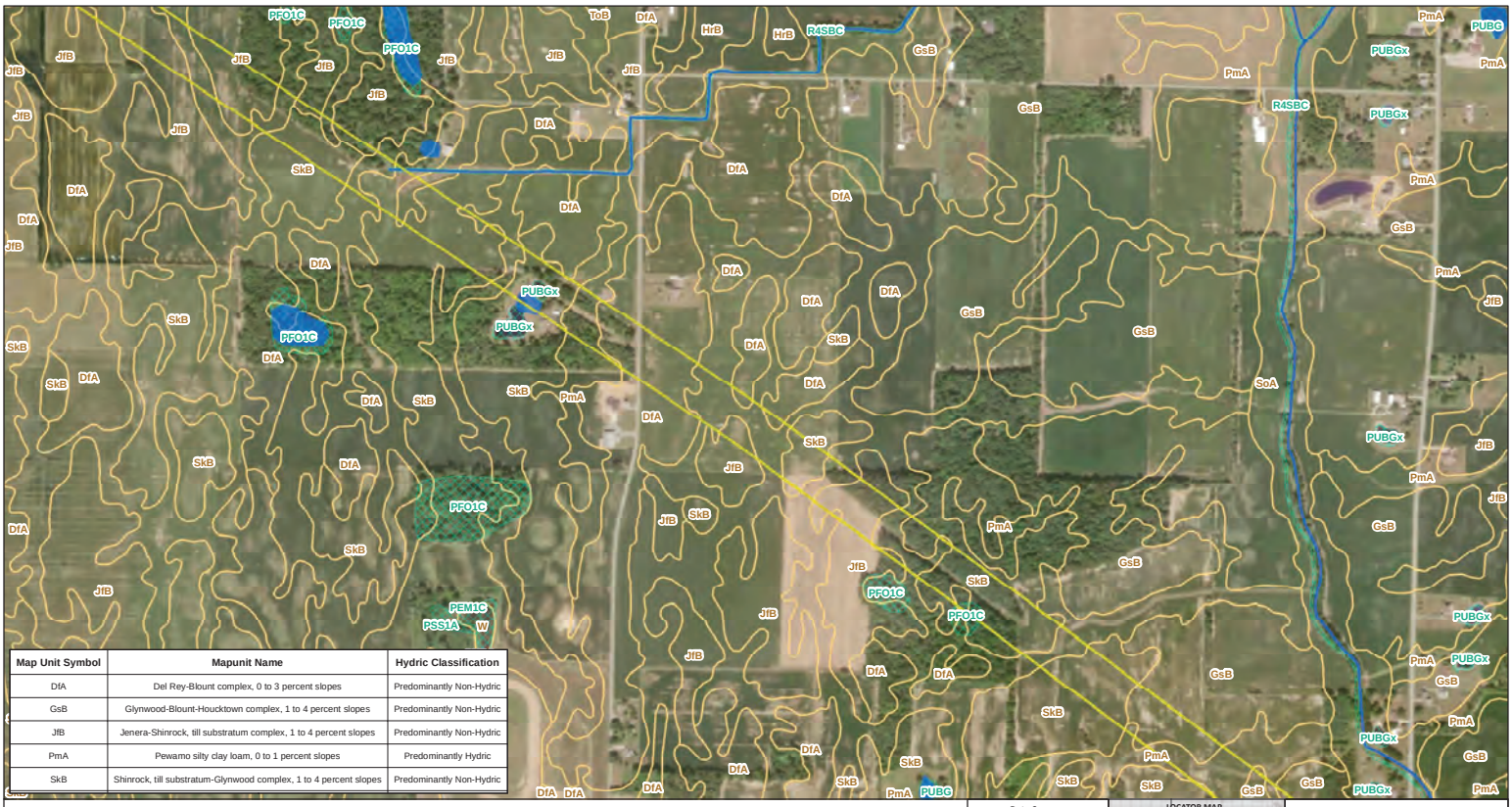
December 22, 2022

LOCATOR MAP

Figure 2.11
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Map Unit Symbol	Mapunit Name	Hydric Classification
DfA	Del Rey-Blount complex, 0 to 3 percent slopes	Predominantly Non-Hydric
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	Predominantly Non-Hydric
JfB	Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes	Predominantly Non-Hydric
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes	Predominantly Non-Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

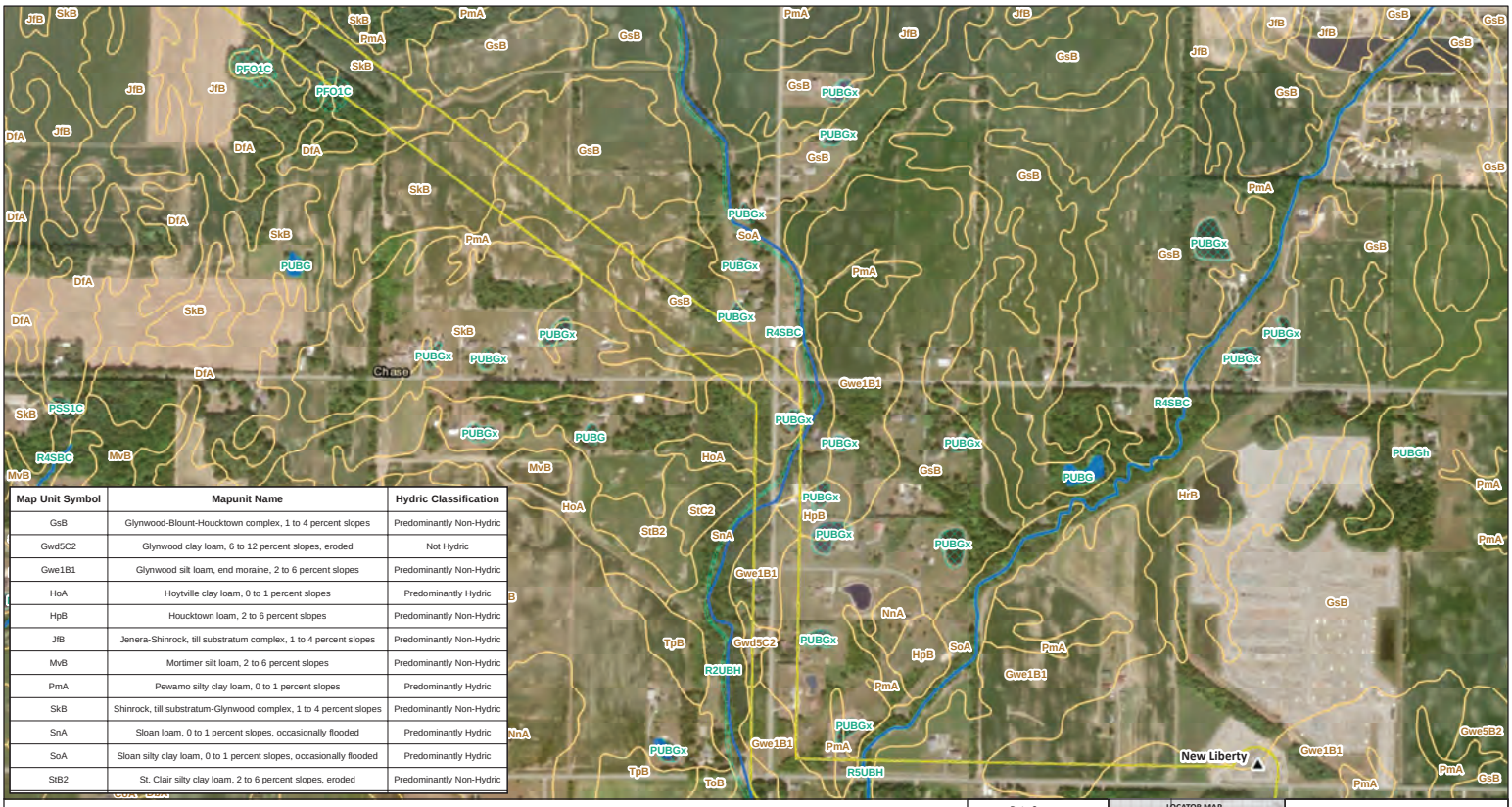
December 22, 2022

LOCATOR MAP

Figure 2.12
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Map Unit Symbol	Mapunit Name	Hydric Classification
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	Predominantly Non-Hydric
Gwd5C2	Glynwood clay loam, 6 to 12 percent slopes, eroded	Not Hydric
Gwe1B1	Glynwood silt loam, end moraine, 2 to 6 percent slopes	Predominantly Non-Hydric
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly Hydric
HpB	Houcktown loam, 2 to 6 percent slopes	Predominantly Non-Hydric
JfB	Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes	Predominantly Non-Hydric
MvB	Mortimer silt loam, 2 to 6 percent slopes	Predominantly Non-Hydric
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes	Predominantly Non-Hydric
SnA	Sloan loam, 0 to 1 percent slopes, occasionally flooded	Predominantly Hydric
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded	Predominantly Hydric
StB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded	Predominantly Non-Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

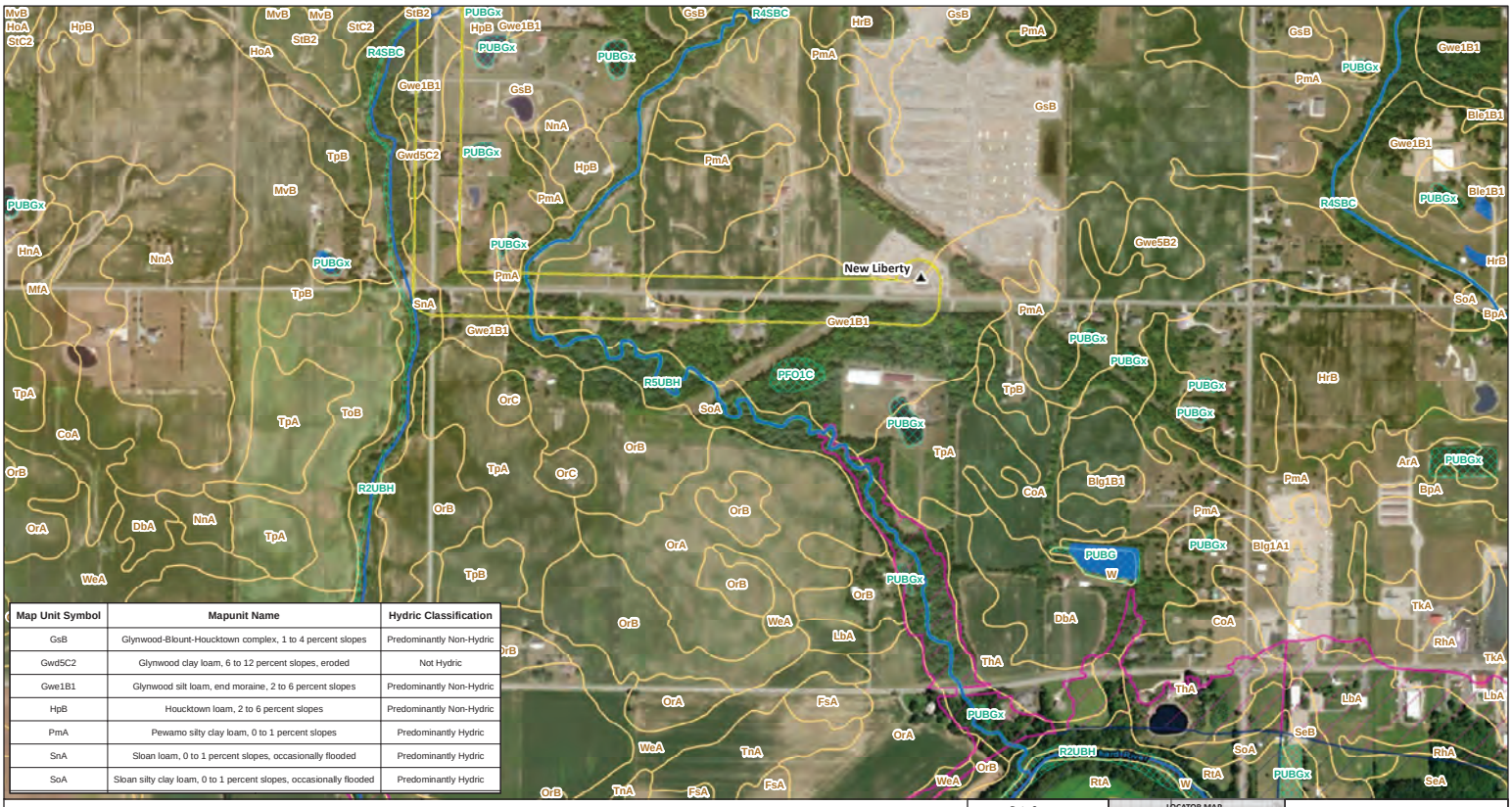
December 22, 2022

LOCATOR MAP

Figure 2.13
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Map Unit Symbol	Mapunit Name	Hydric Classification
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	Predominantly Non-Hydric
Gwd5C2	Glynwood clay loam, 6 to 12 percent slopes, eroded	Not Hydric
Gwe1B1	Glynwood silt loam, end moraine, 2 to 6 percent slopes	Predominantly Non-Hydric
HpB	Houcktown loam, 2 to 6 percent slopes	Predominantly Non-Hydric
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	Predominantly Hydric
SnA	Sloan loam, 0 to 1 percent slopes, occasionally flooded	Predominantly Hydric
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded	Predominantly Hydric

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- 100-Year Floodplain (FEMA)
- Floodway (FEMA)
- NRCS Soil Mapping Unit
- Environmental Survey Corridor

Data Sources:
AEP, 2022; FEMA, 2022;
USGS, 2022; USFWS, 2022;
USDA, 2022;
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

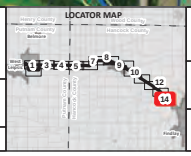


Figure 2.14
Soils, NHD, NWI, Floodplain Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

▲ Existing Substation	● Wetland Data Point	▬ Delineated Pond
△ Proposed Substation	● Upland Data Point	
▪ Switch Station	▬ Delineated Stream	
○ Communication Tower	▬ Delineated Wetland (PEM)	
▭ Environmental Survey Corridor	▬ Delineated Wetland (PFO)	
▲ Culvert	▬ Delineated Wetland (PSS)	

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

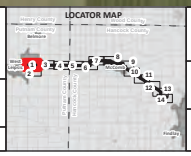


Figure 3.1
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 3.2
Delineated Features Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 3.3
Delineated Features Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 3.4
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend
- ▲ Existing Substation
- △ Proposed Substation
- ▪ Switch Station
- ○ Communication Tower
- ▭ Environmental Survey Corridor
- ▲ Culvert
- ● Wetland Data Point
- ● Upland Data Point
- ━ Delineated Stream
- ▬ Delineated Wetland (PEM)
- ▬ Delineated Wetland (PFO)
- ▬ Delineated Wetland (PSS)
- ▬ Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

Figure 3.5
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

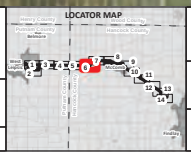


Figure 3.6
Delineated Features Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

Figure 3.7
Delineated Features Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

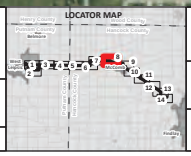


Figure 3.8
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

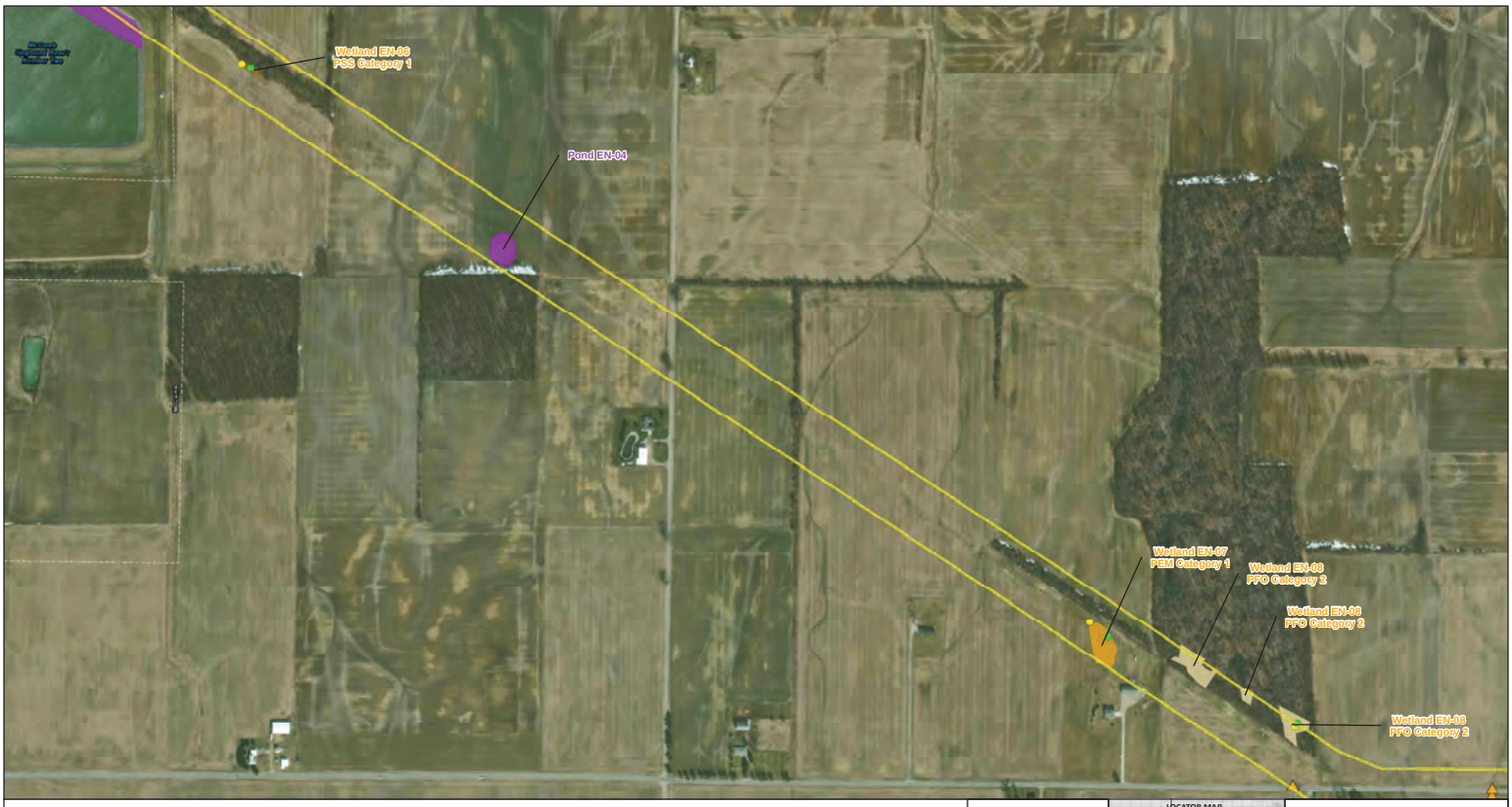
December 22, 2022

LOCATOR MAP

Figure 3.9
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 3.10
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

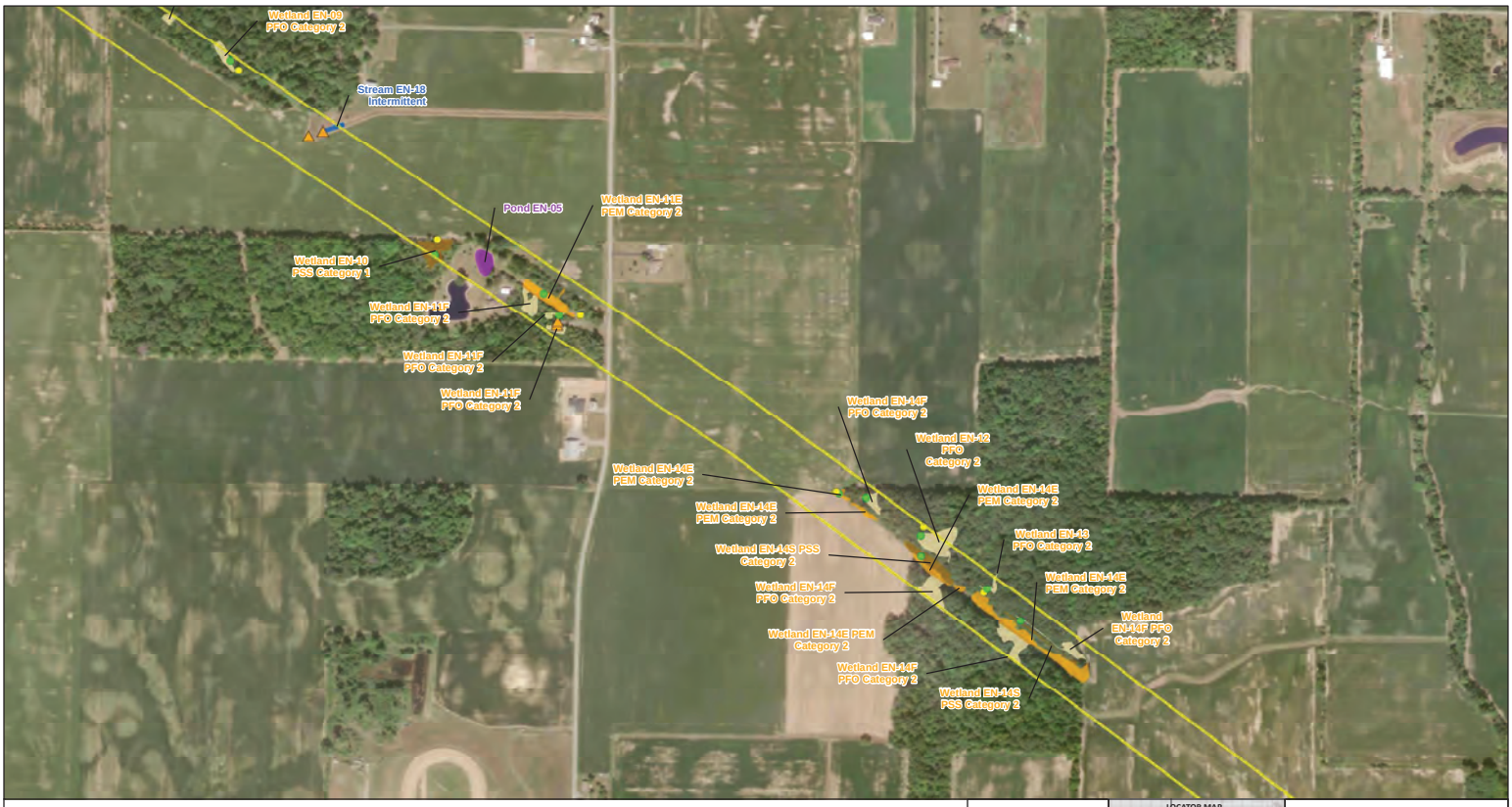
December 22, 2022

LOCATOR MAP

Figure 3.11
Delineated Features Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 3.12
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 3.13
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Culvert
- Wetland Data Point
- Upland Data Point
- Delineated Stream
- Delineated Wetland (PEM)
- Delineated Wetland (PFO)
- Delineated Wetland (PSS)
- Delineated Pond

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 3.14
Delineated Features Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 4.1
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

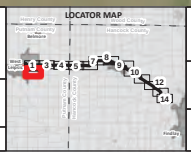


Figure 4.2
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 4.3
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

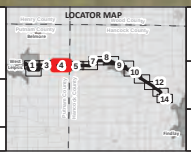


Figure 4.4
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 4.5
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

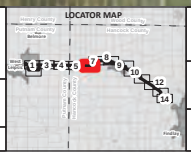


Figure 4.6
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

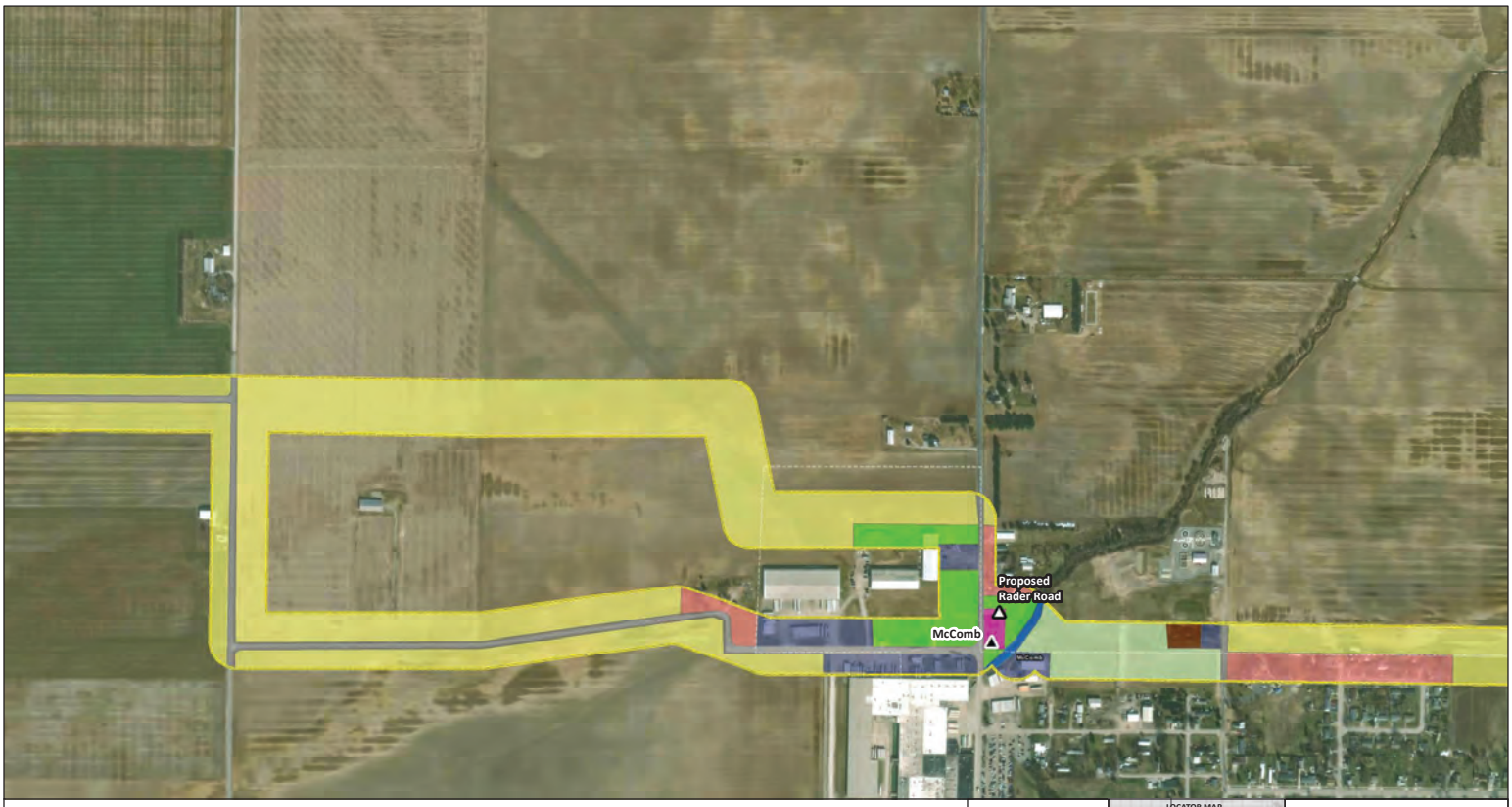
December 22, 2022

LOCATOR MAP

Figure 4.7
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Legend
- ▲ Existing Substation
- △ Proposed Substation
- ▪ Switch Station
- ○ Communication Tower
- ▭ Environmental Survey Corridor
- 🟨 Agricultural
- 🟩 Commercial Lawn
- ■ Forested
- ■ Gravel Lot
- ■ Gravel Substation Pad
- ■ Hayfield
- ■ Maintained ROW - Herbaceous
- ■ Maintained ROW - Scrub/Shrub
- 🟫 Old Field
- 🟪 Park
- 🟦 Pond
- ■ Railroad
- ■ Residential
- ■ Road
- ■ Scrub/Shrub
- 🟦 Stream
- 🟧 Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

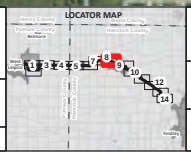
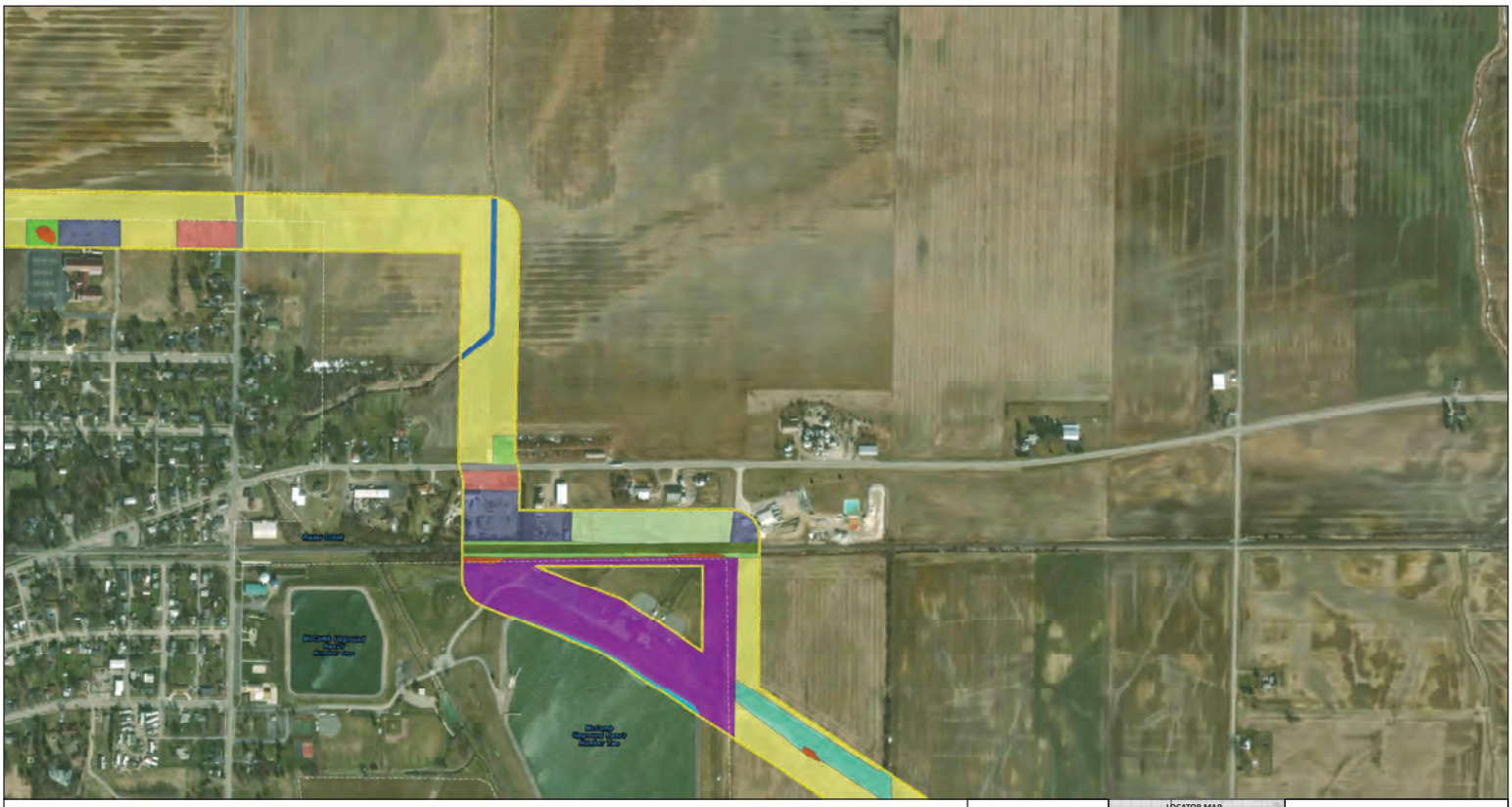


Figure 4.8
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

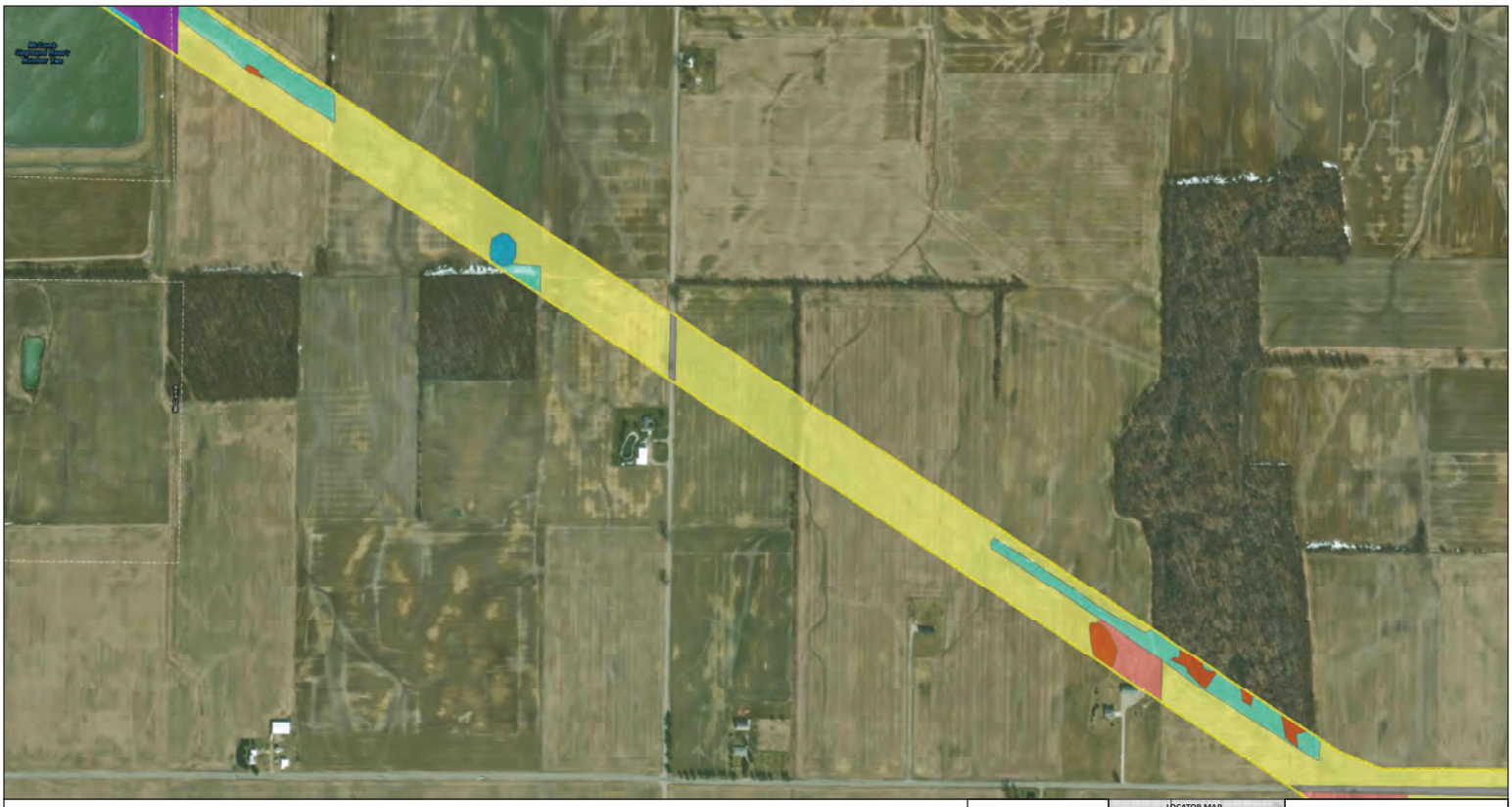
December 22, 2022

LOCATOR MAP

Figure 4.9
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

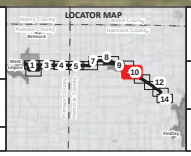


Figure 4.10
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

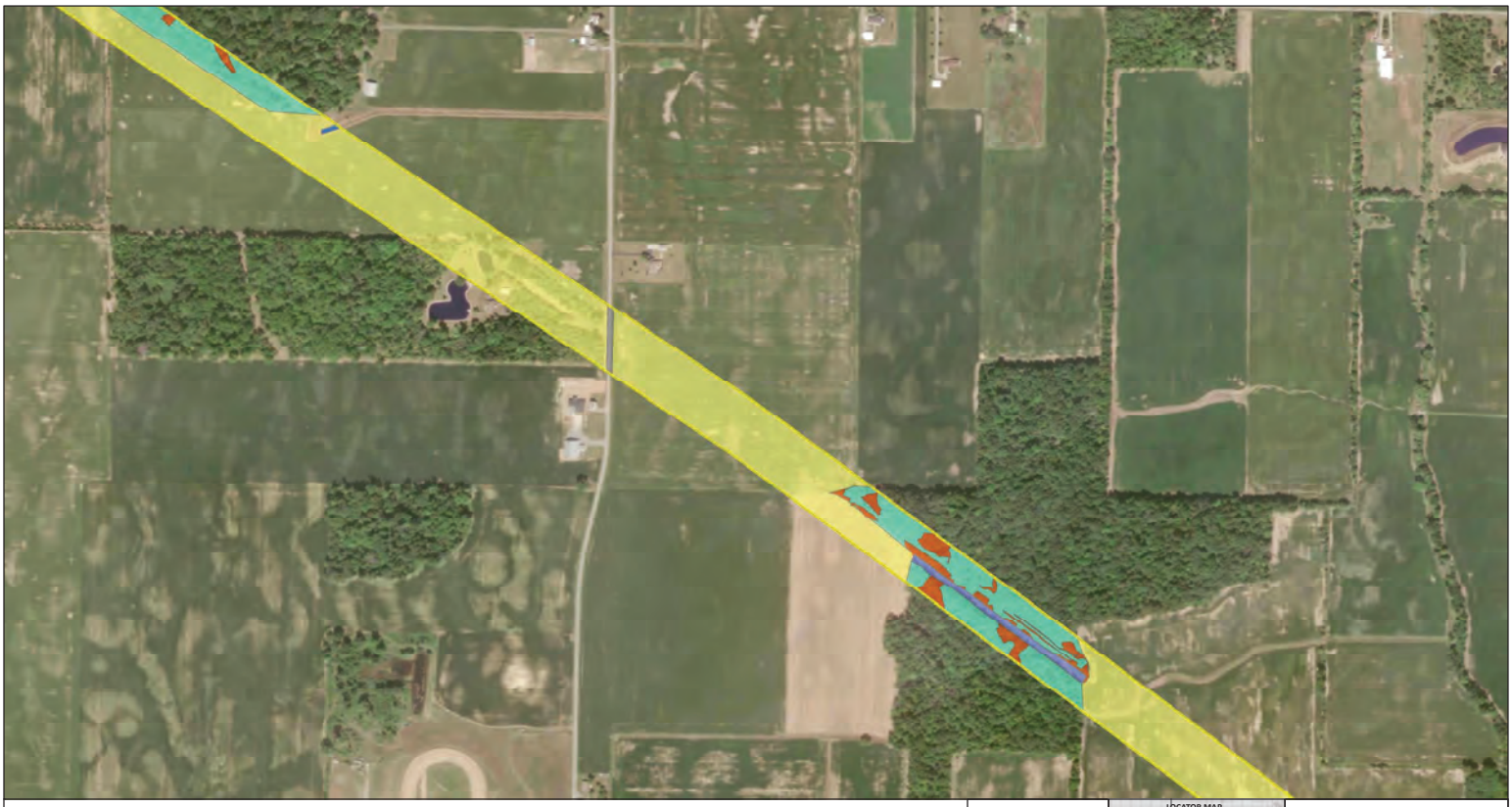
December 22, 2022

LOCATOR MAP

Figure 4.11
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

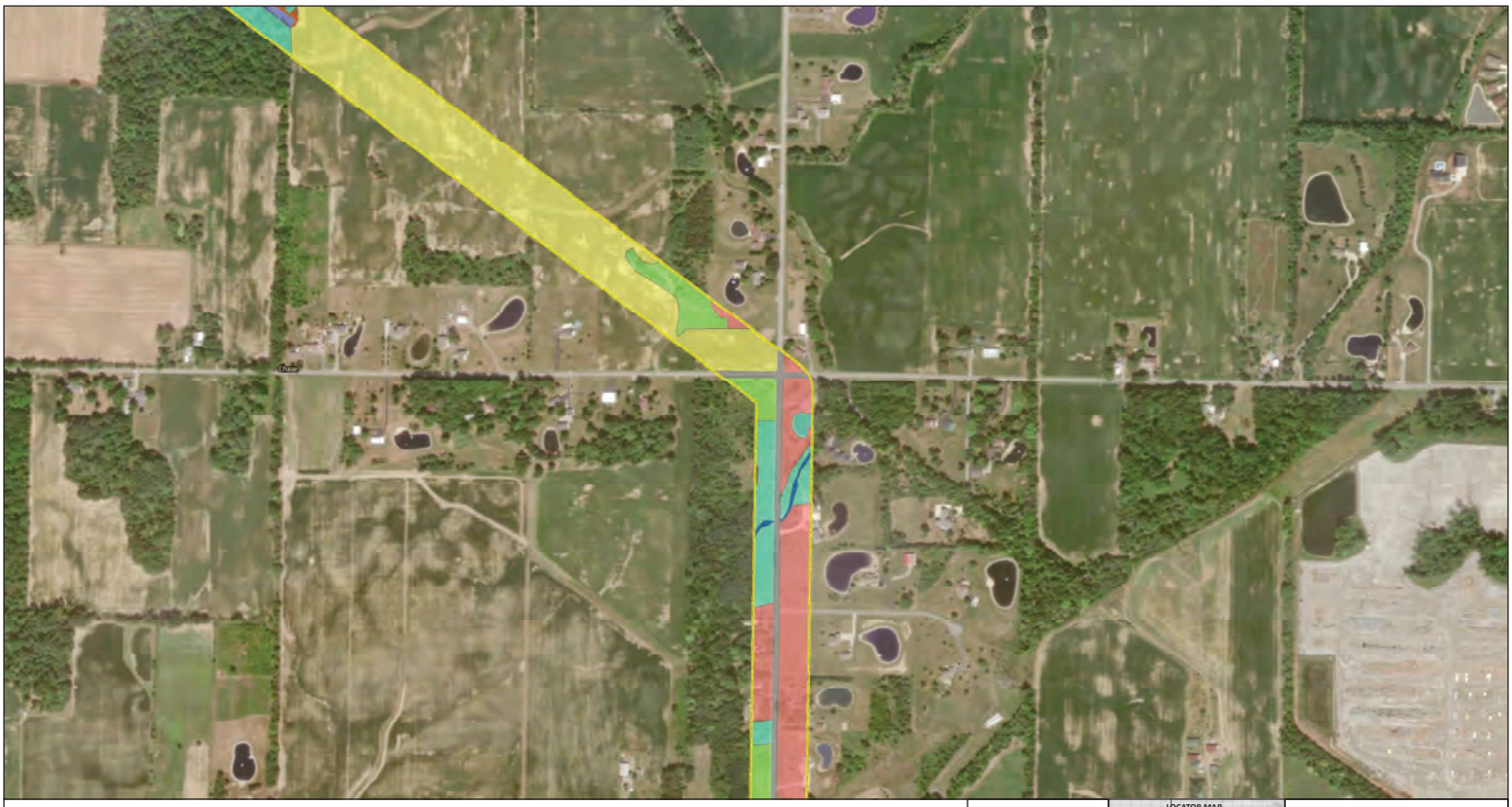
December 22, 2022

LOCATOR MAP

Figure 4.12
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet



Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

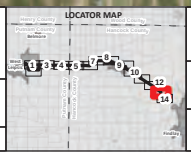


Figure 4.13
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Legend

- Existing Substation
- Proposed Substation
- Switch Station
- Communication Tower
- Environmental Survey Corridor
- Agricultural
- Commercial Lawn
- Forested
- Gravel Lot
- Gravel Substation Pad
- Hayfield
- Maintained ROW - Herbaceous
- Maintained ROW - Scrub/Shrub
- Old Field
- Park
- Pond
- Railroad
- Residential
- Road
- Scrub/Shrub
- Stream
- Wetland

Data Sources:
AEP, 2022
ESRI USA Topo Maps

NAD 83
State Plane Ohio North

December 22, 2022

LOCATOR MAP

Figure 4.14
Habitat/Land Use Map

East Leipsic-New Liberty 138 kV
Transmission Line Rebuild Project

0 250 500 750 1,000
Feet

Appendix B
USACE Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Putnam County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-01

Investigator(s): BAO Section, Township, Range: S 28 T 2N R 8E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR K Lat: 41.10855438300007 Long: -83.95166233299994 Datum: NAD 83

Soil Map Unit Name: Hoytville silty clay loam, 0 to 1 percent slopes NWI classification: PFO1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland EN-01
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

PFO wetland in wood lot surrounded by row crop fields.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- X Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 2
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 4

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland EN-01

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus bicolor	20	Yes	FACW
2. Acer rubrum	10	Yes	FAC
3. Juglans nigra	5	No	FACU
4. Carya laciniosa	15	Yes	FACW
5.			
6.			
7.			
	50 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	10	Yes	FACW
2. Cornus alba	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Elymus virginicus	30	Yes	FACW
2. Hydrophyllum canadense	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	85	x 2 =	170.0
FAC species	20	x 3 =	60.0
FACU species	5	x 4 =	20.0
UPL species	0	x 5 =	0.0
Column Totals:	110 (A)		250.0 (B)

Prevalence Index = B/A = 2.27272727

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland EN-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 3/1	90	10YR 5/8	10	Concer	M	Silty clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L, M**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

General Site Photos Wetland EN-01

N

S

W

E

General Site Photos Wetland EN-01

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Putnam County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-01

Investigator(s): BAO Section, Township, Range: S 28 T 2N R 8E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope (%): 1

Subregion (LRR or MLRA): LRR K Lat: 41.10851231700008 Long: -83.95129823299999 Datum: NAD 83

Soil Map Unit Name: Hoytville silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland EN-01
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

Upland point between PFO and crop field

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland EN-01

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Rubus allegheniensis	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Setaria faberi	60	Yes	FACU
2. Elymus virginicus	45	Yes	FACW
3. Hydrophyllum virginianum	15	No	FAC
4. Alliaria petiolata	10	No	FACU
5. Taraxacum officinale	5	No	FACU
6. Achillea millefolium	5	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	140 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.33333333 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	45	x 2 =	90.0
FAC species	15	x 3 =	45.0
FACU species	100	x 4 =	400.0
UPL species	0	x 5 =	0.0
Column Totals:	160 (A)		535.0 (B)

Prevalence Index = B/A = 3.34375

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland EN-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 3/2	99	7.5YR 4/4	1	Concer	M	Silty clay loam	
16 - 18	10YR 3/2	98	7.5YR 4/6	2	Concer	M	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L, M**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

General Site Photos Upland EN-01

S

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Putnam County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-02F

Investigator(s): BCR Section, Township, Range: S 25 T 2N R 8E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR K Lat: 41.109207250000054 Long: -83.89877983299994 Datum: NAD 83

Soil Map Unit Name: Hoytville silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland EN-02F
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

PFO portion of wetland w-bcr-032922-01. Extends outside survey area to south

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 2
Water Table Present?	Yes X	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

multiple primary and secondary hydrology indicators present.

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland EN-02F

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	60	Yes	FAC
2. Populus deltoides	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	80 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	40	Yes	FACW
2. Cornus amomum	15	Yes	FACW
3. Acer rubrum	10	No	FAC
4. Rosa setigera	5	No	FACU
5.			
6.			
7.			
	70 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Carex lacustris	10	Yes	OBL
2. Lysimachia nummularia	10	Yes	FACW
3. Carex blanda	5	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1. Toxicodendron radicans	10	Yes	FAC
2.			
3.			
4.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10.0
FACW species	65	x 2 =	130.0
FAC species	105	x 3 =	315.0
FACU species	5	x 4 =	20.0
UPL species	0	x 5 =	0.0
Column Totals:	185 (A)		475.0 (B)

Prevalence Index = B/A = 2.56756757

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

hydrophytic vegetation indicators present

SOIL

Sampling Point: Wetland EN-02F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	7.5YR 4/2	85	7.5YR 4/6	15	Concer	M,PL	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

hydric soil indicators present as low chroma/high value matrix with distinct redox features in matric and pore linings

General Site Photos Wetland EN-02F

N

E

S

W

General Site Photos Wetland EN-02F

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Putnam County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-02S

Investigator(s): BCR Section, Township, Range: S 25 T 2N R 8E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR K Lat: 41.10932 Long: -83.89856 Datum: NAD 83

Soil Map Unit Name: Hoytville silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland EN-02S
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

PSS portion of w-bcr-032922-01. PFO portion located south of the ROW.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches):	1
Water Table Present?	Yes X	No _____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

multiple primary and secondary hydrology indictors present

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland EN-02S

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	20	Yes	FACW
2. Cornus amomum	15	Yes	FACW
3. Rubus idaeus	5	No	FACU
4.			
5.			
6.			
7.			
	40 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Carex lacustris	70	Yes	OBL
2. Solidago gigantea	20	No	FACW
3. Phalaris arundinacea	20	No	FACW
4. Juncus effusus	10	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1. Toxicodendron radicans	5	Yes	FAC
2.			
3.			
4.			
	5 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80.0
FACW species	75	x 2 =	150.0
FAC species	5	x 3 =	15.0
FACU species	5	x 4 =	20.0
UPL species	0	x 5 =	0.0
Column Totals:	165 (A)		265.0 (B)

Prevalence Index = B/A = 1.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

hydrophytic vegetation indicators present as dominance test is greater than 50% and prevalence index less than 3

SOIL

Sampling Point: Wetland EN-02S

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 12	7.5YR 4/2	90	10YR 4/6	10	Concer	M,PL	Silty clay loam	
12 - 18	7.5YR 5/1	80	10YR 4/6	20	Concer	M,PL	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

hydric soil indicators present

General Site Photos Wetland EN-02S

N

E

S

W

w

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Putnam County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-02

Investigator(s): BCR Section, Township, Range: S 25 T 2N R 8E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 1

Subregion (LRR or MLRA): LRR K Lat: 41.109334500000045 Long: -83.89855224999997 Datum: NAD 83

Soil Map Unit Name: Hoytville silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland EN-02
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

Upland for w-bcr-032922-01a,b. Adjacent to road

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology indicators observed

VEGETATION – Use scientific names of plants.

Sampling Point: Upland EN-02

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Rubus allegheniensis	40	Yes	FACU
2. Rosa multiflora	20	Yes	FACU
3. Lonicera maackii	10	No	UPL
4.			
5.			
6.			
7.			
	70 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Solidago altissima	40	Yes	FACU
2. Erigeron annuus	15	Yes	FACU
3. Juncus tenuis	10	No	FAC
4. Geum canadense	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	0	x 2 =	0.0
FAC species	20	x 3 =	60.0
FACU species	115	x 4 =	460.0
UPL species	10	x 5 =	40.0
Column Totals:	145 (A)		560.0 (B)

Prevalence Index = B/A = 3.86206897

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

hydrophytic vegetation indicators were not present

SOIL

Sampling Point: Upland EN-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 15	10YR 3/3	100					Silty clay loam	
15 - 18	10YR 3/4	100					Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L, M**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

hydric soil indictors not present

General Site Photos Upland EN-02

W

E

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-03E

Investigator(s): BCR Section, Township, Range: S 30 T 2N R 9E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): LRR K Lat: 41.10919 Long: -83.86736 Datum: NAD 83

Soil Map Unit Name: Mermill clay loam, 0 to 1 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland EN-03E
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

PEM portion of wetland 01 in ROW. drains to culvert which flows under road to West Creek

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches):	1
Water Table Present?	Yes X	No _____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

multiple primary and secondary hydrology indicators present

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland EN-03E

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Cornus amomum	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Phalaris arundinacea	70	Yes	FACW
2. Scirpus cyperinus	20	No	OBL
3. Juncus tenuis	15	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20.0
FACW species	75	x 2 =	150.0
FAC species	15	x 3 =	45.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	110 (A)		215.0 (B)

Prevalence Index = B/A = 1.95

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

hydrophytic vegetation present

SOIL

Sampling Point: Wetland EN-03E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 4/2	96	10YR 4/6	4	Concer	M,PL	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

sample point meets hydric soil indictor of depleted matrix

General Site Photos Wetland EN-03E

SE

NW

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-03F

Investigator(s): BCR Section, Township, Range: S 30 T 2N R 9E

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR K Lat: 41.10868638300008 Long: -83.86814798299997 Datum: NAD 83

Soil Map Unit Name: Mermill clay loam, 0 to 1 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland EN-03F
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

PFO portion of wetland in floodplain of West Creek. Wetland extends outside of survey area to the south and has a hydrologic connection to West Creek.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 1
Water Table Present?	Yes X	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple primary and secondary hydrologic indicators observed. Wetland drains to perennial stream (West Creek).

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland EN-03F

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	30	Yes	FAC
2. Acer rubrum	30	Yes	FAC
3. Fraxinus pennsylvanica	20	Yes	FACW
4. Acer negundo	5	No	FAC
5.			
6.			
7.			
	85 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Acer rubrum	40	Yes	FAC
2. Acer negundo	25	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	65 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Cinna arundinacea	5	Yes	FACW
2. Phalaris arundinacea	5	Yes	FACW
3. Allium vineale	3	No	FACU
4. Lysimachia nummularia	5	Yes	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	13 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1. Toxicodendron radicans	10	Yes	FAC
2.			
3.			
4.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	35	x 2 =	70.0
FAC species	140	x 3 =	420.0
FACU species	3	x 4 =	12.0
UPL species	0	x 5 =	0.0
Column Totals:	178 (A)		502.0 (B)

Prevalence Index = B/A = 2.82022472

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

hydrophytic vegetation present as domiance test is greater than 50% and prevalence index is less than 3

SOIL

Sampling Point: Wetland EN-03F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 4/2	98	10R 4/6	2	Concer	PL,M	Silty clay loam	
8 - 20	10YR 5/2	80	10YR 4/4	20	Concer	PL,M	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L, M**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

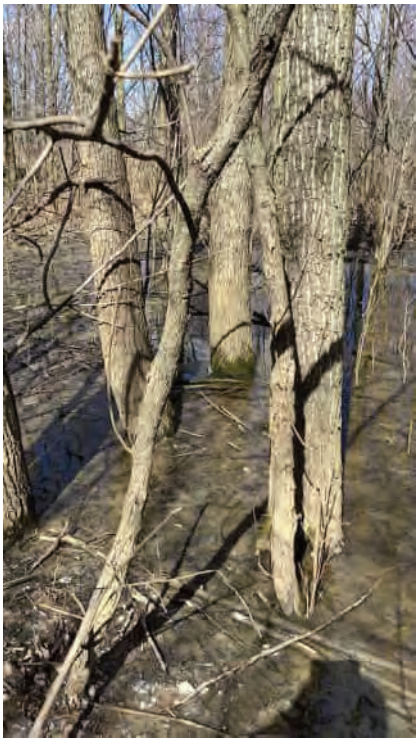
Depth (inches):_____

Hydric Soil Present? **Yes** X **No** _____

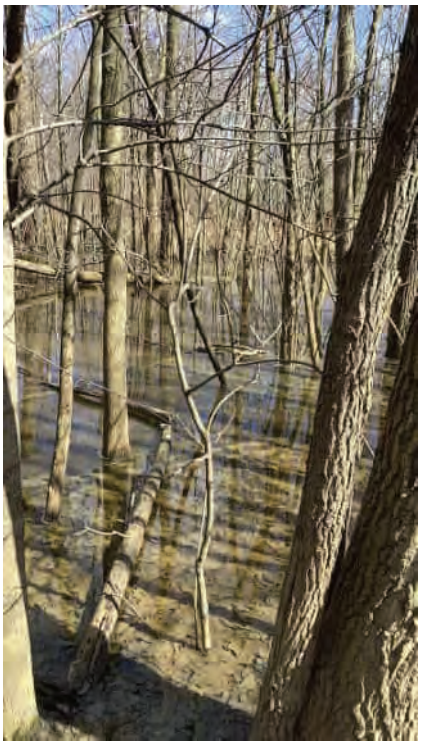
Remarks:

Hydric soil indicator present as low chroma/high value matrix with distinct redox

General Site Photos Wetland EN-03F



N



E

S

W

General Site Photos Wetland EN-03F

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-03

Investigator(s): BCR Section, Township, Range: S 30 T 2N R 9E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Undulating Slope (%): 2

Subregion (LRR or MLRA): LRR K Lat: 41.10870686700008 Long: -83.86740901699994 Datum: NAD 83

Soil Map Unit Name: Mermill clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland EN-03
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

Upland 01 near oxbow

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology not present. Only one secodnary indiactor was observed. No other primary or secondary indicators observed

VEGETATION – Use scientific names of plants.

Sampling Point: Upland EN-03

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	50	Yes	FAC
2. Celtis occidentalis	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	70 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Lonicera maackii	55	Yes	UPL
2. Rubus idaeus	15	No	FACU
3. Acer negundo	10	No	FAC
4.			
5.			
6.			
7.			
	80 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Elymus riparius	20	Yes	FACW
2. Geum canadense	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1. Lonicera japonica	5	Yes	FACU
2.			
3.			
4.			
	5 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.66666667 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	20	x 2 =	40.0
FAC species	120	x 3 =	360.0
FACU species	20	x 4 =	80.0
UPL species	55	x 5 =	220.0
Column Totals:	215 (A)		700.0 (B)

Prevalence Index = B/A = 3.25581395

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

sample point meets hydrophytic vegetation indicators

SOIL

Sampling Point: Upland EN-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10R 3/3	100						
10 - 18	10YR 4/3	98	10YR 4/6	2	Concer	M	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

hydric soil indicators were not present

General Site Photos Upland EN-03

N

S

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-04

Investigator(s): BCR Section, Township, Range: S 23 T 2N R 9E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR K Lat: 41.113173483000025 Long: -83.78821409999995 Datum: NAD 83

Soil Map Unit Name: Hoytville clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland EN-04
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Pem wetland in mowed grass area south of t-line.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 1
Water Table Present?	Yes X	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Connects to culvert providing surface runoff to depressional wetland

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland EN-04

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5)			
1. Poa palustris	20	Yes	FACW
2. Eleocharis compressa	30	Yes	FACW
3. Phalaris arundinacea	30	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	80	x 2 =	160.0
FAC species	0	x 3 =	0.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	80 (A)		160.0 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)
hydrophytic vegetation indicators of Dominance test and P.I. present

SOIL

Sampling Point: Wetland EN-04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 4/1	90	10YR 4/4	10	Concer	PL,M	Sandy clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

hydric soil indicators of F3 and F8 present

General Site Photos Wetland EN-04

N

E

S

W

General Site Photos Wetland EN-04

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-04

Investigator(s): BCR Section, Township, Range: S 23 T 2N R 9E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Flat Slope (%): 5

Subregion (LRR or MLRA): LRR K Lat: 41.113259517000074 Long: -83.78817904999994 Datum: NAD 83

Soil Map Unit Name: Hoytville clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland EN-04
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

Upland for wetland w-bcr-032922-02 in mowed grass area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland EN-04

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5)			
1. Schedonorus arundinaceus	50	Yes	FACU
2. Poa pratensis	60	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	0	x 2 =	0.0
FAC species	0	x 3 =	0.0
FACU species	110	x 4 =	440.0
UPL species	0	x 5 =	0.0
Column Totals:	110 (A)		440.0 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

no hydrophytic vegetation indicators present

SOIL

Sampling Point: Upland EN-04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 19	10YR 3/1	100					Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L, M**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

General Site Photos Upland EN-04

W

E

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-05

Investigator(s): BCR Section, Township, Range: S 25 T 2N R 9E

Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR K Lat: 41.10843100000005 Long: -83.77964979999996 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland EN-05
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Wetland bcr-032922-03 near railroad tracks and disc golf course in existing ROW. Wetland extends outside survey area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	
Water Table Present?	Yes X	No _____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

multiple primary and secondary indicators observed. Wetland extends outside survey area

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland EN-05

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Crataegus phaenopyrum	25	Yes	FAC
2. Fraxinus pennsylvanica	30	Yes	FACW
3. Cornus amomum	15	Yes	FACW
4.			
5.			
6.			
7.			
	70 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Lysimachia nummularia	25	Yes	FACW
2. Solidago gigantea	25	Yes	FACW
3. Symphyotrichum ericoides	15	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.83333333 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	95	x 2 =	190.0
FAC species	25	x 3 =	75.0
FACU species	15	x 4 =	60.0
UPL species	0	x 5 =	0.0
Column Totals:	135 (A)		325.0 (B)

Prevalence Index = B/A = 2.40740741

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

sample point meets hydrophytic vegetation indicators as Dominance test is greater than 50% and Prevalence index is less than 3

SOIL

Sampling Point: Wetland EN-05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 5	10YR 4/2	98	10YR 4/4	3	Concer	M	Clay loam	
5 - 18	10YR 5/2	90	10YR 4/4	10	Concer	PL,M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L, M**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

hydric soil indicators present

General Site Photos Wetland EN-05

N

E

S

W

General Site Photos Wetland EN-05

Soil

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Pro City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-05

Investigator(s): BCR Section, Township, Range: S 25 T 2N R 9E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR K Lat: 41.108340217000034 Long: -83.77957829999997 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland EN-05
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

Upland for w-bcr-032922-03 in park area.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland EN-05

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lonicera maackii	20	Yes	UPL
2. Cornus obliqua	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	25 = Total Cover		

Herb Stratum (Plot size: 5)	Absolute % Cover	Dominant Species?	Indicator Status
1. Poa pratensis	80	Yes	FACU
2. Trifolium repens	15	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95 = Total Cover		

Woody Vine Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.33333333 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	5	x 2 =	10.0
FAC species	0	x 3 =	0.0
FACU species	95	x 4 =	380.0
UPL species	20	x 5 =	80.0
Column Totals:	120 (A)		470.0 (B)

Prevalence Index = B/A = 3.91666667

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland EN-05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 4/3	100					Clay loam	
10 - 18	10YR 4/4	95	10YR 4/6	5	Concer		Clay loam	Distrurbed
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L, M**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

General Site Photos Upland EN-05

S

E

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-06

Investigator(s): BCR Section, Township, Range: S 25 T 2N R 9E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Flat

Slope (%): 2 Lat: 41.10573588333334 Long: -83.7733355 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Sample point W-BCR-032922-04 for PSS wetland in ROW

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	30	Yes	FACW
2. Cephalanthus occidentalis	20	Yes	OBL
3.			
4.			
5.			
	50 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Carex vulpinoidea	50	Yes	FACW
2. Xanthium strumarium	15	No	FAC
3. Scirpus cyperinus	15	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. Toxicodendron radicans	10	Yes	FAC
2. Wisteria frutescens	2		FACU
	12 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	80	x 2 =	160
FAC species	25	x 3 =	75
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	142 (A)		278 (B)

Prevalence Index = B/A = 1.957746478

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- Yes 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Sample point meets hydrophytic vegetation criteria

SOIL

Sampling Point: Wetland EN-06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 20	10YR 4/2	90	10YR 4/4	10	C	PL,M	Clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil indicators present as high chroma/low value depleted matrix

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple primary and secondary hydrology indictors present; wetland receives water from precipitation and surrounding runoff.

Site Photos Wetland EN-06

N

E

S

W

Site Photos Wetland EN-06

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-06

Investigator(s): BCR Section, Township, Range: S 25 T 2N R 9E

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Flat

Slope (%): 2 Lat: 41.10578925 Long: -83.77351196666665 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland point for wetland W-BCR-032922-04 in existing ROW.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Acer negundo	30	Yes	FAC
2. Crataegus phaenopyrum	15	Yes	FAC
3. Rubus allegheniensis	10	No	FACU
4.			
5.			
	55 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Bromus arvensis	30	Yes	FACU
2. Solidago gigantea	15	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	45 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.	10		
2.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	45	x 3 =	135
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	100 (A)		325 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

No 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
sample point meets hydrophytic vegetation indicator of Dominance Test greater than 50%. Dominant species are FACW, FAC and FACU

SOIL

Sampling Point: Upland EN-06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 3/2	100					Clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present

Site Photos Upland EN-06

NW

SE

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-07

Investigator(s): BCR Section, Township, Range: S 30 T 2N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41.097604749999995 Long: -83.75666269999998 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Pem wetland W-BCR-033022-02 on ROW. Wetland extends offsite to the south

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5)			
1. Echinochloa crus-galli	40	Yes	FACW
2. Setaria pumila	30	Yes	FAC
3. Rumex crispus	20	No	FAC
4. Panicum capillare	10	No	FAC
5. Phalaris arundinacea	15	No	FACW
6.			
7.			
8.			
9.			
10.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	55	x 2 = 110
FAC species	60	x 3 = 180
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	115 (A)	290 (B)

Prevalence Index = B/A = 2.521739130

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- Yes 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicator present as Dominance Test > 50% and Prevalence Index < 3.0.

SOIL

Sampling Point: Wetland EN-07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 4/2	98	10YR 4/4	2	C	M	Clay loam	
12 - 19	10YR 5/2	90	10YR 4/4	10	C	M	Clay loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator present as high chroma/low value depleted matrix

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 1

Water Table Present? Yes X No _____ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

mulitple primary hydrology indicators present

Site Photos Wetland EN-07

N

E

S

W

Site Photos	Wetland EN-07

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-07

Investigator(s): BCR Section, Township, Range: S 30 T 2N R 10E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Flat

Slope (%): 3 Lat: 41.0978139 Long: -83.7570255 Datum: NAD 83

Soil Map Unit Name: Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland point for W-BCR-033022-02 in ROW

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5)			
1. Schedonorus pratensis	40	Yes	FACU
2. Bromus arvensis	40	Yes	FACU
3. Trifolium repens	30	Yes	FACU
4. Echinochloa crus-galli	10	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	10	x 2 = 20
FAC species	0	x 3 = 0
FACU species	110	x 4 = 440
UPL species	0	x 5 = 0
Column Totals:	120 (A)	460 (B)

Prevalence Index = B/A = 3.833333333

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- No 2 - Dominance Test is >50%
- No 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
hydrophytic vegetation indicators not observed

SOIL

Sampling Point: Upland EN-07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 3/3	99	10YR 4/4	1	C	M	Clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

wetland hydrology not observerd

Site Photos Upland EN-07

NW

N

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-08

Investigator(s): BCR Section, Township, Range: S 30 T 2N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave

Slope (%): 2 Lat: 41.09637695228497 Long: -83.75299521478284 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland point W-BCR-033022-01 in wooded area north of ROW. Several polygons of wetland complex present within the survey area. Wetland extends to the north towards 2 NWI areas.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus bicolor	40	Yes	FACW
2. Carya ovata	10	No	FACU
3. Celtis occidentalis	20	No	FAC
4. Ulmus americana	10	No	FACW
5.			
	80	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5)			
1. Elymus virginicus	60	Yes	FACW
2. Symphyotrichum lateriflorum	20	Yes	FACW
3. Carex blanda	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	130	x 2 =	260
FAC species	30	x 3 =	90
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	170 (A)		390 (B)

Prevalence Index = B/A = 2.294117647(

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

Yes 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicator present as Dominance Test > 50% and Prevalence Index < 3.0.

SOIL

Sampling Point: Wetland EN-08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 3/1	95	10YR 4/4	5	C	PL,M	Silty clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

hydric soil indicator present of redox dark surface

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes X No ___ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 7

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple primary and secondary hydrology indictors present

Site Photos Wetland EN-08

N

E

S

W

Site Photos Wetland EN-08

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-08

Investigator(s): BCR Section, Township, Range: S 30 T 2N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Undulating

Slope (%): 2 Lat: 41.09632693333333 Long: -83.75302945 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland area in woodlot north of ROW

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus bicolor	30	Yes	FACW
2. Juglans nigra	30	Yes	FACU
3. Carya ovata	20	No	FACU
4. Celtis occidentalis	20	No	FAC
5.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5)			
1. Carex blanda	55	Yes	FAC
2. Elymus virginicus	40	Yes	FACW
3. Geum canadense	15	No	FAC
4. Ageratina altissima	10	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	120	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	90	x 3 =	270
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	220 (A)		650 (B)

Prevalence Index = B/A = 2.954545454!

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

Yes 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicator present as Dominance Test > 50% and Prevalence Index < 3.0.

SOIL

Sampling Point: Upland EN-08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 3/2	100					Silty clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

hydric soil indicators not present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Only 1 secondary indicator was obsvered (geomorphic position), therefore sample point does not meet wetland hydrology

Site Photos Upland EN-08

S

W

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-09

Investigator(s): BCR Section, Township, Range: S 32 T 2N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41.08706924999999 Long: -83.7341288 Datum: NAD 83

Soil Map Unit Name: Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Sample point for PFO wetland w-BCR-033022-03 in wooded area adjacent to retired RR line. Wetland extends outside survey area to the north

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus bicolor	40	Yes	FACW
2. Acer rubrum	20	Yes	FAC
3.			
4.			
5.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Quercus bicolor	45	Yes	FACW
2. Acer negundo	20	Yes	FAC
3. Rosa setigera	5	No	FACU
4.			
5.			
	70	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Lysimachia nummularia	10	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1. Toxicodendron radicans	5	Yes	FAC
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	45	x 3 =	135
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	145 (A)		345 (B)

Prevalence Index = B/A = 2.3793103448

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- Yes 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators present as Dominance Test > 50% and Prevalence Index < 3.0.

SOIL

Sampling Point: Wetland EN-09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 3/1	90	10YR 4/4	10	C	M	Clay loam	
8 - 18	10YR 4/1	80	10YR 4/6	20	C	M	Clay loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

multiple hydric soil indicators present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 4

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

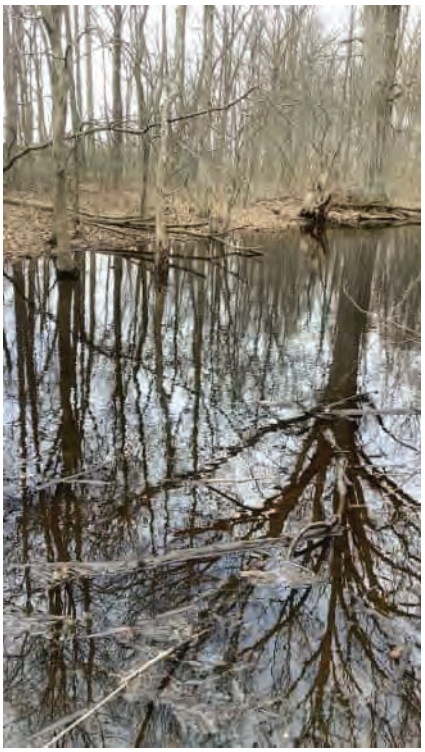
multiple primary and secondary hydrology indicators observed. Wetland recieves hydrology via precipitation and surface runoff from surrounding landscape

Site Photos Wetland EN-09

N

E

S



W

Site Photos	Wetland EN-09

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-09

Investigator(s): BCR Section, Township, Range: S 32 T 2N R 10E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Flat

Slope (%): 3 Lat: 41.08693733333333 Long: -83.73396686666668 Datum: NAD 83

Soil Map Unit Name: Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland sample point for PFO wetland w-BCR-033022-03

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fagus grandifolia	30	Yes	FACU
2. Quercus bicolor	30	Yes	FACW
3. Quercus rubra	15	No	FACU
4. Acer rubrum	5	No	FAC
5.			
	80	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. Rubus allegheniensis	20	Yes	FACU
2. Rosa setigera	25	Yes	FACU
3. Quercus bicolor	15	Yes	FACW
4. Fagus grandifolia	5	No	FACU
5.			
	65	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Carex blanda	45	Yes	FAC
2. Geum canadense	35	Yes	FAC
3. Ageratina altissima	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.571428571 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	45	x 2 =	90
FAC species	85	x 3 =	255
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	230 (A)		745 (B)

Prevalence Index = B/A = 3.888888888

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- No 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
hydrophytic vegetation indictor present as Dominance Test is greater than 50%

SOIL

Sampling Point: Upland EN-09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 13	10YR 3/2	97	10YR 4/4	3	C	M	Silty clay loam	
13 - 19	10YR 4/1	90	10YR 4/6	10	C	M	Silty clay loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indictors present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed

Site Photos Upland EN-09

SE

NW

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-10

Investigator(s): BCR Section, Township, Range: S 32 T 2N R 10E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Undulating

Slope (%): 0 Lat: 41.084272033333335 Long: -83.73014048333334 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Sample point for PSS wetland w-BCR-033022-04. Wetland extends outside survey area

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Crataegus mollis	10	Yes	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Crataegus mollis	30	Yes	FAC
2. Acer negundo	20	Yes	FAC
3. Fraxinus pennsylvanica	20	Yes	FACW
4. Cornus amomum	10	No	FACW
5. Lonicera morrowii	5	No	FACU
	85 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Lysimachia nummularia	30	Yes	FACW
2. Phalaris arundinacea	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	60	x 3 =	180
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	135 (A)		340 (B)

Prevalence Index = B/A = 2.518518518

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- Yes 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicator present as Dominance Test > 50% and Prevalence Index < 3.0.

SOIL

Sampling Point: Wetland EN-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 4/2	95	10YR 4/4	5	C	PL,M	Clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

hydric soil indicator of depleted matrix and redox depressions present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

multiple primary hydrology indicators present.

Site Photos Wetland EN-10

N

E

S

W

Site Photos	Wetland EN-10

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-10

Investigator(s): BCR Section, Township, Range: S 32 T 2N R 10E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat

Slope (%): 0 Lat: 41.0845074 Long: -83.73009776666669 Datum: NAD 83

Soil Map Unit Name: Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland for pss wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Rubus argutus	5	Yes	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Bromus arvensis	80	Yes	FACU
2. Schedonorus arundinaceus	20	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.5 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	105 (A)		415 (B)

Prevalence Index = B/A = 3.952380952

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- No 2 - Dominance Test is >50%
- No 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
hydrophytic vegetation indicators not present

SOIL

Sampling Point: Upland EN-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 2/1	10					Clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

no hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Upland EN-10

SE

NW

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-11E

Investigator(s): BAO Section, Township, Range: S 32 T 2N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41.08373 Long: -83.72803 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
PEM portion of PEM/PFO wetland complex. PEM situated within low-lying area in mowed power line easement.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5)			
1. Phalaris arundinacea	90	Yes	FACW
2. Schedonorus arundinaceus	10	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	100 (A)		220 (B)

Prevalence Index = B/A = 2.20

Hydrophytic Vegetation Indicators:

Yes 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

Yes 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland EN-11E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 3/1	97	10YR 4/6	3	C	M,PL	Silty clay loam	
10 - 18	10YR 3/2	97	10YR 4/6	3	C	PL,M	Silty clay loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes X No ___ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 6

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos	Wetland EN-11E

NE

SE

SW

NW

Site Photos	Wetland EN-11E

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-11

Investigator(s): BAO Section, Township, Range: S 32 T 2N R 10E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat

Slope (%): 2-5 Lat: 41.08342 Long: -83.72732 Datum: NAD 83

Soil Map Unit Name: Del Rey-Blount complex, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland data point on edge of maintained power line easement, upslope of PEM/PFO complex.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Cornus amomum	15	Yes	FACW
2. Lonicera maackii	40	Yes	UPL
3. Elaeagnus angustifolia	15	Yes	FACU
4.			
5.			
	70 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Setaria faberi	60	Yes	FACU
2. Phalaris arundinacea	15	No	FACW
3. Solidago canadensis	20	Yes	FACU
4. Symphyotrichum pilosum	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	40	x 5 =	200
Column Totals:	170 (A)		660 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

No 2 - Dominance Test is >50%

No 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland EN-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 3/2	100					Silty clay loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Upland EN-11

NE

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/29/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-11F

Investigator(s): BAO Section, Township, Range: S 32 T 2N R 10E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat

Slope (%): 0-2 Lat: 41.08341 Long: -83.72773 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
PFO portion of PEM/PFO wetland complex. Numerous dead ash trees still standing or fallen.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	50	Yes	FACW
2. Acer negundo	20	Yes	FAC
3. Crataegus sp.	5	No	FAC
4.			
5.			
	75	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	20	Yes	FACW
2. Ulmus americana	20	Yes	FACW
3. Crataegus sp.	15	No	FAC
4. Rubus allegheniensis	30	Yes	FACU
5. Lonicera maackii	15	No	UPL
	125	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Phalaris arundinacea	20	Yes	FACW
2. Carex lurida	40	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	60	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 86% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	120	x 2 =	240
FAC species	50	x 3 =	150
FACU species	35	x 4 =	140
UPL species	15	x 5 =	75
Column Totals:	260 (A)		645 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

- No 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- Yes 3 - Prevalence Index is ≤3.0[1]
- No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Hawthorn sp. assumed FAC due to its assocation with other species with varying wetland indicator statuses.

SOIL

Sampling Point: Wetland EN-11F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 2/1	98	7.5YR 4/4	2	Concer	PL,M	Silty loam	Redox 7.5YR 4/4
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 1

Water Table Present? Yes X No ____ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Wetland EN-11F

NW

NE

SW

SE

Site Photos	Wetland EN-11F

soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-12

Investigator(s): BAO Section, Township, Range: S 4 T 1N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave

Slope (%): 0 Lat: 41.08028 Long: -83.72071 Datum: NAD 83

Soil Map Unit Name: Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Mature PFO wetland with large DBH cottonwood trees. PFO within woodlot surrounded by crop fields.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	55	Yes	FAC
2. Acer saccharinum	30	Yes	FACW
3. Ulmus americana	40	Yes	FACW
4. Acer rubrum	20	No	FAC
5.			
	145	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Ulmus americana	15	Yes	FACW
2.			
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Glyceria striata	15	Yes	OBL
2. Carex sp.	15	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	100	x 2 =	200
FAC species	75	x 3 =	225
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	190 (A)		440 (B)

Prevalence Index = B/A = 2.32

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

Yes 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Carex sp. assumed FACW due to it association with other wetland species and due to the presence of strong soil and hydrology indicators.

SOIL

Sampling Point: Wetland EN-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 2/2	98	7.5YR 4/6	2	C	PL	Silty loam	Redox 7.5YR 4/6
10 - 18	10YR 4/2	90	10YR 4/6	10	C	PL,M	Silty clay loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 1

Water Table Present? Yes X No ____ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Wetland EN-12

N

E

S

W

Site Photos	Wetland EN-12

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-12

Investigator(s): BAO Section, Township, Range: S 4 T 1N R 10E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat

Slope (%): 1 Lat: 41.08040046666667 Long: -83.72065245 Datum: NAD 83

Soil Map Unit Name: Jenera-Shinrock, till substratum complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland data point in mature woodlot.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus macrocarpa	40	Yes	FAC
2. Carya ovata	35	Yes	FACU
3. Quercus rubra	20	No	FACU
4. Prunus serotina	20	No	FACU
5.			
	115	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Prunus serotina	20	Yes	FACU
2. Fraxinus pennsylvanica	10	Yes	FACW
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Cardamine concatenata	3	No	FACU
2. Alliaria petiolata	10	Yes	FAC
3. Fraxinus pennsylvanica	20	Yes	FACW
4. Rosa multiflora	10	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	43	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.571428571 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	50	x 3 =	150
FACU species	108	x 4 =	432
UPL species	0	x 5 =	0
Column Totals:	188 (A)		642 (B)

Prevalence Index = B/A = 3.414893617

Hydrophytic Vegetation Indicators:

- No 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- No 3 - Prevalence Index is ≤3.0[1]
- No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland EN-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 3/2	100					Loam	
10 - 18	10YR 5/3	100					Very fine sand	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Upland EN-12

N

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-13

Investigator(s): BAO Section, Township, Range: S 4 T 1N R 10E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave

Slope (%): 0 Lat: 41.07950233333332 Long: -83.71941989999999 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
PFO wetland located along former Railroad. Vernal pool.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	20	Yes	FACW
2. Acer saccharinum	10	Yes	FACW
3. Carya laciniosa	5	No	FACW
4.			
5.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	10	Yes	FACW
2. Carpinus caroliniana	10	Yes	FAC
3. Acer saccharinum	5	Yes	FACW
4.			
5.			
	25	= Total Cover	
Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		130 (B)

Prevalence Index = B/A = 2.166666666

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- Yes 2 - Dominance Test is >50%
- Yes 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland EN-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/1	100					Silty clay loam	
4 - 18	10YR 5/1	85	10YR 5/8	15	C	M	Silty clay	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 3

Water Table Present? Yes X No ___ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 1

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Wetland EN-13

Soil

W

E

S

Site Photos	Wetland EN-13

N

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-13

Investigator(s): BAO Section, Township, Range: S 4 T 1N R 10E

Landform (hillslope, terrace, etc.): Mound Local relief (concave, convex, none): Convex

Slope (%): 5 Lat: 41.07945 Long: -83.71948 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland point on old railroad bed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra	20	Yes	FACU
2. Prunus serotina	20	Yes	FACU
3. Ulmus americana	20	Yes	FACW
4.			
5.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Rosa multiflora	15	Yes	FACU
2. Lonicera maackii	20	Yes	UPL
3. Fraxinus pennsylvanica	5	No	FACW
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Rosa multiflora	5	Yes	FACU
2. Fragaria virginiana	5	Yes	FACU
3. Cardamine concatenata	3	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	13	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 13% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	0	x 3 =	0
FACU species	68	x 4 =	272
UPL species	20	x 5 =	100
Column Totals:	113 (A)		422 (B)

Prevalence Index = B/A = 3.73

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

No 2 - Dominance Test is >50%

No 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland EN-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 2/1	100					Coarse sandy	Very gravelly
16 - 18	10YR 3/3	100					Coarse sandy	Gravelly
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Upland EN-13

SE

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-14E

Investigator(s): BAO Section, Township, Range: S 33 T 2N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41.08086921666666 Long: -83.72229181666668 Datum: NAD 83

Soil Map Unit Name: Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
PEM portion of PEM/PSS/PFO complex along crop field and in T-line ROW. Evidence of farming-related disturbance. Over grown soil piles from past tile work in and adjacent to wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	3	No	FACW
2. Cornus alba	5	Yes	FACW
3.			
4.			
5.			
	8 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Phalaris arundinacea	60	Yes	FACW
2. Elymus virginicus	20	Yes	FACW
3. Juncus effusus	10	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	88	x 2 =	176
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	98 (A)		186 (B)

Prevalence Index = B/A = 1.897959183(

Hydrophytic Vegetation Indicators:

Yes 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

Yes 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland EN-14E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 2/2	90	5YR 4/6	10	C	PL	Silty loam	Redox 5YR 4/6
16 - 18	10YR 2/1	90	5YR 4/6	10	C	PL	Silty loam	Redox 5 YR 4/6
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1

Water Table Present? Yes X No ___ Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos	Wetland EN-14E

N

E

S

W

Site Photos	Wetland EN-14E

Soil

S

Recent tile work

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-14F

Investigator(s): BAO Section, Township, Range: S 33 T 2N R 10E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41.08081451666667 Long: -83.72176765000002 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
PFO portion of PEM/PSS/PFO complex in woodlot surrounded by row crop fields. Old railroad bed along south boundary of PFO.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	30	Yes	FAC
2. Celtis occidentalis	10	No	FAC
3. Quercus alba	10	No	FACU
4. Carya laciniosa	20	No	FACW
5. Ulmus americana	40	Yes	FACW
	130	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	20	Yes	FACW
2. Rosa multiflora	20	Yes	FACU
3.			
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Elymus virginicus	20	Yes	FACW
2. Hydrophyllum virginianum	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.833333333 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	65	x 3 =	195
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	195 (A)		515 (B)

Prevalence Index = B/A = 2.641025641

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

Yes 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland EN-14F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 2/1	98	5YR 4/6	2	Concer	M	Silty loam	Redox 5YR 4/6
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 3

Water Table Present? Yes X No _____ Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Wetland EN-14F

N

E

S

W

W-BAO-032922-01F

Site Photos	Wetland EN-14F

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Wetland EN-14S

Investigator(s): BAO Section, Township, Range: S 4 T 1N R 10E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41.07905 Long: -83.71876 Datum: NAD 83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
PSS wetland data point in old overgrown swale along abandoned railroad.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	10	Yes	FACU
2. Ulmus americana	5	Yes	FACW
3.			
4.			
5.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	30	Yes	FACW
2. Ulmus americana	15	Yes	FACW
3. Lonicera maackii	5	No	UPL
4.			
5.			
	50 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Glyceria striata	5	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	70 (A)		170 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

Yes 2 - Dominance Test is >50%

Yes 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
Trees line edge of swale. Mostly saplings in center.

SOIL

Sampling Point: Wetland EN-14S

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/1	100					Coarse sandy	Gravelly
4 - 14	10YR 3/2	95	10YR 4/4	5	C	PL,M	Silty clay loam	Some gravel
14 - 18	10YR 4/2	95	10YR 4/6	5	C	PL,M	Silty clay loam	Gravelly
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 3

Water Table Present? Yes X No ____ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Wetland EN-14S

NE

SE

SW

NW

Site Photos	Wetland EN-14S

Soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: East Leipsic-New Liberty 138 kV Transmission Line Project City/County: Hancock County Sampling Date: 03/28/2022

Applicant/Owner: AEP State: OH Sampling Point: Upland EN-14

Investigator(s): BAO Section, Township, Range: S 33 T 2N R 10E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat

Slope (%): 2 Lat: 41.080894916666665 Long: -83.72234233333332 Datum: NAD 83

Soil Map Unit Name: Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Upland point between wetland and row crop field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5)			
1. Setaria faberi	90	Yes	FACU
2. Dipsacus fullonum	15	No	FACU
3. Symphyotrichum pilosum	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column Totals:	110 (A)		440 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

No 1 - Rapid Test for Hydrophytic Vegetation

No 2 - Dominance Test is >50%

No 3 - Prevalence Index is ≤3.0[1]

No 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

No Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland EN-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 2/2	100					Silty loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): No

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site Photos Upland EN-14

NE

Soil

Appendix C
ORAM Forms

Site: Wetland EN-01	**Rater(s):** BAO	**Date:** 2022-03-28

3 (max 6 pts.) / 3 (subtotal) Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [x] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

1 (max 14 pts.) / 4 (subtotal) Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

11 (max 30 pts.) / 15 (subtotal) Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [x] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

15 (max 20 pts.) / 30 (subtotal) Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [x] None or none apparent (4)
- [ ] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [x] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [x] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

30 subtotal this page

Site: Wetland EN-01	**Rater(s):** BAO	**Date:** 2022-03-28

30
subtotal first page

0 (max 10 pts.) 30 (subtotal) Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

8 (max 20 pts.) 38 (subtotal) Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [0] Shrub
- [2] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [X] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [X] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [2] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

38 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-02	**Rater(s):** BCR	**Date:** 2022-03-29

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

3	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

9	14
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [ ] other_____

10.5	24.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [x] clearcutting
- [x] selective cutting
- [x] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

24.5
subtotal this page

Site: Wetland EN-02	**Rater(s):** BCR	**Date:** 2022-03-29

24.5
subtotal first page

0	24.5
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

10	34.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [1] Shrub
- [1] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [X] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [1] Vegetated hummucks/tussucks
- [2] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [2] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

34.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-03	**Rater(s):** BCR	**Date:** 2022-03-28

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

3	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

12	17
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [x] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [x] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

9	26
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [x] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [x] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

26
subtotal this page

Site: Wetland EN-03	**Rater(s):** BCR	**Date:** 2022-03-28

26
subtotal first page

0 (max 10 pts.) 26 (subtotal) Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

6 (max 20 pts.) 32 (subtotal) Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [0] Shrub
- [2] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

32 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-04	**Rater(s):** BCR	**Date:** 2022-03-29

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [x] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

2	3
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

5.5	8.5
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [x] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

5.5	14
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [x] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [x] nutrient enrichment

14
subtotal this page

Site: Wetland EN-04	**Rater(s):** BCR	**Date:** 2022-03-29

14
subtotal first page

Metric 5. Special Wetlands.

0 (max 10 pts.) | 14 (subtotal)

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

2 (max 20 pts.) | 16 (subtotal)

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [0] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [X] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

16 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-05	**Rater(s):** BCR	**Date:** 2022-03-29

3 (max 6 pts.) / 3 (subtotal) Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [x] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

2 (max 14 pts.) / 5 (subtotal) Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

7.5 (max 30 pts.) / 12.5 (subtotal) Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [x] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

7.5 (max 20 pts.) / 20 (subtotal) Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [x] clearcutting
- [x] selective cutting
- [x] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

20 subtotal this page

Site: Wetland EN-05	**Rater(s):** BCR	**Date:** 2022-03-29

20
subtotal first page

Metric 5. Special Wetlands.

0 (max 10 pts.) | 20 (subtotal)

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

4 (max 20 pts.) | 24 (subtotal)

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [1] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

24 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-06	**Rater(s):** BCR	**Date:** 2022-03-29

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

4	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

9	13
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

7	20
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [x] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [x] clearcutting
- [x] selective cutting
- [x] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

20
subtotal this page

Site: Wetland EN-06	**Rater(s):** BCR	**Date:** 2022-03-29

20
subtotal first page

0 (max 10 pts.) 20 (subtotal) Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

5 (max 20 pts.) 25 (subtotal) Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [2] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [1] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

25 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-07	**Rater(s):** BCR	**Date:** 2022-03-30

2 (max 6 pts.) | 2 (subtotal) Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

2 (max 14 pts.) | 4 (subtotal) Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

6.5 (max 30 pts.) | 10.5 (subtotal) Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

6 (max 20 pts.) | 16.5 (subtotal) Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [x] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [x] nutrient enrichment

16.5 subtotal this page

Site: Wetland EN-07	**Rater(s):** BCR	**Date:** 2022-03-30

16.5
subtotal first page

0	16.5
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

1	17.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [0] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [X] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [1] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

17.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-08	**Rater(s):** BCR	**Date:** 2022-03-30

3	3
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [x] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

8	11
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [x] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

11.5	22.5
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [x] None or none apparent (12)
- [ ] Recovered (7)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [x] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

13	35.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [x] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [x] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

35.5
subtotal this page

Site: Wetland EN-08	**Rater(s):** BCR	**Date:** 2022-03-30

35.5
subtotal first page

0	35.5
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

7	42.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [0] Shrub
- [2] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [2] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

42.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-09	**Rater(s):** BCR	**Date:** 2022-03-30

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

8	10
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [x] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

10.5	20.5
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [ ] other_____

15	35.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [x] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [x] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [x] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [x] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

35.5
subtotal this page

Site: Wetland EN-09	**Rater(s):** BCR	**Date:** 2022-03-30

35.5
subtotal first page

0 (max 10 pts.) | 35.5 (subtotal) Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

11 (max 20 pts.) | 46.5 (subtotal) Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [0] Shrub
- [2] Forest
- [0] Mudflats
- [2] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [X] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [2] Standing dead >25cm (10in) dbh
- [2] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

46.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-10	**Rater(s):** BCR	**Date:** 2022-03-30

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

4	6
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

8.5	14.5
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

7.5	22
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [x] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

22
subtotal this page

Site: Wetland EN-10	**Rater(s):** BCR	**Date:** 2022-03-30

22
subtotal first page

Metric 5. Special Wetlands.

0 (max 10 pts.) 22 (subtotal)

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

3 (max 20 pts.) 25 (subtotal)

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [2] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [X] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

25 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-11	**Rater(s):** BAO	**Date:** 2022-03-30

2 (max 6 pts.) / 2 (subtotal) Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

4 (max 14 pts.) / 6 (subtotal) Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

9.5 (max 30 pts.) / 15.5 (subtotal) Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [ ] other_____

9 (max 20 pts.) / 24.5 (subtotal) Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

24.5 subtotal this page

Site: Wetland EN-11	**Rater(s):** BAO	**Date:** 2022-03-30

24.5
subtotal first page

0 (max 10 pts.) | 24.5 (subtotal) Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

7 (max 20 pts.) | 31.5 (subtotal) Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [1] Shrub
- [1] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [X] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [X] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [2] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

31.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-12	**Rater(s):** BAO	**Date:** 2022-03-29

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

7	9
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

14	23
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [x] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [ ] other_____

15.5	38.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [x] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [x] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

38.5
subtotal this page

Site: Wetland EN-12	**Rater(s):** BAO	**Date:** 2022-03-29

38.5
subtotal first page

5 (max 10 pts.) 43.5 (subtotal) Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [X] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

11 (max 20 pts.) 54.5 (subtotal) Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- 0 Aquatic bed
- 0 Emergent
- 0 Shrub
- 3 Forest
- 0 Mudflats
- 0 Open water
- 0 Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [X] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [X] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- 0 Vegetated hummucks/tussucks
- 2 Coarse woody debris >15cm (6in)
- 1 Standing dead >25cm (10in) dbh
- 3 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

54.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-13	**Rater(s):** BAO	**Date:** 2022-03-29

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

7	7
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

14	21
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [x] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [ ] other_____

13	34
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [x] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [x] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

34
subtotal this page

Site: Wetland EN-13	**Rater(s):** BAO	**Date:** 2022-03-29

34
subtotal first page

Metric 5. Special Wetlands.

0 (max 10 pts.) | 34 (subtotal)

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

8 (max 20 pts.) | 42 (subtotal)

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [0] Emergent
- [0] Shrub
- [2] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [X] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [X] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [1] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [2] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

42 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Site: Wetland EN-14	**Rater(s):** BAO	**Date:** 2022-03-29

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

7	9
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

11	20
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [x] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [ ] other_____

11.5	31.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [x] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [x] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

31.5
subtotal this page

Site: Wetland EN-14	**Rater(s):** BAO	**Date:** 2022-03-29

31.5
subtotal first page

0 (max 10 pts.) 31.5 (subtotal) Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

10 (max 20 pts.) 41.5 (subtotal) Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [1] Shrub
- [2] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [X] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [X] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [3] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

41.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Appendix D
Designated Use Stream Photographs

Stream ID: Stream EN-02

Stream Name: Little Yellow Creek

Designation: LRW

Substrate

Upstream

Downstream

Stream ID: Stream EN-05

Stream Name: Yellow Creek

Designation: WWH

Substrate

Upstream

Downstream

Stream ID: Stream EN-11

Stream Name: West Creek

Designation: WWH

Substrate

Upstream

Downstream

Stream ID: Stream EN-14

Stream Name: Needles Creek

Designation: WWH

Substrate

Upstream

Downstream

Stream ID: Stream EN-17

Stream Name: Rader Creek

Designation: WWH

Substrate

Upstream

Downstream

Appendix E
QHEI Stream Data Forms

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 29.5

Stream & Location: Stream EN-06 East Leipsic-New Liberty 138 kV Transmission Line Proje **RM:** 0.4 **Date:** 3/28/22

S-BAO-032822-06 **Scorers Full Name & Affiliation:** BAO Jacobs

River Code: 04100009 05 04 **STORET #:** **Lat./ Long.:** (NAD 83 - decimal º) 41.10964 / -83.91906 **Office verified location** [x]

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES		POOL	RIFFLE
[ ]	BLDR /SLABS [10]		
[ ]	BOULDER [9]		
[ ]	COBBLE [8]	10	10
[ ]	GRAVEL [7]	20	30
[x]	SAND [6]	30	30
[ ]	BEDROCK [5]		

OTHER TYPES		POOL	RIFFLE
[ ]	HARDPAN [4]		
[ ]	DETRITUS [3]		
[ ]	MUCK [2]		
[x]	SILT [2]	40	30
[ ]	ARTIFICIAL [0]		

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: [ ] 4 or more [2] [x] 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	QUALITY
[ ] LIMESTONE [1]	[x] HEAVY [-2]
[x] TILLS [1]	[ ] MODERATE [-1]
[ ] WETLANDS [0]	[ ] NORMAL [0]
[ ] HARDPAN [0]	[ ] FREE [1]
[ ] SANDSTONE [0]	[x] EXTENSIVE [-2]
[ ] RIP/RAP [0]	[ ] MODERATE [-1]
[ ] LACUSTURINE [0]	[ ] NORMAL [0]
[ ] SHALE [-1]	[ ] NONE [1]
[ ] COAL FINES [-2]	

SILT

EMBEDDEDNESS

Comments

Substrate 5 *Maximum 20*

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
0	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
1	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)

- [ ] EXTENSIVE >75% [11]
- [ ] MODERATE 25-75% [7]
- [x] SPARSE 5-<25% [3]
- [ ] NEARLY ABSENT <5% [1]

Comments

Cover 5 *Maximum 20*

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
[ ] HIGH [4]	[ ] EXCELLENT [7]	[ ] NONE [6]	[ ] HIGH [3]
[ ] MODERATE [3]	[ ] GOOD [5]	[ ] RECOVERED [4]	[ ] MODERATE [2]
[ ] LOW [2]	[x] FAIR [3]	[ ] RECOVERING [3]	[x] LOW [1]
[x] NONE [1]	[ ] POOR [1]	[ ] RECENT OR NO RECOVERY [1]	

Comments

Channel 6 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION L	EROSION R		RIPARIAN WIDTH L	RIPARIAN WIDTH R		FLOOD PLAIN QUALITY L	FLOOD PLAIN QUALITY R		L	R	
[ ]	[ ]	NONE / LITTLE [3]	[ ]	[ ]	WIDE > 50m [4]	[ ]	[ ]	FOREST, SWAMP [3]	[ ]	[ ]	CONSERVATION TILLAGE [1]
[x]	[x]	MODERATE [2]	[ ]	[ ]	MODERATE 10-50m [3]	[ ]	[ ]	SHRUB OR OLD FIELD [2]	[ ]	[ ]	URBAN OR INDUSTRIAL [0]
[ ]	[ ]	HEAVY / SEVERE [1]	[ ]	[ ]	NARROW 5-10m [2]	[ ]	[ ]	RESIDENTIAL, PARK, NEW FIELD [1]	[ ]	[ ]	MINING / CONSTRUCTION [0]
			[ ]	[x]	VERY NARROW < 5m [1]	[ ]	[ ]	FENCED PASTURE [1]			
			[x]	[ ]	NONE [0]	[x]	[x]	OPEN PASTURE, ROWCROP [0]			

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 2.5 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)

- [ ] > 1m [6]
- [ ] 0.7-<1m [4]
- [x] 0.4-<0.7m [2]
- [ ] 0.2-<0.4m [1]
- [ ] < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)

- [x] POOL WIDTH > RIFFLE WIDTH [2]
- [ ] POOL WIDTH = RIFFLE WIDTH [1]
- [ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

[ ] TORRENTIAL [-1]	[ ] SLOW [1]
[ ] VERY FAST [1]	[ ] INTERSTITIAL [-1]
[ ] FAST [1]	[ ] INTERMITTENT [-2]
[x] MODERATE [1]	[ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

x

Comments

Pool / Current 4 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). [ ] NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
[ ] BEST AREAS > 10cm [2]	[ ] MAXIMUM > 50cm [2]	[ ] STABLE (e.g., Cobble, Boulder) [2]	[ ] NONE [2]
[x] BEST AREAS 5-10cm [1]	[x] MAXIMUM < 50cm [1]	[ ] MOD. STABLE (e.g., Large Gravel) [1]	[ ] LOW [1]
[ ] BEST AREAS < 5cm [metric=0]		[x] UNSTABLE (e.g., Fine Gravel, Sand) [0]	[ ] MODERATE [0]
			[x] EXTENSIVE [-1]

Comments

Riffle / Run 1 *Maximum 8*

6] GRADIENT

(16 ft/mi)

DRAINAGE AREA (3.7 mi²)

- [ ] VERY LOW - LOW [2-4]
- [x] MODERATE [6-10]
- [ ] HIGH - VERY HIGH [10-6]

%POOL: 30 **%GLIDE:** 0 **%RUN:** 40 **%RIFFLE:** 30

Gradient 6 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Perennial stream S-BAO-032822-06

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☐ NORMAL	☐
☐ LOW	☐
☐ DRY	☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
☐ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

1st pass _____ cm

2nd _____ cm

CANOPY

- ☒ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

B] AESTHETICS

- ☒ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	☐ >100ft²	☐ >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG - SUCCESSION - OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING - BEDLOAD - STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

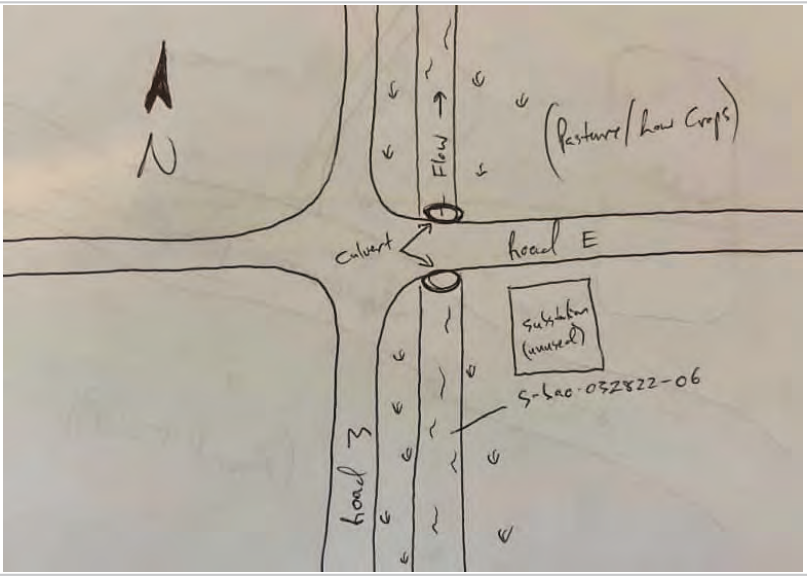
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	5
x̄ depth	
max. depth	10
x̄ bankfull width	20
bankfull x̄ depth	
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing: Stream EN-06



Upstream

Downstream

Substrate

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 32.5

Stream & Location: Stream EN-12 East Leipsic-New Liberty 138 kV Transmission Line Proje **RM:** 3.3 **Date:** 3/28/22

S-BCR-032822-04 **Scorers Full Name & Affiliation:** BCR Jacobs

River Code: 04100010 01 02 **STORET #:** **Lat./ Long.:** (NAD 83 - decimal º) 41.10925 / -83.85188 Office verified location [x]

1] SUBSTRATE

Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL	RIFFLE
[ ] [ ] BLDR /SLABS [10]		
[ ] [ ] BOULDER [9]		
[ ] [ ] COBBLE [8]		
[ ] [ ] GRAVEL [7]	5	
[x] [ ] SAND [6]	75	
[ ] [ ] BEDROCK [5]		

OTHER TYPES	POOL	RIFFLE
[ ] [ ] HARDPAN [4]		
[ ] [ ] DETRITUS [3]	5	
[ ] [ ] MUCK [2]		
[ ] [x] SILT [2]	10	
[ ] [ ] ARTIFICIAL [0]	5	

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: [ ] 4 or more [2] [x] 3 or less [0]

Check ONE (Or 2 & average)

ORIGIN	QUALITY
[ ] LIMESTONE [1]	SILT: [ ] HEAVY [-2]
[x] TILLS [1]	[ ] MODERATE [-1]
[ ] WETLANDS [0]	[x] NORMAL [0]
[ ] HARDPAN [0]	[ ] FREE [1]
[ ] SANDSTONE [0]	EMBEDDEDNESS: [ ] EXTENSIVE [-2]
[ ] RIP/RAP [0]	[x] MODERATE [-1]
[ ] LACUSTURINE [0]	[ ] NORMAL [0]
[ ] SHALE [-1]	[ ] NONE [1]
[ ] COAL FINES [-2]	

Substrate 8 Maximum 20

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
1	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT

Check ONE (Or 2 & average)

[ ] EXTENSIVE >75% [11]
[ ] MODERATE 25-75% [7]
[x] SPARSE 5-<25% [3]
[x] NEARLY ABSENT <5% [1]

Comments

Cover 4 Maximum 20

3] CHANNEL MORPHOLOGY

Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
[ ] HIGH [4]	[ ] EXCELLENT [7]	[ ] NONE [6]	[ ] HIGH [3]
[ ] MODERATE [3]	[ ] GOOD [5]	[ ] RECOVERED [4]	[ ] MODERATE [2]
[ ] LOW [2]	[ ] FAIR [3]	[x] RECOVERING [3]	[x] LOW [1]
[x] NONE [1]	[x] POOR [1]	[ ] RECENT OR NO RECOVERY [1]	

Comments

Channel 6 Maximum 20

4] BANK EROSION AND RIPARIAN ZONE

Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

L	R	EROSION
[x]	[x]	NONE / LITTLE [3]
[x]	[x]	MODERATE [2]
[ ]	[ ]	HEAVY / SEVERE [1]

L	R	RIPARIAN WIDTH
[ ]	[ ]	WIDE > 50m [4]
[ ]	[ ]	MODERATE 10-50m [3]
[ ]	[ ]	NARROW 5-10m [2]
[x]	[x]	VERY NARROW < 5m [1]
[ ]	[ ]	NONE [0]

L	R	FLOOD PLAIN QUALITY
[ ]	[ ]	FOREST, SWAMP [3]
[ ]	[ ]	SHRUB OR OLD FIELD [2]
[ ]	[ ]	RESIDENTIAL, PARK, NEW FIELD [1]
[ ]	[ ]	FENCED PASTURE [1]
[x]	[x]	OPEN PASTURE, ROWCROP [0]

L	R	
[ ]	[ ]	CONSERVATION TILLAGE [1]
[ ]	[ ]	URBAN OR INDUSTRIAL [0]
[ ]	[ ]	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 3.5 Maximum 10

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH — Check ONE (ONLY!)

[ ] > 1m [6]
[ ] 0.7-<1m [4]
[ ] 0.4-<0.7m [2]
[ ] 0.2-<0.4m [1]
[x] < 0.2m [0]

CHANNEL WIDTH — Check ONE (Or 2 & average)

[ ] POOL WIDTH > RIFFLE WIDTH [2]
[ ] POOL WIDTH = RIFFLE WIDTH [1]
[x] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY — Check ALL that apply

[ ] TORRENTIAL [-1]
[ ] VERY FAST [1]
[ ] FAST [1]
[ ] MODERATE [1]
[x] SLOW [1]
[ ] INTERSTITIAL [-1]
[ ] INTERMITTENT [-2]
[ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 1 Maximum 12

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). [ ] NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
[ ] BEST AREAS > 10cm [2]	[ ] MAXIMUM > 50cm [2]	[ ] STABLE (e.g., Cobble, Boulder) [2]	[ ] NONE [2]
[ ] BEST AREAS 5-10cm [1]	[ ] MAXIMUM < 50cm [1]	[ ] MOD. STABLE (e.g., Large Gravel) [1]	[ ] LOW [1]
[ ] BEST AREAS < 5cm [metric=0]		[ ] UNSTABLE (e.g., Fine Gravel, Sand) [0]	[ ] MODERATE [0]
			[ ] EXTENSIVE [-1]

Comments

Riffle / Run 0 Maximum 8

6] GRADIENT

(24 ft/mi) [ ] VERY LOW - LOW [2-4]
[ ] MODERATE [6-10]
[x] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (1.35 mi²)

%POOL: %GLIDE: 100
%RUN: %RIFFLE:

Gradient 10 Maximum 10

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Intermittent stream S-bcr-032822-04

METHOD

- ☐ BOAT
- ☒ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☒ NORMAL	☒
☐ LOW	☐
☐ DRY	☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☒ OTHER

63 meters

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
☐ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

CANOPY

- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

pass 1st_____ cm

2nd_____ cm

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	☒ >100ft²	☒ >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG - SUCCESSION - OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING - BEDLOAD - STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

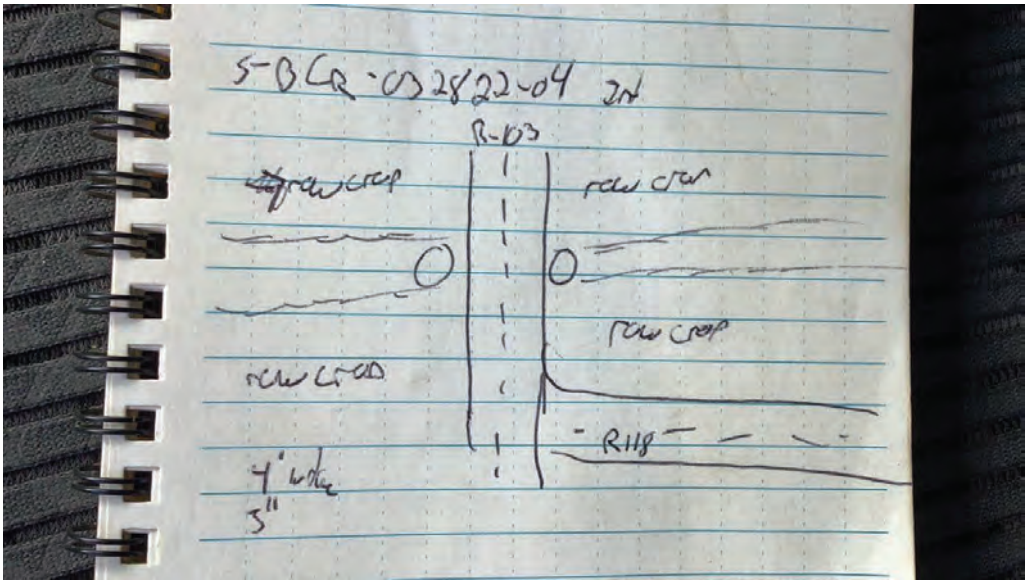
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	4
x̄ depth	3
max. depth	5
x̄ bankfull width	10
bankfull x̄ depth	1
W/D ratio	
bankfull max. depth	15
floodprone x² width	
entrench. ratio	

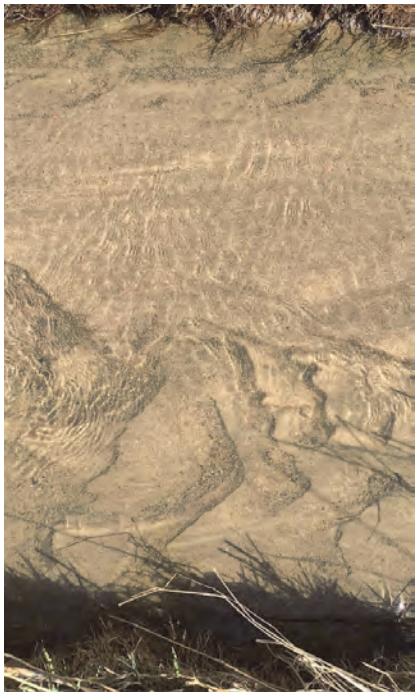
Legacy Tree:

Stream Drawing: Stream EN-12



Upstream

Downstream



Substrate

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 33

Stream & Location: Stream EN-13 East Leipsic-New Liberty 138 kV Transmission Line Proje **RM:** 12.5 **Date:** _ _ _ _ _ _

S-BCR-032822-03 **Scorers Full Name & Affiliation:** BCR Jacobs

River Code: 04100010 01 02 **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal º) 41.11663 / -83.83660 **Office verified location** [x]

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES		POOL	RIFFLE	OTHER TYPES		POOL	RIFFLE
[ ]	BLDR /SLABS [10]			[ ]	HARDPAN [4]		
[ ]	BOULDER [9]			[ ]	DETRITUS [3]	10	0
[ ]	COBBLE [8]			[ ]	MUCK [2]		
[x]	GRAVEL [7]	30	0	[x]	SILT [2]	50	0
[ ]	SAND [6]	10	0	[ ]	ARTIFICIAL [0]		
[ ]	BEDROCK [5]						

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: [ ] 4 or more [2] [x] 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	QUALITY	
[ ] LIMESTONE [1]	[x] HEAVY [-2]	SILT
[x] TILLS [1]	[ ] MODERATE [-1]	
[ ] WETLANDS [0]	[ ] NORMAL [0]	
[ ] HARDPAN [0]	[ ] FREE [1]	
[ ] SANDSTONE [0]	[ ] EXTENSIVE [-2]	EMBEDDEDNESS
[ ] RIP/RAP [0]	[x] MODERATE [-1]	
[ ] LACUSTURINE [0]	[ ] NORMAL [0]	
[ ] SHALE [-1]	[ ] NONE [1]	
[ ] COAL FINES [-2]		

Substrate 7 *Maximum 20*

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	1	AQUATIC MACROPHYTES [1]
1	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)

- [ ] EXTENSIVE >75% [11]
- [ ] MODERATE 25-75% [7]
- [x] SPARSE 5-<25% [3]
- [ ] NEARLY ABSENT <5% [1]

Comments

Cover 6 *Maximum 20*

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
[ ] HIGH [4]	[ ] EXCELLENT [7]	[ ] NONE [6]	[ ] HIGH [3]
[ ] MODERATE [3]	[ ] GOOD [5]	[ ] RECOVERED [4]	[ ] MODERATE [2]
[ ] LOW [2]	[ ] FAIR [3]	[x] RECOVERING [3]	[x] LOW [1]
[x] NONE [1]	[x] POOR [1]	[ ] RECENT OR NO RECOVERY [1]	

Comments

Channel 5 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
[x] [x] NONE / LITTLE [3]	[ ] [ ] WIDE > 50m [4]	[ ] [ ] FOREST, SWAMP [3]	[ ] [ ] CONSERVATION TILLAGE [1]
[ ] [ ] MODERATE [2]	[ ] [ ] MODERATE 10-50m [3]	[ ] [ ] SHRUB OR OLD FIELD [2]	[ ] [ ] URBAN OR INDUSTRIAL [0]
[ ] [ ] HEAVY / SEVERE [1]	[ ] [ ] NARROW 5-10m [2]	[ ] [ ] RESIDENTIAL, PARK, NEW FIELD [1]	[ ] [ ] MINING / CONSTRUCTION [0]
	[ ] [ ] VERY NARROW < 5m [1]	[ ] [ ] FENCED PASTURE [1]	
	[x] [x] NONE [0]	[x] [x] OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 3 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	
Check **ONE** (*ONLY!*)	Check ONE (*Or 2 & average*)	Check ALL that apply	
[ ] > 1m [6]	[ ] POOL WIDTH > RIFFLE WIDTH [2]	[ ] TORRENTIAL [-1]	[x] SLOW [1]
[ ] 0.7-<1m [4]	[ ] POOL WIDTH = RIFFLE WIDTH [1]	[ ] VERY FAST [1]	[ ] INTERSTITIAL [-1]
[ ] 0.4-<0.7m [2]	[x] POOL WIDTH < RIFFLE WIDTH [0]	[ ] FAST [1]	[ ] INTERMITTENT [-2]
[ ] 0.2-<0.4m [1]		[x] MODERATE [1]	[ ] EDDIES [1]
[x] < 0.2m [0]			

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 2 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). [!] NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
[ ] BEST AREAS > 10cm [2]	[ ] MAXIMUM > 50cm [2]	[ ] STABLE (e.g., Cobble, Boulder) [2]	[ ] NONE [2]
[ ] BEST AREAS 5-10cm [1]	[ ] MAXIMUM < 50cm [1]	[ ] MOD. STABLE (e.g., Large Gravel) [1]	[ ] LOW [1]
[ ] BEST AREAS < 5cm [metric=0]		[ ] UNSTABLE (e.g., Fine Gravel, Sand) [0]	[ ] MODERATE [0]
			[ ] EXTENSIVE [-1]

Comments

Riffle / Run 0 *Maximum 8*

6] GRADIENT

(18 ft/mi) [ ] VERY LOW - LOW [2-4] [x] MODERATE [6-10] [ ] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (1.43 mi²)

%POOL: %GLIDE: 100 %RUN: %RIFFLE:

Gradient 10 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Intermittent stream S-bcr-032822-03

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE

1st -sample pass-	2nd
[ ] HIGH	[ ]
[ ] UP	[ ]
[x] NORMAL	[ ]
[ ] LOW	[ ]
[ ] DRY	[ ]

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

_____ meters

CLARITY

1st --sample pass--	2nd
[x] < 20 cm	[ ]
[ ] 20-<40 cm	[ ]
[ ] 40-70 cm	[ ]
[ ] > 70 cm/ CTB	[ ]
[ ] SECCHI DEPTH	[ ]

CANOPY

- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

pass 1st_____ cm

2nd_____ cm

B] AESTHETICS

- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	[No] >100ft²	[No] >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG - SUCCESSION - OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING - BEDLOAD - STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

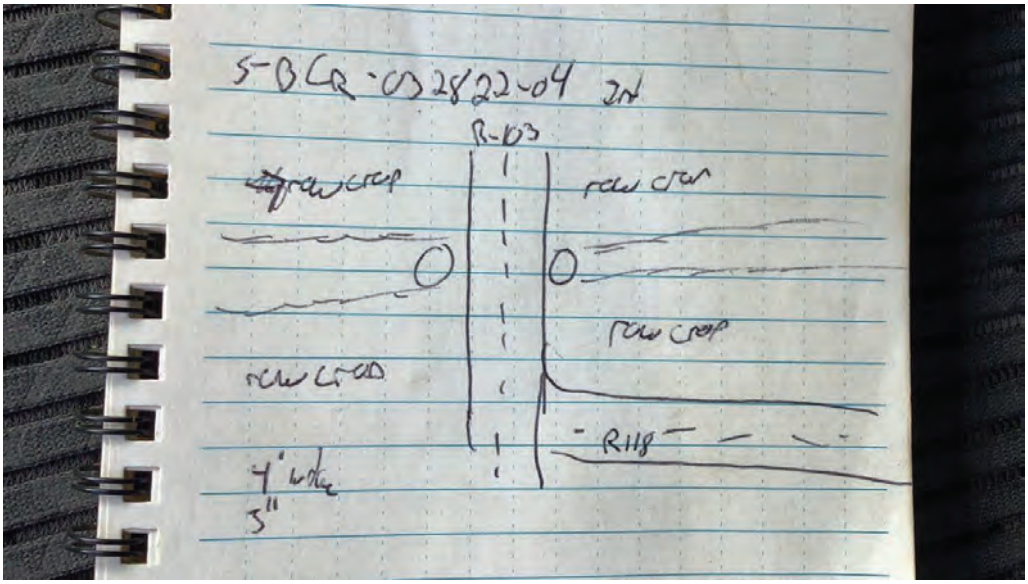
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	5
x̄ depth	10
max. depth	15
x̄ bankfull width	10
bankfull x̄ depth	
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing: Stream EN-13



Upstream

Downstream

Substrate

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 54

Stream & Location: Stream EN-16 East Leipsic-New Liberty 138 kV Transmission Line Proje **RM:** **Date:** _ _ _ _ _ _

S-BCR-032922-01 **Scorers Full Name & Affiliation:** JBL Jacobs

River Code: **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal º) 41.11380 / -83.79783 **Office verified location** [x]

1] *SUBSTRATE*

Check ***ONLY* Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES		POOL	RIFFLE
[ ]	BLDR /SLABS [10]		
[ ]	BOULDER [9]		
[ ]	COBBLE [8]	0	10
[x]	GRAVEL [7]	20	50
[x]	SAND [6]	50	30
[ ]	BEDROCK [5]		

OTHER TYPES		POOL	RIFFLE
[ ]	HARDPAN [4]		
[ ]	DETRITUS [3]		
[ ]	MUCK [2]		
[ ]	SILT [2]	30	5
[ ]	ARTIFICIAL [0]	0	5

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: [ ] 4 or more [2] [x] 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	QUALITY
[ ] LIMESTONE [1]	SILT: [ ] HEAVY [-2]
[x] TILLS [1]	[x] MODERATE [-1]
[ ] WETLANDS [0]	[x] NORMAL [0]
[ ] HARDPAN [0]	[ ] FREE [1]
[ ] SANDSTONE [0]	EMBEDDEDNESS: [ ] EXTENSIVE [-2]
[ ] RIP/RAP [0]	[x] MODERATE [-1]
[ ] LACUSTURINE [0]	[x] NORMAL [0]
[ ] SHALE [-1]	[ ] NONE [1]
[ ] COAL FINES [-2]	

Comments

Substrate 13 *Maximum 20*

2] *INSTREAM COVER*

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
1	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)

- [ ] EXTENSIVE >75% [11]
- [x] MODERATE 25-75% [7]
- [x] SPARSE 5-<25% [3]
- [ ] NEARLY ABSENT <5% [1]

Comments

Cover *Maximum 20* 9

3] *CHANNEL MORPHOLOGY*

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
[ ] HIGH [4]	[ ] EXCELLENT [7]	[ ] NONE [6]	[ ] HIGH [3]
[x] MODERATE [3]	[x] GOOD [5]	[ ] RECOVERED [4]	[x] MODERATE [2]
[x] LOW [2]	[ ] FAIR [3]	[x] RECOVERING [3]	[x] LOW [1]
[ ] NONE [1]	[ ] POOR [1]	[ ] RECENT OR NO RECOVERY [1]	

Comments

Channel *Maximum 20* 12

4] *BANK EROSION AND RIPARIAN ZONE*

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

L	R	EROSION
[ ]	[x]	NONE / LITTLE [3]
[x]	[ ]	MODERATE [2]
[ ]	[x]	HEAVY / SEVERE [1]

L	R	RIPARIAN WIDTH
[ ]	[ ]	WIDE > 50m [4]
[ ]	[ ]	MODERATE 10-50m [3]
[x]	[x]	NARROW 5-10m [2]
[ ]	[ ]	VERY NARROW < 5m [1]
[ ]	[ ]	NONE [0]

L	R	FLOOD PLAIN QUALITY
[ ]	[ ]	FOREST, SWAMP [3]
[ ]	[ ]	SHRUB OR OLD FIELD [2]
[x]	[x]	RESIDENTIAL, PARK, NEW FIELD [1]
[ ]	[ ]	FENCED PASTURE [1]
[ ]	[ ]	OPEN PASTURE, ROWCROP [0]

L	R	
[ ]	[ ]	CONSERVATION TILLAGE [1]
[x]	[x]	URBAN OR INDUSTRIAL [0]
[ ]	[ ]	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian *Maximum 10* 4.5

5] *POOL / GLIDE AND RIFFLE / RUN QUALITY*

MAXIMUM DEPTH — Check **ONE** (*ONLY!*)

- [ ] > 1m [6]
- [ ] 0.7-<1m [4]
- [x] 0.4-<0.7m [2]
- [ ] 0.2-<0.4m [1]
- [ ] < 0.2m [0]

CHANNEL WIDTH — Check ONE (*Or 2 & average*)

- [x] POOL WIDTH > RIFFLE WIDTH [2]
- [ ] POOL WIDTH = RIFFLE WIDTH [1]
- [ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY — Check ALL that apply

[ ] TORRENTIAL [-1]	[x] SLOW [1]
[ ] VERY FAST [1]	[ ] INTERSTITIAL [-1]
[ ] FAST [1]	[ ] INTERMITTENT [-2]
[x] MODERATE [1]	[ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact x
(circle one and comment on back)

Comments

should be 6 points, not 4

Pool / Current *Maximum 12* 6

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). [ ] **NO RIFFLE [metric=0]**

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
[ ] BEST AREAS > 10cm [2]	[ ] MAXIMUM > 50cm [2]	[ ] STABLE (e.g., Cobble, Boulder) [2]	[ ] NONE [2]
[ ] BEST AREAS 5-10cm [1]	[x] MAXIMUM < 50cm [1]	[x] MOD. STABLE (e.g., Large Gravel) [1]	[ ] LOW [1]
[x] BEST AREAS < 5cm [metric=0]		[x] UNSTABLE (e.g., Fine Gravel, Sand) [0]	[x] MODERATE [0]
			[ ] EXTENSIVE [-1]

Comments

Riffle / Run *Maximum 8* 1.5

6] *GRADIENT*

(13 ft/mi) **DRAINAGE AREA** (4.02 mi²)

- [ ] VERY LOW - LOW [2-4]
- [x] MODERATE [6-10]
- [ ] HIGH - VERY HIGH [10-6]

%POOL: 50 **%GLIDE:** 20 **%RUN:** 10 **%RIFFLE:** 20

Gradient *Maximum 10* 8

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE

1st -sample pass-	2nd
[ ] HIGH	[ ]
[ ] UP	[ ]
[x] NORMAL	[x]
[ ] LOW	[ ]
[ ] DRY	[ ]

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

_____ meters

CLARITY

1st --sample pass--	2nd
[ ] < 20 cm	[ ]
[x] 20-<40 cm	[ ]
[ ] 40-70 cm	[ ]
[ ] > 70 cm/ CTB	[ ]
[ ] SECCHI DEPTH	[ ]

CANOPY

- [ ] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

pass 1st_____ cm
2nd_____ cm

B] AESTHETICS

- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	[ ] >100ft²	[ ] >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG - SUCCESSION - OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING - BEDLOAD - STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

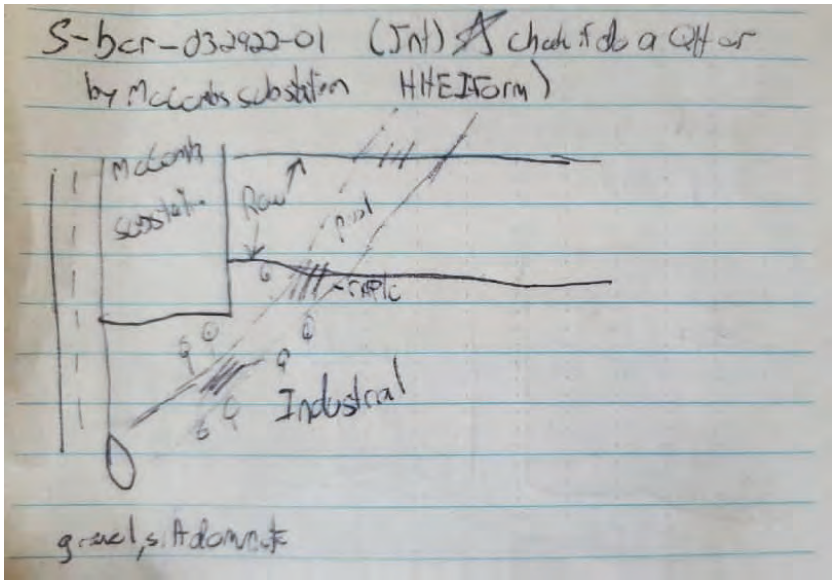
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	10
x̄ depth	
max. depth	20
x̄ bankfull width	15
bankfull x̄ depth	
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing: Stream EN-16



Upstream

Downstream

Substrate

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 56

Stream & Location: Stream EN-19 East Leipsic-New Liberty 138 kV Transmission Line Project **RM:** 1.7 **Date:** 3/29/22

S-BAO-032922-01 **Scorers Full Name & Affiliation:** BAO Jacobs

River Code: 04100008 03 04 **STORET #:** **Lat./ Long.:** (NAD 83 - decimal °) 41.07217 / -83.70731 Office verified location [x]

1] SUBSTRATE

Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES		POOL	RIFFLE
[ ]	BLDR /SLABS [10]		
[ ]	BOULDER [9]		
[ ]	COBBLE [8]	10	15
[x]	GRAVEL [7]	15	25
[x]	SAND [6]	40	40
[ ]	BEDROCK [5]		

OTHER TYPES		POOL	RIFFLE
[ ]	HARDPAN [4]		
[ ]	DETRITUS [3]		
[ ]	MUCK [2]		
[ ]	SILT [2]	30	10
[ ]	ARTIFICIAL [0]	5	10

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: [ ] 4 or more [2] [x] 3 or less [0]

Check ONE (Or 2 & average)

ORIGIN	QUALITY
[ ] LIMESTONE [1]	SILT: [ ] HEAVY [-2]
[x] TILLS [1]	[x] MODERATE [-1]
[ ] WETLANDS [0]	[ ] NORMAL [0]
[ ] HARDPAN [0]	[ ] FREE [1]
[ ] SANDSTONE [0]	EMBEDDEDNESS: [x] EXTENSIVE [-2]
[ ] RIP/RAP [0]	[x] MODERATE [-1]
[ ] LACUSTURINE [0]	[ ] NORMAL [0]
[ ] SHALE [-1]	[ ] NONE [1]
[ ] COAL FINES [-2]	

Substrate 11.5 Maximum 20

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

0	UNDERCUT BANKS [1]	1	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	1	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
1	ROOTMATS [1]				

AMOUNT

Check ONE (Or 2 & average)

[ ] EXTENSIVE >75% [11]
[x] MODERATE 25-75% [7]
[ ] SPARSE 5-<25% [3]
[ ] NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20: 13

3] CHANNEL MORPHOLOGY

Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
[ ] HIGH [4]	[ ] EXCELLENT [7]	[ ] NONE [6]	[ ] HIGH [3]
[x] MODERATE [3]	[ ] GOOD [5]	[x] RECOVERED [4]	[ ] MODERATE [2]
[x] LOW [2]	[x] FAIR [3]	[ ] RECOVERING [3]	[x] LOW [1]
[ ] NONE [1]	[ ] POOR [1]	[ ] RECENT OR NO RECOVERY [1]	

Comments

Channel Maximum 20: 10

4] BANK EROSION AND RIPARIAN ZONE

Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

EROSION L	EROSION R		RIPARIAN WIDTH L	RIPARIAN WIDTH R		FLOOD PLAIN QUALITY L	FLOOD PLAIN QUALITY R		L	R	
[ ]	[ ]	NONE / LITTLE [3]	[x]	[x]	WIDE > 50m [4]	[x]	[x]	FOREST, SWAMP [3]	[ ]	[ ]	CONSERVATION TILLAGE [1]
[x]	[x]	MODERATE [2]	[ ]	[ ]	MODERATE 10-50m [3]	[ ]	[ ]	SHRUB OR OLD FIELD [2]	[ ]	[ ]	URBAN OR INDUSTRIAL [0]
[x]	[x]	HEAVY / SEVERE [1]	[x]	[x]	NARROW 5-10m [2]	[x]	[x]	RESIDENTIAL, PARK, NEW FIELD [1]	[ ]	[ ]	MINING / CONSTRUCTION [0]
			[ ]	[ ]	VERY NARROW < 5m [1]	[ ]	[ ]	FENCED PASTURE [1]			
			[ ]	[ ]	NONE [0]	[ ]	[ ]	OPEN PASTURE, ROWCROP [0]			

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10: 6.5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH — Check ONE (ONLY!)

[ ] > 1m [6]
[x] 0.7-<1m [4]
[ ] 0.4-<0.7m [2]
[ ] 0.2-<0.4m [1]
[ ] < 0.2m [0]

CHANNEL WIDTH — Check ONE (Or 2 & average)

[x] POOL WIDTH > RIFFLE WIDTH [2]
[ ] POOL WIDTH = RIFFLE WIDTH [1]
[ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY — Check ALL that apply

[ ] TORRENTIAL [-1]
[ ] VERY FAST [1]
[ ] FAST [1]
[x] MODERATE [1]
[x] SLOW [1]
[ ] INTERSTITIAL [-1]
[ ] INTERMITTENT [-2]
[ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact x
(circle one and comment on back)

Comments

Pool / Current Maximum 12: 6

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). [ ] NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
[ ] BEST AREAS > 10cm [2]	[ ] MAXIMUM > 50cm [2]	[ ] STABLE (e.g., Cobble, Boulder) [2]	[ ] NONE [2]
[x] BEST AREAS 5-10cm [1]	[x] MAXIMUM < 50cm [1]	[ ] MOD. STABLE (e.g., Large Gravel) [1]	[x] LOW [1]
[ ] BEST AREAS < 5cm [metric=0]		[x] UNSTABLE (e.g., Fine Gravel, Sand) [0]	[ ] MODERATE [0]
			[ ] EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8: 3

6] GRADIENT

(23 ft/mi)

DRAINAGE AREA (4 mi²)

[ ] VERY LOW - LOW [2-4]
[x] MODERATE [6-10]
[ ] HIGH - VERY HIGH [10-6]

%POOL: 25 %GLIDE: 60
%RUN: 5 %RIFFLE: 10

Gradient Maximum 10: 6

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Intermittent stream S-BAO-032922-01

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☐ NORMAL	☐
☐ LOW	☐
☐ DRY	☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
☐ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

CANOPY

- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☒ 10%-<30%
- ☐ <10%- CLOSED

pass 1st_____ cm

2nd_____ cm

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	☐ >100ft²	☐ >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG - SUCCESSION - OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING - BEDLOAD - STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

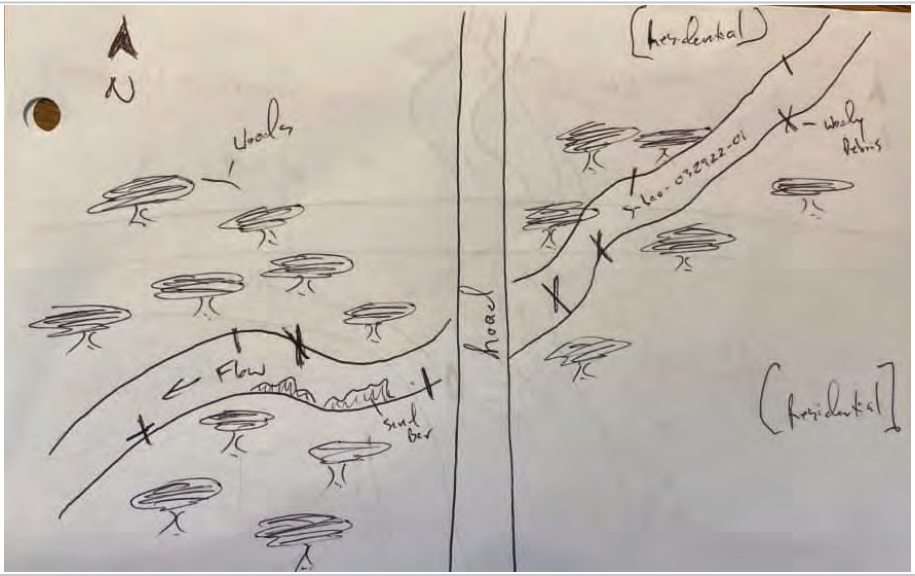
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	10
x̄ depth	
max. depth	30
x̄ bankfull width	25
bankfull x̄ depth	
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing: Stream EN-19



Upstream

Downstream

Substrate

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 41.5

Stream & Location: Stream EN-20 East Leipsic-New Liberty 138 kV Transmission Line Proje **RM:** 1.2 **Date:** _ _ _ _ _ _

S-BAO-032922-03 **Scorers Full Name & Affiliation:** BAO Jacobs

River Code: 04100008 03 04 **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 41.06591 / -83.70572 **Office verified location** [Y]

1] *SUBSTRATE*

Check ***ONLY* Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES		POOL	RIFFLE
[ ]	BLDR /SLABS [10]		
[ ]	BOULDER [9]		
[ ]	COBBLE [8]		
[ ]	GRAVEL [7]	5	15
[X]	SAND [6]	25	30
[ ]	BEDROCK [5]		

OTHER TYPES		POOL	RIFFLE
[ ]	HARDPAN [4]		
[ ]	DETRITUS [3]		
[ ]	MUCK [2]		
[X]	SILT [2]	70	40
[ ]	ARTIFICIAL [0]	0	15

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: [ ] 4 or more [2] [X] 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	QUALITY	
[ ] LIMESTONE [1]	[X] HEAVY [-2]	SILT
[X] TILLS [1]	[ ] MODERATE [-1]	
[ ] WETLANDS [0]	[ ] NORMAL [0]	
[ ] HARDPAN [0]	[ ] FREE [1]	
[ ] SANDSTONE [0]	[X] EXTENSIVE [-2]	EMBEDDEDNESS
[ ] RIP/RAP [0]	[ ] MODERATE [-1]	
[ ] LACUSTURINE [0]	[ ] NORMAL [0]	
[ ] SHALE [-1]	[ ] NONE [1]	
[ ] COAL FINES [-2]		

Comments

Substrate 5 *Maximum 20*

2] *INSTREAM COVER*

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	1	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
1	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)

- [ ] EXTENSIVE >75% [11]
- [X] MODERATE 25-75% [7]
- [X] SPARSE 5-<25% [3]
- [ ] NEARLY ABSENT <5% [1]

Comments

Cover 9 *Maximum 20*

3] *CHANNEL MORPHOLOGY*

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
[ ] HIGH [4]	[ ] EXCELLENT [7]	[ ] NONE [6]	[ ] HIGH [3]
[ ] MODERATE [3]	[ ] GOOD [5]	[ ] RECOVERED [4]	[ ] MODERATE [2]
[X] LOW [2]	[X] FAIR [3]	[X] RECOVERING [3]	[X] LOW [1]
[X] NONE [1]	[X] POOR [1]	[ ] RECENT OR NO RECOVERY [1]	

Comments

Channel 7.5 *Maximum 20*

4] *BANK EROSION AND RIPARIAN ZONE*

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

L	R	EROSION
[X]	[X]	NONE / LITTLE [3]
[X]	[X]	MODERATE [2]
[ ]	[ ]	HEAVY / SEVERE [1]

L	R	RIPARIAN WIDTH
[ ]	[ ]	WIDE > 50m [4]
[ ]	[ ]	MODERATE 10-50m [3]
[X]	[X]	NARROW 5-10m [2]
[X]	[X]	VERY NARROW < 5m [1]
[ ]	[ ]	NONE [0]

L	R	FLOOD PLAIN QUALITY
[ ]	[ ]	FOREST, SWAMP [3]
[ ]	[ ]	SHRUB OR OLD FIELD [2]
[X]	[X]	RESIDENTIAL, PARK, NEW FIELD [1]
[ ]	[ ]	FENCED PASTURE [1]
[ ]	[ ]	OPEN PASTURE, ROWCROP [0]

L	R	
[ ]	[ ]	CONSERVATION TILLAGE [1]
[ ]	[ ]	URBAN OR INDUSTRIAL [0]
[ ]	[ ]	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Narrow tree line on both banks

Riparian 4.5 *Maximum 10*

5] *POOL / GLIDE AND RIFFLE / RUN QUALITY*

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)

- [ ] > 1m [6]
- [ ] 0.7-<1m [4]
- [ ] 0.4-<0.7m [2]
- [X] 0.2-<0.4m [1]
- [ ] < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)

- [ ] POOL WIDTH > RIFFLE WIDTH [2]
- [X] POOL WIDTH = RIFFLE WIDTH [1]
- [ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

[ ] TORRENTIAL [-1]	[X] SLOW [1]
[ ] VERY FAST [1]	[ ] INTERSTITIAL [-1]
[ ] FAST [1]	[ ] INTERMITTENT [-2]
[ ] MODERATE [1]	[ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact x
(circle one and comment on back)

Comments

Pool / Current 3 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). [ ] NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
[ ] BEST AREAS > 10cm [2]	[ ] MAXIMUM > 50cm [2]	[ ] STABLE (e.g., Cobble, Boulder) [2]	[ ] NONE [2]
[X] BEST AREAS 5-10cm [1]	[X] MAXIMUM < 50cm [1]	[X] MOD. STABLE (e.g., Large Gravel) [1]	[ ] LOW [1]
[ ] BEST AREAS < 5cm [metric=0]		[X] UNSTABLE (e.g., Fine Gravel, Sand) [0]	[X] MODERATE [0]
			[X] EXTENSIVE [-1]

Comments

Riffle / Run 2 *Maximum 8*

6] *GRADIENT*

(38 ft/mi) [ ] VERY LOW - LOW [2-4]
[ ] MODERATE [6-10]
[X] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (1.49 mi²)

%POOL: 30 **%GLIDE:** 65
%RUN: 0 **%RIFFLE:** 5

Gradient 10 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass- 2nd

- ☐ HIGH ☐
- ☐ UP ☐
- ☐ NORMAL ☐
- ☐ LOW ☐
- ☐ DRY ☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

CLARITY

1st --sample pass-- 2nd

- ☐ < 20 cm ☐
- ☐ 20-<40 cm ☐
- ☐ 40-70 cm ☐
- ☐ > 70 cm/ CTB ☐
- ☐ SECCHI DEPTH ☐

CANOPY

- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☒ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

1st pass _____ cm

2nd _____ cm

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG - SUCCESSION - OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING - BEDLOAD - STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

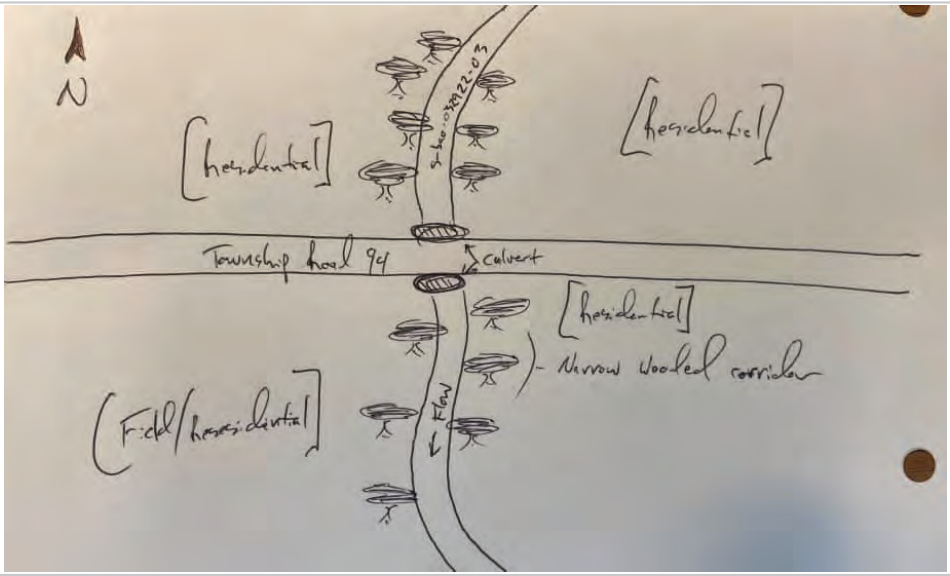
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width 10
- $\bar{x}$ depth
- max. depth 12
- $\bar{x}$ bankfull width 12
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing: Stream EN-20



Upstream

Substrate

Downstream

Appendix F
HHEI Stream Data Forms

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 43

SITE NAME/LOCATION Stream EN-01 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BAO-032822-02 RIVER BASIN 04100009 RIVER CODE _____ DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 41.110805500000005 LONG -83.96335073333334 RIVER MILE _____

DATE 03/28/2022 SCORER BAO COMMENTS Intermittent channelized stream. Flows from culvert adjacent to power substation.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS **[16 pts]**		☐	SILT **[3 pt]**	15
☐	BOULDER (>256 mm) **[16 pts]**		☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	BEDROCK **[16 pts]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☒	CLAY or HARDPAN **[0 pt]**	50
☒	GRAVEL (2-64 mm) **[9 pts]**	25	☐	MUCK **[0 pts]**	
☐	SAND (<2 mm) **[6 pts]**	10	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40

13

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 5

Pool Depth Max = 30

25

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 1

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☒	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Yellow Creek Distance from Evaluated Stream >2 miles

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Leipsic, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Putnam Township/City: Van Buren Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW

Site Photos	Stream EN-01

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 47

SITE NAME/LOCATION Stream EN-03 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BAO-032822-03 RIVER BASIN 04100009 RIVER CODE _____ DRAINAGE AREA (mi²) 0.37

LENGTH OF STREAM REACH (ft) 200 LAT 41.105552249999995 LONG -83.93837864999999 RIVER MILE _____

DATE 03/28/2022 SCORER BAO COMMENTS Intermittent channelized stream adjacent to railroad. Flows under road via culvert.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	70
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	20	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40

12

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 3

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 6

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Yellow Creek Distance from Evaluated Stream 0 mile

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Leipsic, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Putnam Township/City: Van Buren Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): Yes Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

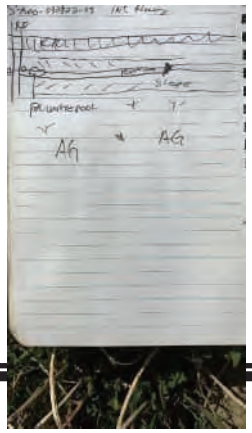
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos	Stream EN-03

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 31

SITE NAME/LOCATION Stream EN-04 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BAO-032822-04 RIVER BASIN 04100009 RIVER CODE _____ DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 41.10921115 LONG -83.95747234999999 RIVER MILE _____

DATE 03/28/2022 SCORER BAO COMMENTS Intermittent channelized stream along road. Flows under multiple culverts throughout reach.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	20
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	80	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 9

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate Max = 40

11

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 3

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 3

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☐	Residential, Park, New Field	☐	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Paved road along left bank

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Yellow Creek Distance from Evaluated Stream 0 mile

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Leipsic, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Putnam Township/City: Van Buren Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): _____ Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

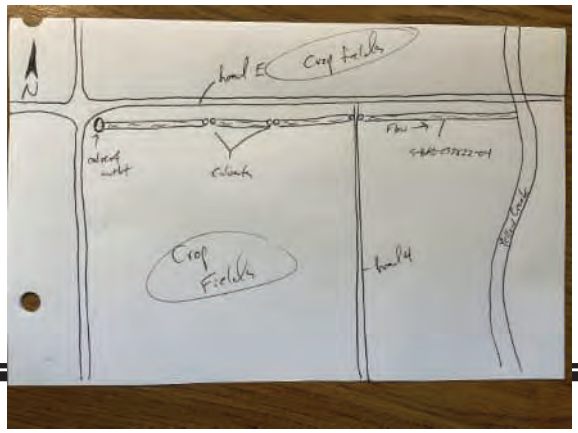
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos	Stream EN-04

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 58

SITE NAME/LOCATION Stream EN-07 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BCR-032822-09 RIVER BASIN 04100009 RIVER CODE _____ DRAINAGE AREA (mi²) 0.68

LENGTH OF STREAM REACH (ft) 200 LAT 41.10948931666667 LONG -83.90496714999999 RIVER MILE _____

DATE 03/28/2022 SCORER BCR COMMENTS Intermittent stream 09. Channelized, culvert

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	60
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	20	☐	☐	ARTIFICIAL **[3 pts]**	10

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 9

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 8

Pool Depth Max = 30

25

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 6

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS Intermittent

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Yellow Creek Distance from Evaluated Stream >2 miles

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Leipsic, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Putnam Township/City: Van Buren Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

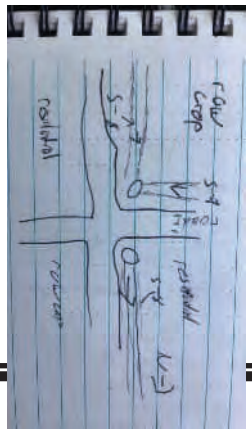
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos Stream EN-07

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 59

SITE NAME/LOCATION Stream EN-08 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BCR-032822-08 RIVER BASIN 04100009 RIVER CODE _____ DRAINAGE AREA (mi²) 0.66

LENGTH OF STREAM REACH (ft) 172 LAT 41.1092853 LONG -83.90003008333332 RIVER MILE _____

DATE 03/28/2022 SCORER BCR COMMENTS Intermittent. Stream 8 along road 2. Channelized, culvert

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	65
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	5
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	5
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	15	☐	☐	ARTIFICIAL **[3 pts]**	10

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 5 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40

14

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 7

Pool Depth Max = 30

25

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 6

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☒	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☒ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS Intermittent

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Yellow Creek Distance from Evaluated Stream >2 miles

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Leipsic, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Putnam Township/City: Van Buren Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

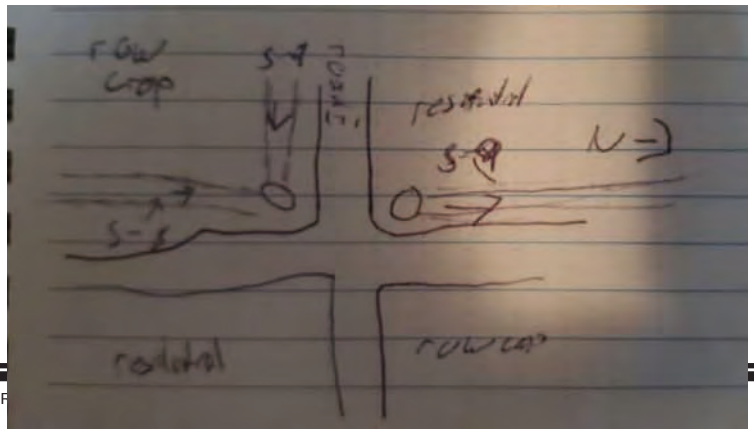
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos Stream EN-08

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 58

SITE NAME/LOCATION Stream EN-09 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BCR-032822-07 RIVER BASIN 04100009 RIVER CODE _____ DRAINAGE AREA (mi²) 0.20

LENGTH OF STREAM REACH (ft) 200 LAT 41.10937223333333 LONG -83.89043831666667 RIVER MILE _____

DATE 03/28/2022 SCORER BCR COMMENTS Internittent. Runs Along Road E. Concrete channeled; culvert

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	40
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	40	☐	☐	ARTIFICIAL **[3 pts]**	10

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 9 **(B)** 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☒ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 14

Pool Depth Max = 30

20

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☒ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 10

Bankfull Width Max=30

25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☒	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Yellow Creek Distance from Evaluated Stream >2 miles

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Leipsic, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Putnam Township/City: Van Buren Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

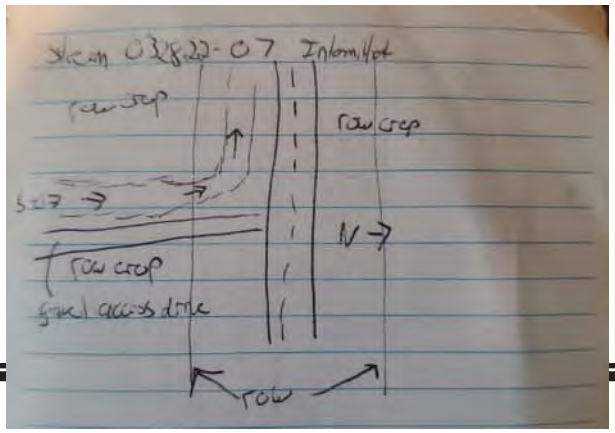
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

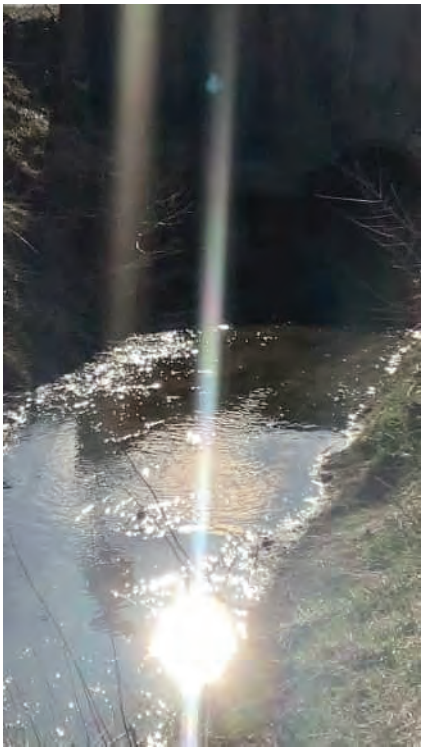
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos Stream EN-09

Upstream



Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 55

SITE NAME/LOCATION Stream EN-10 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BCR-032822-06 RIVER BASIN 04100009 RIVER CODE _____ DRAINAGE AREA (mi²) 0.07

LENGTH OF STREAM REACH (ft) 200 LAT 41.10942803333334 LONG -83.88100111666665 RIVER MILE _____

DATE 03/28/2022 SCORER BCR COMMENTS Intermittent stream at intersection of road E and 1. Culvert, channelized

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	55
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	20
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☐	SAND (<2 mm) **[6 pts]**	15	☐	☐	ARTIFICIAL **[3 pts]**	10

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

(B) TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

10

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 8

Pool Depth Max = 30

25

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 5

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☒ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Yellow Creek Distance from Evaluated Stream >2 miles

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Leipsic, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Putnam Township/City: Van Buren Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

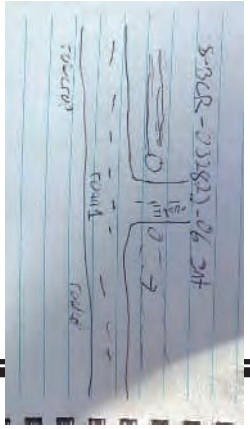
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos	Stream EN-10

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 54

SITE NAME/LOCATION Stream EN-15 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BCR-032822-01 RIVER BASIN 04100010 RIVER CODE _____ DRAINAGE AREA (mi²) 0.24

LENGTH OF STREAM REACH (ft) 114 LAT 41.11677275 LONG -83.82049241666668 RIVER MILE _____

DATE 03/28/2022 SCORER BCR COMMENTS Intermittent. Channelized, culvert

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	70
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☐	SAND (<2 mm) **[6 pts]**		☐	☒	ARTIFICIAL **[3 pts]**	20

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate Max = 40

9

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 5

Pool Depth Max = 30

25

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 5

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Needles Creek Distance from Evaluated Stream 1.61 miles

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: McComb, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Hancock Township/City: Pleasant Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

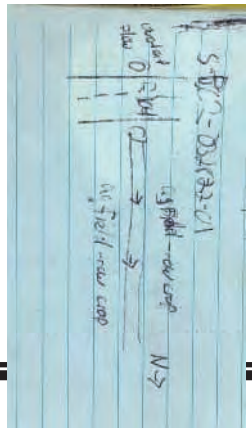
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos	Stream EN-15

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 52

SITE NAME/LOCATION Stream EN-18 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BCR-033022-01 RIVER BASIN 04100008 RIVER CODE _____ DRAINAGE AREA (mi²) 0.83

LENGTH OF STREAM REACH (ft) 90 LAT 41.08607826666666 LONG -83.73214743333335 RIVER MILE _____

DATE 03/30/2022 SCORER BCR COMMENTS Intermittent. Tile, channelized, culvert

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	50
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☒	CLAY or HARDPAN **[0 pt]**	35
☐	☐	GRAVEL (2-64 mm) **[9 pts]**	5	☐	☐	MUCK **[0 pts]**	
☐	☐	SAND (<2 mm) **[6 pts]**	10	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 3 **(B)** 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

7

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☒ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 12

Pool Depth Max = 30

20

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☒ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 10

Bankfull Width Max=30

25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☐	Residential, Park, New Field	☐	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Blanchard River Distance from Evaluated Stream >2 miles

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Findlay, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Hancock Township/City: Portage Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 03/29/2022 Quantity: 0.06

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

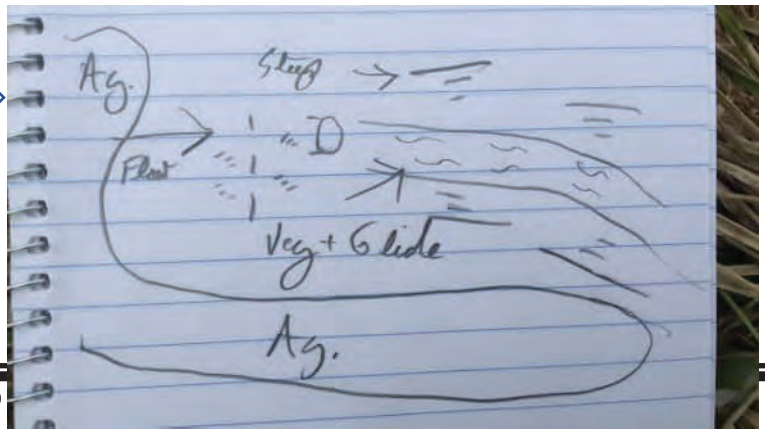
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos	Stream EN-18

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 32

SITE NAME/LOCATION Stream EN-21 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BAO-032922-04 RIVER BASIN 04100008 RIVER CODE _____ DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 110 LAT 41.065638333333325 LONG -83.69885491666668 RIVER MILE _____

DATE 03/29/2022 SCORER BAO COMMENTS Ephemeral. Flows under road from crop field via drainage tile.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	60
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**	5	☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	35	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 9

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate Max = 40

12

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☒	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS Wet season, estimated ephemeral.

MAXIMUM POOL DEPTH (inches): 3

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____

AVERAGE BANKFULL WIDTH (feet): 1.5

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank)

L	R	
☐	☒	Wide >10m
☒	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Maintained power line easement near left bank

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing ☐ Moist Channel, isolated pools, no flow (intermittent)

☐ Subsurface flow with isolated pools (interstitial) ☐ Dry channel, no water (ephemeral)

COMMENTS Wet season, estimated ephemeral

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0

☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Blanchard River Distance from Evaluated Stream 0.87 mile

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Findlay, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Hancock Township/City: Liberty Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

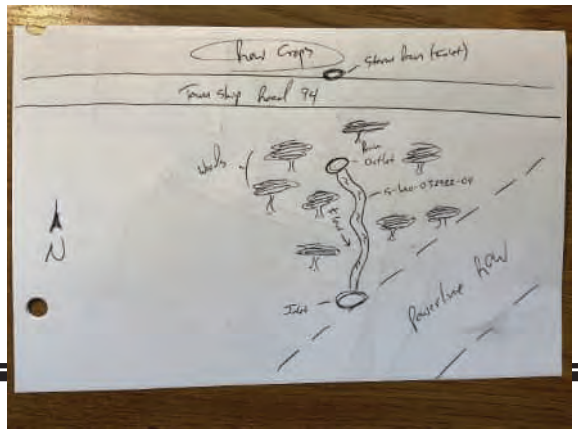
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos	Stream EN-21

Upstream

Downstream

Substrate

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) 22

SITE NAME/LOCATION Stream EN-22 East Leipsic-New Liberty 138 kV Transmission Line Project

SITE NUMBER S-BAO-032922-05 RIVER BASIN 04100008 RIVER CODE _____ DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 117 LAT 41.065532166666664 LONG -83.69774495000001 RIVER MILE _____

DATE 03/29/2022 SCORER BAO COMMENTS Ephemeral. Flows under road from unused crop field via drainage tile.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type present). Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	60
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pts]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**	5	☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	35	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 9

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate Max = 40

12

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 feet)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS Wet season, estimated ephemeral

MAXIMUM POOL DEPTH (inches): 1

Pool Depth Max = 30

5

3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____

AVERAGE BANKFULL WIDTH (feet): 1.5

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★NOTE: River Left (L) and Right (R) as looking downstream★

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Maintained powerline easement near right bank.

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (intermittent)
- ☐ Dry channel, no water (ephemeral)

COMMENTS Wet season, estimated ephemeral

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Blanchard River Distance from Evaluated Stream 0.86 mile

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Findlay, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Hancock Township/City: Liberty Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 03/26/2022 Quantity: 0.13

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): No Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: _____

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

Salamanders Observed? (Y/N) _____ Species observed (if known): _____

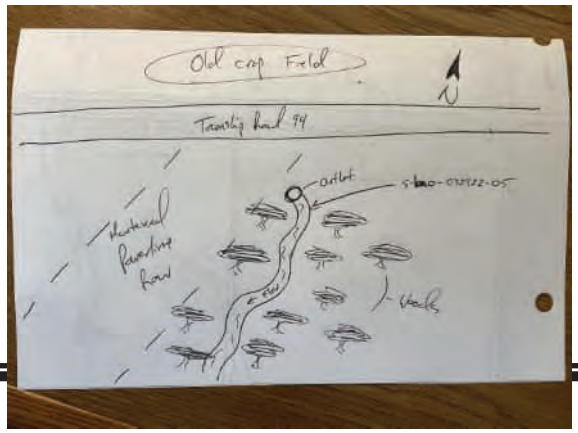
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW



Site Photos	Stream EN-22

Upstream

Downstream

Substrate

Appendix G
Jacobs Pond Forms

Jacobs

POND DATA SHEET

FEATURE ID Pond EN-01	**ASSOCIATED FEATURES:**
SURVEY TYPE: Wetland and waterbodies delineation	
DATE: 03/28/2022	**CLIENT/PROJECT NAME:** AEP East Leipsic-New Liberty 138 kV Transmission Line Project
INVESTIGATORS: BAO	**ROUTE:**
STATE/COUNTY: OH Putnam County	**IS THIS A MAPPED NWI FEATURE?:** yes L2UBK

WATERBODY CHARACTERISTICS

WATERBODY TYPE:	Reservoir
AVG. DEPTH:	>3 feet
AVG. WIDTH (WATER SURFACE):	900 feet
APPROXIMATE SIZE:	45 acres

QUALITATIVE ATTRIBUTES

AVERAGE WATER APPEARANCE:	Clear
PRIMARY SUBSTRATE (IF OBSERVED):	Silt/artficial
POTENTIAL HABITAT FOR:	Fish, frogs, waterfowl
SURROUNDING LAND USE:	Agriculture
WETLAND FRINGE (IF PRESENT):	N/A

COMMENTS

Banks lined with rip-rap.

Site Photos	Pond EN-01

E

Jacobs

P-BCR-032922-01

POND DATA SHEET

FEATURE ID Pond EN-02	**ASSOCIATED FEATURES:**
SURVEY TYPE: Wetland and waterbodies delineation	
DATE: 03/29/2022	**CLIENT/PROJECT NAME:** AEP East Leipsic-New Liberty 138 kV Transmission Line Project
INVESTIGATORS: BCR	**ROUTE:**
STATE/COUNTY: OH Putnam County	**IS THIS A MAPPED NWI FEATURE?:** yes PUBGx

WATERBODY CHARACTERISTICS

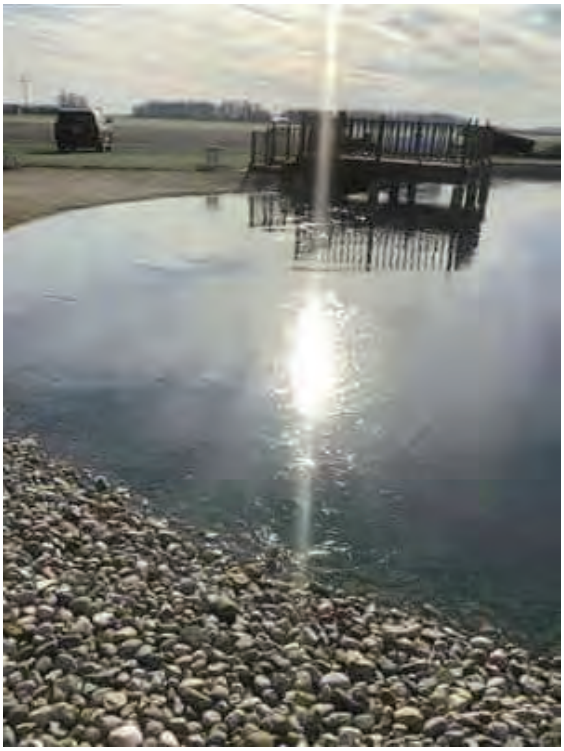
WATERBODY TYPE:	residential pond
AVG. DEPTH:	8
AVG. WIDTH (WATER SURFACE):	80 ft
APPROXIMATE SIZE:	.10

QUALITATIVE ATTRIBUTES

AVERAGE WATER APPEARANCE:	blue
PRIMARY SUBSTRATE (IF OBSERVED):	gravel
POTENTIAL HABITAT FOR:	a duck
SURROUNDING LAND USE:	residential, agricultural
WETLAND FRINGE (IF PRESENT):	none

COMMENTS

Site Photos Pond EN-02



E

S

Jacobs

P-BCR-032922-02

POND DATA SHEET

FEATURE ID Pond EN-03	**ASSOCIATED FEATURES:**
SURVEY TYPE: Wetland and waterbodies delineation	
DATE: 03/29/2022	**CLIENT/PROJECT NAME:** AEP East Leipsic-New Liberty 138 kV Transmission Line Project
INVESTIGATORS: BCR	**ROUTE:**
STATE/COUNTY: OH Blackford County	**IS THIS A MAPPED NWI FEATURE?:** yes L1UBHx

WATERBODY CHARACTERISTICS

WATERBODY TYPE:	Reservoir
AVG. DEPTH:	50 ft
AVG. WIDTH (WATER SURFACE):	1000 ft
APPROXIMATE SIZE:	20 acres

QUALITATIVE ATTRIBUTES

AVERAGE WATER APPEARANCE:	clear
PRIMARY SUBSTRATE (IF OBSERVED):	
POTENTIAL HABITAT FOR:	avian/fish
SURROUNDING LAND USE:	park
WETLAND FRINGE (IF PRESENT):	N/A

COMMENTS

Site Photos	Pond EN-03

Jacobs

POND DATA SHEET

FEATURE ID Pond EN-04	**ASSOCIATED FEATURES:**
SURVEY TYPE: Wetland and waterbodies delineation	
DATE: 03/29/2022	**CLIENT/PROJECT NAME:** AEP East Leipsic-New Liberty 138 kV Transmission Line Project
INVESTIGATORS: BCR	**ROUTE:**
STATE/COUNTY: OH Blackford County	**IS THIS A MAPPED NWI FEATURE?:** yes PUBG

WATERBODY CHARACTERISTICS

WATERBODY TYPE:	Pond
AVG. DEPTH:	3
AVG. WIDTH (WATER SURFACE):	75
APPROXIMATE SIZE:	.4 acres

QUALITATIVE ATTRIBUTES

AVERAGE WATER APPEARANCE:	murky
PRIMARY SUBSTRATE (IF OBSERVED):	silt
POTENTIAL HABITAT FOR:	birds
SURROUNDING LAND USE:	agriculture
WETLAND FRINGE (IF PRESENT):	

COMMENTS

Site Photos	Pond EN-04

SE

N

Jacobs

P-BCR-033022-01

POND DATA SHEET

FEATURE ID Pond EN-05	**ASSOCIATED FEATURES:**
SURVEY TYPE: Wetland and waterbodies delineation	
DATE: 03/30/2022	**CLIENT/PROJECT NAME:** AEP East Leipsic-New Liberty 138 kV Transmission Line Project
INVESTIGATORS: BCR	**ROUTE:**
STATE/COUNTY: OH Blackford County	**IS THIS A MAPPED NWI FEATURE?:** yes PUBGx

WATERBODY CHARACTERISTICS

WATERBODY TYPE:	Pond
AVG. DEPTH:	7
AVG. WIDTH (WATER SURFACE):	70
APPROXIMATE SIZE:	.2 acres

QUALITATIVE ATTRIBUTES

AVERAGE WATER APPEARANCE:	Dye
PRIMARY SUBSTRATE (IF OBSERVED):	Gravel
POTENTIAL HABITAT FOR:	Birds
SURROUNDING LAND USE:	Residential, agricultural
WETLAND FRINGE (IF PRESENT):	None

COMMENTS

Site Photos	Pond EN-05

SW

NW

Jacobs

P-BAO-032922-01

POND DATA SHEET

FEATURE ID Pond EN-06	**ASSOCIATED FEATURES:**
SURVEY TYPE: Wetland and waterbodies delineation	
DATE: 03/29/2022	**CLIENT/PROJECT NAME:** AEP East Leipsic-New Liberty 138 kV Transmission Line Project
INVESTIGATORS: BAO	**ROUTE:**
STATE/COUNTY: OH Blackford County	**IS THIS A MAPPED NWI FEATURE?:** yes PUBGx

WATERBODY CHARACTERISTICS

WATERBODY TYPE:	Residential pond
AVG. DEPTH:	>3 feet
AVG. WIDTH (WATER SURFACE):	100 feet
APPROXIMATE SIZE:	0.5 acre

QUALITATIVE ATTRIBUTES

AVERAGE WATER APPEARANCE:	Water dyed blue
PRIMARY SUBSTRATE (IF OBSERVED):	Silt/artificial
POTENTIAL HABITAT FOR:	Fish, frogs
SURROUNDING LAND USE:	Residential and woodlot
WETLAND FRINGE (IF PRESENT):	N/A

COMMENTS

Site Photos	Pond EN-06

N

Appendix H
Representative Land Use Photographs

Representative photo of agriculture

Representative photo of commercial lawn

Representative photo of delineated pond

Representative photo of delineated stream

Representative photo of delineated wetland

Representative photo of forested

Representative photo of gravel lot

Representative photo of hayfield

Representative photo of old field

Representative photo of park

Google imagery representative of railroad

Representative photo of residential

Google imagery representative of road

Representative photo of scrub/shrub

Appendix I
Agency Coordination

From:	Ohio, FW3
To:	Lubbers, Jake
Cc:	nathan.reardon@dnr.state.oh.us; Parsons, Kate
Subject:	[EXTERNAL] New Liberty-East Leipsic Project, Hancock and Putnam Counties, Ohio
Date:	Thursday, April 14, 2022 2:46:39 PM
Attachments:	image.png image.png

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

Project Code: 2022-0013594

Dear Mr. Lubbers,

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

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

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

Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.
If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

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

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

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

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

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

Sincerely,

Patrice Ashfield
Field Office Supervisor

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

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

April 1, 2022

Jake Lubbers
Jacobs
2 Crowne Point Court, Suite 100
Cincinnati, OH 45241

Re: 22-0220; AEP New Liberty-East Leipsic Project

Project: The proposed project includes the expansion of two stations (approximately 8 acres) and the rebuild of approximately 18 miles of transmission line from 69kV to 138kV within a 100-foot right-of-way (ROW).

Location: The proposed project is located in Liberty Township, Portage Township, Pleasant Township, and Village of McComb in Hancock County, and Van Buren Township and Village of Leipsic in Putnam County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has the following data at or within one mile of the project area:

Sora Rail (*Porzana carolina*), state species of concern
Virginia Rail (*Rallus limicola*), state species of concern
Elktoe (*Alasmidonta marginata*), state species of concern
Creek Heelsplitter (*Lasmigona compressa*), state species of concern
Kidneyshell (*Ptychobranchus fasciolaris*), state species of concern
Deertoe (*Truncilla truncata*), state species of concern

The review was performed on the project area specified in the request as well as an additional one-mile radius. Records searched date from 1980. Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area.

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

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

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH $\geq$ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

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

The project is within the range of the following listed mussel species.
Federally Endangered
clubshell (*Pleurobema clava*)
rayed bean (*Villosa fabalis*)

State Endangered
purple lilliput (*Toxolasma lividum*)

State Threatened
pondhorn (*Uniomerus tetralasmus*)
black sandshell (*Ligumia recta*)

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2020), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) 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 (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2020) can be found at: https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf

The project is within the range of the western banded killifish (*Fundulus diaphanus menona*), a state endangered fish. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact this or other aquatic species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet meadows and other wetlands. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the black-crowned night-heron *(Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

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

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

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

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

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

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

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

Mike Pettegrew
Environmental Services Administrator