

# Construction Notice Marysville-Cadence Solar 345 kV Transmission Line Project



An **AEP** Company

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*BOUNDLESS ENERGY*<sup>SM</sup>

PUCO Case No. 23-0099-EL-BNR

Submitted to:  
The Ohio Power Siting Board  
Pursuant to Ohio Administrative Code Section  
4906-6-05

Submitted by:  
Ohio Power Company

November 21, 2023

# Construction Notice for Marysville-Cadence Solar 345 kV Transmission Line Project

## Construction Notice

### Ohio Power Company Marysville-Cadence Solar 345 kV Transmission Line

#### 4906-6-05

Ohio Power Company (the “Company”) provides the following information to the Ohio Power Siting Board (“OPSB”) pursuant to Ohio Administrative Code Section 4906-6-05.

#### 4906-6-05(B) General Information

##### B(1) Project Description

**The name of the project and applicant's reference number, names and reference number(s) of resulting circuits, a brief description of the project, and why the project meets the requirements for a Construction Notice.**

The Company proposes to construct the Marysville-Cadence Solar 345 kV Transmission Line Project (the “Project”) in Taylor Township, Union County, Ohio. The purpose of the Project is to provide a 345 kV interconnection between the Cadence Solar facility (OPSB Case Number 20-1677-EL-BGN), an Independent Power Producer (IPP), and the Company’s Marysville Station. The Project will require two spans of 345 kV transmission line extending approximately 0.1 mile from the northwest portion of Marysville Station with one new pole located outside of the existing substation fence. The Project will be entirely on property owned by the Company. The IPP plans to construct an electric transmission line from their solar facility substation, located 1.2 miles to the northwest, to the interconnection point. The IPP submitted the proposed 345 kV transmission line to OPSB under separate cover (OPSB Case Number 23-557-EL-BLN), which was approved in August 2023. The location of the Project is shown on Figure 1 and Figure 2 in Appendix A.

The Project meets the requirements for a CN because it is within the types of projects defined by item (1) (d)(i) of Ohio Administrative Code Section 4906-1-01 Appendix A of the Application Requirement Matrix For Electric Power Transmission Lines:

- (1) New construction, extension, or relocation of single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows:*
  - (d) Line(s) primarily needed to attract or meet the requirements of a specific customer or customers, as follows:*
    - i. The line is completely on property owned by the specific customer or the applicant.*

The Project has been assigned PUCO Case No. 23-0099-EL-BNR.

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### **B(2) Statement of Need**

**If the proposed project is an electric power transmission line or gas or natural gas transmission line, a statement explaining the need for the proposed facility.**

As part of the AD2-093 IPP connection facility, the Company will install two 345 kV spans out of Marysville Substation towards the generating facility's station to act as the point of interconnection. The interconnection facility is a 175 MW (105 MW Capacity) solar generating facility in Union County, Ohio.

This PJM Network Upgrade Project (N7372) is related to the Company's obligation to connect the developer (AD2-093) per the PJM IPP Tariff. The Project is listed in the 2023 Company LTFR document (Form FE-T9, Planned Transmission Lines). Failure to move forward with the proposed Project will result in the Company's inability to serve the customer's generation request, thereby jeopardizing the customer's required in-service date per the FERC approved Interconnection Service Agreement (175 MW nameplate capability). The LTFR page is provided in Appendix B.

### **B(3) Project Location**

**The applicant shall provide the location of the project in relation to existing or proposed lines and substations shown on an area system map of sufficient scale and size to show existing and proposed transmission facilities in the Project Area.**

The location of the Project in relation to existing and proposed transmission lines is shown in Figure 1 of Appendix A.

### **B(4) Alternatives Considered**

**The applicant shall describe the alternatives considered and reasons why the proposed location or route is best suited for the proposed facility. The discussion shall include, but not be limited to, impacts associated with socioeconomic, ecological, construction, or engineering aspects of the project.**

The Project is located entirely on Company property and is required in order to connect an IPP's electric transmission line to the Cadence Solar facility. Based on the IPP's approved solar farm, the IPP's approved transmission line, and other existing facilities in the area, the proposed location is the most suitable and least impactful route location for the Project. Other alternatives would require impacting additional neighboring properties, as opposed to remaining entirely on the Company's property, and would add additional transmission length to the Project without any additional benefit. The proposed Project is not anticipated to impact wetlands, streams, or any known cultural resource areas eligible for the National Register of Historic Places (NRHP). Additionally, no residences are located within 1,000 feet of the Project. Therefore, this alternative represents the most suitable location and is the most appropriate solution for meeting the Company and IPP's needs in the area.

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### **B(5) Public Information Program**

**The applicant shall describe its public information program to inform affected property owners and tenants of the nature of the project and the proposed timeframe for project construction and restoration activities.**

The Project will be located entirely within Company-owned property, with no additional property owners or tenants affected. The Company maintains a website (<http://aeptransmission.com/ohio/>) on which an electronic copy of this CN is available. An electronic copy of the CN will be served to the public library in each political subdivision affected by this Project.

### **B(6) Construction Schedule**

**The applicant shall provide an anticipated construction schedule and proposed in-service date of the project.**

Construction of the Project is planned to begin in March 2024, and the anticipated in-service date is November 2024.

### **B(7) Area Map**

**The applicant shall provide a map of at least 1:24,000 scale clearly depicting the facility with clearly marked streets, roads, and highways, and an aerial image.**

Figure 1 in Appendix A provides the proposed Project area on a map of 1:24,000-scale (1 inch equals 2,000 feet), showing the Project on the United States Geological Survey (USGS) 7.5-minute topographic map of the Peoria, Ohio quadrangle. Figure 2 in Appendix A show the Project Area on recent aerial photography, dated 2020, as provided by ESRI World Imagery at a scale of 1:6,000 scale (1 inch equals 500 feet).

To visit the Project site from Columbus, Ohio, take I-70 West to Exit 93 and head north on I-270. After 9 miles at Exit 17B, take the ramp for U.S. 33/OH-161 West toward Marysville. Take U.S. 33 17 miles to Exit 92 onto OH-31 North toward Kenton/Marion. Go 4.6 miles and turn left onto Wheeler Green Road/County Highway 205. After 2 miles, turn right onto Reed Road/County Highway 198. The entrance to Marysville Station is on the left after 1.1 miles. The Project is near the northwest corner of Marysville Station at the address 22955 Reed Rd, Marysville, OH 43067 (latitude 40.334428 and longitude -83.430022).



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### **B(8) Property Agreements**

**The applicant shall provide a list of properties for which the applicant has obtained easements, options, and/or land use agreements necessary to construct and operate the facility and a list of the additional properties for which such agreements have not been obtained.**

The proposed Project is located on Parcel Number 3000060100000, which is owned by the Company. No property easements, options, or land use agreements are necessary to construct the Project.

### **B(9) Technical Features**

**The applicant shall describe the following information regarding the technical features of the project:**

#### **B(9)(a) Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.**

Line Asset Name:	Marysville-Cadence Solar 345 kV
Ownership:	Ohio Power Company
Voltage:	345 kV
Conductors:	954.0 kcmil 54/7 Strands "CARDINAL" 795.0 kcmil 26/7 Strands "DRAKE"
Static Wire:	(2) AFL OPGW DNO-9275 S1-36/101/646 0.646 With Up To 96 Fiber
Insulators:	Polymer
ROW Width:	N/A
Structure Type:	(2) Single Circuit, self-supporting steel monopole dead-end structures on concrete pier foundations

#### **B(9)(b) Electric and Magnetic Fields**

**For electric power transmission lines that are within one hundred feet of an occupied residence or institution, the production of electric and magnetic fields during the operation of the proposed electric power transmission line.**

No occupied residences or institutions are located within 100 feet of the Project.

#### **B(9)(c) Project Cost**

**The estimated capital cost of the project.**

The capital cost estimate for the proposed Project, which is comprised of applicable tangible and capital costs, is approximately \$1,766,000 using a Class 4 estimate. However, the Project is reimbursable through the PJM process and the IPP is responsible for all costs associated with the interconnection.

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### **B(10) Social and Ecological Impacts**

**The applicant shall describe the social and ecological impacts of the project:**

#### **B(10)(a) Land Use Characteristics**

**Provide a brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.**

An aerial photograph of the Project vicinity is provided as Figure 2 in Appendix A. The Project is located in Taylor Township, Union County, Ohio. Land use in the Project area consists of the Marysville Station, existing electric transmission lines, and agricultural fields. No tree clearing is anticipated for the Project.

#### **B(10)(b) Agricultural Land Information**

**Provide the acreage and a general description of all agricultural land, and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.**

The Project extends from Marysville Station to a new transmission structure just outside the station fence and is entirely located on property owned by the Company. No agricultural land will be impacted by the Project. The Union County Auditor indicated that the Project parcel was not identified as Agricultural District Land on October 24, 2023.

#### **B(10)(c) Archaeological and Cultural Resources**

**Provide a description of the applicant's investigation concerning the presence or absence of significant archaeological or cultural resources that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

The Company's consultant completed a Phase I Cultural Resource Management Investigation of the Marysville Station property, which included the Project area, in 2017. No further investigation was considered to be necessary by the consultant. The Ohio Historic Preservation Office ("SHPO") agreed that the Project will not impact any cultural resources eligible for listing on the NRHP and no additional coordination is necessary prior to construction. A copy of the November 22, 2017 concurrence letter from SHPO is provided in Appendix C.

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### **B(10)(d) Local, State, and Federal Agency Correspondence**

**Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.**

Ground disturbance for the Project will be under one acre. The Company will have a soil and erosion plan for its portion of the Project in order to maintain best management practices to minimize erosion control sediment to protect surface water quality during storm events.

Per field reviews on September 29, 2020 (see Appendix D) and rechecked on January 24, 2023, no streams or wetlands are crossed by or within work areas of the Project. Therefore, the Project will not require a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers or a Section 401 Water Quality Certification from the OEPA.

The FEMA Flood Insurance Rate Map was reviewed to identify any floodplains/flood hazard areas that have been mapped within the Project area (specifically, map number **39159C0250D**). Based on this mapping, no mapped FEMA floodplains are located in the Project area. Therefore, no floodplain permit will be required for this Project.

There are no other known local, state, or federal requirements that must be met prior to commencement of the proposed Project.

### **B(10)(e) Threatened, Endangered, and Rare Species**

**Provide a description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

As part of the ecological study completed for the Project, a coordination letter was submitted to the USFWS Ohio Ecological Services Field Office seeking technical assistance on the Project for potential impacts to threatened or endangered species. The December 16, 2022, response letter from the USFWS (see Appendix C) indicated all projects in the State of Ohio lie within range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. In Ohio, presence of these species is assumed wherever suitable habitat occurs unless a presence/probable absence survey has been performed to document probable absence. The USFWS response letter states that, should the Project site contain trees  $\geq 3$  inches diameter at breast height (dbh), the USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees  $\geq 3$  inches dbh cannot be avoided, the USFWS recommends that removal of trees  $\geq 3$  inches dbh only occur between October 1 and March 31 in order to avoid adverse effects to these species. If implementation of seasonal tree clearing is not possible, the USFWS recommends summer

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presence/probable absence surveys be conducted between June 1 and August 15. Based on current USFWS Ohio Field Office guidance, no hibernaculum or caves were located in the Project area. Also, no tree clearing is anticipated for the Project, therefore the northern long-eared and Indiana bats are not anticipated to be impacted. Additionally, the USFWS states that they do not anticipate adverse effects to any other federally endangered, threatened, proposed or candidate species due to the Project type, size, and location.

A coordination letter was submitted to the Ohio Department of Natural Resources (“ODNR”) Division of Wildlife (“DOW”) Ohio Natural Heritage Program (“ONHP”) and the ODNR - Office of Real Estate on June 20, 2022 seeking an environmental review of the proposed Project for potential impacts on state-listed and federally-listed threatened or endangered species. Correspondence from ODNR’s DOW/ONHP and the ODNR – Office of Real Estate was received on January 10, 2023 (see Appendix C).

The Project is within the range of the Indiana bat, a state and federally endangered species; northern long-eared bat, a state endangered and federally threatened species; little brown bat, a state endangered species; and the tricolored bat, a state endangered species. No tree clearing is anticipated for the Project. Therefore, no additional coordination with ODNR is anticipated.

According to ODNR-DOW, the Project is within the range of seven endangered or threatened mussel species. Due to location and no in-water work, ODNR-DOW indicated that the Project is not likely to impact these species.

In addition, the ODNR lists the project in the range of the northern harrier a state endangered bird. The northern harrier nests in large marshes and grasslands and hunts over grasslands. The nesting period is between April 15 and July 31. No potential habitat for this species was observed in the Project area during the site reconnaissance, therefore no impacts to this species are anticipated.

### **B(10)(f) Areas of Ecological Concern**

**Provide a description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

No unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, or other protected natural areas were identified within the Project area.

FEMA Flood Insurance Rate Maps were consulted to identify any floodplains/flood hazard areas that have been mapped in the Project Area (specifically, map number **39159C0250D**). Based on these maps, no mapped FEMA floodplains are located in the Project area.

## **Construction Notice for Marysville-Cadence Solar 345 kV Transmission Line Project**

Wetland and stream delineation field surveys were completed within the Project area by the Company's consultant on September 29, 2020 (see Figure 2 in Appendix D) and rechecked on January 24, 2023. No streams or wetlands are crossed by or within work areas of the Project.

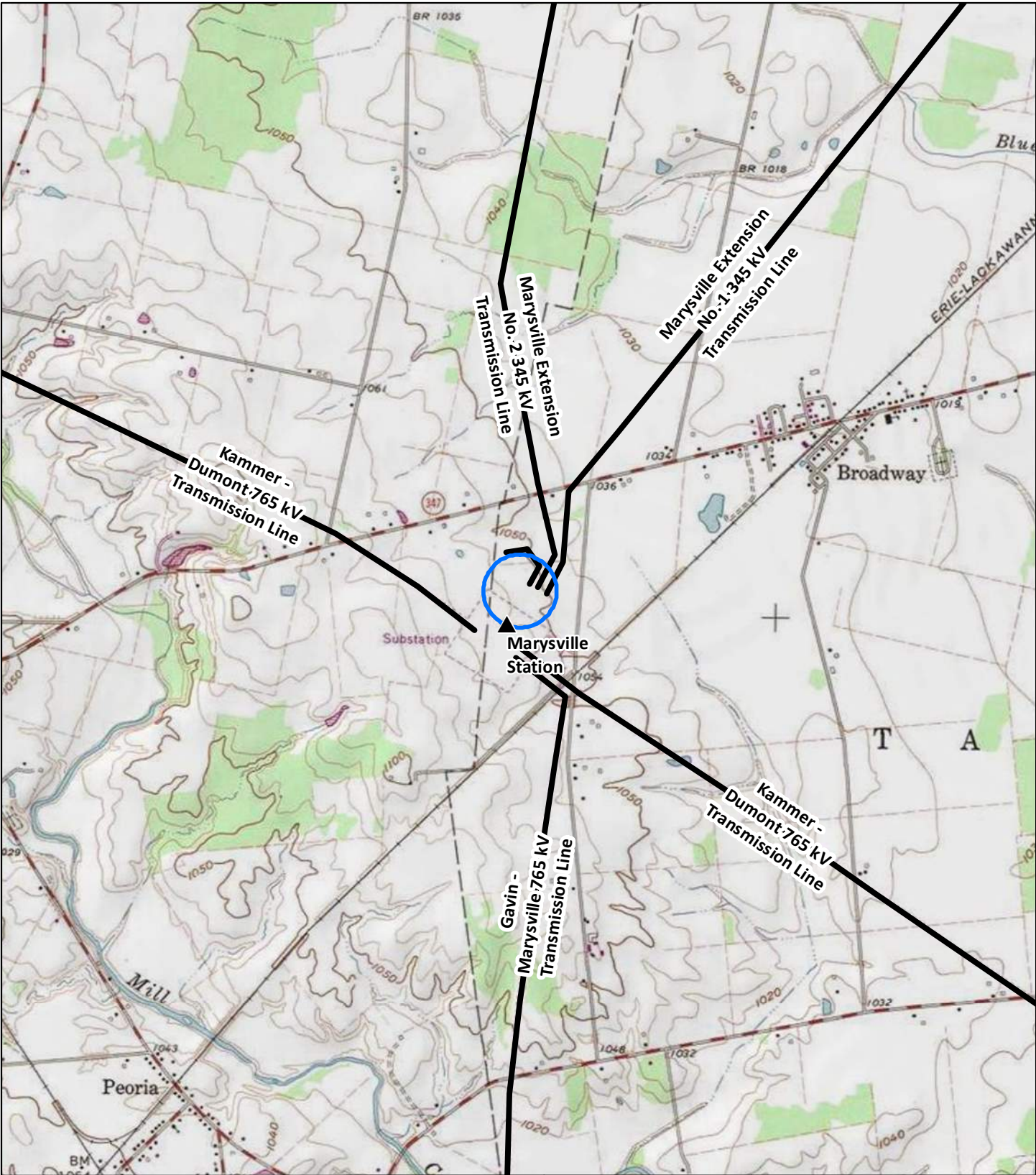
### **B(10)(g) Unusual Conditions**

**Provide any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts.**




To the best of the Company's knowledge, no unusual conditions exist that would result in significant environmental, social, health, or safety impacts.

**Appendix A Project Maps**





**Legend:**

-  Project Area
-  Existing Transmission Line
-  Existing Substation

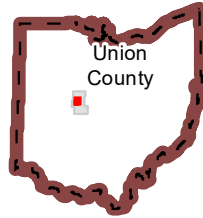
Data Sources: AEP, USGS 7.5' Topographic Quadrangle (Peoria, Ohio)

Ohio State Plane North NAD 1983



November 06, 2023

**PROJECT LOCATION**



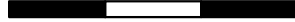
UNION COUNTY, OHIO

**FIGURE 1  
TOPOGRAPHIC OVERVIEW**



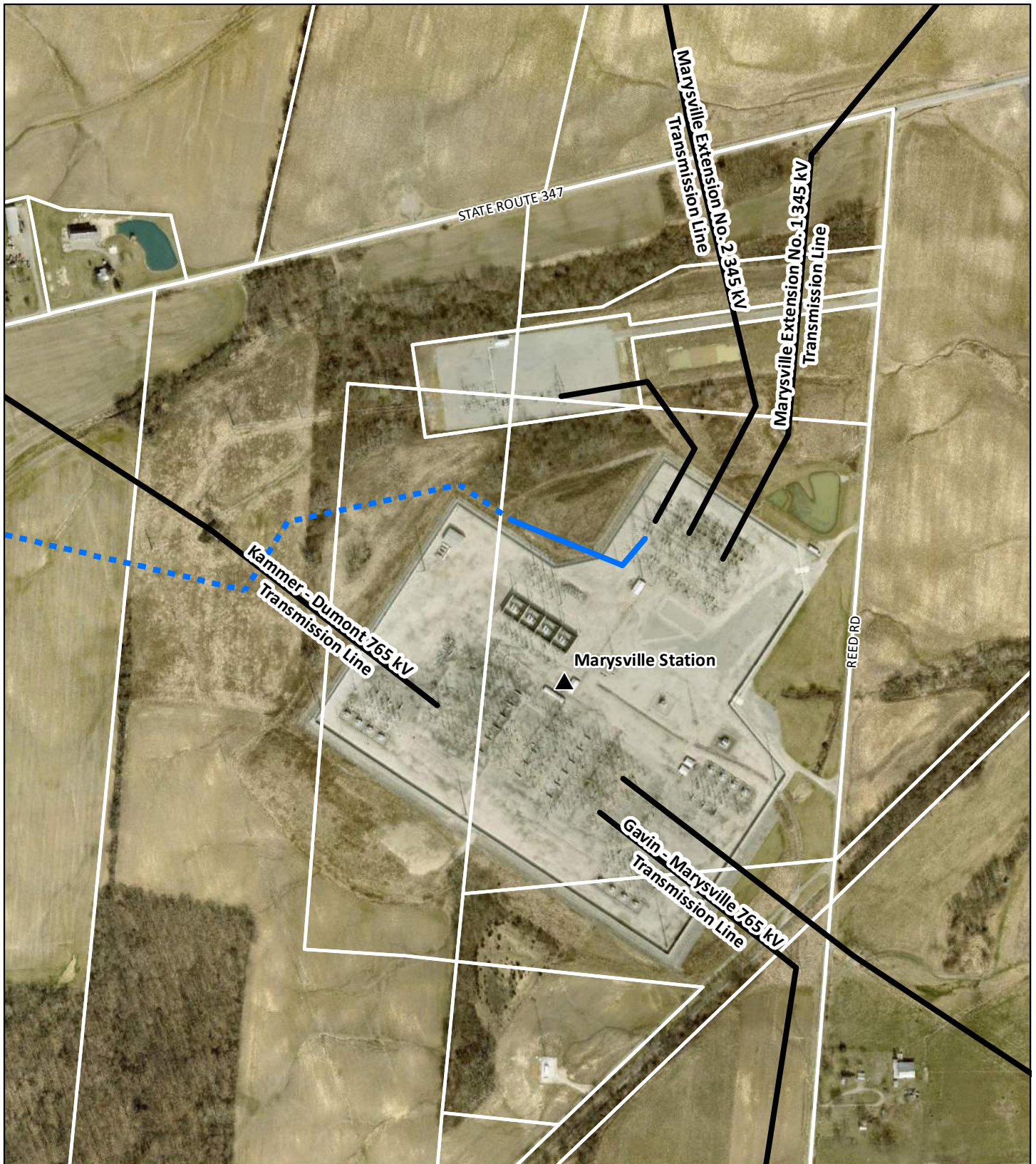
Marysville-Cadence Solar 345 kV Transmission Line

0 1,000 2,000 3,000



Feet





**Legend:**

- Proposed Transmission Line
- - - IPP Transmission Line (Case No. 23-557-EL-BLN)
- Existing Transmission Line
- ▲ Existing Substation
- Parcel Boundary

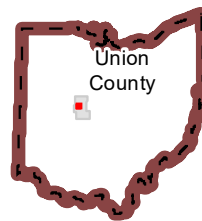
Data Sources: AEP, ESRI World Imagery, 2022

Ohio State Plane North NAD 1983



November 06, 2023

**PROJECT LOCATION**

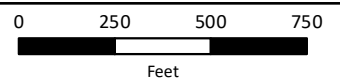


UNION COUNTY, OHIO

**FIGURE 2  
PROJECT AERIAL MAP**



Marysville-Cadence Solar  
345 kV Transmission Line





**Appendix B Long-term Forecast Report**

<b>1</b>	<b>LINE NAME AND NUMBER:</b>	Marysville – Union County Solar (IPP) 345kV (AD2-092, AD2-093, & AD2-096 TP2020178)
<b>2</b>	<b>POINTS OF ORIGIN AND TERMINATION</b>	Marysville – Union County Solar (IPP) INTERMEDIATE STATIONS - N/A
<b>3</b>	<b>RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS</b>	0.15 mi / 150 ft / 1 circuit
<b>4</b>	<b>VOLTAGE: DESIGN / OPERATE</b>	345 kV /345 kV
<b>5</b>	<b>APPLICATION FOR CERTIFICATE:</b>	2023
<b>6</b>	<b>CONSTRUCTION:</b>	2023
<b>7</b>	<b>CAPITAL INVESTMENT:</b>	\$1.43 mi (reimbursable)
<b>8</b>	<b>PLANNED SUBSTATION:</b>	N/A
<b>9</b>	<b>SUPPORTING STRUCTURES:</b>	Steel
<b>10</b>	<b>PARTICIPATION WITH OTHER UTILITIES</b>	N/A
<b>11</b>	<b>PURPOSE OF THE PLANNED TRANSMISSION LINE</b>	Connect and serve new generation customer
<b>12</b>	<b>CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION</b>	Generation deliverability limitation
<b>13</b>	<b>MISCELLANEOUS:</b>	

## **Appendix C Agency Coordination**



In reply refer to  
2017-UNI-40321

November 22, 2017

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

**RE: Marysville 765 kV Station Fence Project, Liberty and Taylor Townships, Union County, Ohio**

Dear Mr. Weller:

This letter is in response to the correspondence received on October 27, 2017 regarding the proposed Marysville 765kV Station Fence Project in Liberty and Taylor Townships, Union 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 4906-4). 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 (16 U.S.C.470 [36 CFR 800]).

The following comments pertain to the *Phase I Archaeological Investigations for the American Electric Power 84.6 ha (209 ac) Marysville 765kV Station Fence Project in Liberty and Taylor Townships, Union County, Ohio* by Weller & Associates, Inc. (2017).

A literature review, visual inspection, surface collection, shovel probe, and shovel test unit excavation was completed as part of the investigations. No previously inventoried Ohio Archaeological Inventory (OAI) site is located within the project area. Five (5) Ohio Archaeological Inventory (OAI) sites were identified as part of this survey. OAI#33UN0540 is a historic period artifact scatter identified during shovel test unit excavation. OAI#33UN0541, 33UN0543, and 33UN0544 are prehistoric isolated finds identified during surface collection. OAI#33UN0542 is a prehistoric period artifact scatter identified during surface collection. None of the sites are recommended as eligible for listing in the National Register of Historic Places (NRHP). Based on the information provided, we agree the archaeological sites are not eligible for listing in the NRHP and no further archaeological work is necessary.

Please complete your associated site inventory as soon as possible. Project associated inventory should be completed and submitted concurrent with submission of your survey documentation for our comments. Following IForm submission procedure, please send a notification to the survey manager ([archsurvey@ohiohistory.org](mailto:archsurvey@ohiohistory.org), or directly at [beberhard@ohiohistory.org](mailto:beberhard@ohiohistory.org)) so that the manager is aware your inventory is prepared, complete, and ready for review.

The following comments pertain to the *History/Architecture Investigations for the American Electric Power 84.6 ha (209 ac) Marysville 765kV Station Fence Project in Liberty and Taylor Townships, Union County, Ohio* by Weller & Associates, Inc. (2017).

The investigations consisted of a systematic survey of all properties fifty years of age or older that are situated within 1,000' of the proposed project site. A total of six individual properties of fifty years of age or older were identified within the APE.

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Mr. Ryan J. Weller  
Page 2  
November 22, 2017

It is Weller's recommendation that none of these properties are eligible for inclusion in the NRHP due to a lack of associative significance, a loss of integrity, or a lack of character defining features. Our office agrees with Weller's recommendations regarding eligibility.

The results of the architectural investigation identified no historic properties located within the APE that exhibit potential significance for inclusion in the NRHP. Therefore, we agree that the project as proposed will have no effect on historic properties.

Based on the information provided, we agree the project will not affect 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 [khorricks@ohiohistory.org](mailto:khorricks@ohiohistory.org). Thank you for your cooperation.

Sincerely,



Krista Horrocks, Project Reviews Manager  
Resource Protection and Review

cc: Ron Howard, AEP ([rmhoward@aep.com](mailto:rmhoward@aep.com))

RPR Serial No: 1071068, 1071069

**OHIO HISTORY CONNECTION**

800 E. 17th Ave., Columbus, OH 43211-2474 • 614.297.2300 • [ohiohistory.org](http://ohiohistory.org)



# Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR

MARY MERTZ, DIRECTOR

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

January 10, 2023

Daniel Godec  
Stantec Consulting Services Inc.  
11687 Lebanon Road  
Cincinnati, OH 45241

**Re:** 22-1237; Marysville-Union County Solar Generation Tie Line Project

**Project:** The proposed project involves facilitating the interconnection of the Cadence Solar generating facility and storage facility into AEP's existing Marysville 345 kV Station facility.

**Location:** The proposed project is located in Taylor and Liberty Townships, Union 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:** A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. 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 any particular 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 Eileen Wyza at [Eileen.Wyza@dnr.ohio.gov](mailto:Eileen.Wyza@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 & NORTHERN LONG-EARED 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 Eileen Wyza 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

snuffbox (*Epioblasma triquetra*)

clubshell (*Pleurobema clava*)

Northern riffleshell (*Epioblasma torulosa rangiana*)

rayed bean (*Villosa fabalis*)

Federally Threatened

rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Endangered

elephant-ear (*Elliptio crassidens crassidens*)

State Threatened

pondhorn (*Unio merus tetralasmus*)

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

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

Mike Pettegrew  
Environmental Services Administrator



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Ecological Services  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230  
(614) 416-8993 / FAX (614) 416-8994



December 16, 2022

Project Code: 2023-0021802

Reference: Marysville-Union County Solar Generation Tie Line project

Dear Mr./Ms,

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  $\geq 3$  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  $\geq 3$  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  $\geq 3$  inches dbh cannot be avoided, we recommend removal of any trees  $\geq 3$  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 <https://ecos.fws.gov/ecp/species/9045>), 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 it is important to conserve the functions and values of the remaining wetlands in Ohio ([https://epa.ohio.gov/portals/47/facts/ohio\\_wetlands.pdf](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](mailto: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](mailto:ohio@fws.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Patrice Ashfield", written in a cursive style.

Patrice Ashfield  
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW  
Eileen Wyza, ODNR-DOW

## **Appendix D Ecological Survey Reports**



**Marysville Station Expansion Project,  
Union County, Ohio**

**Ecological Resources Inventory  
Report**

Prepared for:  
AEP Ohio Transmission Company, Inc.  
8600 Smiths Mill Road  
New Albany, Ohio 43054

Prepared by:  
Stantec Consulting Services Inc.  
11687 Lebanon Road  
Cincinnati, Ohio 45241

September 29, 2020

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Introduction  
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## 1.0 Introduction

AEP Ohio Transmission Company, Inc. (AEP) is proposing to expand the existing Marysville 765 kV substation (Marysville Station) and to possibly relocate and/or construct new associated transmission lines in Union County, Ohio (Figure 1, Appendix A). The Project Area includes the existing station pad and adjacent areas where substation expansion, fence installation, and/or transmission line relocation/construction work may occur. The Project Area was surveyed for wetlands, waterbodies, open water features, upland drainage features, and potential threatened, endangered, and rare species habitat by Stantec Consulting Services Inc. (Stantec) biologists on August 29 and 30, 2017, September 6, 2017, and again on September 24, 2020. The approximate locations of features located up to 50 feet outside of the Project Area were also recorded during the field surveys, where landowner access was permitted. However, no data forms were collected on features that did not extend into the Project Area. These features are shown on the Figure 2 maps in Appendix A as "approximate" wetlands, streams (waterways), and upland drainage features.



Methods  
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## 2.0 Methods

### 2.1 WETLAND DELINEATION

Prior to completing the field surveys, a desktop review of the Project Area was conducted using U.S. Geological Survey (USGS) topographic mapping, National Wetlands Inventory (NWI) maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey mapping, and aerial imagery mapping. Stantec completed a wetland delineation study in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region - Version 2.0* (USACE 2010). Wetland categories were classified using the Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001).

### 2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project Area, per the protocols outlined in the USACE's Guidance on Ordinary High Water Mark Identification (Regulatory Guidance Letter, No. 05-05) (USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definitions in the Federal Register/Vol. 67, No. 10 (USACE 2002). Functional assessment of streams within the Project Area was based on completion of the Ohio Environmental Protection Agency's (OEPA) Headwater Habitat Evaluation Index (HHEI; OEPA 2012) and/or Qualitative Habitat Evaluation Index (QHEI; OEPA 2006). The centerline of each waterway was identified and surveyed using a handheld sub-meter accuracy global positioning system (GPS) unit and mapped with geographic information system (GIS) software. Additionally, the locations of ponds/open water features and upland drainage features (which lacked a continuously defined bed and bank/OHWM) identified within the Project Area were also recorded with a sub-meter accuracy GPS unit during the field surveys.

### 2.3 RARE SPECIES

Prior to conducting the field surveys, Stantec contacted the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) for information regarding rare, threatened, or endangered species and their habitats of concern within the vicinity of the Project Area (Appendix B – Agency Correspondence). To assess potential impacts to rare, threatened, or endangered species, Stantec scientists conducted a pedestrian reconnaissance of the proposed Project Area, collected information on existing habitats within the Project Area, and assessed the potential for these habitats to be used by these species.

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### 3.0 Results

#### 3.1 TERRESTRIAL HABITAT

Stantec completed field surveys within the Project Area on August 29 and 30, 2017, September 6, 2017, and again on September 24, 2020 for wetlands, waterbodies, and threatened and endangered species or their habitats. Figure 2 (Appendix A) shows the wetlands and waterbodies identified by Stantec within the Project Area, as well as the locations of open waters and upland drainage features identified within the Project Area. Figure 3 (Appendix A) shows the locations of habitats and land uses identified within the Project Area, including the locations of any identified rare, threatened or endangered species habitats observed within the Project Area. Representative photographs of the wetlands, streams, upland drainage features, and other habitats identified within the Project Area are included in Appendix C of this report (photo locations are shown on Figures 2 and 3, Appendix A).

**Table 1. Vegetation Communities and Land Cover Found within the Marysville Station Expansion Project Area, Union County, Ohio**

Vegetation Communities and Land Cover Types within Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Agricultural Field	Extreme Disturbance/Ruderal Community (dominated by planted non-native row crop species, opportunistic invaders, and/or native highly tolerant taxa). Common plant species observed included soybeans ( <i>Glycine max</i> ).	No	89.68
Mixed Early Successional/Second Growth Deciduous Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species observed included red maple ( <i>Acer rubrum</i> ), sugar maple ( <i>Acer saccharum</i> ), wingstem ( <i>Verbesina alternifolia</i> ), American elm ( <i>Ulmus americana</i> ), Canada goldenrod ( <i>Solidago canadensis</i> ), giant ironweed ( <i>Vernonia gigantea</i> ), Amur honeysuckle ( <i>Lonicera maackii</i> ), and Japanese honeysuckle ( <i>Lonicera japonica</i> ).	No	2.87
Early Successional Deciduous Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species	No	4.21

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Vegetation Communities and Land Cover Types within Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
	and/or opportunistic invaders). Common plant species observed included Amur honeysuckle, multiflora rose ( <i>Rosa multiflora</i> ), Allegheny blackberry ( <i>Rubus allegheniensis</i> ), red maple, and eastern cottonwood ( <i>Populus deltoides</i> ).		
Mixed Early Successional/Second Growth Riparian Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species observed included American sycamore ( <i>Platanus occidentalis</i> ), boxelder ( <i>Acer negundo</i> ), green ash ( <i>Fraxinus pennsylvanica</i> ), wingstem, eastern poison ivy ( <i>Toxicodendron radicans</i> ), stinging nettle ( <i>Urtica dioica</i> ), jewelweed ( <i>Impatiens capensis</i> ), and riverbank grape ( <i>Vitis riparia</i> ).	No	15.03
Old Field	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders and/or native highly tolerant taxa). Common plant species observed included Canada goldenrod, crownvetch ( <i>Securigera varia</i> ), Canada thistle ( <i>Cirsium arvense</i> ), broomsedge bluestem ( <i>Andropogon virginicus</i> ), yellow foxtail ( <i>Setaria pumila</i> ), multiflora rose, Allegheny blackberry, Queen Anne's lace ( <i>Daucus carota</i> ), common milkweed ( <i>Asclepias syriaca</i> ), giant ironweed, annual ragweed ( <i>Ambrosia artemisiifolia</i> ), and red clover ( <i>Trifolium pratense</i> ).	No	28.82
New Field	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders and/or native highly tolerant taxa). Common plant species observed included tall fescue ( <i>Schedonorus arundinaceus</i> ), Japanese foxtail ( <i>Setaria faberi</i> ) and Kentucky bluegrass ( <i>Poa pratensis</i> ).	No	0.63
Manicured Lawn	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Common plant species	No	3.71

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Vegetation Communities and Land Cover Types within Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
	observed included tall fescue perennial ryegrass ( <i>Lolium perenne</i> ), Kentucky bluegrass, narrowleaf plantain ( <i>Plantago lanceolata</i> ), common dandelion ( <i>Taraxacum officinale</i> ), white clover ( <i>Trifolium repens</i> ), and Bermudagrass ( <i>Cynodon dactylon</i> ).		
Gravel Road	Extreme Disturbance/existing gravel and/or paved road. Little to no vegetation was observed in these areas.	No	1.13
Railroad	Extreme Disturbance/existing railroad. Little to no vegetation was observed in these areas.	No	1.15
Industrial	Extreme Disturbance/Ruderal Community (free of vegetation and/or dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Common plant species observed included common dandelion, common plantain ( <i>Plantago major</i> ), giant ragweed ( <i>Ambrosia trifida</i> ), birdsfoot trefoil ( <i>Lotus corniculatus</i> ), common wormwood ( <i>Artemisia vulgaris</i> ), crabgrass ( <i>Digitaria sp.</i> ), and suckling clover ( <i>Trifolium dubium</i> ).	No	48.07
Second Growth Deciduous Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species observed included white oak ( <i>Quercus alba</i> ), multiflora rose, common hackberry ( <i>Celtis occidentalis</i> ), red maple, American elm, sugar maple, northern red oak ( <i>Quercus rubra</i> ), Virginia creeper ( <i>Parthenocissus quinquefolia</i> ), and northern spicebush ( <i>Lindera benzoin</i> ).	No	13.89
Palustrine Emergent Wetland	Moderate Disturbance/Natural Community (dominated by native herbaceous species and/or opportunistic invaders). Common plant species observed included reed canarygrass ( <i>Phalaris arundinacea</i> ),	No	1.64

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Vegetation Communities and Land Cover Types within Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
	jewelweed, giant goldenrod ( <i>Solidago gigantea</i> ), Canadian clearweed ( <i>Pilea pumila</i> ), cattail ( <i>Typha latifolia</i> ), and banyardgrass ( <i>Echinochloa crus-galli</i> ).		
Palustrine Scrub-Shrub Wetland	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species observed included sandbar willow ( <i>Salix interior</i> ), eastern cottonwood, Indianhemp ( <i>Apocynum cannabinum</i> ), American horehound ( <i>Lycopus americana</i> ), and fox sedge ( <i>Carex vulpinoidea</i> ).	No	0.04
Palustrine Forested Wetland	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species observed included eastern cottonwood, black willow ( <i>Salix nigra</i> ), switchgrass ( <i>Panicum virgatum</i> ), swamp smartweed ( <i>Persicaria hydropiperoides</i> ), American water plantain ( <i>Alisma subcordatum</i> ), green ash, boxelder, jewelweed, reed canarygrass, white panicle aster ( <i>Symphyotrichum lanceolatum</i> ), American elm, bur oak ( <i>Quercus macrocarpa</i> ), pin oak ( <i>Quercus palustris</i> ), sweet woodreed ( <i>Cinna arundinacea</i> ), fowl mannagrass ( <i>Glyceria striata</i> ) and calamus ( <i>Acorus calamus</i> ).	No	1.34
Palustrine Unconsolidated Bottom Wetland	Moderate Disturbance/Natural Community (dominated by native herbaceous species and/or opportunistic invaders). Common plant species observed included pin oak, American elm, and green ash.	No	0.02
<b>TOTAL</b>			<b>212.23</b>

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### 3.2 WETLANDS

Stantec completed field surveys for wetlands within the Project Area on August 29 and 30, 2017, September 6, 2017, and again on September 24, 2020. Figure 2 (Appendix A) shows the wetlands identified by Stantec within the Project Area. Representative wetland photographs are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). Completed wetland determination and ORAM data forms are included in Appendix D. Information regarding the Cowardin classification and ORAM categories of wetlands identified within the Project Area is provided in Table 2.

**Table 2. Summary of Wetland Resources Found within the Marysville Station Expansion Project Area, Union County, Ohio**

Wetland Name	Photo Location Number <sup>1</sup>	Isolated?	Wetland Classification <sup>2</sup>	ORAM Score <sup>7</sup>	ORAM Category <sup>7</sup>	Delineated Area (acres) within Project Area
Wetland 1	1, 2	No	PFO <sup>4</sup>	41.5	2	0.19
Wetland 2	3	No	PEM <sup>3</sup>	21	1	0.02
Wetland 3	4	No	PEM <sup>3</sup>	31	2	0.45
Wetland 4	5	No	PEM <sup>3</sup>	27.5	1	0.04
Wetland 5	6, 7, 8	No	PFO <sup>4</sup>	56	2	1.15
Wetland 6	9	No	PUB <sup>6</sup>	43.5	2	0.02
Wetland 7	10	Yes	PSS <sup>5</sup>	32.5	2	0.04
Wetland 8	11	No	PEM <sup>36</sup>	20	1	1.13
<b>TOTAL</b>						<b>3.04</b>
<sup>1</sup> Appendix C – Representative Photographs						
<sup>2</sup> Wetland classification is based on Cowardin et al. (1979).						
<sup>3</sup> PEM = Palustrine Emergent Wetland						
<sup>4</sup> PFO = Palustrine Forested Wetland						
<sup>5</sup> PSS = Palustrine Scrub-Shrub Wetland						
<sup>6</sup> PUB = Palustrine Unconsolidated Bottom Wetland						
<sup>7</sup> ORAM Score and Category are based on the Ohio Rapid Assessment Method for Wetlands v. 5.0 (Mack 2001).						

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### 3.3 STREAMS

Stantec completed field surveys for waterbodies within the Project Area on August 29 and 30, 2017, September 6, 2017, and again on September 24, 2020. Figure 2 (Appendix A) shows the waterbodies (streams) identified by Stantec within the Project Area, as well as the locations of non-jurisdictional upland drainage features identified within the Project Area. Representative photographs of the streams and upland drainage features are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). Completed HHEI data forms are included in Appendix D. Information regarding the streams identified within the Project Area is provided in Table 3. No open waters/ponds were identified within the Project Area.

**Table 3. Summary of Stream Resources Found within the Marysville Station Expansion Project Area, Union County, Ohio**

Stream Name	Photo Location Number <sup>1</sup>	Receiving Waters	Stream Flow Regime <sup>2</sup>	Stream Evaluation Method	Stream Evaluation Score	OHW <sup>3</sup> Width (feet)	Delineated Length (feet) within Project Area
Stream 1	12	Blues Creek	Intermittent	HHEI	34	3.6	2,212
	13			HHEI	30	3	
Stream 2	14	Blues Creek	Ephemeral	HHEI	27	3	417
Stream 3	15	Mill Creek	Ephemeral	HHEI	24	3.4	27
Stream 4	16	Mill Creek	Intermittent	HHEI	50	4	296
<b>TOTAL</b>							<b>2,952</b>
<sup>1</sup> Appendix C – Representative Photographs as shown on Figure 2 (Appendix A)							
<sup>2</sup> Stream classification is based on Federal Register/Vol. 67, No. 10 (USACE 2002)							
<sup>3</sup> OHW <sup>3</sup> = Ordinary High Water Mark							

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3.4 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 4. Summary of Potential Ohio State-Listed Species within the Marysville Station Expansion Project Area, Union County, Ohio

Common Name	Scientific Name	State Listing <sup>1</sup>	Known to Occur Within Union County? <sup>2</sup>	Known Within One Mile of Project Area? <sup>3</sup>	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
<b>Birds</b>								
American Bittern	<i>Botaurus lentiginosus</i>	E	Yes	No	Nesting American bitterns are very secretive and prefer large undisturbed wetlands that have scattered small pools amongst the dense vegetation. They occasionally occupy bogs, large wet meadows, and dense, shrubby swamps (ODNR 2020b).	No	No potentially suitable nesting habitat for this species (large areas of undisturbed wetland) was observed within the Project Area. Therefore, no impacts are anticipated.	No comments received.
Lark Sparrow	<i>Chondestes grammacus</i>	E	Yes	No	Breeding habitat includes various open situations with scattered bushes and trees, including shortgrass, mixed-grass, and tallgrass prairie with a shrub component and sparse litter; parkland; sandhills; barrens; old fields; cultivated fields; shrub thickets; shrub steppe (native and altered); woodland edges; shelterbelts; orchards, parks; riparian areas; brushy pastures; overgrazed pastures; and savanna. Ground nests may be located in areas of sparse ground cover such as those areas associated with burning, moderate to heavy grazing, or poor or eroded soils, or in idle fields, lawns, and cemeteries. Nonbreeding habitats include agricultural areas, suburban gardens, oak woodlands, chaparral, and mesquite/acacia grassland (NatureServe 2020).	Yes	Potentially suitable nesting habitat for this species (old field) was observed within portions of the Project Area. However, those habitats are not extensive within the Project Area or adjacent to it and it is anticipated that vegetation clearing will take place outside of the lark sparrow's nesting season. Therefore, no impacts are anticipated.	No comments received.
Northern Harrier	<i>Circus cyaneus</i>	E	Yes	No	This bird hunts low over grassland and marshes and breeds in large marshes and grasslands (ODNR 2020b). Breeding Northern harriers are most common in large, undisturbed tracts of wetlands and grasslands with low, thick vegetation (The Cornell Lab of Ornithology 2017).	No	No suitable nesting habitat (large areas of marshes and/or grasslands) was observed within the Project Area. Therefore, no impacts are anticipated.	If suitable habitat will be impacted, constructions should be avoided in this habitat during the species' nesting period of May 15 to August 1. If this habitat will not be impacted, this project is not likely to impact this species.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	E	Yes	No	The loggerhead shrike nests in hedgerows, thickets, and fencerows. They hunt over hayfields, pastures, and other grasslands (ODNR 2020b). Large areas of open country, such as grasslands, orchards, and open grassy woodlands, with scattered trees and shrubs are required to be suitable as loggerhead shrike nesting habitat. The average territory sizes in studies conducted in Missouri and New York was approximately 11 acres and 18.5 acres, respectively (Bull and Farrand 1977; NatureServe 2020; Yosef 1996).	Yes	Potentially suitable habitat for this species (old field) was observed within portions of the Project Area. However, those habitats are not extensive within the Project Area or adjacent to it. Therefore, no impacts are anticipated.	If thickets or other types of dense shrubby habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 to August 1. If this habitat will not be impacted, this project is not likely to impact this species.
King Rail	<i>Rallus elegans</i>	E	No	No	Habitat includes freshwater marshes, upland-wetland marsh edges, ricefields or similar flooded farmlands, and shrub swamps (NatureServe 2020). Nests for this species are deep bowls constructed out of grass and usually very well hidden in marsh vegetation (ODNR 2020b). Large areas of palustrine emergent wetland and/or palustrine scrub-shrub wetland	No	No potentially suitable nesting habitat for this species (large areas of palustrine emergent wetland and/or palustrine scrub-shrub wetland habitats) was observed within the Project	If suitable habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to August 1. If no wetland habitat will be impacted, the



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Common Name	Scientific Name	State Listing <sup>1</sup>	Known to Occur Within Union County? <sup>2</sup>	Known Within One Mile of Project Area? <sup>3</sup>	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
					habitats (≥ ~20 acres) that include areas of open water are required to be suitable as king rail nesting habitat (Bull and Farrand 1977; McCormac and Kennedy 2004; NatureServe 2020; Pickens and Meanley 2015).		Area. Therefore, no impacts are anticipated.	project is not likely to impact this species.
Least Bittern	<i>Ixobrychus exilis</i>	T	Yes	No	Habitats vary throughout North America, but nesting usually occurs among dense, tall growths of emergent wetland vegetation, particularly cattails, sedges, bulrush, or common reed interspersed with some woody vegetation and open, fresh water (NatureServe 2020).	Yes	Potentially suitable nesting habitat for this species (Wetland 8) was observed within the Project Area. However, Wetland 8 is a low quality wetland with no woody vegetation, making it marginal habitat. Therefore, no impacts are anticipated.	No comments received.
Barn Owl	<i>Tyto alba</i>	T	Yes	No	Fields of dense grass. Open and partly open country such as grassland, marsh, lightly grazed pasture, and hayfields in a wide variety of situations, often around human habitation. Nests in buildings (church steeples, attics, platforms in silos and barns, wooden water tanks, duckblinds), caves, crevices on cliffs, burrows, and hollow trees, rarely in trees with dense foliage (NatureServe 2020).	Yes	Potentially suitable habitat for this species (old field; deciduous forest; riparian forest) was observed within portions of the Project Area. However, those habitats are not extensive within the Project Area or adjacent to it and no large trees with hollows, or other potentially suitable nesting structures were observed within the Project Area. Therefore, no impacts are anticipated.	No comments received.
<b>Fishes</b>								
Scioto Madtom	<i>Noturus trautmani</i>	E	No	No	Only 18 individuals of the Scioto madtom have ever been found. Of those, 14 were found in the fall of 1957 and none have been seen since. No other fish has been searched for more persistently by researchers in Ohio than this species. This fish has never been found outside of Ohio and all 18 individuals were found in a small area of Big Darby Creek. They were found in the tail end of riffles over a sand and gravel substrate. Since all of the individuals were found in the fall it has been speculated that they may spend the remainder of the year further upstream. They likely feed on various aquatic invertebrates like most other madtom species (ODNR 2020b).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Tippecanoe Darter	<i>Etheostoma tippecanoe</i>	T	No	No	This fish prefers medium to large streams in the Ohio River drainage system and are found in riffles of moderate current with substrate of gravel or cobble sized rocks (ODNR 2020b).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work is proposed by AEP.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.

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Common Name	Scientific Name	State Listing <sup>1</sup>	Known to Occur Within Union County? <sup>2</sup>	Known Within One Mile of Project Area? <sup>3</sup>	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
							Therefore, no impacts are anticipated.	
<b>Invertebrates</b>								
Northern Riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Yes	No	This species inhabits riffles in small to large streams with swift current and a substrate of firmly packed fine gravel and sand (NatureServe 2020).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work is proposed by AEP. Therefore, no impacts are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Snuffbox	<i>Epioblasma triquetra</i>	E	Yes	No	Occurs in medium-sized streams to large rivers generally on mud, rocky, gravel, or sand substrates in flowing water. Often deeply buried in substrate and overlooked by collectors (NatureServe 2020).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Clubshell	<i>Pleurobema clava</i>	E	Yes	No	The clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra and Goforth (2001) found the clubshell in gravel/sand substrate, in runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	E	Yes	No	Typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Rabbitsfoot are also found in medium to large rivers in sand and gravel (NatureServe 2020).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Rayed Bean	<i>Villosa fabalis</i>	E	Yes	No	Habitat includes gravel or sandy substrates, especially in areas of thick roots of aquatic plants, increase substrate stability (NatureServe 2020; Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Pondhorn	<i>Unio merus tetralasmus</i>	T	Yes	No	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.

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Common Name	Scientific Name	State Listing <sup>1</sup>	Known to Occur Within Union County? <sup>2</sup>	Known Within One Mile of Project Area? <sup>3</sup>	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
					mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2020).		proposed by AEP. Therefore, no impacts are anticipated.	
Elephant-Ear	<i>Elliptio crassidens crassidens</i>	E	No	No	This species is an inhabitant of channels in large creeks to rivers with moderate to swift currents, primarily on sand and limestone or rock substrates (NatureServe 2020).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
<b>Mammals</b>								
Indiana bat	<i>Myotis sodalis</i>	E	Yes	No	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas; Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2017). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	No potential hibernacula were observed within the Project area. However, potentially suitable summer foraging habitat (deciduous forest; riparian forest; streamside habitats) and potential roost trees were observed. AEP intends to avoid areas with potential summer roost habitat to the extent possible and intends to clear forested habitat between October 1 and March 31, as necessary. AEP will determine if any summer tree clearing is necessary in areas containing suitable roost habitat and will proceed accordingly.	The project is within the range of the Indiana bat. If suitable habitat occurs within the Project area, ODNR recommends trees be conserved. If suitable habitat occurs within the Project area and trees must be cut, ODNR recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, ODNR recommends a net survey be conducted between June 1 and August 15, prior to any cutting.
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	E	Yes	No	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2016). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	Yes	No potential hibernacula were observed within the Project area. However, potentially suitable summer foraging habitat (deciduous forest; riparian forest; streamside habitats) and potential roost trees were observed. AEP intends to avoid areas with potential summer roost habitat to the extent possible and intends to clear forested habitat between October 1 and March 31, as necessary. AEP will determine if any summer tree clearing is necessary in areas containing	No comments received.

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Common Name	Scientific Name	State Listing <sup>1</sup>	Known to Occur Within Union County? <sup>2</sup>	Known Within One Mile of Project Area? <sup>3</sup>	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
							suitable roost habitat and will proceed accordingly.	
Little Brown Bat	<i>Myotis lucifugus</i>	E	Yes	No	The little brown bat is found throughout Ohio. This species seems to prefer to forage over water but also forages among trees in rather open areas (Harvey et al. 1999). During summer, it typically inhabits buildings, attics, church belfries, barns and outbuildings, and occasionally more natural habitats such as sloughing bark of a dead tree. During summer, two types of roosts are utilized: day roosts and night roosts. Day roosts are the maternity colony roost, while little brown bats often roost in other areas where they rest and congregate to digest their food in between foraging bouts. In Ohio, this species typically utilizes caves and mines as hibernacula, although at least one hibernaculum was found to be located in an attic of an old building (Brack et al. 2010).	Yes	No potential hibernacula were observed within the Project area. However, potentially suitable summer foraging habitat (deciduous forest; riparian forest; streamside habitats) and potential roost trees were observed. AEP intends to avoid areas with potential summer roost habitat to the extent possible and intends to clear forested habitat between October 1 and March 31, as necessary. AEP will determine if any summer tree clearing is necessary in areas containing suitable roost habitat and will proceed accordingly.	No comments received.
Tri-colored Bat	<i>Perimyotis subflavus</i>	E	No	No	The tricolored bat is found throughout Ohio. This species has been found to forage above and within a variety of habitats, including woodlands, agricultural fields, grassy areas, and over streamside vegetation (Sparks et al. 2011). Maternity colonies have often been found within clusters of dead leaves, hanging in trees. Maternity colonies have also been found in or on buildings. Little is known of male tri-colored bats in summer, but it is thought that they are probably solitary and spend their days in similar situations, as well as crevices, caves and mines (Brack et al. 2010). In Ohio, this species typically utilizes caves and mines as hibernacula, utilizing a variety of situations, including very cold areas near cave entrances to deeper passages that seem to be too warm for other species of bats (Brack et al. 2010).	Yes	No potential hibernacula were observed within the Project area. However, potentially suitable summer foraging habitat (deciduous forest; riparian forest; streamside habitats) and potential roost trees were observed. AEP intends to avoid areas with potential summer roost habitat to the extent possible and intends to clear forested habitat between October 1 and March 31, as necessary. AEP will determine if any summer tree clearing is necessary in areas containing suitable roost habitat and will proceed accordingly.	No comments received.

<sup>1</sup> E=Endangered; T=Threatened  
<sup>2</sup> According to Ohio Department of Natural Resources, State Listed Wildlife Species by County (ODNR 2020a).  
<sup>3</sup> According to Ohio Natural Heritage Program (Appendix B).

Table 5. Summary of Potential Federally Listed Species within the Marysville Station Expansion Project Area, Union County, Ohio

Common Name	Scientific Name	Federal Listing <sup>1</sup>	Known to Occur Within Union County? <sup>2</sup>	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	USFWS Comments/Recommendations
<b>Mammals</b>							
Indiana Bat	<i>Myotis sodalis</i>	E	Yes	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas; Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2017). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	No potential hibernacula were observed within the Project area. However, potentially suitable summer foraging habitat (deciduous forest; riparian forest; streamside habitats) and potential roost trees were observed. AEP intends to avoid areas with potential summer roost habitat to the extent possible and intends to clear forested habitat between October 1 and March 31, as necessary. AEP will determine if any summer tree clearing is necessary in areas containing suitable roost habitat and will proceed accordingly.	All projects in the State of Ohio lie within the range of the Indiana bat. The USFWS stated that should the project site contain trees ≥3 inches dbh, USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, USFWS recommends that removal of trees ≥3 inches dbh only occur between October 1 and March 31 to avoid adverse effects to this species. If implementation of seasonal tree clearing is not possible, USFWS recommends summer presence/absence surveys be conducted between June 1 and August 15. If seasonal tree clearing is implemented, the USFWS does not anticipate adverse effects to this species.
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	T	Yes	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2016). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	Yes	No potential hibernacula were observed within the Project area. However, potentially suitable summer foraging habitat (deciduous forest; riparian forest; streamside habitats) and potential roost trees were observed. AEP intends to avoid areas with potential summer roost habitat to the extent possible and intends to clear forested habitat between October 1 and March 31, as necessary. AEP will determine if any summer tree clearing is necessary in areas containing suitable roost habitat and will proceed accordingly.	All projects in the State of Ohio lie within the range of the northern long-eared bat. The USFWS stated that should the project site contain trees ≥3 inches dbh, USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, USFWS recommends that removal of trees ≥3 inches dbh only occur between October 1 and March 31 to avoid adverse effects to this species. If seasonal tree clearing is implemented, the USFWS does not anticipate adverse effects to this species. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule.
<b>Fishes</b>							
Scioto Madtom	<i>Noturus trautmani</i>	E	Yes	Only 18 individuals of the Scioto madtom have ever been found. Of those, 14 were found in the fall of 1957 and none have been seen since. No other fish has been searched for more persistently by researchers in Ohio than this species. This fish has never been found outside of Ohio and all 18 individuals were found in a small area of Big Darby Creek. They were found in the tail end of riffles over a sand and gravel substrate. Since all of the individuals were found in the fall it has been speculated that they may spend the remainder of the year further upstream. They likely feed on various aquatic invertebrates like most other madtom species (ODNR 2020b).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.
<b>Mussels</b>							

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Common Name	Scientific Name	Federal Listing <sup>1</sup>	Known to Occur Within Union County? <sup>2</sup>	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	USFWS Comments/Recommendations
Rayed Bean	<i>Villosa fabalis</i>	E	Yes	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increase substrate stability (Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work is proposed by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.
Northern Riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Yes	This species inhabits riffles in small to large streams with swift current and a substrate of firmly packed fine gravel and sand (NatureServe 2020).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work is proposed by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.
Snuffbox	<i>Epioblasma triquetra</i>	E	Yes	Occurs in medium-sized streams to large rivers, generally on mud, rocky, gravel, or sand substrates in flowing water. This species is often deeply buried in substrate and overlooked by collectors (NatureServe 2020). It is found in a wide range of particle sized substrates. However, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998; Watters et al. 2009).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.
Clubshell	<i>Pleurobema clava</i>	E	Yes	This is a species of small to medium-sized rivers and streams. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle, and cannot tolerate mud or slack water conditions (NatureServe 2020).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work is proposed by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	T	Yes	Typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Rabbitsfoot are also found in medium to large rivers in sand and gravel (NatureServe 2020).	No	No suitable habitat was observed within the Project Area. Additionally, no in-water work is proposed by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.

<sup>1</sup> E=Endangered; T=Threatened

<sup>2</sup> According to USFWS (2018).

## 4.0 Conclusions and Recommendations

Stantec conducted a wetland and waterbodies delineation and a preliminary habitat assessment for threatened and endangered species within the Project Area on August 29 and 30, 2017, September 6, 2017, and again on September 24, 2020. During the collective field surveys, four palustrine emergent (PEM) wetlands totaling approximately 1.64 acres, one palustrine scrub-shrub (PSS) wetland totaling approximately 0.04 acres, two palustrine forested (PFO) wetlands totaling approximately 1.34 acres, and one palustrine unconsolidated bottom (PUB) wetland totaling approximately 0.02 acres were identified within the Project Area. Additionally, two ephemeral streams totaling approximately 444 linear feet in length and two intermittent streams totaling approximately 2,508 linear feet in length were also delineated within the Project Area. See Table 2 for more information regarding the wetland classifications and ORAM categories and Table 3 for more information regarding the streams identified within the Project Area. The information provided by Stantec regarding wetland and stream boundaries is based on an analysis of the wetland and upland conditions present within the Project Area at the time of the field work. The delineations were performed by experienced and qualified professionals using regulatory agency-accepted practices and sound professional judgment.

Table 4 provides summary information for all state-listed threatened and endangered species known to occur, or with potential to occur, within Union County, as well as additional state-listed species mentioned by the ODNR in their environmental review response letter. An environmental review request letter was sent to the ODNR Office of Real Estate. The ODNR Office of Real Estate response letter (Appendix B) indicated that the Project Area is located within the range of the following state-listed endangered and/or threatened species: Indiana bat, Scioto madtom, Tippecanoe darter, king rail, loggerhead shrike, northern harrier, and 7 mussel species.

If suitable Indiana bat roost habitat occurs within the Project Area, the ODNR recommends trees be conserved. If suitable Indiana bat roost habitat occurs in the Project Area and trees must be cut, the ODNR recommends cutting occur between October 1 and March 31. If suitable trees must be cut during summer months, the ODNR recommends a net survey be conducted between June 1 and August 15, prior to any cutting. If no tree removal is proposed, this project is not likely to impact this species. According to the ODNR, the little brown bat (state-listed endangered), northern long-eared bat (state-listed endangered), and tri-colored bat (state-listed endangered) occur statewide in Ohio. These species also roost in trees during the summer months and the little brown bat and tri-colored bat also roost in buildings. Any tree clearing that is necessary for the Project is planned to take place between October 1 and March 31 during the allotted winter tree clearing window. Additionally, no buildings will be removed as part of the Project. Therefore, no impacts to the Indiana bat, northern long-eared bat, little brown bat, and tri-colored bat are anticipated.

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According to the ODNR, due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact the Scioto madtom, Tippecanoe darter, or the 7-mussel species. No suitable habitat for these state-listed fish and mussel species was observed within the Project Area and no in-water work in a perennial stream will be required. Therefore, no impacts to these species are anticipated.

According to the ODNR, the loggerhead shrike nests in hedgerows, thickets and fencerows. They hunt over hayfields, pastures, and other grasslands. The ODNR stated that, if thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 to August 1. Potentially suitable nesting habitat for the loggerhead shrike (old field habitat with scattered trees and shrubs) was observed in the Project area. It is anticipated that AEP will avoid construction in potentially suitable loggerhead shrike nesting habitat between April 1 and August 1 or pre-construction nest surveys for this species will be conducted. Therefore, the Project is not likely to impact this species. No suitable habitat was observed in the Project area for the northern harrier or king rail. Therefore, no impacts to those species are anticipated.

Potential habitat was also observed for the lark sparrow, least bittern, and barn owl within the Project area. Old field habitat within the Project area is limited but could be considered potential nesting habitat for the lark sparrow and potential foraging habitat for the barn owl. However, those habitats are not extensive within the Project Area or adjacent to it. Additionally, it is anticipated that AEP will clear vegetation outside of the lark sparrow's nesting season. Therefore, no impacts to the lark sparrow are anticipated. Potentially suitable barn owl nesting habitat was also observed within the Project Area (deciduous forest; riparian forest). However, those habitats are not extensive within the Project Area or adjacent to it, and no large trees with hollows or other potentially suitable barn owl nesting structures were observed within the Project Area. Therefore, no impacts to the barn owl are anticipated. Wetland 8 provides potentially suitable habitat for the least bittern. However, Wetland 8 is a relatively small and low quality wetland with no woody vegetation, making it marginal habitat. Therefore, no impacts to the least bittern are anticipated.

The Ohio Natural Heritage Database (ONHD) review determined that there are no records of state endangered or threatened plants or animals within the Project Area. There are also no records of state potentially threatened plants, special interest or species of concern animals, or any federally-listed species within a one mile radius of the Project Area. Also, the ONHD is unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the Project Area.

The Project Area includes suitable foraging habitat and potentially suitable roosting habitat for the following federally listed threatened and endangered species: Indiana bat and northern long-eared bat. A technical assistance letter was submitted to the USFWS. The USFWS response letter (Appendix B) stated that should the project site contain trees  $\geq 3$  inches dbh, the USFWS



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recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees  $\geq 3$  inches dbh cannot be avoided, USFWS recommends that removal of trees  $\geq 3$  inches dbh only occur between October 1 and March 31 to avoid adverse effects to these species. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule. If implementation of seasonal tree clearing is not possible, the USFWS recommends summer presence/absence surveys be conducted for the Indiana bat between June 1 and August 15. If seasonal tree clearing is implemented, the USFWS does not anticipate adverse effects to these species or any other federally endangered, threatened, proposed or candidate species due to the project type, size, and location (Appendix B). AEP intends to clear trees within the Project Area between October 1 and March 31. Therefore, no adverse effects to the Indiana bat or northern long-eared bat are anticipated.

Additionally, the USFWS indicated that there are no federal wilderness areas, wildlife refuges, or designated critical habitat within the vicinity of the Project area (Appendix B). The USFWS recommended that impacts to wetlands and other water resources be avoided or minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

References  
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## 5.0 References

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**ECOLOGICAL RESOURCES INVENTORY REPORT, MARYSVILLE STATION EXPANSION PROJECT, UNION COUNTY, OHIO**

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September 29, 2020

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**ECOLOGICAL RESOURCES INVENTORY REPORT, MARYSVILLE STATION EXPANSION PROJECT, UNION COUNTY, OHIO**

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September 29, 2020

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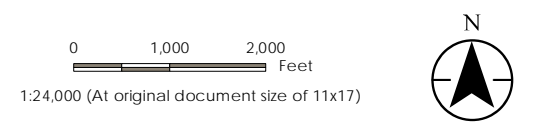
## Appendix A Figures


### A.1 FIGURE 1 – PROJECT LOCATION MAP

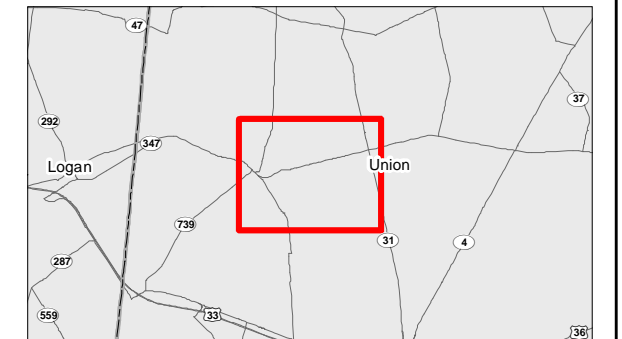




Figure No. 1  
 Title Project Location Map  
 Client/Project AEP Ohio Transmission Company, Inc.  
 Marysville Station Expansion Project  
 Project Location Union County, OH  
 Prepared by JLH on 2020-09-29  
 Technical Review by NTN on 2020-09-29  
 Independent Review by DJG on 2020-09-29



Legend  
 Project Area (Substation Property)



Notes  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources Include: Stantec, AEP, NADS  
 3. Background: USGS 7.5' Topographic Quadrangles - Peoria (1975)



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 Revised: 2020-09-29 By: JHedeman



A.2 FIGURE 2 – WETLAND AND WATERBODY DELINEATION MAP



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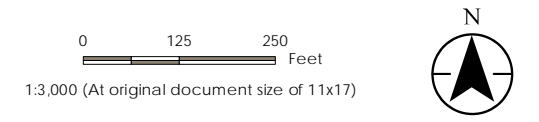
Figure No.  
2

Title  
**Wetland and Waterbody  
Delineation Map**

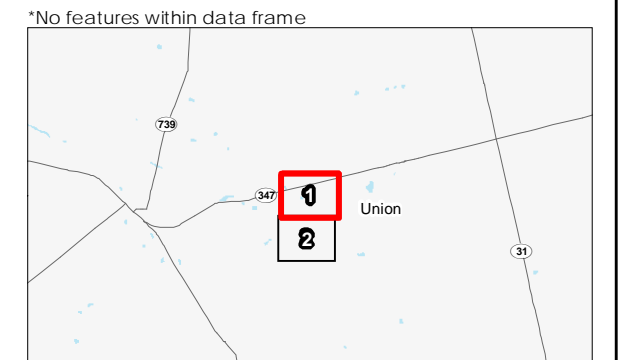
Client/Project  
AEP Ohio Transmission Company, Inc.  
Marysville Station  
Expansion Project

Project Location  
Union County, OH

193705599  
Prepared by JLH on 2020-09-29  
Technical Review by NTN on 2020-09-29  
Independent Review by DJG on 2020-09-29



- Legend**
- Project Area (Substation Property)
  - Existing Culvert
  - Wetland Determination Sample Point
  - Photo Location
  - Upland Drainage Feature
  - Approximate Upland Drainage Feature
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
  - Field Delineated Forested Wetland
  - Field Delineated Scrub-Shrub Wetland
  - Field Delineated Unconsolidated Bottom Wetland
  - Approximate Stormwater Detention Basin
  - FEMA Flood Hazard Area\*
    - 100-year Flood Zone
    - 100-year Floodway



**Notes**

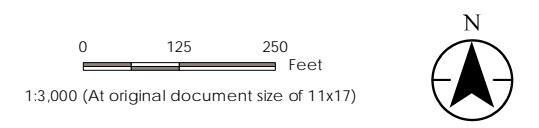
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2. Data Sources Include: Stantec, AEP, USGS, FEMA, NADS
3. Orthophotography: 2015 NAIP



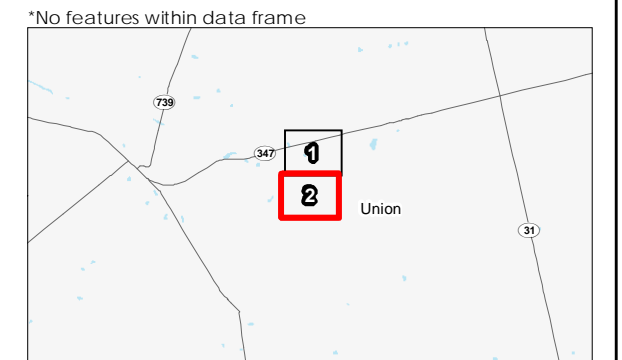




Figure No. 2  
 Title  
**Wetland and Waterbody Delineation Map**  
 Client/Project  
 AEP Ohio Transmission Company, Inc.  
 Marysville Station  
 Expansion Project  
 Project Location  
 Union County, OH  
 193705599  
 Prepared by JLH on 2020-09-29  
 Technical Review by NTN on 2020-09-29  
 Independent Review by DJG on 2020-09-29



- Legend**
- Project Area (Substation Property)
  - ▲ Existing Culvert
  - Wetland Determination Sample Point
  - Photo Location
  - ~ Upland Drainage Feature
  - - - Approximate Upland Drainage Feature
  - ~ Field Delineated Waterway
  - - - Approximate Waterway
  - Field Delineated Emergent Wetland
  - Field Delineated Forested Wetland
  - Field Delineated Scrub-Shrub Wetland
  - Field Delineated Unconsolidated Bottom Wetland
  - Approximate Stormwater Detention Basin
  - FEMA Flood Hazard Area\*  
100-year Flood Zone
  - 100-year Floodway



**Notes**

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, AEP, USGS, FEMA, NADS
3. Orthophotography: 2015 NAIP



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 Revised: 2020-09-29 By: JHedeman

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.



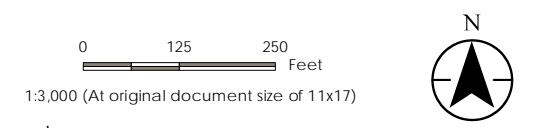
A.3 FIGURE 3 – HABITAT ASSESSMENT MAP



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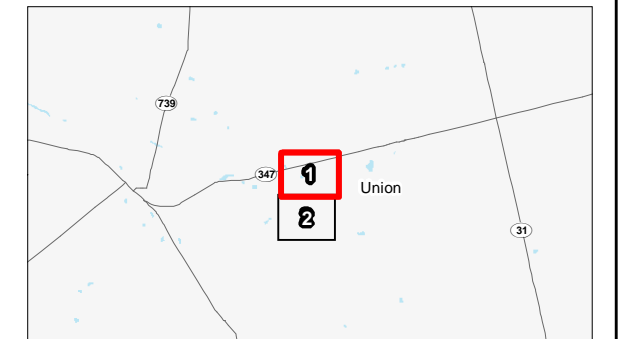


Figure No.  
**3**  
 Title  
**Habitat Assessment Map**  
 Client/Project  
 AEP Ohio Transmission Company, Inc.  
 Marysville Station  
 Expansion Project  
 Project Location  
 Union County, OH 193705599  
 Prepared by JLH on 2020-09-29  
 Technical Review by NTN on 2020-09-29  
 Independent Review by DJG on 2020-09-29



**Legend**

Project Area (Substation Property)	Agricultural Field
Photo Location	Old Field
Potential Bat Roost Tree	New Field
Upland Drainage Feature	Manicured Lawn
Approximate Upland Drainage Feature	Early Successional Deciduous Forest
Field Delineated Waterway	Mixed Early Successional/Second Growth Deciduous Forest
Approximate Waterway	Mixed Early Successional/Second Growth Riparian Forest
Field Delineated Emergent Wetland	Second Growth Deciduous Forest
Field Delineated Forested Wetland	Industrial
Field Delineated Scrub-Schrub Wetland	Railroad
Field Delineated Unconsolidated Bottom Wetland	Gravel Road
Approximate Stormwater Detention Basin	



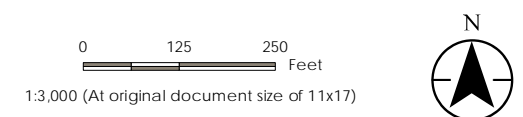
**Notes**  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources Include: Stantec, AEP, USGS, NADS  
 3. Orthophotography: 2015 NAIP





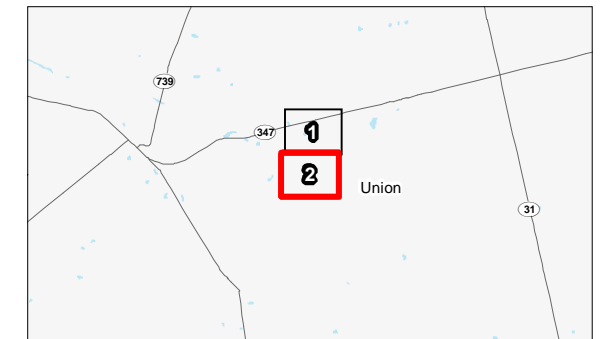


Figure No. 3  
 Title Habitat Assessment Map  
 Client/Project AEP Ohio Transmission Company, Inc. Marysville Station Expansion Project  
 Project Location Union County, OH 193705599  
 Prepared by JLH on 2020-09-29  
 Technical Review by NTN on 2020-09-29  
 Independent Review by DJG on 2020-09-29



**Legend**

Project Area (Substation Property)		Habitat Area	
○	Photo Location	Yellow	Agricultural Field
▲	Potential Bat Roost Tree	Blue	Old Field
~	Upland Drainage Feature	Brown	New Field
~	Approximate Upland Drainage Feature	Red	Manicured Lawn
~	Field Delineated Waterway	Orange	Early Successional Deciduous Forest
~	Approximate Waterway	Light Green	Mixed Early Successional/Second Growth Deciduous Forest
~	Field Delineated Emergent Wetland	Pink	Mixed Early Successional/Second Growth Riparian Forest
~	Field Delineated Forested Wetland	Purple	Second Growth Deciduous Forest
~	Field Delineated Scrub-Schrub Wetland	Red Hatched	Industrial
~	Field Delineated Unconsolidated Bottom Wetland	Black Hatched	Railroad
~	Approximate Stormwater Detention Basin	Grey Hatched	Gravel Road



**Notes**  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources Include: Stantec, AEP, USGS, NADS  
 3. Orthophotography: 2015 NAIP



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## Appendix B Agency Correspondence



# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

**Office of Real Estate**  
*Paul R. Baldrige, Chief*  
2045 Morse Road – Bldg. E-2  
Columbus, OH 43229  
*Phone: (614) 265-6649*  
*Fax: (614) 267-4764*

November 13, 2017

Dan Godec  
Stantec  
1500 Lake Shore Drive Suite 100  
Columbus OH 43204-3800

**Re:** 17-671; Request for Environmental Review, Marysville Station Expansion Project

**Project:** The proposed project involves the expansion of the existing Marysville 765 substation (Marysville Station).

**Location:** The proposed project is in Liberty and Taylor Townships, Union 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 no records at or within a one-mile radius of the project area.

A review of the Ohio Natural Heritage Database indicates there are no records of state endangered or threatened plants or animals within the project area. There are also no records of state potentially threatened plants, special interest or species of concern animals, or any federally listed species. In addition, we are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the project area. The review was performed on the project area you specified in your 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 any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

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

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

The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior to any cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of for the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the elephant-ear (*Elliptio crassidens crassidens*), a state endangered mussel, and the pondhorn (*Unio merus tetralasmus*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, and the Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the king rail (*Rallus elegans*), a state endangered bird. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to August 1. If no wetland habitat will be impacted, the project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus cyaneus*), 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 May 15 to August 1. If this habitat will not be impacted, the project is not likely to impact this species.

The project is within the range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. The loggerhead shrike nests in hedgerows, thickets and fencerows. They hunt over hayfields, pastures, and other grasslands. If thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 to August 1. 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 U.S. 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](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 John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler  
ODNR Office of Real Estate  
2045 Morse Road, Building E-2  
Columbus, Ohio 43229-6693  
John.Kessler@dnr.state.oh.us



**From:** [susan\\_zimmermann@fws.gov](mailto:susan_zimmermann@fws.gov) on behalf of [Ohio, FW3](#)  
**To:** [Godec, Daniel](#)  
**Cc:** [nathan.reardon@dnr.state.oh.us](mailto:nathan.reardon@dnr.state.oh.us); [kate.parsons@dnr.state.oh.us](mailto:kate.parsons@dnr.state.oh.us)  
**Subject:** AEP Marysville Station Expansion Project, Union Co. OH  
**Date:** Wednesday, September 06, 2017 11:34:48 AM  
**Attachments:** [Capture of Dan.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



TAILS# 03E15000-2017-TA-1832

Dear Mr. Godec,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the 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. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

**FEDERALLY LISTED SPECIES COMMENTS:** All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed 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 travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags =3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the

characteristics of a potential roost tree and are located within 1,000 feet (305 meters) 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 and abandoned mines.

Should the proposed site contain trees  $\geq 3$  inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees  $\geq 3$  inches dbh cannot be avoided, we recommend that removal of any trees  $\geq 3$  inches dbh only occur between October 1 and March 31. Seasonal clearing is being 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, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the project area during the summer. If a summer survey documents probable absence of Indiana bats, the 4(d) rule for the northern long-eared bat could be applied. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office. Surveyors must have a valid federal permit. Please note that summer surveys may only be conducted between June 1 and August 15.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), 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 that 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.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, 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, consultation with the Service should be initiated to assess any potential impacts.

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 ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at [john.kessler@dnr.state.oh.us](mailto:john.kessler@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](mailto:ohio@fws.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Dan Everson". The signature is fluid and cursive, with a large initial "D" and "E".

Dan Everson

Field Supervisor

cc: Nathan Reardon, ODNR-DOW

Kate Parsons, ODNR-DOW

## Appendix C Representative Photographs

### C.1 WETLAND AND WATERBODY PHOTOGRAPHS

AEP Ohio Transmission Company, Inc.  
Marysville Station Expansion Project  
Union County, Ohio



Photo Location 1. View of Wetland 1. Photograph taken facing north.



Photo Location 1. View of Wetland 1. Photograph taken facing west.



AEP Ohio Transmission Company, Inc.  
Marysville Station Expansion Project  
Union County, Ohio



Photo Location 1. View of Wetland 1. Photograph taken facing south.



Photo Location 1. View of Wetland 1. Photograph taken facing east.



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Union County, Ohio



Photo Location 2. View of Wetland 1. Photograph taken facing north.



Photo Location 2. View of Wetland 1. Photograph taken facing west.



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Union County, Ohio



Photo Location 2. View of Wetland 1. Photograph taken facing east.



Photo Location 2. View of Wetland 1. Photograph taken facing south.



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Photo Location 3. View of Wetland 2. Photograph taken facing east.



Photo Location 3. View of Wetland 2. Photograph taken facing northeast.



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Photo Location 3. View of Wetland 2. Photograph taken facing southwest.



Photo Location 3. View of Wetland 2. Photograph taken facing west.



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Photo Location 4. View of Wetland 3. Photograph taken facing west.



Photo Location 4. View of Wetland 3. Photograph taken facing east.



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Union County, Ohio



Photo Location 4. View of Wetland 3. Photograph taken facing south.



Photo Location 4. View of Wetland 3. Photograph taken facing north.



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Photo Location 5. View of Wetland 4. Photograph taken facing south.



Photo Location 5. View of Wetland 4. Photograph taken facing west.



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Union County, Ohio



Photo Location 5. View of Wetland 4. Photograph taken facing north.



Photo Location 5. View of Wetland 4. Photograph taken facing east.



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Photo Location 6. View of Wetland 5. Photograph taken facing north.



Photo Location 6. View of Wetland 5. Photograph taken facing east.



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Union County, Ohio



Photo Location 6. View of Wetland 5. Photograph taken facing west.



Photo Location 6. View of Wetland 5. Photograph taken facing south.



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Photo Location 7. View of Wetland 5. Photograph taken facing west.



Photo Location 7. View of Wetland 5. Photograph taken facing north.



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Union County, Ohio



Photo Location 7. View of Wetland 5. Photograph taken facing east.



Photo Location 7. View of Wetland 5. Photograph taken facing south.



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Union County, Ohio



Photo Location 8. View of Wetland 5. Photograph taken facing north.



Photo Location 8. View of Wetland 5. Photograph taken facing south.



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Union County, Ohio



Photo Location 8. View of Wetland 5. Photograph taken facing east.



Photo Location 8. View of Wetland 5. Photograph taken facing west.



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Union County, Ohio



Photo Location 9. View of Wetland 6. Photograph taken facing north.



Photo Location 9. View of Wetland 6. Photograph taken facing west.



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Marysville Station Expansion Project  
Union County, Ohio



Photo Location 9. View of Wetland 6. Photograph taken facing east.



Photo Location 9. View of Wetland 6. Photograph taken facing south.



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Marysville Station Expansion Project  
Union County, Ohio



Photo Location 10. View of Wetland 7. Photograph taken facing west.



Photo Location 10. View of Wetland 7. Photograph taken facing south.



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Marysville Station Expansion Project  
Union County, Ohio



Photo Location 10. View of Wetland 7. Photograph taken facing north.



Photo Location 10. View of Wetland 7. Photograph taken facing east.

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Photo Location 11. View of Wetland 8. Photograph taken facing south.



Photo Location 11. View of Wetland 8. Photograph taken facing southeast.



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Union County, Ohio



Photo Location 11. View of Wetland 8. Photograph taken facing northeast.



Photo Location 11. View of Wetland 8. Photograph taken facing southwest.

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Photo Location 12. View of Stream 1. Photograph taken facing upstream/west.



Photo Location 12. View of Stream 1. Photograph taken facing downstream/east.



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Photo Location 13. View of Stream 1. Photograph taken facing upstream/west.



Photo Location 13. View of Stream 1. Photograph taken facing downstream/east.



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Union County, Ohio



Photo Location 14. View of Stream 2. Photograph taken facing upstream/west.



Photo Location 14. View of Stream 2. Photo taken facing downstream/east.



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Photo Location 15. View of Stream 3. Photo taken facing upstream/northeast.



Photo Location 15. View of Stream 3. Photograph taken facing downstream/southwest.



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Photo Location 16. View of Stream 4. Photograph taken facing upstream/southwest.



Photo Location 16. View of Stream 4. Photograph taken facing downstream/northeast.



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Union County, Ohio



Photo Location 17. Representative view of vegetated upland drainage feature. Photograph taken facing west.



Photo Location 18. Representative view of graveled upland drainage feature. Photograph taken facing northwest.



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Union County, Ohio



Photo Location 19. View of non-jurisdictional wetland determination sample point 21.  
Photograph taken facing west.



Photo Location 19. View of non-jurisdictional wetland determination sample point 21.  
Photograph taken facing south.



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Union County, Ohio



Photo Location 19. View of non-jurisdictional wetland determination sample point 21.  
Photograph taken facing east.



Photo Location 19. View of non-jurisdictional wetland determination sample point 21.  
Photograph taken facing north.



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Union County, Ohio



Photo Location 20. View of non-jurisdictional wetland determination sample point 22.  
Photograph taken facing south.



Photo Location 20. View of non-jurisdictional wetland determination sample point 22.  
Photograph taken facing west.



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Union County, Ohio



Photo Location 20. View of non-jurisdictional wetland determination sample point 22.  
Photograph taken facing north.



Photo Location 20. View of non-jurisdictional wetland determination sample point 22.  
Photograph taken facing east.



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Union County, Ohio



Photo Location 21. View of early successional deciduous forest at wetland determination sample points 21 and 22. Photograph taken facing east.



Photo Location 21. View of early successional deciduous forest at wetland determination sample points 21 and 22. Photograph taken facing west.



C.2 HABITAT PHOTOGRAPHS

AEP Ohio Transmission Company, Inc.  
Marysville Station Expansion Project  
Union County, Ohio



Photo Location 1. Representative view of old field habitat. Photograph taken facing northeast.



Photo Location 2. Representative view of manicured lawn habitat. Photograph taken facing northwest.



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Marysville Station Expansion Project  
Union County, Ohio



Photo Location 3. Representative view of mixed early successional/second growth deciduous forest habitat. Photograph taken facing north.



Photo Location 4. Representative view of second growth deciduous forest habitat. Photograph taken facing south.



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Marysville Station Expansion Project  
Union County, Ohio



Photo Location 5. Representative view of mixed early successional/second growth riparian forest habitat. Photograph taken facing east.



Photo Location 6. Representative view of early successional deciduous forest habitat. Photograph taken facing north.



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Union County, Ohio



Photo Location 7. Representative view of industrial habitat. Photograph taken facing southeast.



Photo Location 8. Representative view of agricultural habitat. Photograph taken facing southwest.

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Union County, Ohio



Photo Location 9. Representative view of existing gravel road. Photograph taken facing northeast.



Photo Location 10. Representative view of potential bat roost tree. Photograph taken facing northeast.



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Union County, Ohio



Photo Location 11. Representative view of recently constructed stormwater detention basin and new field habitat area. Photograph taken facing south.



Photo Location 12. View of concrete outfall within the recently constructed stormwater detention basin. Photograph taken facing north.

## Appendix D Data Forms

### D.1 WETLAND DETERMINATION DATA FORMS

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Wetzel silty clay loam</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 1</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP 1</b>
Slope (%): <b>0%</b>	Latitude:	Longitude:	Datum: <b>NAD83</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section:			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks: **old farm pond**

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <input checked="" type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input checked="" type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input checked="" type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input checked="" type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test
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<p><b>Field Observations:</b></p> Surface Water Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    Depth: <b>0-1</b> (in.) Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.) Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    Depth: <b>0-7</b> (in.)	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Wetzel silty clay loam**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	16	--	10YR	4/1	60	7.5YR	4/6	20	C	M	silty clay
0	16	--	10YR	4/2	20	--	--	--	--	--	silty clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed)	Type: <b>NA</b>	Depth: <b>NA</b>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks: **old farm pond**



Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 1** Sample Point: **SP 1**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Populus deltoides</i>	55	Y	FAC
2.	<i>Salix nigra</i>	15	Y	OBL
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>70</b>		

Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Salix nigra</i>	5	Y	OBL
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>5</b>		

Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Panicum virgatum</i>	30	Y	FAC
2.	<i>Persicaria hydropiperoides</i>	20	Y	OBL
3.	<i>Alisma subcordatum</i>	5	N	OBL
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		<b>55</b>		

Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		<b>0</b>		

Remarks:

**Additional Remarks:**

Dominance Test Worksheet	
Number of Dominant Species that are OBL, FACW, or FAC:	<u>5</u> (A)
Total Number of Dominant Species Across All Strata:	<u>5</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100%</u> (A/B)

Prevalence Index Worksheet	
Total % Cover of:	Multiply by:
OBL spp. <u>45</u>	x 1 = <u>45</u>
FACW spp. <u>0</u>	x 2 = <u>0</u>
FAC spp. <u>85</u>	x 3 = <u>255</u>
FACU spp. <u>0</u>	x 4 = <u>0</u>
UPL spp. <u>0</u>	x 5 = <u>0</u>
Total <u>130</u> (A)	<u>300</u> (B)
Prevalence Index = B/A = <u>2.308</u>	

**Hydrophytic Vegetation Indicators:**

Yes     No    Rapid Test for Hydrophytic Vegetation  
 Yes     No    Dominance Test is > 50%  
 Yes     No    Prevalence Index is ≤ 3.0 \*  
 Yes     No    Morphological Adaptations (Explain) \*  
 Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>	Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>		County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>	State: <b>Ohio</b>
Soil Unit: <b>Wetzel silty clay loam</b>	NWI/WWI Classification: <b>NONE</b>	Wetland ID: <b>Wetland 1</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>	Sample Point: <b>SP 2</b>
Slope (%): <b>2%</b>	Latitude: <b>40.3361</b> Longitude: <b>-83.433041</b>	Community ID: <b>PFO</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Section: <b>--</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?	Are normal circumstances present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Township: <b>--</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		Range: <b>--</b> Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input checked="" type="checkbox"/> D2 - Geomorphic Position</li> <li><input checked="" type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Wetzel silty clay loam**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	4	--	10YR	4/2	95	10YR	5/8	5	C	PL	silty clay loam
4	16	--	10YR	4/1	90	10YR	6/8	10	C	M	clay loam
--	--	--	--	--	--	--	--	--	--	--	--
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<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input checked="" type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>NA</b>	Depth: <b>NA</b>	<b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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Remarks:

Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 1**

Sample Point: **SP 2**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Fraxinus pennsylvanica</i>	20	Y	FACW
2.	<i>Populus deltoides</i>	30	Y	FAC
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		50		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Acer negundo</i>	3	N	FAC
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		3		
Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Agrimonia parviflora</i>	10	N	FACW
2.	<i>Pilea pumila</i>	20	N	FACW
3.	<i>Symphotrichum lanceolatum</i>	25	Y	FAC
4.	<i>Impatiens capensis</i>	30	Y	FACW
5.	<i>Xanthium strumarium</i>	3	N	FAC
6.	<i>Solidago canadensis</i>	3	N	FACU
7.	<i>Acorus calamus</i>	30	Y	OBL
8.	<i>Phalaris arundinacea</i>	2	N	FACW
9.	<i>Ambrosia trifida</i>	3	N	FAC
10.	<i>Lycopus americanus</i>	2	N	OBL
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		128		
Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)  
 Total Number of Dominant Species Across All Strata: 5 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:		Multiply by:	
OBL spp.	<u>32</u>	x 1 =	<u>32</u>
FACW spp.	<u>82</u>	x 2 =	<u>164</u>
FAC spp.	<u>64</u>	x 3 =	<u>192</u>
FACU spp.	<u>3</u>	x 4 =	<u>12</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>181</u> (A)	<u>400</u> (B)
Prevalence Index = B/A =		<u>2.210</u>	

**Hydrophytic Vegetation Indicators:**

- Yes  No Rapid Test for Hydrophytic Vegetation
- Yes  No Dominance Test is > 50%
- Yes  No Prevalence Index is ≤ 3.0 \*
- Yes  No Morphological Adaptations (Explain) \*
- Yes  No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

- Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

**Additional Remarks:**



Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Wetzel silty clay loam</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 1</b>
Landform: <b>Side slope</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP 3</b>
Slope (%): <b>5%</b>	Latitude: _____	Longitude: _____	Datum: <b>NAD83</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Wetzel silty clay loam**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	16	--	10YR	5/2	95	10YR	5/4	5	C	M	clay loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input checked="" type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed)	Type: <b>NA</b>	Depth: <b>NA</b>	<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Remarks:

Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 1** Sample Point: **SP 3**

VEGETATION (Species identified in all uppercase are non-native species.)				
Tree Stratum (Plot size: 30 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Acer rubrum</i>	15	Y	FAC
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		15		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
1.	<i>Lonicera morrowii</i>	20	Y	FACU
2.	<i>Rosa multiflora</i>	15	Y	FACU
3.	<i>Sambucus nigra</i>	3	N	FACW
4.	<i>Ulmus americana</i>	5	N	FACW
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		43		
Herb Stratum (Plot size: 5 ft radius)				
1.	<i>Vernonia gigantea</i>	15	N	FAC
2.	<i>Agrimonia parviflora</i>	50	Y	FACW
3.	<i>Impatiens capensis</i>	20	Y	FACW
4.	<i>Solidago canadensis</i>	20	Y	FACU
5.	<i>Parthenocissus quinquefolia</i>	10	N	FACU
6.	<i>Ambrosia trifida</i>	5	N	FAC
7.	<i>Asclepias syriaca</i>	3	N	FACU
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		123		
Woody Vine Stratum (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index Worksheet**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>78</u>	x 2 =	<u>156</u>
FAC spp.	<u>35</u>	x 3 =	<u>105</u>
FACU spp.	<u>68</u>	x 4 =	<u>272</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>181</u> (A)	<u>533</u> (B)
		Prevalence Index = B/A =	<u>2.945</u>

**Hydrophytic Vegetation Indicators:**

Yes    No   Rapid Test for Hydrophytic Vegetation

Yes    No   Dominance Test is > 50%

Yes    No   Prevalence Index is ≤ 3.0 \*

Yes    No   Morphological Adaptations (Explain) \*

Yes    No   Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Wetzel silty clay loam</b>	NW/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 2</b>
Landform: <b>Floodplain</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP 4</b>
Slope (%): <b>2%</b>	Latitude: <b>40.3373</b>	Longitude: <b>-83.427617</b>	Datum: <b>wgs 84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input checked="" type="checkbox"/> D2 - Geomorphic Position</li> <li><input checked="" type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Wetzel silty clay loam**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	16	--	10YR	4/2	90	10YR	4/6	5	C	PL	clay loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input checked="" type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed)	Type: <b>NA</b>	Depth: <b>NA</b>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks:



Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 2** Sample Point: **SP 4**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 30 ft radius)</b>				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
<b>Sapling/Shrub Stratum (Plot size: 15 ft radius)</b>				
1.	<i>Fraxinus pennsylvanica</i>	5	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		5		
<b>Herb Stratum (Plot size: 5 ft radius)</b>				
1.	<i>Phalaris arundinacea</i>	90	Y	FACW
2.	<i>Impatiens capensis</i>	4	N	FACW
3.	<i>Solidago gigantea</i>	10	N	FACW
4.	<i>Pilea pumila</i>	2	N	FACW
5.	<i>Agrimonia parviflora</i>	2	N	FACW
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		108		
<b>Woody Vine Stratum (Plot size: 30 ft radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**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**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	0	x 1 =	0
FACW spp.	113	x 2 =	226
FAC spp.	0	x 3 =	0
FACU spp.	0	x 4 =	0
UPL spp.	0	x 5 =	0
Total		113 (A)	226 (B)
Prevalence Index = B/A =		<u>2.000</u>	

**Hydrophytic Vegetation Indicators:**

<input type="checkbox"/> Yes	<input type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Dominance Test is > 50%
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Wetzel silty clay loam</b>	NW/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 2</b>
Landform: <b>Terrace</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP 5</b>
Slope (%): <b>2%</b>	Latitude: <b>40.3374</b>	Longitude: <b>-83.427481</b>	Datum: <b>wgs 84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Wetzel silty clay loam**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	16	--	10YR	3/2	100	--	--	--	--	--	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/>):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>NA</b>	Depth: <b>NA</b>	<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Remarks:

Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 2**

Sample Point: **SP 5**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>0</b>		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
1.	<i>Ulmus americana</i>	3	N	FACW
2.	<i>Fraxinus pennsylvanica</i>	5	N	FACW
3.	<i>Rubus allegheniensis</i>	50	Y	FACU
4.	<i>Lonicera morrowii</i>	10	N	FACU
5.	<i>Cornus amomum</i>	5	N	FACW
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>73</b>		
Herb Stratum (Plot size: 5 ft radius)				
1.	<i>Solidago canadensis</i>	45	Y	FACU
2.	<i>Ambrosia trifida</i>	15	N	FAC
3.	<i>Agrimonia parviflora</i>	5	N	FACW
4.	<i>Phalaris arundinacea</i>	15	N	FACW
5.	<i>Impatiens capensis</i>	2	N	FACW
6.	<i>Rubus allegheniensis</i>	35	Y	FACU
7.	<i>Cirsium arvense</i>	3	N	FACU
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		<b>120</b>		
Woody Vine Stratum (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		<b>0</b>		

**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 spp.	<b>0</b>	x 1 =	<b>0</b>
FACW spp.	<b>35</b>	x 2 =	<b>70</b>
FAC spp.	<b>15</b>	x 3 =	<b>45</b>
FACU spp.	<b>143</b>	x 4 =	<b>572</b>
UPL spp.	<b>0</b>	x 5 =	<b>0</b>

Total **193** (A) **687** (B)

Prevalence Index = B/A = **3.560**

**Hydrophytic Vegetation Indicators:**

- Yes  No Rapid Test for Hydrophytic Vegetation
- Yes  No Dominance Test is > 50%
- Yes  No Prevalence Index is ≤ 3.0 \*
- Yes  No Morphological Adaptations (Explain) \*
- Yes  No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

**Additional Remarks:**



Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 2 to 4 percent slopes</b>	NWI/WWI Classification: <b>PFO1A</b>		Wetland ID: <b>N/A</b>
Landform: <b>Terrace</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP 6</b>
Slope (%): <b>2%</b>	Latitude: <b>40.3376</b>	Longitude: <b>-83.42673</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks: **Non-JD point in NWI PFO1A**

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 2 to 4 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	10	--	10YR	4/2	100	--	--	--	--	--	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/>):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed)	Type: <b>Rock/Root</b>	Depth: <b>10"</b>	<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Remarks:

Project/Site: **Marysville Station Expansion Project** Wetland ID: **N/A** Sample Point: **SP 6**

VEGETATION (Species identified in all uppercase are non-native species.)				
Tree Stratum (Plot size: 30 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Acer saccharum</i>	20	Y	FACU
2.	<i>Catalpa bignonioides</i>	45	Y	FACU
3.	<i>Prunus serotina</i>	5	N	FACU
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		70		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
1.	<i>Lonicera maackii</i>	25	Y	UPL
2.	<i>Ribes americanum</i>	10	N	FACW
3.	<i>Rosa multiflora</i>	45	Y	FACU
4.	<i>Maclura pomifera</i>	10	N	FACU
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		90		
Herb Stratum (Plot size: 5 ft radius)				
1.	<i>Solidago canadensis</i>	10	Y	FACU
2.	<i>Parthenocissus quinquefolia</i>	40	N	FACU
3.	<i>Elymus virginicus</i>	3	N	FACW
4.	<i>Carex sp.</i>	5	N	FAC
5.	<i>Euthamia graminifolia</i>	2	N	FACW
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		60		
Woody Vine Stratum (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

**Prevalence Index Worksheet**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>15</u>	x 2 =	<u>30</u>
FAC spp.	<u>5</u>	x 3 =	<u>15</u>
FACU spp.	<u>175</u>	x 4 =	<u>700</u>
UPL spp.	<u>25</u>	x 5 =	<u>125</u>
Total		<u>220</u> (A)	<u>870</u> (B)
Prevalence Index = B/A =		<u>3.955</u>	

**Hydrophytic Vegetation Indicators:**

Yes     No    Rapid Test for Hydrophytic Vegetation

Yes     No    Dominance Test is > 50%

Yes     No    Prevalence Index is ≤ 3.0 \*

Yes     No    Morphological Adaptations (Explain) \*

Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Wetzel silty clay loam</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 3</b>
Landform: <b>Floodplain</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP 7</b>
Slope (%): <b>2%</b>	Latitude: <b>40.3364</b>	Longitude: <b>-83.434546</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input checked="" type="checkbox"/> D2 - Geomorphic Position</li> <li><input checked="" type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Wetzel silty clay loam**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	3	--	10YR	4/2	100	--	--	--	--	--	clay loam
3	10	--	10YR	4/2	95	10YR	5/8	5	C	M	clay loam
10	16	--	10YR	4/2	85	10YR	5/8	15	C	M	clay loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input checked="" type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>--</b>	Depth: <b>--</b>	<b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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Remarks:



Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 3** Sample Point: **SP 7**

VEGETATION (Species identified in all uppercase are non-native species.)				
Tree Stratum (Plot size: 30 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Populus deltoides</i>	10	Y	FAC
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		10		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
1.	<i>Rosa multiflora</i>	10	Y	FACU
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		10		
Herb Stratum (Plot size: 5 ft radius)				
1.	<i>Phalaris arundinacea</i>	100	Y	FACW
2.	<i>Typha latifolia</i>	3	N	OBL
3.	<i>Impatiens capensis</i>	15	N	FACW
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		118		
Woody Vine Stratum (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

**Prevalence Index Worksheet**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>3</u>	x 1 =	<u>3</u>
FACW spp.	<u>115</u>	x 2 =	<u>230</u>
FAC spp.	<u>10</u>	x 3 =	<u>30</u>
FACU spp.	<u>10</u>	x 4 =	<u>40</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>138</u> (A)	<u>303</u> (B)
		Prevalence Index = B/A =	<u>2.196</u>

**Hydrophytic Vegetation Indicators:**

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Dominance Test is > 50%
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/29/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Wetzel silty clay loam</b>	NW/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 3</b>
Landform: <b>Side slope</b>	Local Relief: <b>Convex</b>		Sample Point: <b>SP 8</b>
Slope (%): <b>2%</b>	Latitude: <b>40.3363</b>	Longitude: <b>-83.434407</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Wetzel silty clay loam**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	10	--	10YR	4/3	100	--	--	--	--	--	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/>):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed)	Type: <b>till line/compaction</b>	Depth: <b>10"</b>	<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Remarks:

Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 3** Sample Point: **SP 8**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 30 ft radius)</b>				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
<b>Sapling/Shrub Stratum (Plot size: 15 ft radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
<b>Herb Stratum (Plot size: 5 ft radius)</b>				
1.	<i>Glycine max</i>	90	Y	UPL
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		90		
<b>Woody Vine Stratum (Plot size: 30 ft radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**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**

<u>Total % Cover of:</u>	<u>Multiply by:</u>
OBL spp. <u>0</u>	x 1 = <u>0</u>
FACW spp. <u>0</u>	x 2 = <u>0</u>
FAC spp. <u>0</u>	x 3 = <u>0</u>
FACU spp. <u>0</u>	x 4 = <u>0</u>
UPL spp. <u>90</u>	x 5 = <u>450</u>
<b>Total</b> <u>90</u> (A)	<u>450</u> (B)
Prevalence Index = B/A = <u>5.000</u>	

**Hydrophytic Vegetation Indicators:**

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Dominance Test is > 50%
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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



Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 2 to 4 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 4</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP 9</b>
Slope (%): <b>0%</b>	Latitude: _____	Longitude: _____	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input checked="" type="checkbox"/> D2 - Geomorphic Position</li> <li><input checked="" type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
--	--

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

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 2 to 4 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	7	--	10YR	4/2	90	10YR	3/4	10	C	M	silt loam
7	16	--	10YR	5/2	95	10YR	5/6	5	C	M	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input checked="" type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed) Type: <b>--</b>      Depth: <b>--</b></p>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
--	--

Remarks:

Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 4**

Sample Point: **SP 9**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Populus deltoides</i>	15	Y	FAC
2.	<i>Fraxinus pennsylvanica</i>	2	N	FACW
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		17		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Salix nigra</i>	3	Y	OBL
2.	<i>Ulmus americana</i>	5	Y	FACW
3.	<i>Quercus palustris</i>	2	N	FACW
4.	<i>Rubus allegheniensis</i>	2	N	FACU
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		12		
Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Phalaris arundinacea</i>	100	Y	FACW
2.	<i>Solidago canadensis</i>	5	N	FACU
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		105		
Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		

**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 spp.	<u>3</u>	x 1 =	<u>3</u>
FACW spp.	<u>109</u>	x 2 =	<u>218</u>
FAC spp.	<u>15</u>	x 3 =	<u>45</u>
FACU spp.	<u>7</u>	x 4 =	<u>28</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>134</u> (A)	<u>294</u> (B)
Prevalence Index = B/A =		<u>2.194</u>	

**Hydrophytic Vegetation Indicators:**

- Yes     No    Rapid Test for Hydrophytic Vegetation
- Yes     No    Dominance Test is > 50%
- Yes     No    Prevalence Index is ≤ 3.0 \*
- Yes     No    Morphological Adaptations (Explain) \*
- Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

- Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

**Additional Remarks:**

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 2 to 4 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>	Wetland ID: <b>Wetland 4</b>	
Landform: <b>Flat</b>	Local Relief: <b>Linear</b>	Sample Point: <b>SP 10</b>	Community ID: <b>Upland</b>
Slope (%): <b>0%</b>	Latitude: <b>40.3357</b>	Longitude: <b>-83.433864</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>		Township: <b>--</b>	
Range: <b>--</b>		Dir: <b>--</b>	

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 2 to 4 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	10	--	10YR	4/3	100	--	--	--	--	--	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/>):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed)	Type: <b>till line/compaction</b>	Depth: <b>10"</b>	<p><b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Remarks:



Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 4**

Sample Point: **SP 10**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)			
	Species Name	% Cover	Dominant
1.	--	--	--
2.	--	--	--
3.	--	--	--
4.	--	--	--
5.	--	--	--
6.	--	--	--
7.	--	--	--
8.	--	--	--
9.	--	--	--
10.	--	--	--
Total Cover =		<b>0</b>	

Sapling/Shrub Stratum (Plot size: 15 ft radius)			
	Species Name	% Cover	Dominant
1.	--	--	--
2.	--	--	--
3.	--	--	--
4.	--	--	--
5.	--	--	--
6.	--	--	--
7.	--	--	--
8.	--	--	--
9.	--	--	--
10.	--	--	--
Total Cover =		<b>0</b>	

Herb Stratum (Plot size: 5 ft radius)			
	Species Name	% Cover	Dominant
1.	<i>Glycine max</i>	100	Y
2.	<i>Conyza canadensis</i>	2	N
3.	--	--	--
4.	--	--	--
5.	--	--	--
6.	--	--	--
7.	--	--	--
8.	--	--	--
9.	--	--	--
10.	--	--	--
11.	--	--	--
12.	--	--	--
13.	--	--	--
14.	--	--	--
15.	--	--	--
Total Cover =		<b>102</b>	

Woody Vine Stratum (Plot size: 30 ft radius)			
	Species Name	% Cover	Dominant
1.	--	--	--
2.	--	--	--
3.	--	--	--
4.	--	--	--
5.	--	--	--
Total Cover =		<b>0</b>	

Remarks:

**Additional Remarks:**

**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 spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>0</u>	x 2 =	<u>0</u>
FAC spp.	<u>0</u>	x 3 =	<u>0</u>
FACU spp.	<u>0</u>	x 4 =	<u>0</u>
UPL spp.	<u>102</u>	x 5 =	<u>510</u>

Total 102 (A) 510 (B)

Prevalence Index = B/A = 5.000

**Hydrophytic Vegetation Indicators:**

- Yes  No Rapid Test for Hydrophytic Vegetation
- Yes  No Dominance Test is > 50%
- Yes  No Prevalence Index is ≤ 3.0 \*
- Yes  No Morphological Adaptations (Explain) \*
- Yes  No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 0 to 2 percent slopes</b>	NW1/WW1 Classification: <b>PFO1A</b>		Wetland ID: <b>Wetland 5</b>
Landform: <b>Flat</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP 11</b>
Slope (%): <b>1%</b>	Latitude: <b>40.3296</b>	Longitude: <b>-83.436242</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input checked="" type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 0 to 2 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	4	--	10YR	4/2	90	10YR	4/6	10	C	M	silt loam
4	7	--	10YR	5/2	90	10YR	4/6	10	C	M	silty clay loam
7	16	--	10YR	5/1	90	10YR	5/8	10	C	M	silty clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input checked="" type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed) Type: <b>--</b> Depth: <b>--</b></p>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks:

Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 5** Sample Point: **SP 11**

<b>VEGETATION</b> (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum</b> (Plot size: 30 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Acer rubrum</i>	65	Y	FAC
2.	<i>Ulmus americana</i>	30	Y	FACW
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		95		
<b>Sapling/Shrub Stratum</b> (Plot size: 15 ft radius)				
1.	<i>Ulmus americana</i>	15	Y	FACW
2.	<i>Fraxinus pennsylvanica</i>	10	Y	FACW
3.	<i>Rosa carolina</i>	5	N	FACU
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		30		
<b>Herb Stratum</b> (Plot size: 5 ft radius)				
1.	<i>Boehmeria cylindrica</i>	20	Y	UPL
2.	<i>Cinna arundinacea</i>	20	Y	UPL
3.	<i>Toxicodendron radicans</i>	5	N	FAC
4.	<i>Carex squarrosa</i>	5	N	OBL
5.	<i>Symphotrichum lanceolatum</i>	5	N	FAC
6.	<i>Glyceria striata</i>	15	Y	OBL
7.	<i>Carex stricta</i>	15	Y	OBL
8.	<i>Agrimonia parviflora</i>	2	N	FACW
9.	<i>Rosa carolina</i>	3	N	FACU
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		90		
<b>Woody Vine Stratum</b> (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

**Prevalence Index Worksheet**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>35</u>	x 1 =	<u>35</u>
FACW spp.	<u>57</u>	x 2 =	<u>114</u>
FAC spp.	<u>75</u>	x 3 =	<u>225</u>
FACU spp.	<u>8</u>	x 4 =	<u>32</u>
UPL spp.	<u>40</u>	x 5 =	<u>200</u>
Total		<u>215</u> (A)	<u>606</u> (B)
		Prevalence Index = B/A =	<u>2.819</u>

**Hydrophytic Vegetation Indicators:**

Yes     No    Rapid Test for Hydrophytic Vegetation

Yes     No    Dominance Test is > 50%

Yes     No    Prevalence Index is ≤ 3.0 \*

Yes     No    Morphological Adaptations (Explain) \*

Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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



Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 0 to 2 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 5</b>
Landform: <b>Side slope</b>	Local Relief: <b>Convex</b>		Sample Point: <b>SP 12</b>
Slope (%): <b>2%</b>	Latitude: <b>40.3297</b>	Longitude: <b>-83.436006</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
			Section: <b>--</b>
			Township: <b>--</b>
			Range: <b>--</b> Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 0 to 2 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	4	--	10YR	5/3	100	--	--	--	--	--	silty clay loam
4	10	--	10YR	5/2	50	--	--	--	--	--	clay loam
--	--	--	10YR	5/4	50	--	--	--	--	--	clay loam
10	16	--	10YR	6/3	95	10YR	6/8	5	C	M	silty clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/>):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed)      Type: <b>--</b>      Depth: <b>--</b></p>	<p><b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Remarks:

Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 5** Sample Point: **SP 12**

VEGETATION (Species identified in all uppercase are non-native species.)				
Tree Stratum (Plot size: 30 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Acer saccharum</i>	90	Y	FACU
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		90		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
1.	<i>Ulmus americana</i>	25	Y	FACW
2.	<i>Acer saccharum</i>	45	Y	FACU
3.	<i>Rosa multiflora</i>	5	N	FACU
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		75		
Herb Stratum (Plot size: 5 ft radius)				
1.	<i>Rubus allegheniensis</i>	20	Y	FACU
2.	<i>Viola sororia</i>	15	Y	FAC
3.	<i>Agrimonia parviflora</i>	10	N	FACW
4.	<i>Persicaria virginiana</i>	3	N	FAC
5.	<i>Toxicodendron radicans</i>	10	N	FAC
6.	<i>Parthenocissus quinquefolia</i>	20	Y	FACU
7.	<i>Symphotrichum sp</i>	3	N	FAC
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		81		
Woody Vine Stratum (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

**Prevalence Index Worksheet**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>35</u>	x 2 =	<u>70</u>
FAC spp.	<u>31</u>	x 3 =	<u>93</u>
FACU spp.	<u>180</u>	x 4 =	<u>720</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>246</u> (A)	<u>883</u> (B)
		Prevalence Index = B/A =	<u>3.589</u>

**Hydrophytic Vegetation Indicators:**

Yes     No    Rapid Test for Hydrophytic Vegetation

Yes     No    Dominance Test is > 50%

Yes     No    Prevalence Index is ≤ 3.0 \*

Yes     No    Morphological Adaptations (Explain) \*

Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 0 to 2 percent slopes</b>	NW1/WW1 Classification: <b>PFO1A</b>		Wetland ID: <b>Wetland 5</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP 13</b>
Slope (%): <b>1%</b>	Latitude: <b>40.3286</b>	Longitude: <b>-83.436056</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input checked="" type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input checked="" type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 0 to 2 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	3	--	10YR	5/1	90	10YR	5/8	10	C	M	silty clay
3	16	--	10YR	4/1	85	10YR	5/8	15	C	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input checked="" type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed)	Type: <b>--</b>	Depth: <b>--</b>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks:



Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 5**

Sample Point: **SP 13**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Quercus macrocarpa</i>	10	N	FAC
2.	<i>Quercus palustris</i>	15	Y	FACW
3.	<i>Acer saccharinum</i>	35	Y	FACW
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		60		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Quercus macrocarpa</i>	10	Y	FAC
2.	<i>Ulmus americana</i>	10	Y	FACW
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		20		
Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Boehmeria cylindrica</i>	20	Y	OBL
2.	<i>Cinna arundinacea</i>	15	Y	FACW
3.	<i>Carex lupulina</i>	10	N	OBL
4.	<i>Glyceria striata</i>	3	N	OBL
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		48		
Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		

**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 spp.	<u>33</u>	x 1 =	<u>33</u>
FACW spp.	<u>75</u>	x 2 =	<u>150</u>
FAC spp.	<u>20</u>	x 3 =	<u>60</u>
FACU spp.	<u>0</u>	x 4 =	<u>0</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>

Total 128 (A) 243 (B)

Prevalence Index = B/A = 1.898

**Hydrophytic Vegetation Indicators:**

- Yes  No Rapid Test for Hydrophytic Vegetation
- Yes  No Dominance Test is > 50%
- Yes  No Prevalence Index is ≤ 3.0 \*
- Yes  No Morphological Adaptations (Explain) \*
- Yes  No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

**Additional Remarks:**

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 0 to 2 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 6</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP 14</b>
Slope (%): <b>0%</b>	Latitude: _____	Longitude: _____	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Community ID: <b>PUB</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Section: <b>--</b>	Township: <b>--</b>
		Range: <b>--</b>	Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <input checked="" type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input checked="" type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input checked="" type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input checked="" type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test
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<p><b>Field Observations:</b></p> Surface Water Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    Depth: <b>0-1</b> (in.) Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.) Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    Depth: <b>0</b> (in.)	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 0 to 2 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%	Color (Moist)	%	Type	Location			
0	3	--	10YR	4/1	85	10YR	4/6	15	C	M	silty clay
3	16	--	10YR	5/1	80	10YR	5/8	20	C	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>--</b>	Depth: <b>--</b>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks:

Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 6**

Sample Point: **SP 14**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Quercus palustris</i>	5	Y	FACW
2.	<i>Ulmus americana</i>	5	Y	FACW
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>10</b>		

Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Fraxinus pennsylvanica</i>	15	Y	FACW
2.	<i>Ulmus americana</i>	10	Y	FACW
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>25</b>		

Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		<b>0</b>		

Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		<b>0</b>		

Remarks:

**Additional Remarks:**

**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 spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>35</u>	x 2 =	<u>70</u>
FAC spp.	<u>0</u>	x 3 =	<u>0</u>
FACU spp.	<u>0</u>	x 4 =	<u>0</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>

Total 35 (A) 70 (B)

Prevalence Index = B/A = 2.000

**Hydrophytic Vegetation Indicators:**

- Yes  No Rapid Test for Hydrophytic Vegetation
- Yes  No Dominance Test is > 50%
- Yes  No Prevalence Index is ≤ 3.0 \*
- Yes  No Morphological Adaptations (Explain) \*
- Yes  No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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



Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 0 to 2 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 6</b>
Landform: <b>Side slope</b>	Local Relief: <b>Convex</b>		Sample Point: <b>SP 15</b>
Slope (%): <b>2%</b>	Latitude: _____	Longitude: _____	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Community ID: <b>Upland</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
			Section: <b>--</b>
			Township: <b>--</b>
			Range: <b>--</b> Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 0 to 2 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	3	--	10YR	4/1	100	--	--	--	--	--	silty clay loam
3	11	--	10YR	4/2	97	10YR	5/6	3	C	M	silty clay
11	16	--	10YR	5/1	90	10YR	6/6	10	C	M	silty clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1- Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input checked="" type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed) Type: <b>--</b> Depth: <b>--</b></p>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks:

Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 6** Sample Point: **SP 15**

<b>VEGETATION</b> (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum</b> (Plot size: 30 ft radius)				
	<i>Species Name</i>	<i>% Cover</i>	<i>Dominant</i>	<i>Ind. Status</i>
1.	<i>Fraxinus pennsylvanica</i>	55	Y	FACW
2.	<i>Ulmus americana</i>	20	Y	FACW
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		75		
<b>Sapling/Shrub Stratum</b> (Plot size: 15 ft radius)				
1.	<i>Rubus allegheniensis</i>	20	Y	FACU
2.	<i>Rosa multiflora</i>	15	N	FACU
3.	<i>Ulmus americana</i>	40	Y	FACW
4.	<i>Fraxinus pennsylvanica</i>	5	N	FACW
5.	<i>Lonicera morrowii</i>	3	N	FACU
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		83		
<b>Herb Stratum</b> (Plot size: 5 ft radius)				
1.	<i>Parthenocissus quinquefolia</i>	15	Y	FACU
2.	<i>Rubus allegheniensis</i>	15	Y	FACU
3.	<i>Toxicodendron radicans</i>	25	Y	FAC
4.	<i>Persicaria virginiana</i>	15	Y	FAC
5.	<i>Rosa multiflora</i>	15	Y	FACU
6.	<i>Agrimonia parviflora</i>	10	N	FACW
7.	<i>Geum canadense</i>	5	N	FAC
8.	<i>Galium aparine</i>	3	N	FACU
9.	<i>Alliaria petiolata</i>	5	N	FAC
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		108		
<b>Woody Vine Stratum</b> (Plot size: 30 ft radius)				
1.	<i>Toxicodendron radicans</i>	10	Y	FAC
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		10		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

**Prevalence Index Worksheet**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>130</u>	x 2 =	<u>260</u>
FAC spp.	<u>60</u>	x 3 =	<u>180</u>
FACU spp.	<u>86</u>	x 4 =	<u>344</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>276</u> (A)	<u>784</u> (B)
Prevalence Index = B/A =		<u>2.841</u>	

**Hydrophytic Vegetation Indicators:**

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Dominance Test is > 50%
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 0 to 2 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 5</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP 16</b>
Slope (%): <b>1%</b>	Latitude: <b>40.3295</b>	Longitude: <b>-83.435325</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input checked="" type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input checked="" type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 0 to 2 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	4	--	10YR	3/1	95	10YR	5/8	5	C	M	silty clay loam
4	10	--	10YR	4/1	90	10YR	5/8	10	C	M	silty clay loam
10	16	--	10YR	5/2	60	10YR	5/8	40	C	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed)      Type: <b>--</b>      Depth: <b>--</b></p>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks:



Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 5**

Sample Point: **SP 16**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Quercus macrocarpa</i>	65	Y	FAC
2.	<i>Acer rubrum</i>	20	Y	FAC
3.	<i>Quercus palustris</i>	15	N	FACW
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>100</b>		

Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Fraxinus pennsylvanica</i>	5	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>5</b>		

Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Cinna arundinacea</i>	45	Y	FACW
2.	<i>Glyceria striata</i>	20	Y	OBL
3.	<i>Symphyotrichum lateriflorum</i>	3	N	FACW
4.	<i>Toxicodendron radicans</i>	5	N	FAC
5.	<i>Carex squarrosa</i>	3	N	OBL
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		<b>76</b>		

Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Toxicodendron radicans</i>	5	Y	FAC
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		<b>5</b>		

Remarks:

**Additional Remarks:**

**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 spp.	<u>23</u>	x 1 =	<u>23</u>
FACW spp.	<u>68</u>	x 2 =	<u>136</u>
FAC spp.	<u>95</u>	x 3 =	<u>285</u>
FACU spp.	<u>0</u>	x 4 =	<u>0</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>186</u> (A)	<u>444</u> (B)
Prevalence Index = B/A =		<u>2.387</u>	

**Hydrophytic Vegetation Indicators:**

- Yes     No    Rapid Test for Hydrophytic Vegetation
- Yes     No    Dominance Test is > 50%
- Yes     No    Prevalence Index is ≤ 3.0 \*
- Yes     No    Morphological Adaptations (Explain) \*
- Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

- Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>		Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>
Soil Unit: <b>Glynwood silt loam, end moraine, 2 to 6 percent slopes</b>		NW1/WW1 Classification: <b>NONE</b>	
Landform: <b>Toeslope</b>	Local Relief: <b>Concave</b>	Latitude: <b>40.3308</b>	Longitude: <b>-83.431141</b>
Slope (%): <b>1%</b>	Datum: <b>WGS84</b>	Wetland ID: <b>Wetland 7</b>	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Sample Point: <b>SP 17</b>	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Community ID: <b>PSS</b>	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		Section: <b>--</b>	
Are normal circumstances present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Township: <b>--</b>	
Remarks: <b>reclaimed area from station construction</b>		Range: <b>--</b> Dir: <b>--</b>	

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input checked="" type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input checked="" type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test
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<p><b>Field Observations:</b></p> Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.) Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.) Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.)	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: **N/A**

Remarks:

**SOILS**

Map Unit Name: **Glynwood silt loam, end moraine, 2 to 6 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	5	--	10YR	4/2	98	10YR	4/4	2	C	M	silty clay loam
5	10	--	10YR	5/2	95	10YR	5/6	5	C	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):</p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat		<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)	
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>clay/fill material</b> Depth: <b>10"</b>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks:

Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 7**

Sample Point: **SP 17**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>0</b>		

Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Salix interior</i>	45	Y	FACW
2.	<i>Populus deltoides</i>	3	N	FAC
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>48</b>		

Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Typha latifolia</i>	45	Y	OBL
2.	<i>Solidago canadensis</i>	10	N	FACU
3.	<i>Apocynum cannabinum</i>	15	N	FAC
4.	<i>Lycopus americanus</i>	10	N	OBL
5.	<i>Echinochloa crus-galli</i>	5	N	FACW
6.	<i>Scirpus atrovirens</i>	2	N	OBL
7.	<i>Cirsium arvense</i>	1	N	FACU
8.	<i>Juncus tenuis</i>	2	N	FAC
9.	<i>Carex vulpinoidea</i>	25	Y	FACW
10.	<i>Solidago rugosa</i>	5	N	FAC
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		<b>120</b>		

Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		<b>0</b>		

Remarks:

**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: **100%** (A/B)

**Prevalence Index Worksheet**

Total % Cover of:		Multiply by:	
OBL spp.	57	x 1 =	57
FACW spp.	75	x 2 =	150
FAC spp.	25	x 3 =	75
FACU spp.	11	x 4 =	44
UPL spp.	0	x 5 =	0
<b>Total</b>	<b>168</b>	<b>(A)</b>	<b>326</b> <b>(B)</b>
Prevalence Index = B/A =			<b>1.940</b>

**Hydrophytic Vegetation Indicators:**

- Yes     No    Rapid Test for Hydrophytic Vegetation
- Yes     No    Dominance Test is > 50%
- Yes     No    Prevalence Index is ≤ 3.0 \*
- Yes     No    Morphological Adaptations (Explain) \*
- Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

**Additional Remarks:**



Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Glynwood silt loam, end moraine, 2 to 6 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 7</b>
Landform: <b>Flat</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP 18</b>
Slope (%): <b>1%</b>	Latitude: <b>40.3309</b>	Longitude: <b>-83.431141</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Glynwood silt loam, end moraine, 2 to 6 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	5	--	10YR	5/3	93	--	--	--	--	--	fill
0	5	--	10YR	5/8	5	--	--	--	--	--	fill
0	5	--	10YR	6/1	2	--	--	--	--	--	fill
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/>):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed) Type: <b>clay/fill material</b>      Depth: <b>5"</b></p>	<p><b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Remarks:

Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 7**

Sample Point: **SP 18**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>0</b>		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
1.	<i>Populus deltoides</i>	10	Y	FAC
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>10</b>		
Herb Stratum (Plot size: 5 ft radius)				
1.	<i>Daucus carota</i>	10	N	UPL
2.	<i>Schedonorus arundinaceus</i>	65	Y	FACU
3.	<i>Solidago rugosa</i>	15	N	FAC
4.	<i>Poa pratensis</i>	25	N	FAC
5.	<i>Apocynum cannabinum</i>	3	N	FAC
6.	<i>Setaria pumila</i>	15	N	FAC
7.	<i>Phleum pratense</i>	5	N	FACU
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		<b>138</b>		
Woody Vine Stratum (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		<b>0</b>		

**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: **50%** (A/B)

**Prevalence Index Worksheet**

Total % Cover of:		Multiply by:	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>0</u>	x 2 =	<u>0</u>
FAC spp.	<u>68</u>	x 3 =	<u>204</u>
FACU spp.	<u>70</u>	x 4 =	<u>280</u>
UPL spp.	<u>10</u>	x 5 =	<u>50</u>
Total		<b>148</b> (A)	<b>534</b> (B)
		Prevalence Index = B/A =	<b>3.608</b>

**Hydrophytic Vegetation Indicators:**

- Yes     No    Rapid Test for Hydrophytic Vegetation
- Yes     No    Dominance Test is > 50%
- Yes     No    Prevalence Index is ≤ 3.0 \*
- Yes     No    Morphological Adaptations (Explain) \*
- Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

**Additional Remarks:**

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 2 to 4 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 8</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP 19</b>
Slope (%): <b>0%</b>	Latitude:	Longitude:	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Community ID: <b>PEM</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
			Section: <b>--</b>
			Township: <b>--</b>
			Range: <b>--</b> Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks: **fed by multiple drain tiles from underneath facility**

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present  ):

<p><u>Primary:</u></p> <input checked="" type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input checked="" type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input checked="" type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test
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<p><b>Field Observations:</b></p> Surface Water Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    Depth: <b>0-1'</b> (in.) Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.) Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    Depth: <b>surface</b> (in.)	<p><b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 2 to 4 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	4	--	10YR	5/1	100	--	--	--	--	--	sandy clay loam
4	10	--	10YR	5/2	80	10YR	6/4	20	C	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input checked="" type="checkbox"/> ):</p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input checked="" type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
--	--

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed) Type: <b>clay/fill material</b> Depth: <b>10"</b></p>	<p><b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
--	--

Remarks:



Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Wetland 8**

Sample Point: **SP 19**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>0</b>		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		<b>0</b>		
Herb Stratum (Plot size: 5 ft radius)				
1.	<i>Typha angustifolia</i>	60	Y	OBL
2.	<i>Echinochloa muricata</i>	5	N	OBL
3.	<i>Typha X glauca</i>	20	Y	OBL
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		<b>85</b>		
Woody Vine Stratum (Plot size: 30 ft radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		<b>0</b>		

**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 spp.	<u>85</u>	x 1 =	<u>85</u>
FACW spp.	<u>0</u>	x 2 =	<u>0</u>
FAC spp.	<u>0</u>	x 3 =	<u>0</u>
FACU spp.	<u>0</u>	x 4 =	<u>0</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>85</u> (A)	<u>85</u> (B)
		Prevalence Index = B/A =	<u>1.000</u>

**Hydrophytic Vegetation Indicators:**

- Yes     No    Rapid Test for Hydrophytic Vegetation
- Yes     No    Dominance Test is > 50%
- Yes     No    Prevalence Index is ≤ 3.0 \*
- Yes     No    Morphological Adaptations (Explain) \*
- Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

- Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

**Additional Remarks:**

Project/Site: <b>Marysville Station Expansion Project</b>		Stantec Project #: <b>193705599</b>	Date: <b>08/30/17</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Nate Noland</b>	Investigator #2: <b>Kate Bomar</b>		State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 2 to 4 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>		Wetland ID: <b>Wetland 8</b>
Landform: <b>Side slope</b>	Local Relief: <b>Convex</b>		Sample Point: <b>SP 20</b>
Slope (%): <b>5%</b>	Latitude: <b>40.3315</b>	Longitude: <b>-83.427529</b>	Datum: <b>WGS84</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p> <p>Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      Depth: <b>--</b> (in.)</p>	<p><b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 2 to 4 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Redox Features				Texture (e.g. clay, sand, loam)
			Color (Moist)	%		Color (Moist)	%	Type	Location	
0	6	--	10YR 4/3	88	--	--	--	--	--	silty clay loam
--	--	--	10YR 4/2	10	10YR	4/4	2	C	--	silty clay loam
6	10	--	10YR 4/2	45	10YR	5/6	5	--	--	silty clay loam
--	--	--	10YR 4/3	40	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/>):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<p><b>Indicators for Problematic Soils <sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (If Observed) Type: <b>clay/fill material</b>      Depth: <b>10"</b></p>	<p><b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Remarks:

Project/Site: **Marysville Station Expansion Project** Wetland ID: **Wetland 8** Sample Point: **SP 20**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 30 ft radius)</b>				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
<b>Sapling/Shrub Stratum (Plot size: 15 ft radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
<b>Herb Stratum (Plot size: 5 ft radius)</b>				
1.	<i>Apocynum cannabinum</i>	10	N	FAC
2.	<i>Daucus carota</i>	15	Y	UPL
3.	<i>Conyza canadensis</i>	3	N	UPL
4.	<i>Symphyotrichum ericoides</i>	30	Y	FACU
5.	<i>Solidago canadensis</i>	5	N	FACU
6.	<i>Lotus corniculatus</i>	10	N	FACU
7.	<i>Dactylis glomerata</i>	2	N	FACU
8.	<i>Setaria faberi</i>	25	Y	FACU
9.	<i>Senecio hieraciifolius</i>	3	N	FAC
10.	<i>Ambrosia artemisiifolia</i>	10	N	FACU
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		113		
<b>Woody Vine Stratum (Plot size: 30 ft radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**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**

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>0</u>	x 2 =	<u>0</u>
FAC spp.	<u>13</u>	x 3 =	<u>39</u>
FACU spp.	<u>82</u>	x 4 =	<u>328</u>
UPL spp.	<u>18</u>	x 5 =	<u>90</u>
Total		<u>113</u> (A)	<u>457</u> (B)
		Prevalence Index = B/A = <u>4.044</u>	

**Hydrophytic Vegetation Indicators:**

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Dominance Test is > 50%
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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



Project/Site: <b>Marysville Station Expansion Project</b>	Stantec Project #: <b>193705599</b>	Date: <b>09/24/20</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>	Investigator #1: <b>Nate Noland</b>	County: <b>Union</b>
Investigator #2: <b>Aaron Kwolek</b>	Investigator #2: <b>Aaron Kwolek</b>	State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 2 to 4 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>	Wetland ID: <b>Non-JD</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>	Sample Point: <b>SP 21</b>
Slope (%): <b>1</b>	Latitude: <b>40.3358</b>	Longitude: <b>-83.429471</b>
	Datum: <b>NAD83</b>	Community ID: <b>UPL</b>

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

Are Vegetation , Soil , or Hydrology  significantly disturbed?  Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic?  Yes  No

Section: \_\_\_\_\_ Township: -- Range: -- Dir: --

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present?  Yes  No

Wetland Hydrology Present?  Yes  No

Hydric Soils Present?  Yes  No

**Is This Sampling Point Within A Wetland?  Yes  No**

Remarks: **Toe of slope area adjacent to agricultural field.**

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Surface Water</li> <li><input type="checkbox"/> A2 - High Water Table</li> <li><input type="checkbox"/> A3 - Saturation</li> <li><input type="checkbox"/> B1 - Water Marks</li> <li><input type="checkbox"/> B2 - Sediment Deposits</li> <li><input type="checkbox"/> B3 - Drift Deposits</li> <li><input type="checkbox"/> B4 - Algal Mat or Crust</li> <li><input type="checkbox"/> B5 - Iron Deposits</li> <li><input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery</li> <li><input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface</li> </ul>	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> B9 - Water-Stained Leaves</li> <li><input type="checkbox"/> B13 - Aquatic Fauna</li> <li><input type="checkbox"/> B14 - True Aquatic Plants</li> <li><input type="checkbox"/> C1 - Hydrogen Sulfide Odor</li> <li><input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots</li> <li><input type="checkbox"/> C4 - Presence of Reduced Iron</li> <li><input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils</li> <li><input type="checkbox"/> C7 - Thin Muck Surface</li> <li><input type="checkbox"/> D9 - Gauge or Well Data</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> B6 - Surface Soil Cracks</li> <li><input type="checkbox"/> B10 - Drainage Patterns</li> <li><input type="checkbox"/> C2 - Dry-Season Water Table</li> <li><input type="checkbox"/> C8 - Crayfish Burrows</li> <li><input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery</li> <li><input type="checkbox"/> D1 - Stunted or Stressed Plants</li> <li><input checked="" type="checkbox"/> D2 - Geomorphic Position</li> <li><input type="checkbox"/> D5 - FAC-Neutral Test</li> </ul>
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**Field Observations:**

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: -- (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: -- (in.)	
Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: -- (in.)	

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

Remarks: \_\_\_\_\_

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 2 to 4 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%	Color (Moist)	%	Type	Location		
0	14	--	10YR	4/3	100	--	--	--	--	silt loam
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

**NRCS Hydric Soil Field Indicators** (check here if indicators are not present ):

<ul style="list-style-type: none"> <li><input type="checkbox"/> A1 - Histosol</li> <li><input type="checkbox"/> A2 - Histic Epipedon</li> <li><input type="checkbox"/> A3 - Black Histic</li> <li><input type="checkbox"/> A4 - Hydrogen Sulfide</li> <li><input type="checkbox"/> A5 - Stratified Layers</li> <li><input type="checkbox"/> A10 - 2 cm Muck</li> <li><input type="checkbox"/> A11 - Depleted Below Dark Surface</li> <li><input type="checkbox"/> A12 - Thick Dark Surface</li> <li><input type="checkbox"/> S1 - Sandy Muck Mineral</li> <li><input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> S4 - Sandy Gleyed Matrix</li> <li><input type="checkbox"/> S5 - Sandy Redox</li> <li><input type="checkbox"/> S6 - Stripped Matrix</li> <li><input type="checkbox"/> F1 - Loamy Muck Mineral</li> <li><input type="checkbox"/> F2 - Loamy Gleyed Matrix</li> <li><input type="checkbox"/> F3 - Depleted Matrix</li> <li><input type="checkbox"/> F6 - Redox Dark Surface</li> <li><input type="checkbox"/> F7 - Depleted Dark Surface</li> <li><input type="checkbox"/> F8 - Redox Depressions</li> </ul>	<p><b>Indicators for Problematic Soils<sup>1</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A16 - Coast Prairie Redox</li> <li><input type="checkbox"/> S7 - Dark Surface</li> <li><input type="checkbox"/> F12 - Iron-Manganese Masses</li> <li><input type="checkbox"/> TF12 - Very Shallow Dark Surface</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul>
--	---	---

Restrictive Layer (if Observed) Type: **NA** Depth: **NA**

**Hydric Soil Present?**  Yes  No

Remarks: \_\_\_\_\_

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Project/Site: **Marysville Station Expansion Project** Wetland ID: **Non-JD** Sample Point: **SP 21**

<b>VEGETATION</b> (Species identified in all uppercase are non-native species.)																												
Tree Stratum (Plot size: 30 ft radius)																												
	<i>Species Name</i>	<i>% Cover</i>	<i>Dominant</i>	<i>Ind. Status</i>																								
1.	<i>Populus deltoides</i>	45	Y	FAC																								
2.	<i>Catalpa speciosa</i>	15	Y	FACU																								
3.	--	--	--	--																								
4.	--	--	--	--																								
5.	--	--	--	--																								
6.	--	--	--	--																								
7.	--	--	--	--																								
8.	--	--	--	--																								
9.	--	--	--	--																								
10.	--	--	--	--																								
Total Cover =		60																										
Sapling/Shrub Stratum (Plot size: 15 ft radius)																												
1.	<i>Lonicera maackii</i>	30	Y	UPL																								
2.	<i>Acer negundo</i>	35	Y	FAC																								
3.	<i>Ulmus americana</i>	3	N	FACW																								
4.	<i>Rosa multiflora</i>	3	N	FACU																								
5.	--	--	--	--																								
6.	--	--	--	--																								
7.	--	--	--	--																								
8.	--	--	--	--																								
9.	--	--	--	--																								
10.	--	--	--	--																								
Total Cover =		71																										
Herb Stratum (Plot size: 5 ft radius)																												
1.	<i>Toxicodendron radicans</i>	30	Y	FAC																								
2.	<i>Solidago canadensis</i>	10	Y	FACU																								
3.	<i>Ambrosia trifida</i>	5	N	FAC																								
4.	--	--	--	--																								
5.	--	--	--	--																								
6.	--	--	--	--																								
7.	--	--	--	--																								
8.	--	--	--	--																								
9.	--	--	--	--																								
10.	--	--	--	--																								
11.	--	--	--	--																								
12.	--	--	--	--																								
13.	--	--	--	--																								
14.	--	--	--	--																								
15.	--	--	--	--																								
Total Cover =		45																										
Woody Vine Stratum (Plot size: 30 ft radius)																												
1.	--	--	--	--																								
2.	--	--	--	--																								
3.	--	--	--	--																								
4.	--	--	--	--																								
5.	--	--	--	--																								
Total Cover =		0																										
<p><b>Dominance Test Worksheet</b></p> <p>Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>6</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)</p>																												
<p><b>Prevalence Index Worksheet</b></p> <table style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: left;"><b>Total % Cover of:</b></td> <td style="text-align: right;"><b>Multiply by:</b></td> </tr> <tr> <td>OBL spp.</td> <td align="center"><u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW spp.</td> <td align="center"><u>3</u></td> <td>x 2 = <u>6</u></td> </tr> <tr> <td>FAC spp.</td> <td align="center"><u>115</u></td> <td>x 3 = <u>345</u></td> </tr> <tr> <td>FACU spp.</td> <td align="center"><u>28</u></td> <td>x 4 = <u>112</u></td> </tr> <tr> <td>UPL spp.</td> <td align="center"><u>30</u></td> <td>x 5 = <u>150</u></td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td><u>176</u> (A)      <u>613</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: right;">Prevalence Index = B/A =</td> <td align="center"><u>3.483</u></td> </tr> </table>					<b>Total % Cover of:</b>		<b>Multiply by:</b>	OBL spp.	<u>0</u>	x 1 = <u>0</u>	FACW spp.	<u>3</u>	x 2 = <u>6</u>	FAC spp.	<u>115</u>	x 3 = <u>345</u>	FACU spp.	<u>28</u>	x 4 = <u>112</u>	UPL spp.	<u>30</u>	x 5 = <u>150</u>	Total		<u>176</u> (A) <u>613</u> (B)	Prevalence Index = B/A =		<u>3.483</u>
<b>Total % Cover of:</b>		<b>Multiply by:</b>																										
OBL spp.	<u>0</u>	x 1 = <u>0</u>																										
FACW spp.	<u>3</u>	x 2 = <u>6</u>																										
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Total		<u>176</u> (A) <u>613</u> (B)																										
Prevalence Index = B/A =		<u>3.483</u>																										
<p><b>Hydrophytic Vegetation Indicators:</b></p> <p><input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No    Rapid Test for Hydrophytic Vegetation</p> <p><input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No    Dominance Test is &gt; 50%</p> <p><input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No    Prevalence Index is ≤ 3.0 *</p> <p><input type="checkbox"/> Yes    <input type="checkbox"/> No    Morphological Adaptations (Explain) *</p> <p><input type="checkbox"/> Yes    <input type="checkbox"/> No    Problem Hydrophytic Vegetation (Explain) *</p> <p style="font-size: small;">* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p>																												
<p><b>Definitions of Vegetation Strata:</b></p> <p><b>Tree</b> - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.</p> <p><b>Sapling/Shrub</b> - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.</p> <p><b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.</p> <p><b>Woody Vines</b> - All woody vines greater than 3.28 ft. in height.</p>																												
<p align="center"><b>Hydrophytic Vegetation Present</b>    <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No</p>																												
Remarks:																												

**Additional Remarks:**

Project/Site: <b>Marysville Station Expansion Project</b>	Stantec Project #: <b>193705599</b>	Date: <b>09/24/20</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>	Investigator #1: <b>Nate Noland</b>	County: <b>Union</b>
Investigator #2: <b>Aaron Kwolek</b>	Investigator #2: <b>Aaron Kwolek</b>	State: <b>Ohio</b>
Soil Unit: <b>Blount silt loam, end moraine, 2 to 4 percent slopes</b>	NWI/WWI Classification: <b>NONE</b>	Wetland ID: <b>Non-JD</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>	Sample Point: <b>SP 22</b>
Slope (%): <b>1</b>	Latitude: <b>40.3357</b>	Longitude: <b>-83.42972</b>
	Datum: <b>NAD83</b>	Community ID: <b>UPL</b>

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Section:
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?	Are normal circumstances present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Township: <b>--</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		Range: <b>--</b> Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydic Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks: **Area is toe of slope adjacent to agricultural field.**

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present ):

<b>Primary:</b>	<b>Secondary:</b>
<input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input checked="" type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test	

<b>Field Observations:</b> Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.) Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.) Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    Depth: <b>--</b> (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	---

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

Remarks:

**SOILS**

Map Unit Name: **Blount silt loam, end moraine, 2 to 4 percent slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%	Color (Moist)	%	Type	Location		
0	14	--	10YR	4/3	100	--	--	--	--	silt loam
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

<b>NRCS Hydic Soil Field Indicators</b> (check here if indicators are not present <input checked="" type="checkbox"/> ): <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions
<b>Indicators for Problematic Soils<sup>1</sup></b> <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)	

Restrictive Layer (If Observed) Type: <b>NA</b>	Depth: <b>NA</b>	<b>Hydic Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	------------------	--

Remarks:

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.



Project/Site: **Marysville Station Expansion Project**

Wetland ID: **Non-JD**

Sample Point: **SP 22**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Populus deltoides</i>	20	Y	FAC
2.	<i>Catalpa speciosa</i>	20	Y	FACU
3.	<i>Morus rubra</i>	25	Y	FACU
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		65		
Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Lonicera maackii</i>	30	Y	UPL
2.	<i>Rubus allegheniensis</i>	5	N	FACU
3.	<i>Acer negundo</i>	20	Y	FAC
4.	<i>Cornus amomum</i>	1	N	FACW
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		56		
Herb Stratum (Plot size: 5 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	<i>Solidago canadensis</i>	5	N	FACU
2.	<i>Agrimonia parviflora</i>	15	Y	FACW
3.	<i>Viola sp.</i>	10	N	FAC
4.	<i>Toxicodendron radicans</i>	25	Y	FAC
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		55		
Woody Vine Stratum (Plot size: 30 ft radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		

**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: 57% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:		Multiply by:	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>16</u>	x 2 =	<u>32</u>
FAC spp.	<u>75</u>	x 3 =	<u>225</u>
FACU spp.	<u>55</u>	x 4 =	<u>220</u>
UPL spp.	<u>30</u>	x 5 =	<u>150</u>
Total		<u>176</u> (A)	<u>627</u> (B)
Prevalence Index = B/A =		<u>3.563</u>	

**Hydrophytic Vegetation Indicators:**

Yes     No    Rapid Test for Hydrophytic Vegetation  
 Yes     No    Dominance Test is > 50%  
 Yes     No    Prevalence Index is ≤ 3.0 \*  
 Yes     No    Morphological Adaptations (Explain) \*  
 Yes     No    Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks: **Though the hydrophytic vegetation dominance is greater than 50%, the prevalence index indicates that the majority of vegetative species present is upland and not hydrophytic.**

**Additional Remarks:**

D.2 ORAM DATA FORMS

## Background Information

<b>Name:</b>	Nate Noland
<b>Date:</b>	8/29/2017
<b>Affiliation:</b>	Stantec Consulting
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206
<b>Phone Number:</b>	513-842-8200
<b>e-mail address:</b>	nathan.noland@stantec.com
<b>Name of Wetland:</b>	Wetland 1
<b>Vegetation Community(ies):</b>	PFO
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
<b>Lat/Long or UTM Coordinate</b>	40.335919°N, -83.432952°W
<b>USGS Quad Name</b>	Peoria
<b>County</b>	Union
<b>Township</b>	Taylor
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	05060001
<b>Site Visit</b>	8/29/2017
<b>National Wetland Inventory Map</b>	N/A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	Wetzel silty clay loam
<b>Delineation report/map</b>	See Ecological Resources Inventory Report



Name of Wetland: <u>Wetland 1</u>	
Wetland Size (acres, hectares): <u>0.19 acres</u>	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
<p>See Ecological Inventory Resource Report</p>	
Final score : <u>4.5</u>	Category: <u>2</u>

## Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input checked="" type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b



8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	<input type="radio"/> NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	<input type="radio"/> NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	<input type="radio"/> NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	<input type="radio"/> NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	<input type="radio"/> NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	<input type="radio"/> NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	<input type="radio"/> NO Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	<input type="radio"/> NO Complete Quantitative Rating

Table 1. Characteristic plant species.

<b>invasive/exotic spp</b>	<b>fen species</b>	<b>bog species</b>	<b>Oak Opening species</b>	<b>wet prairie species</b>
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland 1 Rater(s): N. Noland Date: 8/29/2017

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)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

10	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)
- 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)
- LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

12	23
max 30 pts	subtotal

**Metric 3. Hydrology.**

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- 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)
- <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- 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)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input checked="" type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other <u>old farm pond</u>

12.5	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)
- 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)
- 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)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input checked="" type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input checked="" type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

35.5
subtotal this page



Site: Wetland 1 Rater(s): N. Noland Date: 8/29/2017

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)

6	41.5
max 20 pts	subtotal

### Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 2 Emergent
- Shrub
- 3 1 Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- 2 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)
- 0 Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography

Score all present using 0 to 3 scale.

- 1 Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- 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

41.5

**End of Quantitative Rating. Complete Categorization Worksheets.**

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES (NO)	If yes, Category 3	
Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	10	
	Metric 3. Hydrology	12	
	Metric 4. Habitat	12.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	6	
	TOTAL SCORE	41.5	Category based on score breakpoints modified 2

**Complete Wetland Categorization Worksheet.**

Wetland 1

## Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p>NO</p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO</p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p>NO</p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p>NO</p> <p>Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

<b>Final Category</b>			
Choose one	Category 1	Category 2	Category 3

**End of Ohio Rapid Assessment Method for Wetlands.**



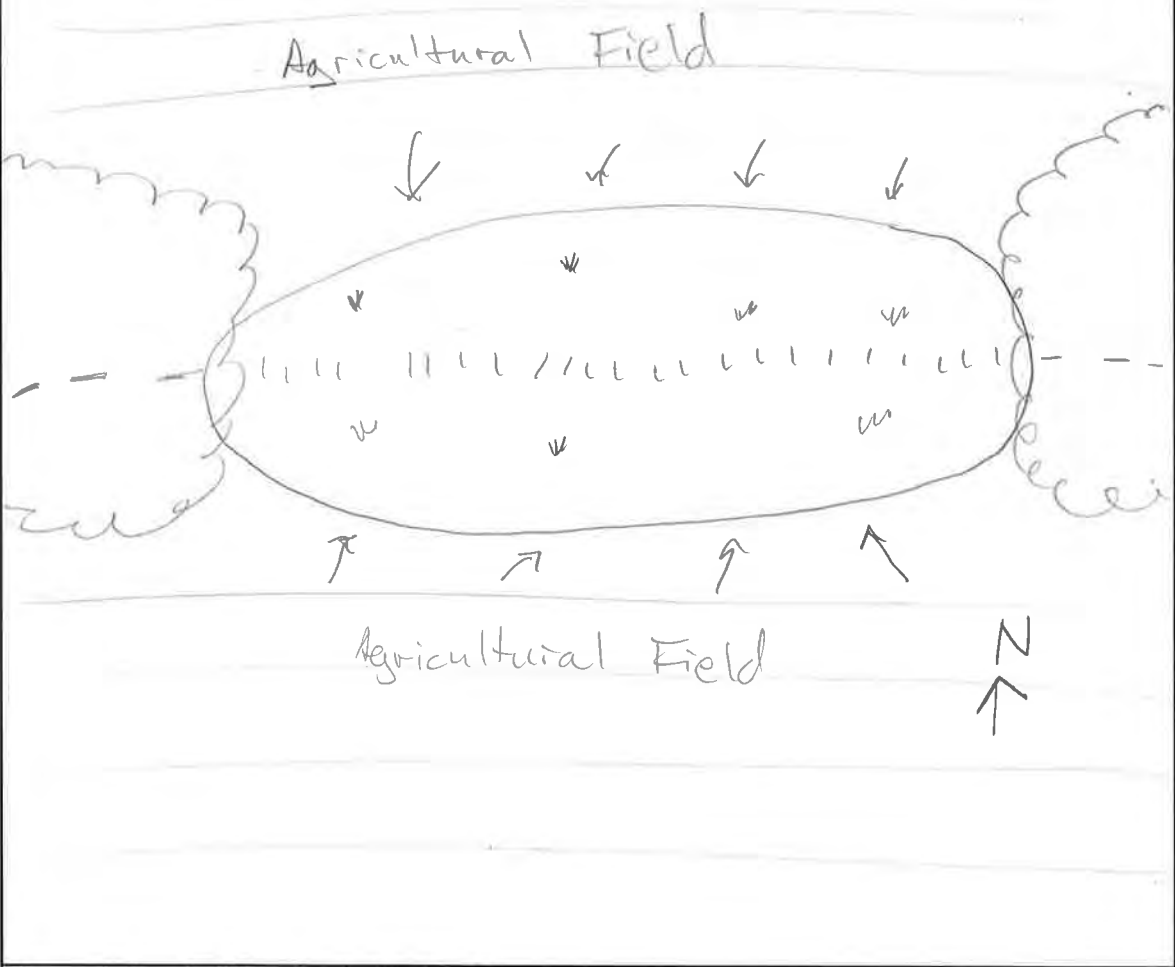
## Background Information

<b>Name:</b>	Nate Noland
<b>Date:</b>	8/29/2017
<b>Affiliation:</b>	Stantec Consulting
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206
<b>Phone Number:</b>	513-842-8200
<b>e-mail address:</b>	nathan.noland@stantec.com
<b>Name of Wetland:</b>	Wetland 2
<b>Vegetation Community(ies):</b>	PEM
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
<p>The map shows a network of roads. Highway 101 is on the left, with a circled '739' nearby. Highway 347 is labeled 'Raymond'. A shaded rectangular area is labeled 'Project Area'. To the right of the project area is 'Reed Road'. Further right is 'Broadway' and 'HWY 31'. A north arrow points upwards.</p>	
<b>Lat/Long or UTM Coordinate</b>	40.337344°N, -83.427509°W
<b>USGS Quad Name</b>	Peoria
<b>County</b>	Union
<b>Township</b>	Taylor
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	05060001
<b>Site Visit</b>	8/29/2017
<b>National Wetland Inventory Map</b>	N/A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	wetzel silty clay loam
<b>Delineation report/map</b>	See Ecological Resources Inventory Report

Name of Wetland: Wetland 2

Wetland Size (acres, hectares): 0.02 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

See Ecological Resource Inventory Report

Final score : 2 | Category:

## Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**



## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and <b>hydrologically isolated</b> and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input checked="" type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b

Wetland 2

8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	NO  Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO  Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO  Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

Table 1. Characteristic plant species.

<b>invasive/exotic spp</b>	<b>fen species</b>	<b>bog species</b>	<b>Oak Opening species</b>	<b>wet prairie species</b>
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinaratum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.



Site: Wetland 2 Rater(s): N. Noland Date: 8/29/2017

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)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

3	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)
- 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), shrub land, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

14	18
max 30 pts.	subtotal

**Metric 3. Hydrology.**

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

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)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

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)

3d. Duration inundation/saturation. Score one or double check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other

7	25
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)
- 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)
- 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)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input checked="" type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input checked="" type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input checked="" type="checkbox"/> nutrient enrichment

25
subtotal this page

Site: Wetland 2 Rater(s): N. Noland Date: 8/29/2017

25

subtotal first page

0	25
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)

-4	21
max 20 pts.	subtotal

### Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- 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)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

21

**End of Quantitative Rating. Complete Categorization Worksheets.**

# ORAM Summary Worksheet

*Wetland 2*

		<b>circle answer or insert score</b>	<b>Result</b>
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	14	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-4	
	<b>TOTAL SCORE</b>	<b>21</b>	Category based on score breakpoints <b>1</b>

**Complete Wetland Categorization Worksheet.**



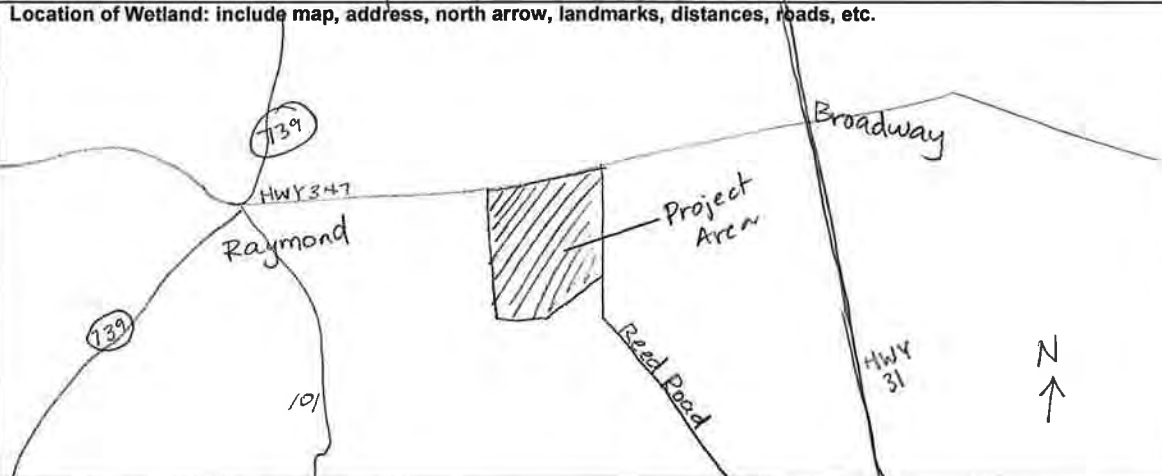
## Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p>NO</p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO</p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p>NO</p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p>NO</p> <p>Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

<b>Final Category</b>			
Choose one	Category 1	Category 2	Category 3

**End of Ohio Rapid Assessment Method for Wetlands.**

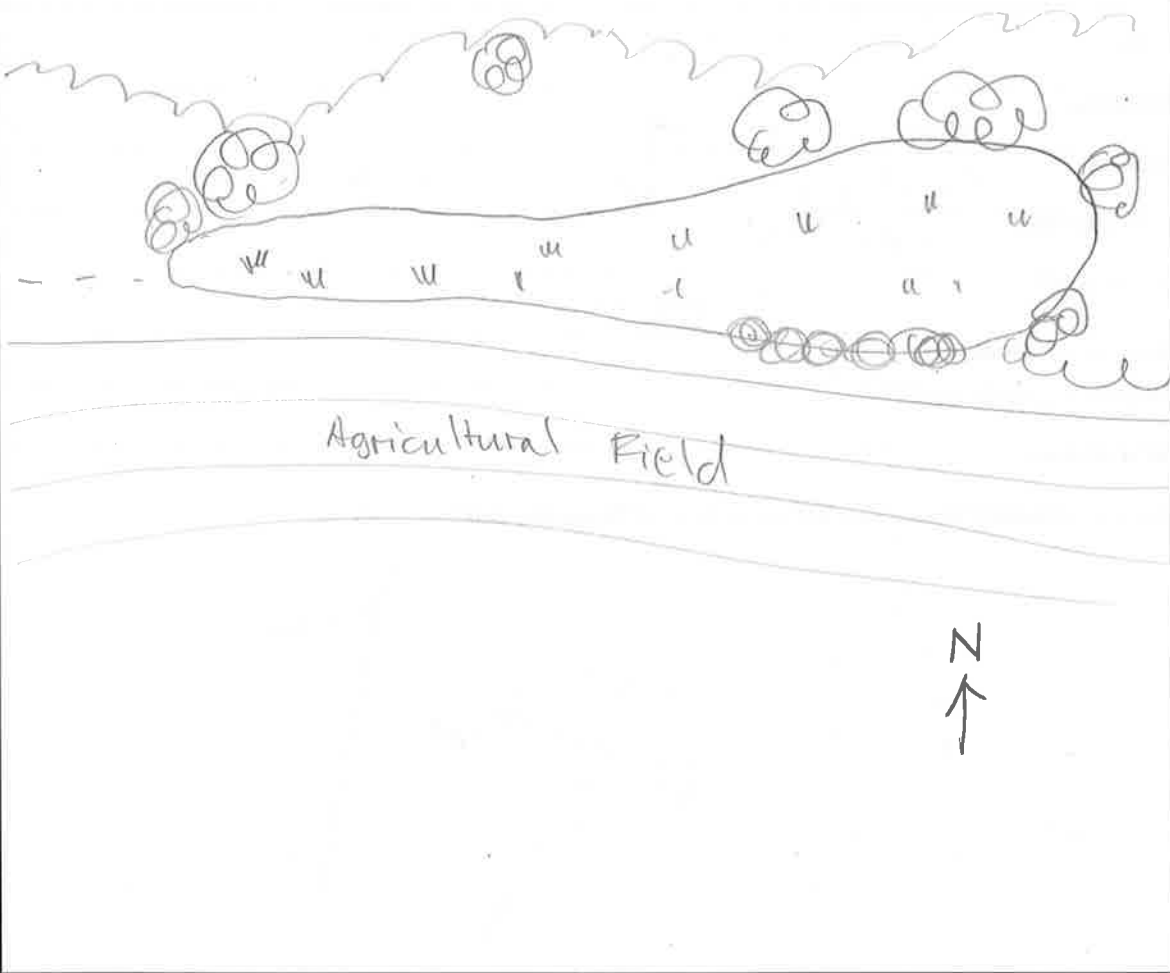
## Background Information

<b>Name:</b>	Nate Noland
<b>Date:</b>	8/29/2017
<b>Affiliation:</b>	Stantec Consulting
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206
<b>Phone Number:</b>	513-842-8200
<b>e-mail address:</b>	nathan.noland@stantec.com
<b>Name of Wetland:</b>	Wetland 3
<b>Vegetation Community(ies):</b>	PEM
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
	
<b>Lat/Long or UTM Coordinate</b>	40.33645°N, -83.434353°W
<b>USGS Quad Name</b>	Peoria
<b>County</b>	Union
<b>Township</b>	Taylor
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	05060001
<b>Site Visit</b>	8/29/2017
<b>National Wetland Inventory Map</b>	N/A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	Wetzel silty clay loam
<b>Delineation report/map</b>	See Ecological Resources Inventory Report

Name of Wetland: Wetland 3

Wetland Size (acres, hectares): 0.45 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

See Ecological Resource Inventory Report

Final score : 3 | Category: 2



### Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and <b>hydrologically isolated</b> and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input checked="" type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b

8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	NO  Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO  Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO  Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating



Table 1. Characteristic plant species.

<b>invasive/exotic spp</b>	<b>fen species</b>	<b>bog species</b>	<b>Oak Opening species</b>	<b>wet prairie species</b>
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherades</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rastellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriopharum viridicarinarum</i>	<i>Eriopharum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Labelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Patentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium carymbasum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Waadwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris diffarmis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

<b>Site:</b> <u>Wetland 3</u>	<b>Rater(s):</b> <u>N. Noland</u>	<b>Date:</b> <u>8/29/2017</u>
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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)
  - 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)
  - 1  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)
  - 3  LOW. Old field (>10 years), shrub land, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

17	23
max 30 pts	subtotal

**Metric 3. Hydrology.**

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - 4  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)
  - 1  0.4 to 0.7m (15.7 to 27.6in) (2)
  - <0.4m (<15.7in) (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- Semi- to permanently inundated/saturated (4)
  - Regularly inundated/saturated (3)
  - 1.5  Seasonally inundated (2)
  - Seasonally saturated in upper 30cm (12in) (1)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- |   |   |                                |   |                               |  |                               |  |                               |                                   |   |                                |
|---|---|--------------------------------|---|-------------------------------|--|-------------------------------|--|-------------------------------|-----------------------------------|---|--------------------------------|
| <ul style="list-style-type: none"> <li>9.5 <input checked="" type="checkbox"/> None or none apparent (2)</li> <li><input checked="" type="checkbox"/> Recovered (7)</li> <li><input type="checkbox"/> Recovering (3)</li> <li><input type="checkbox"/> Recent or no recovery (1)</li> </ul> | <p style="text-align: center; font-weight: bold;">Check all disturbances observed</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> ditch</td> <td><input type="checkbox"/> point source (nonstormwater)</td> </tr> <tr> <td><input type="checkbox"/> tile</td> <td><input type="checkbox"/> filling/grading</td> </tr> <tr> <td><input type="checkbox"/> dike</td> <td><input type="checkbox"/> road bed/RR track</td> </tr> <tr> <td><input type="checkbox"/> weir</td> <td><input type="checkbox"/> dredging</td> </tr> <tr> <td><input type="checkbox"/> stormwater input</td> <td><input type="checkbox"/> other</td> </tr> </table> | <input type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) | <input type="checkbox"/> tile | <input type="checkbox"/> filling/grading | <input type="checkbox"/> dike | <input type="checkbox"/> road bed/RR track | <input type="checkbox"/> weir | <input type="checkbox"/> dredging | <input type="checkbox"/> stormwater input | <input type="checkbox"/> other |
| <input type="checkbox"/> ditch  | <input type="checkbox"/> point source (nonstormwater)   |                                |   |                               |  |                               |  |                               |                                   |   |                                |
| <input type="checkbox"/> tile   | <input type="checkbox"/> filling/grading  |                                |   |                               |  |                               |  |                               |                                   |   |                                |
| <input type="checkbox"/> dike   | <input type="checkbox"/> road bed/RR track  |                                |   |                               |  |                               |  |                               |                                   |   |                                |
| <input type="checkbox"/> weir   | <input type="checkbox"/> dredging   |                                |   |                               |  |                               |  |                               |                                   |   |                                |
| <input type="checkbox"/> stormwater input   | <input type="checkbox"/> other  |                                |   |                               |  |                               |  |                               |                                   |   |                                |

9	32
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)
  - 3  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)
  - Fair (3)
  - 1.5  Poor to fair (2)
  - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- |  |   |                                 |  |                                  |   |                                       |  |   |                                   |   |   |   |   |
|--|---|---------------------------------|--|----------------------------------|---|---------------------------------------|--|---|-----------------------------------|---|---|---|---|
| <ul style="list-style-type: none"> <li>4.5 <input checked="" type="checkbox"/> None or none apparent (9)</li> <li><input checked="" type="checkbox"/> Recovered (6)</li> <li><input checked="" type="checkbox"/> Recovering (3)</li> <li><input type="checkbox"/> Recent or no recovery (1)</li> </ul> | <p style="text-align: center; font-weight: bold;">Check all disturbances observed</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> mowing</td> <td><input type="checkbox"/> shrub/sapling removal</td> </tr> <tr> <td><input type="checkbox"/> grazing</td> <td><input type="checkbox"/> herbaceous/aquatic bed removal</td> </tr> <tr> <td><input type="checkbox"/> clearcutting</td> <td><input type="checkbox"/> sedimentation</td> </tr> <tr> <td><input checked="" type="checkbox"/> selective cutting</td> <td><input type="checkbox"/> dredging</td> </tr> <tr> <td><input type="checkbox"/> woody debris removal</td> <td><input checked="" type="checkbox"/> farming</td> </tr> <tr> <td><input type="checkbox"/> toxic pollutants</td> <td><input checked="" type="checkbox"/> nutrient enrichment</td> </tr> </table> | <input type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal | <input type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal | <input type="checkbox"/> clearcutting | <input type="checkbox"/> sedimentation | <input checked="" type="checkbox"/> selective cutting | <input type="checkbox"/> dredging | <input type="checkbox"/> woody debris removal | <input checked="" type="checkbox"/> farming | <input type="checkbox"/> toxic pollutants | <input checked="" type="checkbox"/> nutrient enrichment |
| <input type="checkbox"/> mowing  | <input type="checkbox"/> shrub/sapling removal  |                                 |  |                                  |   |                                       |  |   |                                   |   |   |   |   |
| <input type="checkbox"/> grazing   | <input type="checkbox"/> herbaceous/aquatic bed removal   |                                 |  |                                  |   |                                       |  |   |                                   |   |   |   |   |
| <input type="checkbox"/> clearcutting  | <input type="checkbox"/> sedimentation  |                                 |  |                                  |   |                                       |  |   |                                   |   |   |   |   |
| <input checked="" type="checkbox"/> selective cutting  | <input type="checkbox"/> dredging   |                                 |  |                                  |   |                                       |  |   |                                   |   |   |   |   |
| <input type="checkbox"/> woody debris removal  | <input checked="" type="checkbox"/> farming   |                                 |  |                                  |   |                                       |  |   |                                   |   |   |   |   |
| <input type="checkbox"/> toxic pollutants  | <input checked="" type="checkbox"/> nutrient enrichment   |                                 |  |                                  |   |                                       |  |   |                                   |   |   |   |   |

32
subtotal this page

Site: Wetland 3 Rater(s): N. Noland Date: 8/29/2017

32

  
subtotal first page

0	32
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	31
max 20 pts	subtotal

### Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 2 Emergent
- Shrub
- 2 0 Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- 2 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

- X Extensive >75% cover (-5)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

**End of Quantitative Rating. Complete Categorization Worksheets.**



# ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	4	
	Metric 3. Hydrology	17	
	Metric 4. Habitat	9	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-1	
	TOTAL SCORE	31	Category based on score breakpoints 1 or 2 gray zone

Category 2

## Complete Wetland Categorization Worksheet.

## Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p>NO</p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO</p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p>NO</p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p>NO</p> <p>Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

**Final Category**

Choose one	Category 1	Category 2	Category 3
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**End of Ohio Rapid Assessment Method for Wetlands.**

## Background Information

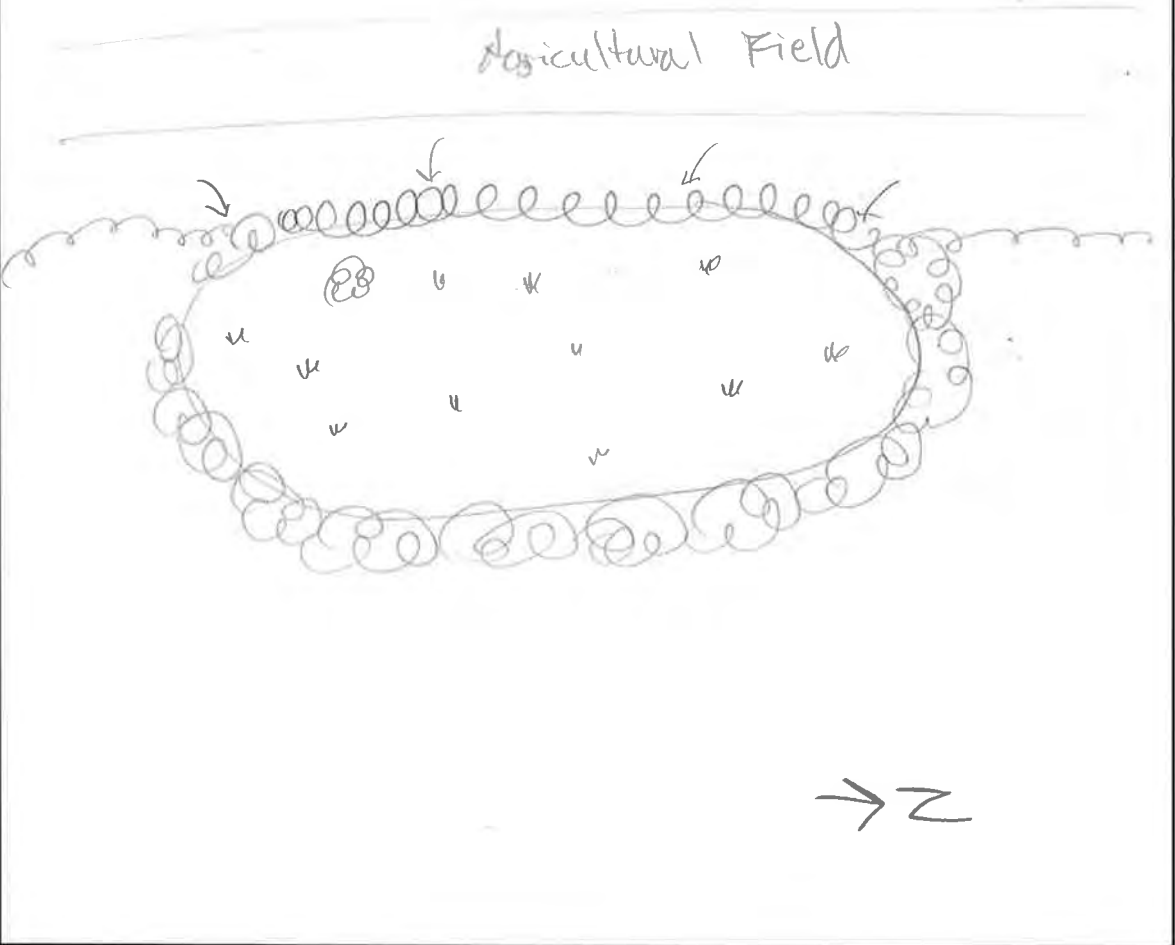
<b>Name:</b>	Nate Noland
<b>Date:</b>	8/30/2017
<b>Affiliation:</b>	Stantec Consulting
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206
<b>Phone Number:</b>	513-842-8200
<b>e-mail address:</b>	nathan.noland@stantec.com
<b>Name of Wetland:</b>	Wetland 4
<b>Vegetation Community(ies):</b>	PEM
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
<b>Lat/Long or UTM Coordinate</b>	40.33556°N, -83.423706°W
<b>USGS Quad Name</b>	Peoria
<b>County</b>	Union
<b>Township</b>	Taylor
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	05060001
<b>Site Visit</b>	8/30/2017
<b>National Wetland Inventory Map</b>	N/A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	Blount silt loam, end moraine, 2-4% slopes
<b>Delineation report/map</b>	See Ecological Resources Inventory Report



Name of Wetland: Wetland 4

Wetland Size (acres, hectares): 0.04

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

Ecological Inventory Resource Report

Final score : 27.5 Category: 1

### Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and <b>hydrologically isolated</b> and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b



Wetland 4

8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	NO  Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO  Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO  Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

<b>invasive/exotic spp</b>	<b>fen species</b>	<b>bog species</b>	<b>Oak Opening species</b>	<b>wet prairie species</b>
<i>Lythrum salicaria</i>	<i>Zygadenus elegans var. glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica var. capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis spp.</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum spp.</i>		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

**End of Narrative Rating. Begin Quantitative Rating on next page.**

<b>Site:</b> <u>Wetland 4</u>	<b>Rater(s):</b> <u>N. Noland</u>	<b>Date:</b> <u>8/30/2017</u>
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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)
- <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)
- 4  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)
- 3  LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

13.5	20.5
max 30 pts.	subtotal

**Metric 3. Hydrology.**

3a. Sources of Water. Score all that apply

- High pH groundwater (5)
- Other groundwater (3)
- 1  Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 1  0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- 9.5  None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

3b. Connectivity. Score all that apply

- 100 year floodplain (1)
- 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)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- 1  Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other

10	30.5
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)
- 3  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)
- 1  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)
- 6  Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

30.5
subtotal this page



Site: Wetland 4 Rater(s): N. Noland Date: 8/30/17

30.5  
subtotal first page

0 30.5  
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)

-3 27.5  
max 20 pts subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- 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)
- 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.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

27.5

**End of Quantitative Rating. Complete Categorization Worksheets.**

# ORAM Summary Worksheet

Wetland 4

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES (NO)	If yes, Category 3	
Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	13.5	
	Metric 4. Habitat	10	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersed, microtopography	-3	
	TOTAL SCORE	27.5	Category based on score breakpoints 1

**Complete Wetland Categorization Worksheet.**

## Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<input checked="" type="radio"/> NO	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<input checked="" type="radio"/> NO	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<input checked="" type="radio"/> NO	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<input type="radio"/> NO	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<input checked="" type="radio"/> NO	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<input checked="" type="radio"/> NO	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

**Final Category**

Choose one	<input checked="" type="radio"/> Category 1	<input type="radio"/> Category 2	<input type="radio"/> Category 3
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**End of Ohio Rapid Assessment Method for Wetlands.**



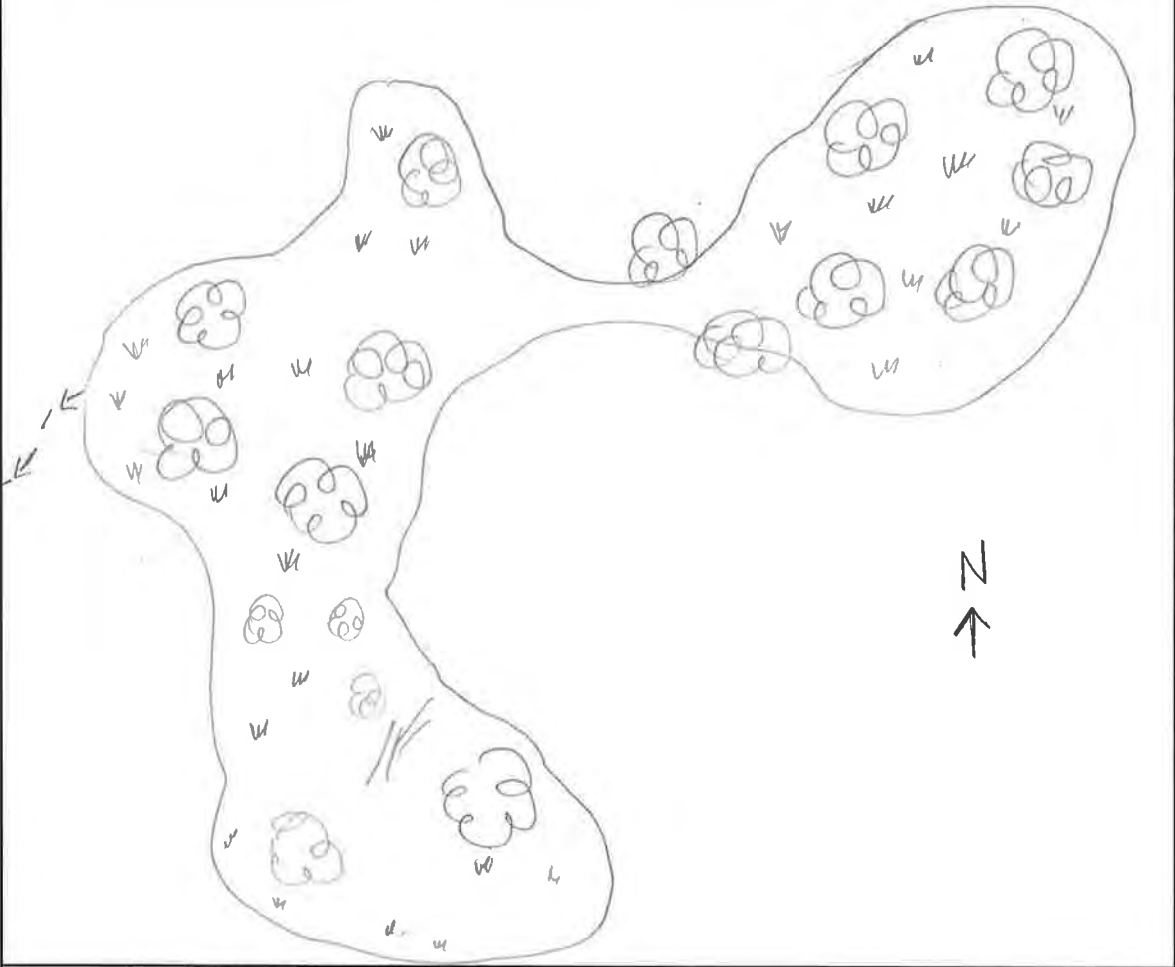
## Background Information

<b>Name:</b>	Nate Noland
<b>Date:</b>	8/30/2017
<b>Affiliation:</b>	Stantec Consulting
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206
<b>Phone Number:</b>	513-842-8200
<b>e-mail address:</b>	nathan.noland@stantec.com
<b>Name of Wetland:</b>	Wetland 5
<b>Vegetation Communit(ies):</b>	PFO
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
<b>Lat/Long or UTM Coordinate</b>	40.329124°N, -83.435878°W
<b>USGS Quad Name</b>	Peoria
<b>County</b>	Union
<b>Township</b>	Taylor
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	05060001
<b>Site Visit</b>	8/30/2017
<b>National Wetland Inventory Map</b>	PFO1A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	Blount silt loam, end moraine 0-2% slopes
<b>Delineation report/map</b>	see Ecological Resources Inventory Report

Name of Wetland: Wetland 5

Wetland Size (acres, hectares): 1.15 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

See Ecological Inventory Resource Report

Final score : 56

Category: 2

## Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**



## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input checked="" type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b

8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	NO  Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO  Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO  Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

Table 1. Characteristic plant species.

<b>invasive/exotic spp</b>	<b>fen species</b>	<b>bog species</b>	<b>Oak Opening species</b>	<b>wet prairie species</b>
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

**End of Narrative Rating. Begin Quantitative Rating on next page.**



<b>Site:</b> <u>Wetland 5</u>	<b>Rater(s):</b> <u>N. Noland</u>	<b>Date:</b> <u>8/30/2017</u>
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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)
  - 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)

13	15
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)
  - 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), shrub land, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

15.5	30.5
max 30 pts.	subtotal

**Metric 3. Hydrology.**

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - 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)
  - <0.4m (<15.7in) (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- Semi- to permanently inundated/saturated (4)
  - 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)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <li><input type="checkbox"/> ditch</li> <li><input checked="" type="checkbox"/> tile</li> <li><input type="checkbox"/> dike</li> <li><input type="checkbox"/> weir</li> <li><input type="checkbox"/> stormwater input</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> point source (nonstormwater)</li> <li><input type="checkbox"/> filling/grading</li> <li><input type="checkbox"/> road bed/RR track</li> <li><input type="checkbox"/> dredging</li> <li><input checked="" type="checkbox"/> other <i>Historical families</i></li> </ul>

14.5	45
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)
  - 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)
  - 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)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <li><input type="checkbox"/> mowing</li> <li><input type="checkbox"/> grazing</li> <li><input type="checkbox"/> clearcutting</li> <li><input checked="" type="checkbox"/> selective cutting</li> <li><input type="checkbox"/> woody debris removal</li> <li><input type="checkbox"/> toxic pollutants</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> shrub/sapling removal</li> <li><input type="checkbox"/> herbaceous/aquatic bed removal</li> <li><input type="checkbox"/> sedimentation</li> <li><input type="checkbox"/> dredging</li> <li><input type="checkbox"/> farming</li> <li><input type="checkbox"/> nutrient enrichment</li> </ul>

45
subtotal this page

Site: Wetland 5 Rater(s): N. Noland Date: 8/30/2017

45

subtotal first page

0 45

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)

11 56

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- Aquatic bed
- 2  Emergent
- 1  Shrub
- 2  Forest
- 0  Mudflats
- Open water
- Other

**6b. horizontal (plan view) Interspersion.**

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- 1  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)
- 1  Absent (1)

**6d. Microtopography.**

Score all present using 0 to 3 scale.

- 3  Vegetated hummocks/tussocks
- 0  Coarse woody debris >15cm (6in)
- 0  Standing dead >25cm (10in) dbh
- 4  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

56

**End of Quantitative Rating. Complete Categorization Worksheets.**

# ORAM Summary Worksheet

Wetland 5

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands -- Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	13	
	Metric 3. Hydrology	19.5	
	Metric 4. Habitat	14.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	11	
	TOTAL SCORE	50	Category based on score breakpoints CAT 2

Complete Wetland Categorization Worksheet.

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES  Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO  Is quantitative rating score <i>less</i> than the Category 2 scoring threshold ( <i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES  Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO  Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to  Narrative Rating No. 5	YES  Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO  Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold ( <i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	<input checked="" type="radio"/> YES  Wetland is assigned to the appropriate category based on the scoring range	<input type="radio"/> NO  If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES  Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> NO  Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES  Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO  Wetland is assigned to category as determined by the ORAM.  A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	<input checked="" type="radio"/> Category 2	Category 3
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**End of Ohio Rapid Assessment Method for Wetlands.**



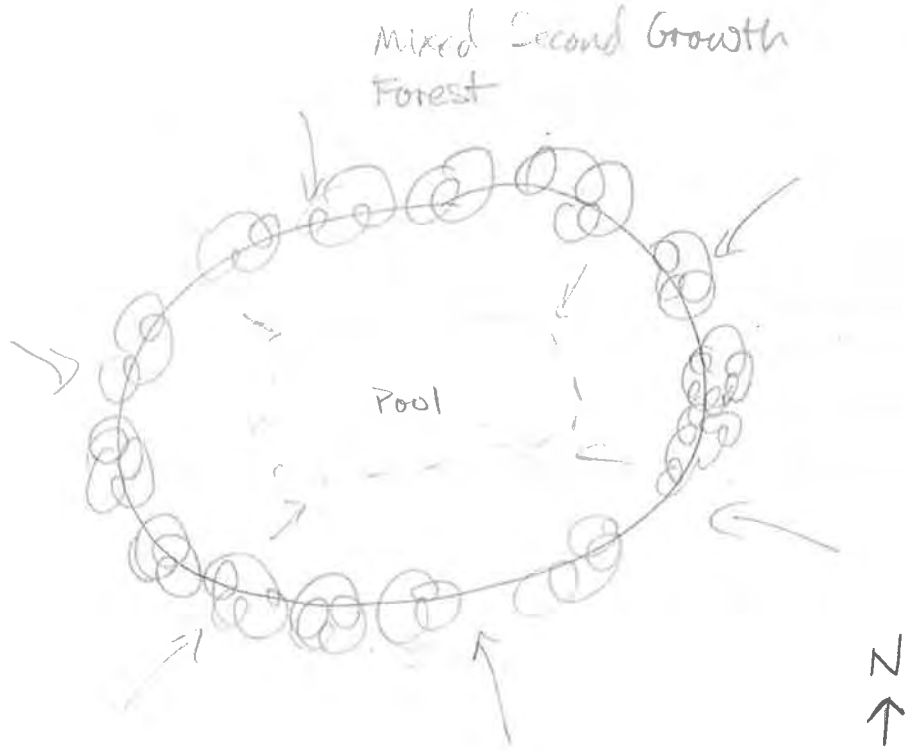
## Background Information

<b>Name:</b>	Nate Noland		
<b>Date:</b>	8/30/2017		
<b>Affiliation:</b>	Stantec Consulting		
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206		
<b>Phone Number:</b>	513-842-8200		
<b>e-mail address:</b>	nathan.noland@stantec.com		
<b>Name of Wetland:</b>	Wetland 6		
<b>Vegetation Community(ies):</b>	PUB		
<b>HGM Class(es):</b>	depressional		
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	<p>The map shows a hatched rectangular area labeled 'Project Area' situated between 'Reed Road' and 'Broadway'. To the west of the project area is 'Raymond' and 'HWY 3+7'. Further west are '139' and '101'. To the east is 'HWY 31'. A north arrow is located to the right of the map.</p>		
<b>Lat/Long or UTM Coordinate</b>	40.32865°N, -83.435244°W		
<b>USGS Quad Name</b>	Peoria		
<b>County</b>	Union		
<b>Township</b>	Taylor		
<b>Section and Subsection</b>	N/A		
<b>Hydrologic Unit Code</b>	05060001		
<b>Site Visit</b>	8/30/2017		
<b>National Wetland Inventory Map</b>	N/A		
<b>Ohio Wetland Inventory Map</b>	N/A		
<b>Soil Survey</b>	Blount silt loam, end moraine, 0-2% slopes		
<b>Delineation report/map</b>	See Ecological Resources Inventory Report		

Name of Wetland: Wetland 6

Wetland Size (acres, hectares): 0.02 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

See Ecological Inventory Resource Report

Final score : 43.5      Category: 2

## Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input checked="" type="radio"/> NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO Go to Question 8b



8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	<input checked="" type="radio"/> NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	<input checked="" type="radio"/> NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	<input checked="" type="radio"/> NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	<input checked="" type="radio"/> NO Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	<input checked="" type="radio"/> NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland 6 Rater(s): N. Noland Date: 8/30/2017

6	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)
  - <0.1 acres (0.04ha) (0 pts)

13	13
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)
  - 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), shrub land, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

13	26
max 30 pts.	subtotal

**Metric 3. Hydrology.**

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - 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)
  - <0.4m (<15.7in) (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- Semi- to permanently inundated/saturated (4)
  - 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)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input checked="" type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other

11.5	37.5
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)
  - 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)
  - 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)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input checked="" type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

37.5
subtotal this page

**Site:** Wetland 6 **Rater(s):** N. Noland **Date:** 8/30/2017

37.5

subtotal first page

0 37.5

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)

6 43.5

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- 7  Mudflats
- Open water
- Other

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- 1  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)
- 1  Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- 0  Vegetated hummocks/tussucks
- 2  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

43.5

**End of Quantitative Rating. Complete Categorization Worksheets.**



## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	13	
	Metric 3. Hydrology	13	
	Metric 4. Habitat	11.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	6	
	TOTAL SCORE	43.5	Category based on score breakpoints <i>Modified 2</i>

**Complete Wetland Categorization Worksheet.**

Wetland U

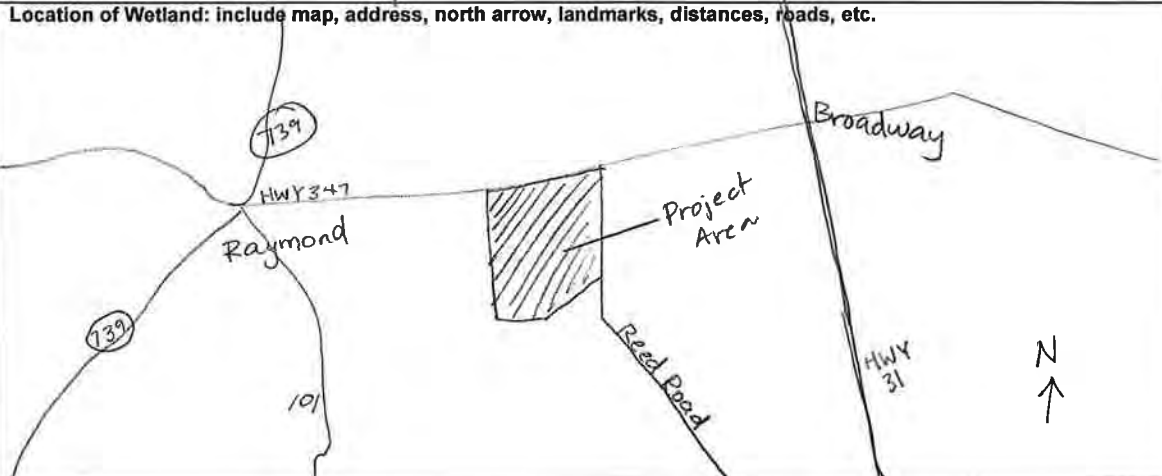
## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<p>NO</p> <p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p>NO</p> <p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<p>NO</p> <p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO</p> <p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p>NO</p> <p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p>NO</p> <p>Wetland is assigned to category as determined by the ORAM.</p> <p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

**Final Category**  
 Choose one    Category 1    Category 2    Category 3

**End of Ohio Rapid Assessment Method for Wetlands.**

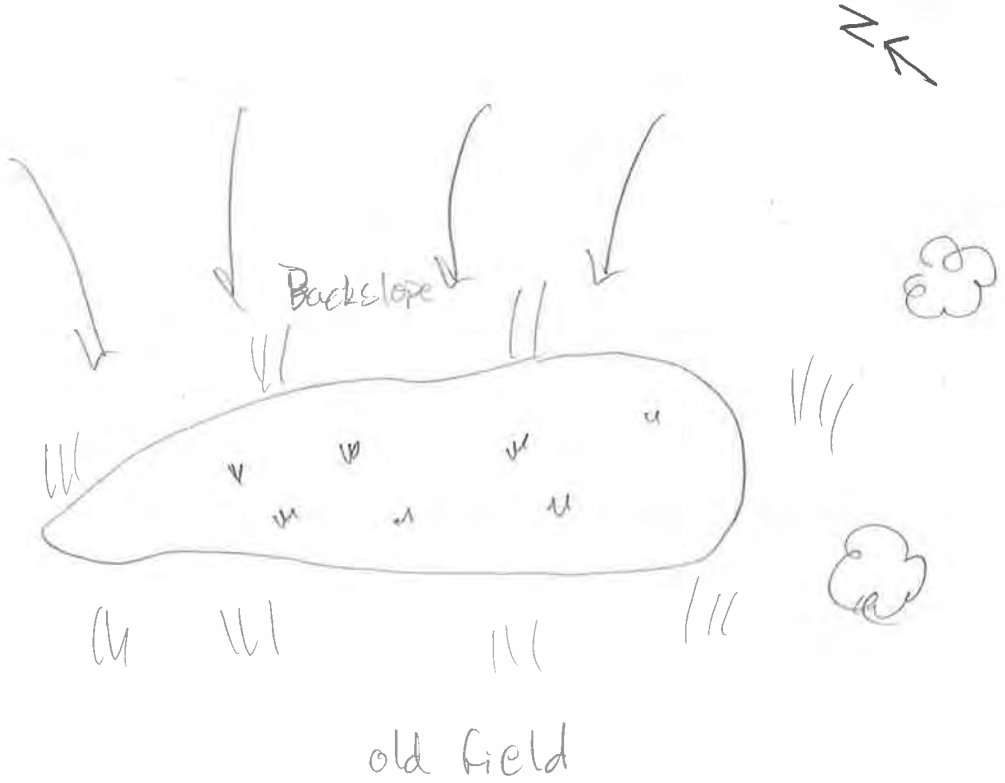
## Background Information

<b>Name:</b>	Nate Noland
<b>Date:</b>	8/30/2017
<b>Affiliation:</b>	Stantec Consulting
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206
<b>Phone Number:</b>	513-842-8200
<b>e-mail address:</b>	nathan.noland@stantec.com
<b>Name of Wetland:</b>	Wetland 7
<b>Vegetation Communit(ies):</b>	PSS
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
	
<b>Lat/Long or UTM Coordinate</b>	40.330782°N, -83.431251°W
<b>USGS Quad Name</b>	Peoria
<b>County</b>	Union
<b>Township</b>	Taylor
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	05060001
<b>Site Visit</b>	8/30/2017
<b>National Wetland Inventory Map</b>	N/A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	Glynwood silt loam, end moraine, 2-6% slopes
<b>Delineation report/map</b>	See Ecological Resources Inventory Report

Name of Wetland: Wetland 7

Wetland Size (acres, hectares): 0.04 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

See Ecological Inventory Resource Report

Final score : 32.5      Category: 2



## Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

# Narrative Rating

Wetland 7

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and <b>hydrologically isolated</b> and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b

8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	NO  Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO  Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO  Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris orundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.



Site: Wetland 7 Rater(s): N. Noland Date: 8/30/2017

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)
  - <0.1 acres (0.04ha) (0 pts)

12 12  
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)
  - 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), shrub land, young second growth forest (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

9 21  
max 30 pts. subtotal

**Metric 3. Hydrology.**

- 3a. Sources of Water. Score all that apply
- High pH groundwater (5)
  - Other groundwater (3)
  - 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)
  - <0.4m (<15.7in) (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- Semi- to permanently inundated/saturated (4)
  - 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)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed

<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input checked="" type="checkbox"/> other <u>Facility construction</u>

7.5 28.5  
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)
  - 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)
  - 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)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed

<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

28.5  
subtotal this page

**Site:** Wetland 7      **Rater(s):** N. Noland      **Date:** 8/30/2017

28.5

  
subtotal first page

0	0
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)

4	32.5
max 20 pts	subtotal

### Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- 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)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

32.5

**End of Quantitative Rating. Complete Categorization Worksheets.**

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	12	
	Metric 3. Hydrology	9	
	Metric 4. Habitat	7.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	4	
	TOTAL SCORE	32.5	Category based on score breakpoints 1 or 2 gray zone

**Complete Wetland Categorization Worksheet.**

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES  Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO  Is quantitative rating score <i>less</i> than the Category 2 scoring threshold ( <i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES  Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO  Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to  Narrative Rating No. 5	YES  Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO  Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold ( <i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES  Wetland is assigned to the appropriate category based on the scoring range	<input checked="" type="radio"/> NO  If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	<input checked="" type="radio"/> YES  Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO  Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES  Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO  Wetland is assigned to category as determined by the ORAM.  A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	<input checked="" type="radio"/> Category 2	Category 3
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**End of Ohio Rapid Assessment Method for Wetlands.**



## Background Information

<b>Name:</b>	Nate Noland
<b>Date:</b>	8/30/2017
<b>Affiliation:</b>	Stantec Consulting
<b>Address:</b>	11687 Lebanon Rd., Cincinnati, OH 45206
<b>Phone Number:</b>	513-842-8200
<b>e-mail address:</b>	nathan.noland@stantec.com
<b>Name of Wetland:</b>	Wetland 8
<b>Vegetation Community(ies):</b>	PUB
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
<b>Lat/Long or UTM Coordinate</b>	40.33081°N, -83.428193°W
<b>USGS Quad Name</b>	Peoria
<b>County</b>	Union
<b>Township</b>	Taylor
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	05060001
<b>Site Visit</b>	8/30/2017
<b>National Wetland Inventory Map</b>	N/A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	Blount silt loam, end moraine, 2-4% slopes
<b>Delineation report/map</b>	See Ecological Resources Inventory Report

Name of Wetland:		Wetland 8	
Wetland Size (acres, hectares):		1.13 acres	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.			
Comments, Narrative Discussion, Justification of Category Changes:			
see Ecological Inventory Resource Report			
Final score :		20	
Category:			

## Scoring Boundary Worksheet

**INSTRUCTIONS.** The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and <b>hydrologically isolated</b> and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input checked="" type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b



8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	NO  Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO  Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO  Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

Table 1. Characteristic plant species.

<b>invasive/exotic spp</b>	<b>fen species</b>	<b>bog species</b>	<b>Oak Opening species</b>	<b>wet prairie species</b>
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

<b>Site:</b> <u>Wetland 8</u>	<b>Rater(s):</b> <u>N. Noland</u>	<b>Date:</b> <u>8/30/2017</u>
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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)
- 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)
- 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), shrub land, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- 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)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

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)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

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)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input checked="" type="checkbox"/> dredging
<input checked="" type="checkbox"/> stormwater input	<input type="checkbox"/> other

4	18
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)
- 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)
- 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)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input checked="" type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input checked="" type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

18
subtotal this page

<b>Site:</b> Wetland 8	<b>Rater(s):</b> N. Noland	<b>Date:</b> 8/30/2017
------------------------	----------------------------	------------------------

18

subtotal first page

0	18
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)

2	20
max 20 pts.	subtotal

### Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1  Emergent
- 2  Shrub
- 2  Forest
- Mudflats
- 1  Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- 2  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

- 5  Extensive >75% cover (-5)
- 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 hummocks/tussucks
- 0  Coarse woody debris >15cm (6in)
- 0  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

20

**End of Quantitative Rating. Complete Categorization Worksheets.**



## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	9	
	Metric 4. Habitat	4	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	2	
	TOTAL SCORE	20	Category based on score breakpoints <b>CAT 1</b>

**Complete Wetland Categorization Worksheet.**

## Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p>NO</p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<p>NO</p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO</p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p>NO</p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate</i> OR <i>superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p>NO</p> <p>Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

Final Category  
 Choose one    Category 1    Category 2    Category 3

**End of Ohio Rapid Assessment Method for Wetlands.**

### D.3 HHEI DATA FORMS



# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

**34**

SITE NAME/LOCATION Marysville Station Expansion Project / Union County, OHIO  
AEP SITE NUMBER Stream 1 RIVER BASIN Scioto DRAINAGE AREA (mi<sup>2</sup>) 0.12  
 LENGTH OF STREAM REACH (ft) 200 LAT. 40.341802°N LONG. 83.43043°W RIVER CODE / RIVER MILE /  
 DATE 8/29/09 SCORER UTN COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY  
 MODIFICATIONS: \_\_\_\_\_

**1. SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>65</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>2</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>10</u>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>5</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<u>20</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) **9** (B) **5**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: \_\_\_\_\_ TOTAL NUMBER OF SUBSTRATE TYPES: **5**

**2. Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters): **1cm**

**3. BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS 0.1m 3.6 0.5 1.0 6.0 1.0 AVERAGE BANKFULL WIDTH (meters) **1.2**

HHEI Metric Points

Substrate Max = 40

**14**

A + B

Pool Depth Max = 30

**5**

Bankfull Width Max=30

**15**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Per Bank)		(Most Predominant per Bank)	
Wide >10m		<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> Moderate 5-10m		<input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> Narrow <5m		<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/> None		<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> Mining or Construction

COMMENTS \_\_\_\_\_

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS intermittent

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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)**

<sup>Med.</sup> WWH Name: Bues Creek Distance from Evaluated Stream ~ 2 mi  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: Mill Creek Distance from Evaluated Stream >10 mi

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Peoria NRCS Soil Map Page: 1 NRCS Soil Map Stream Order 1  
County: Union Township / City: Raymond

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/29/2017 Quantity: 0.25"

Photograph Information: \_\_\_\_\_

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOTIC EVALUATION**

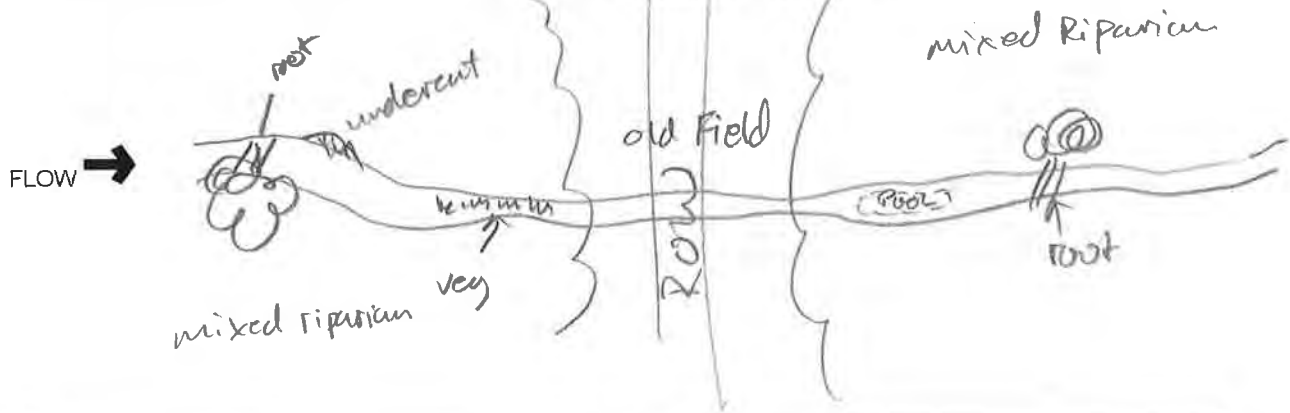
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) \_\_\_\_\_ Salamanders Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_  
Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_ Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_

Comments Regarding Biology: no water some small roots

**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





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

30

SITE NAME/LOCATION Marysville Station Expansion Project / Union County, OH  
AEP SITE NUMBER Stream 1 RIVER BASIN Scioto DRAINAGE AREA (mi<sup>2</sup>) 0.12 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft) 200 LAT. 40.331118°N LONG. 83.476840°W RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_  
 DATE 8/29/2017 SCORER NTN COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY

MODIFICATIONS:

**1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>65</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACKWOODY DEBRIS [3 pts]	<u>5</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>15</u>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<u>20</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 9 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: \_\_\_\_\_ TOTAL NUMBER OF SUBSTRATE TYPES: \_\_\_\_\_

**2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters): 0

**3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS OTWM = 3.0' 0.3 ISF = 4.5 AVERAGE BANKFULL WIDTH (meters) 1.4  
TOTB = 6.0' 0.5

HHEI Metric Points

Substrate Max = 40

15

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Per Bank)		(Most Predominant per Bank)	
Wide >10m		Mature Forest, Wetland	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>
Moderate 5-10m		Residential, Park, New Field	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>
Narrow <5m			<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
None			<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>

COMMENTS \_\_\_\_\_

**FLOW REGIME (At Time of Evaluation) (Check ONLY one box):**

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS Intermittent

**SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):**

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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)**

<sup>modified</sup> WWH Name: Blues Creek Distance from Evaluated Stream ~2mi  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: Mill Creek Distance from Evaluated Stream >10mi

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Peoria NRCS Soil Map Page: 1 NRCS Soil Map Stream Order 1  
County: Union Township / City: Raymond

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/22/2017 Quantity: 0.40"

Photograph Information: \_\_\_\_\_

Elevated Turbidity? (Y/N): N Canopy (% open): 15%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

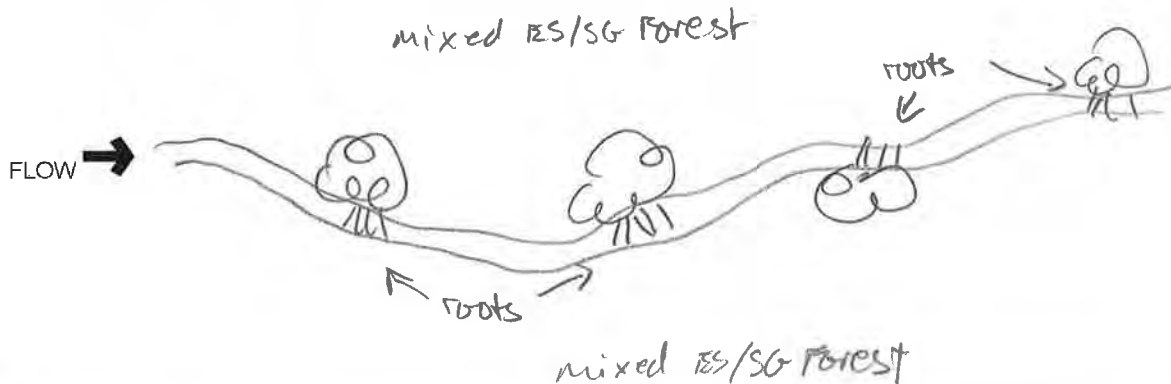
Fish Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_ Salamanders Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_ Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_

Comments Regarding Biology: no water in channel!

**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





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

27

SITE NAME/LOCATION Marysville Station Expansion Project, Union County, Ohio  
AEP SITE NUMBER Stream 2 RIVER BASIN Scioto DRAINAGE AREA (mi<sup>2</sup>) 1 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft) 200 LAT. 40,33591°N LONG. 83,435571°W RIVER CODE      RIVER MILE       
 DATE 8/29/2017 SCORER KLB COMMENTS     

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY  
 MODIFICATIONS:     

**1. SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	05
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5	<input type="checkbox"/> MUCK [0 pts]	
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	10	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 9 (B) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:      TOTAL NUMBER OF SUBSTRATE TYPES: 3

**2. Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS      MAXIMUM POOL DEPTH (centimeters): 0

**3. BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS OHWM = 3' 0.5' TDB = 4' 1' AVERAGE BANKFULL WIDTH (meters) 1.2

HHEI Metric Points

Substrate Max = 40

12

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

1.5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
<input checked="" type="checkbox"/> L <input checked="" type="checkbox"/> R	(Per Bank)	<input type="checkbox"/> L <input type="checkbox"/> R	(Most Predominant per Bank)
<input checked="" type="checkbox"/> Wide >10m		<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> Moderate 5-10m		<input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> Narrow <5m		<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/> None		<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> Mining or Construction

COMMENTS     

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS ephemeral

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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)**

Mod. WWH Name: Blues Creek Distance from Evaluated Stream ~ 2.5 mi  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: Mill Creek Distance from Evaluated Stream > 10 mi

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Peoria NRCS Soil Map Page: ✓ NRCS Soil Map Stream Order ✓  
County: Union Township / City: Raymond

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/29/2017 Quantity: 0.25"

Photograph Information: \_\_\_\_\_

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

**BIOTIC EVALUATION**

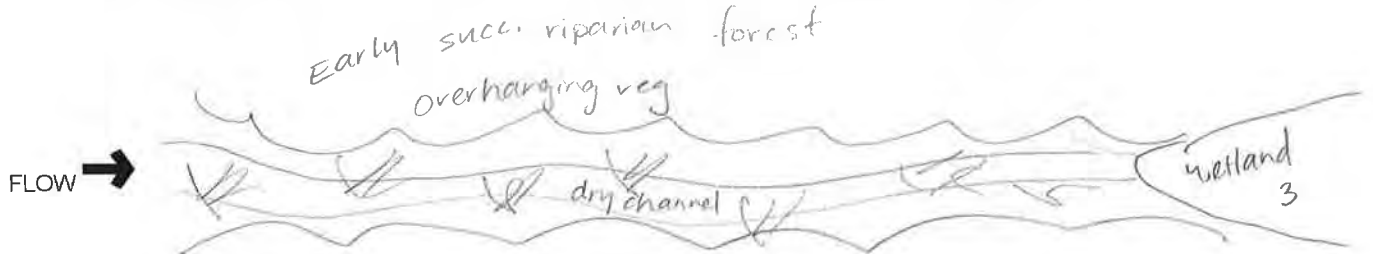
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_ Salamanders Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_  
Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_ Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_

Comments Regarding Biology: No water

**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





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

24

SITE NAME/LOCATION Marysville Station Expansion Project / Union County, Ohio  
 AEP SITE NUMBER Stream 3 RIVER BASIN Scioto DRAINAGE AREA (mi<sup>2</sup>) \_\_\_\_\_  
 LENGTH OF STREAM REACH (ft) 200 LAT. 40.3291°N LONG. 83.4346°W RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_  
 DATE 8/30/2017 SCORER ATN COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY

MODIFICATIONS:

**1. SUBSTRATE** (Estimate percent of a very type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>90</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>2</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	<u>8</u>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 6 (B) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6 TOTAL NUMBER OF SUBSTRATE TYPES: 3

**2. Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters): 0

**3. BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS DHWB = 3.4' Depth 0.3 AVERAGE BANKFULL WIDTH (meters) 1.1  
TWB = 5' Depth 0.6

HHEI Metric Points

Substrata Max = 40

9

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wide >10m		Mature Forest, Wetland	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Conservation Tillage
			Urban or Industrial
			Open Pasture, Row Crop
			Mining or Construction

COMMENTS \_\_\_\_\_

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 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: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: Mill Creek Distance from Evaluated Stream ~ 1 mi

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Peoria NRCS Soil Map Page: / NRCS Soil Map Stream Order /  
County: Union Township / City: Raymond

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/29/2017 Quantity: 0.25"

Photograph Information: \_\_\_\_\_

Elevated Turbidity? (Y/N): N Canopy (% open): 51%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: /

Field Measures: Temp (°C) / Dissolved Oxygen (mg/l) / pH (S.U.) / Conductivity (µmhos/cm) /

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: /

Additional comments/description of pollution impacts: N/A

**BIOTIC EVALUATION**

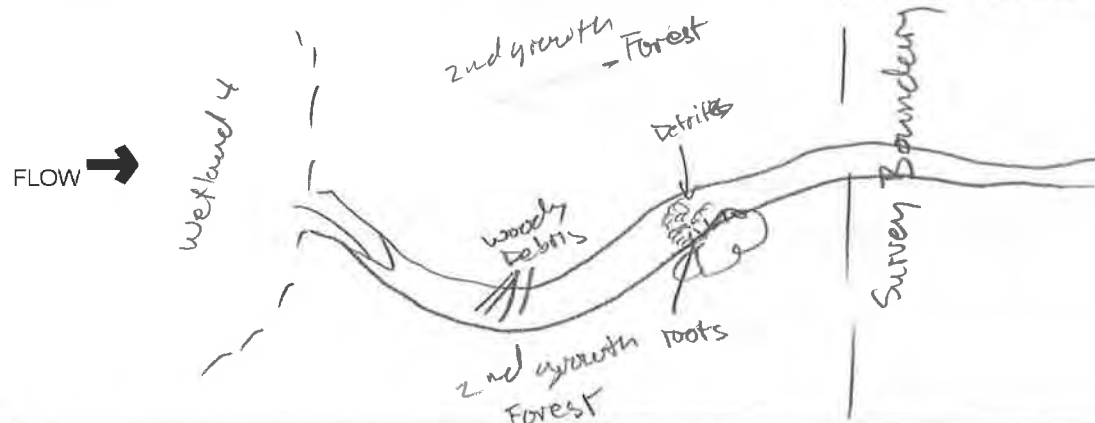
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) / Voucher? (Y/N) / Salamanders Observed? (Y/N) / Voucher? (Y/N) /  
Frogs or Tadpoles Observed? (Y/N) / Voucher? (Y/N) / Aquatic Macroinvertebrates Observed? (Y/N) / Voucher? (Y/N) /

Comments Regarding Biology: No water

**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





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

50

SITE NAME/LOCATION Maysville Station Expansion Project / Union County, Ohio  
 AEP SITE NUMBER Stream 4 RIVER BASIN Scioto DRAINAGE AREA (mi<sup>2</sup>) 0.04  
 LENGTH OF STREAM REACH (ft) 200 LAT. 40.332443°N LONG. 83.426918°W RIVER CODE / RIVER MILE /  
 DATE 6/30/2010 SCORER NTN COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWHH Streams" for Instructions

STREAM CHANNEL  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY

MODIFICATIONS: Man made mitigation channel

**1. SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>35</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>10</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<u>20</u>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<u>35</u>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) **6** (B) **4**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: \_\_\_\_\_ TOTAL NUMBER OF SUBSTRATE TYPES: \_\_\_\_\_

**2. Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters): 12

**3. BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS OTW 4.0' Depth 1.0 AVERAGE BANKFULL WIDTH (meters) 1.4  
TUB = 6.0 Depth 3.0

HHEI Metric Points

Substrate Max = 40

10

A + B

Pool Depth Max = 30

25

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY			
L	R	L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wide >10m		Mature Forest, Wetland		Conservation Tillage	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field		Urban or Industrial	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field		Open Pasture, Row Crop	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture		Mining or Construction	

COMMENTS \_\_\_\_\_

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS Intermittent

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: Mill Creek Distance from Evaluated Stream ~1.5 mi

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Boria NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order \_\_\_\_\_  
County: Union Township / City: Raymond

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/29/2017 Quantity: 0.25"  
Photograph Information: \_\_\_\_\_  
Elevated Turbidity? (Y/N): N Canopy (% open): 100  
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: 1  
Field Measures: Temp (°C) 24.5 Dissolved Oxygen (mg/l) ✓ pH (S.U.) 9.3 Conductivity (µmhos/cm) 1  
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: ✓

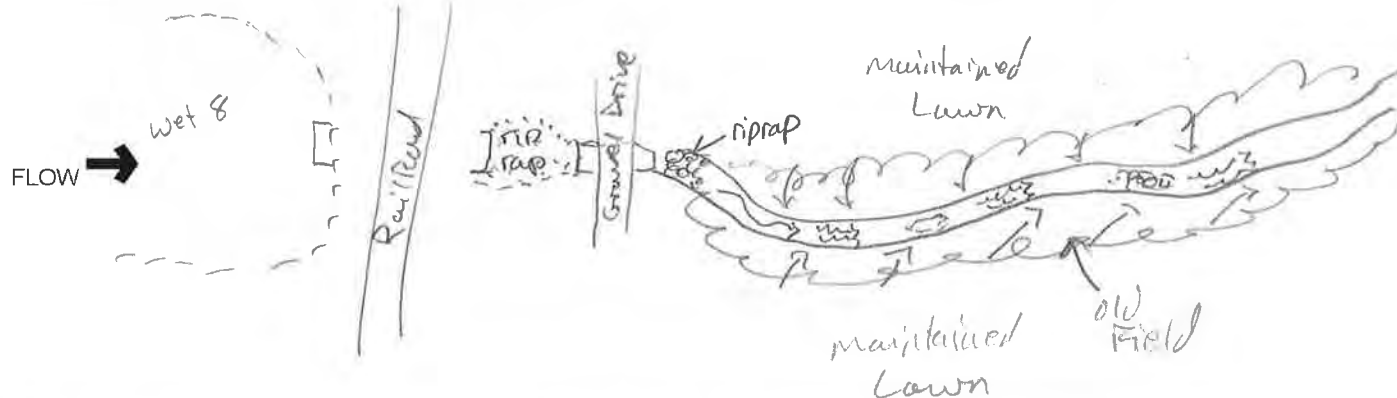
Additional comments/description of pollution impacts: ✓

**BIOTIC EVALUATION**

Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) Y Voucher? (Y/N) ✓ Salamanders Observed? (Y/N) — Voucher? (Y/N) —  
Frogs or Tadpoles Observed? (Y/N) ✓ Voucher? (Y/N) — Aquatic Macroinvertebrates Observed? (Y/N) — Voucher? (Y/N) —  
Comments Regarding Biology: snails, worms, fish

**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





**Marysville-Union County Solar  
Generation Tie Line Project**

**Ecological Survey Report**

Prepared for:

MYR Energy Services, Inc.  
55 East Monroe Street  
Chicago, IL 60603


Prepared by:

Stantec Consulting Services Inc.  
10200 Alliance Road, Suite 300  
Cincinnati, OH 45242

January 24, 2023

## Sign-off Sheet

This document entitled Marysville-Union County Solar Generation Tie Line Project Ecological Survey Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of MYR Energy Services, Inc. Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by   
(signature)

**Cyrus Chastain**

Reviewed by   
(signature)

**Aaron Kwolek**

Approved by   
(signature)

**Daniel Godec**

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	Wetland Determination Data Forms .....	D.1
	ORAM Data Form .....	D.2



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HHEI Data Form ..... D.3

Introduction  
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## **1.0 INTRODUCTION**

AEP Ohio Transmission Company, Inc. (AEP) and MYR Energy Services, Inc. are proposing construction activities associated with the Marysville-Union County Solar Generation Tie Line Project. The Project includes the installation of new electric transmission structures near the existing AEP Marysville Station facility, as well as north of State Route 347 near the Marysville Station facility in order to tie into/interconnect with the planned Independent Power Producer (IPP) Union Solar Project. The portion of the Project located south of State Route 347 was previously surveyed for ecological resources by Stantec Consulting Services Inc. (Stantec) under contract with AEP as part of the Marysville Station Expansion Project in 2017 and 2020. The portion of the Project which was not previously surveyed by Stantec (hereafter referred to as the Project area) begins northeast of the intersection of State Route 347 and Patrick-Brush Run Road and extends northwest approximately 0.25 miles in Liberty Township, Union County, Ohio (Figure 1, Appendix A). The Project area was surveyed for wetlands, waterbodies, open water features, and potential threatened, endangered, and rare species habitat by Stantec biologists on January 5, 2023. The approximate locations of features located up to 50 feet outside of the Project area were also recorded during the field surveys, where landowner access was permitted. However, no data forms were collected on features that did not extend into the Project area. The approximate locations of these features are shown on the Figure 2 maps in Appendix A as "approximate" wetlands, streams (waterways), open waters, and upland drainage features.

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## 2.0 METHODS

### 2.1 WETLAND DELINEATION

Prior to completing the field surveys, a desktop review of the Project area was conducted using U.S. Geological Survey (USGS) topographic mapping, National Wetlands Inventory (NWI) maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey data, and aerial imagery mapping. No NWI-mapped features are located within the Project area. Stantec completed a wetland delineation study in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE 2010). Wetland categories were classified using the Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001).

### 2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high-water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project area, per the protocols outlined in the USACE's *Guidance on Ordinary High Water Mark Identification* (Regulatory Guidance Letter, No. 05-05) (USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definitions in the *Federal Register/Vol. 67, No. 10* (USACE 2002). Functional assessment of streams within the Project area was based on completion of the Ohio Environmental Protection Agency's (OEPA) *Headwater Habitat Evaluation Index (HHEI; OEPA 2020)* and/or *Qualitative Habitat Evaluation Index (QHEI; OEPA 2006)*. The centerline of each waterway and/or the OHWM of each waterway was identified and surveyed using a handheld sub-meter accuracy global positioning system (GPS) unit and mapped with geographic information system (GIS) software. Additionally, the locations of ponds/open water features and upland drainage features (which lacked a continuously defined bed and bank/OHWM) identified within the Project area were also recorded with a sub-meter accuracy GPS unit during the field surveys.

### 2.3 RARE SPECIES

Prior to conducting the field surveys, Stantec contacted the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) for information regarding rare, threatened, or endangered species and their habitats of concern within the vicinity of the Project area (Appendix B – Agency Correspondence). To assess potential impacts to rare, threatened, or endangered species, Stantec scientists conducted a pedestrian reconnaissance of the proposed Project area, collected information on existing habitats within the Project area, and assessed the potential for these habitats to be used by federally listed or state-listed species that have the potential to occur within Union County.

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### 3.0 RESULTS

#### 3.1 TERRESTRIAL HABITAT

Stantec completed field surveys on January 5, 2023, for threatened and endangered species or their habitats. Figure 3 (Appendix A) shows the vegetation communities/habitats identified within the Project area and the locations of any identified rare, threatened, or endangered species habitat observed within the Project area during the time of the habitat assessment surveys. Representative photographs of the vegetation communities/habitats and land cover types identified within the Project area are included in Appendix C of this report (photo locations are shown on Figure 3, Appendix A). Information regarding the vegetation communities/habitats/land cover types identified within the Project area is provided in Table 1.

**Table 1. Vegetation Communities and Land Cover Types Found within the Marysville-Union County Solar Generation Tie Line Project Area, Union County, Ohio**

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Agricultural Land	Extreme Disturbance/Ruderal Community dominated by planted row crop species such as corn ( <i>Zea mays</i> ), soybean ( <i>Glycine max</i> ), and common wheat ( <i>Triticum aestivum</i> ).	No	9.51
Old Field	Extreme Disturbance/Ruderal Community dominated by opportunistic invaders and/or native highly tolerant taxa. Common plant species included velvetleaf ( <i>Abutilon theophrasti</i> ), Canada goldenrod ( <i>Solidago canadensis</i> ), Allegheny blackberry ( <i>Rubus allegheniensis</i> ), Japanese bristlegrass ( <i>Setaria faberi</i> ), Indianhemp ( <i>Apocynum cannabinum</i> ), white avens ( <i>Geum canadense</i> ), and Fuller's teasel ( <i>Dipsacus fullonum</i> ).	No	0.51
Residential Lawn	Extreme Disturbance/Ruderal Community dominated by opportunistic invaders and/or native highly tolerant taxa. Common plant species included common plantain ( <i>Plantago major</i> ), Kentucky bluegrass ( <i>Poa pratensis</i> ), perennial ryegrass ( <i>Lolium perenne</i> ), white clover ( <i>Trifolium repens</i> ), and common dandelion ( <i>Taraxacum officinale</i> ).	No	0.32
Existing Roadway	Extreme Disturbance/existing gravel or paved road without vegetation.	No	0.14



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Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Mixed Early Successional/ Second Grown Deciduous Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders). Common plant species included common hackberry ( <i>Celtis occidentalis</i> ), American sycamore ( <i>Platanus occidentalis</i> ), bitternut hickory ( <i>Carya cordiformis</i> ), Allegheny blackberry, American elm ( <i>Ulmus americana</i> ), northern red oak ( <i>Quercus rubra</i> ), black walnut ( <i>Juglans nigra</i> ), and eastern redcedar ( <i>Juniperus virginiana</i> )	No	0.66
Palustrine Emergent Wetland	Moderate Disturbance/Natural Community (dominated by native herbaceous species and/or opportunistic invaders). Common plant species included butterweed ( <i>Packera glabellla</i> ), redroot amaranth ( <i>Amaranthus retroflexus</i> ), cursed buttercup ( <i>Ranunculus scleratus</i> ), and purple deadnettle ( <i>Lamium purpureum</i> ).	No	0.05
<b>TOTAL</b>			<b>11.19</b>

**3.2 WETLANDS**

One palustrine emergent wetland was delineated within the Project area during the field surveys completed on January 5, 2023. Table 2 provides information about the wetland delineated within the Project area. Two additional wetland determination sample points were evaluated within the Project area in the locations most likely to meet the criteria to be considered a wetland. Representative photographs of the wetland and wetland determination sample points are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). The completed ORAM and wetland determination data forms are included in Appendix D.

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**Table 2. Summary of Wetland Resources Found within the Marysville-Union County Solar Generation Tie Line Project Area, Union County, Ohio**

Wetland ID	Location			Isolated? <sup>2</sup>	Habitat Type <sup>3,4</sup>	Delineated Area within Project Area (acre)	ORAM <sup>5</sup>		Nearest Proposed Structure Number	Existing Structure Number in Wetland	Proposed Structure Number in Wetland	Structure Installation Method	Proposed Impacts	
	Latitude	Longitude	Photo Location <sup>1</sup>				Score	Category					Temporary Matting Area (acre)	Permanent Impact Area (acre)
Wetland 1	40.3367	-83.4399	7	Yes	PEM	0.05	14	1	N/A	N/A	N/A	N/A	TBD	TBD
<b>TOTAL:</b>						<b>0.05</b>	<b>TOTAL:</b>					<b>TBD</b>	<b>TBD</b>	

<sup>1</sup> Appendix B - Figure 2 and Appendix D – Wetland and Waterbody Delineation Photographs  
<sup>2</sup> Pending USACE jurisdictional review  
<sup>3</sup> Habitat type based on Cowardin et al. (1979).  
<sup>4</sup> PEM = Palustrine Emergent Wetland  
<sup>5</sup> ORAM Score and Category are based on the Ohio Rapid Assessment Method for Wetland v. 5.0 (Mack 2001).

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**3.3 STREAMS**

One ephemeral stream was identified in the Project area during Stantec’s January 5, 2023 site visit. Figure 2 (Appendix A) shows the location of the stream identified by Stantec within the Project area. Representative photographs of the stream are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). A completed HHEI data form for the identified stream is included in Appendix D. Information regarding the identified stream is provided in Table 3.

**Table 3. Summary of Stream Resources Found within the Marysville-Union County Solar Generation Tie Line Project Area, Union County, Ohio**

Stream ID	Location		Stream Type	Stream Name <sup>1</sup>	Delineated Length (feet)	Bankfull Width (feet)	OHWM Width (feet)	Field Evaluation			Ohio EPA 401 Eligibility	Stream Crossing?	Proposed Impacts	
	Latitude	Longitude						Method	Score <sup>2,3</sup>	Category/ Rating/ OAC Use Designation <sup>2,3,4</sup>			Fill Type	Area (acre)
Stream 1	40.337532	-83.443837	Ephemeral	UNT to Mill Creek	65	2	1.5	HHEI	15	Class I Primary Headwater	Eligible	TBD <sup>5</sup>	TBD <sup>5</sup>	TBD <sup>5</sup>
<b>TOTAL:</b>					<b>65</b>								<b>TOTAL:</b>	<b>0</b>

<sup>1</sup>UNT = Unnamed Tributary  
<sup>2</sup>Based on the designated use evaluation presented in the Field Methods for Evaluating Primary Headwater Habitat Streams in Ohio, Version 4.0 (OEPA 2020).  
<sup>3</sup>Based on the designated use evaluation presented in the Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (OEPA 2006).  
<sup>4</sup>Based on Ohio Administrative Code (OAC) 3745-1-16.  
<sup>5</sup>TBD – To be determined. Impact information is unknown at this time.

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### **3.4 OPEN WATERS**

No open waters were identified within the Project area during Stantec's January 5, 2023 site visit.



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### 3.5 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 4. Summary of Potential Federally Listed and Ohio State-Listed Species within the Marysville-Union County Solar Generation Tie Line Project Area, Union County, Ohio

Common Name/ Scientific Name	State Listed Status <sup>1,2</sup>	Federally Listed Status <sup>1,3</sup>	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
<b>Mammals</b>						
Indiana Bat/ <i>Myotis sodalis</i>	E	E	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas; Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2022b). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential roost trees or potential hibernacula were observed within the Project area.	<p><b>ODNR</b> – This Project lies within the range of the Indiana bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or 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 ODNR recommends a 0.25-mile tree cutting and subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species.</p> <p><b>USFWS</b> – The Indiana bat occurs throughout the State of Ohio. The Indiana bat may be found</p>	<p>Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area.</p> <p><b>Avoidance Dates:</b> April 1 – September 30</p>

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Common Name/ Scientific Name	State Listed Status <sup>1,2</sup>	Federally Listed Status <sup>1,3</sup>	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
					<p>wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. 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. If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted between June 1 and August 15 for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year.</p>	
Northern Long-eared Bat/ <i>Myotis septentrionalis</i>	E	T	<p>The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2020). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).</p>	<p>Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential hibernacula were observed within the Project area.</p>	<p><b>ODNR</b> – This Project lies within the range of the northern long-eared bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or within 0.25 miles of the Project</p>	<p>Potentially suitable foraging habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area.</p> <p><b>Avoidance Dates:</b> April 1 – September 30</p>

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Common Name/ Scientific Name	State Listed Status <sup>1,2</sup>	Federally Listed Status <sup>1,3</sup>	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
					<p>area, please send this information to Erin Hazelton for project recommendations. If a potential or known hibernaculum is found, the ODNR recommends a 0.25-mile tree cutting and subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species.</p> <p><b>USFWS</b> – If no caves or abandoned mines may be disturbed and tree removal is unavoidable, seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) is recommended. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule.</p>	
Little Brown Bat/ <i>Myotis lucifugus</i>	E	N/A	<p>This bat uses a wide range of habitats and man-made structures for roosting, including buildings and attics. Less frequently, they use hollows of trees. Winter hibernation sites typically consist of caves, tunnels, abandoned mines. Foraging habitat for this species generally occurs over water, along the edges of lakes and stream, or in woodlands near waterbodies (NatureServe 2022).</p>	<p>Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential hibernacula were observed within the Project area.</p>	<p><b>ODNR</b> - This Project lies within the range of the little brown bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or 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 ODNR recommends a 0.25-mile tree cutting and</p>	<p>Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area.</p> <p><b>Avoidance Dates:</b> April 1 – September 30</p>

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Common Name/ Scientific Name	State Listed Status <sup>1,2</sup>	Federally Listed Status <sup>1,3</sup>	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
					<p>subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species.</p> <p><b>USFWS</b> - No comments received.</p>	
<p>Tricolored Bat/<i>Perimyotis subflavus</i></p>	<p>E</p>	<p>PE</p>	<p>This species is found throughout Ohio and is associated with forested landscapes, foraging near trees and along waterways. Maternity and summer roosts usually occur in dead or live tree foliage, or in the south, in clumps of Spanish moss. Maternity colonies may also use tree cavities or man-made structures, such as buildings or bridges. Caves, mines, and rock crevices may be used as winter hibernacula and/or summer night roosts between foraging (NatureServe 2022).</p>	<p>Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. No potential hibernacula were observed within the Project area.</p>	<p><b>ODNR</b> - This Project lies within the range of the tricolored bat. Therefore, if suitable habitat occurs within the Project area and trees need to be cut, the ODNR recommends cutting only occur between October 1 and March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with dbh ≥ 20 inches if possible. If trees are present within the project area, and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, ODNR recommends cutting only occur from October 1 through March 31. In addition, the ODNR recommends a desktop habitat assessment, followed by field a field assessment if needed, is conducted to determine if there are potential hibernacula present within the Project area. If a habitat assessment finds that a potential hibernaculum is present within the Project area or 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 ODNR recommends a 0.25-mile tree cutting and subsurface disturbance buffer be established around the potential hibernaculum entrance. However, limited summer or winter tree cutting may be acceptable after consultation with the ODNR. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this Project is not likely to impact this species.</p> <p><b>USFWS</b> - No comments received.</p>	<p>Potentially suitable foraging and roosting habitat (mixed early successional/second growth deciduous forest) was observed within the Project area. A desktop bat hibernacula habitat assessment was completed by Stantec and no potential bat hibernacula were identified within the Project area or its vicinity (Figure 4; Appendix A). No potential hibernacula were observed within the Project area.</p> <p><b>Avoidance Dates:</b> April 1 – September 30</p>



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Common Name/ Scientific Name	State Listed Status <sup>1,2</sup>	Federally Listed Status <sup>1,3</sup>	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
<b>Birds</b>						
Northern Harrier/ <i>Circus hudsonius</i>	E	N/A	Harriers hunt low over grasslands, with wings held in a distinctive dihedral (V-shape). This is a common migrant and winter species; nesters are much rarer, although they occasionally breed in large marshes and grasslands (ODNR 2018). Northern harriers appear to be associated with large tracts of undisturbed habitat. They are uncommon in blocks of contiguous grassland less than 100 hectares (Slater and Rock 2005).	No suitable nesting habitat was observed within the Project area.	<b>ODNR</b> – The Project is within the range of the northern harrier. 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.  <b>USFWS</b> - No comments received.	Northern harriers require large tracts of wetlands and/or grasslands that are 100 hectares (247 acres) or more for suitable breeding/nesting habitat (Slater and Rock 2005). No suitable nesting habitat (large tracts of wetlands and/or grasslands) were observed within the Project area. Therefore, no impacts are anticipated and avoidance dates are not applicable.
<b>Mussels</b>						
Northern Riffleshell/ <i>Epioblasma torulosa rangiana</i>	E	E	This mussel is found in a wide variety of streams from small to large. Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (NatureServe 2022).	No suitable habitat was observed within the Project area.	<b>ODNR</b> – The Project area is within the range of the northern riffleshell. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.  <b>USFWS</b> – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Rabbitsfoot/ <i>Quadrula cylindrica</i>	E	T	Typical habitat for this species is small to medium-sized rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Rabbitsfoot are also found in medium to large rivers in sand and gravel (NatureServe 2022).	No suitable habitat was observed within the Project area.	<b>ODNR</b> – The Project area is within the range of the rabbitsfoot. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.  <b>USFWS</b> – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Snuffbox/ <i>Epioblasma triquetra</i>	E	E	The snuffbox occurs in medium-sized streams to large rivers, generally on mud, rocky, gravel, or sand substrates in flowing water. They are often deeply buried in substrate and overlooked by collectors (NatureServe 2022). It is found in a wide range of particle sized substrates; however, swift shallow riffles with sand and gravel are where it is typically found	No suitable habitat was observed within the Project area.	<b>ODNR</b> – The Project area is within the range of the snuffbox. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.  <b>USFWS</b> – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

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Common Name/ Scientific Name	State Listed Status <sup>1,2</sup>	Federally Listed Status <sup>1,3</sup>	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
			(Parmalee and Bogan 1998; Watters et al. 2009).			
Rayed Bean/ <i>Villosa fabalis</i>	E	E	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increased substrate stability (NatureServe 2022; Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	No suitable habitat was observed within the Project area.	<b>ODNR</b> – The Project area is within the range of the rayed bean. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.  <b>USFWS</b> – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Clubshell/ <i>Pleurobema clava</i>	E	E	The clubshell occurs in medium to small rivers and streams, containing clean, coarse sand and cobble substrates (USFWS 1994). The clubshell is usually found within the current, where it may live several inches underneath the surface. It is most common in the downstream ends of riffles and islands (Watters et al. 2009). The clubshell is mostly considered an Ohio River system species, including the Tennessee, Cumberland, Kanawha, and Wabash river drainages. However, it is also found within the Maumee River system of Lake Erie. Although historically the clubshell was originally described as occurring within Lake Erie, only one record of its occurrence there has been found (Watters et al. 2009).	No suitable habitat was observed within the Project area	<b>ODNR</b> – The Project area is within the range of the clubshell mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.  <b>USFWS</b> – Due to the project type, size, and location, we do not anticipate adverse effects to this species.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
Elephant-ear/ <i>Elliptio crassidens crassidens</i>	E	N/A	This mussel is found in muddy sand, sand, and rocky substrates in moderate currents. In some areas, it is common in large creeks to rivers with moderate to swift currents primarily on sand and limestone or rock substrates (NatureServe 2022).	No suitable habitat was observed within the Project area.	<b>ODNR</b> – The Project area is within the range of the elephant-ear. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.  <b>USFWS</b> – No comments received.	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.

MARYSVILLE-UNION COUNTY SOLAR GENERATION TIE LINE PROJECT ECOLOGICAL SURVEY REPORT

Results  
January 24, 2023

Common Name/ Scientific Name	State Listed Status <sup>1,2</sup>	Federally Listed Status <sup>1,3</sup>	Typical Habitat	Habitat Observed	Agency Comments (Appendix B)	Potential Impacts and Avoidance Dates
Pondhorn/ <i>Uniomerus tetralasmus</i>	T	N/A	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2022).	No suitable habitat was observed within the Project area.	<p><b>ODNR</b> – The Project area is within the range of the pondhorn. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.</p> <p><b>USFWS</b> – No comments received.</p>	No suitable habitat was observed within the Project area. Additionally, no in-water work in perennial streams is proposed by AEP. Therefore, impacts to this species are not anticipated and avoidance dates are not applicable.
<p><sup>1</sup>E=Endangered; T=Threatened; N/A= Not Applicable  <sup>2</sup>According to ODNR, State Listed Wildlife and Plant Species by County (ODNR 2022a).  <sup>3</sup>According to Information for Planning and Consultation website (USFWS 2022a).</p>						

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

Stantec conducted a wetland and waterbody delineation and a preliminary habitat assessment for threatened and endangered species within the Project area on January 5, 2023. One palustrine emergent (PEM) wetland (Wetland 1) totaling approximately 0.05 acres was identified within the Project area. Additionally, one ephemeral stream (Stream 1) totaling approximately 65 linear feet in length was identified within the Project area. Completed data forms for the identified stream and wetland features are provided in Appendix D and representative photographs are provided in Appendix C.

The information provided by Stantec regarding wetland and stream boundaries is based on an analysis of the wetland and upland conditions present within the Project area at the time of the field work. The delineations were performed by experienced and qualified professionals using regulatory agency-accepted practices and sound professional judgment.

An ODNR Ohio Natural Heritage Program data request and environmental review request letter was sent to the ODNR Office of Real Estate on December 5, 2022. The ODNR Office of Real Estate response dated January 10, 2023 (Appendix B) states that there are no records of state or federally listed plants or animals within one mile of the Project area.

The ODNR stated that the entire state of Ohio is within the range of the state-listed endangered Indiana bat, northern long-eared bat, little brown bat, and tricolored bat. If trees are present within the Project area, and trees must be cut, the ODNR recommends cutting only occur from October 1 – March 31, conserving trees with loose, shaggy bark and/or crevices holes, or cavities as well as trees with diameter at breast height (dbh)  $\geq$  20 inches if possible. If trees are present within the Project area and trees must be cut during the summer months, the ODNR recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. If state listed bats are documented, the ODNR recommends cutting only occur from October 1 through March 31.

The ODNR also recommended that a desktop habitat assessment be conducted, followed by a field assessment if needed, to determine if there are potential bat hibernacula present within 0.25 miles of the Project area. Stantec completed a desktop habitat desktop assessment in accordance with the 2022 Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines (USFWS 2022b) utilizing available ODNR websites, including data on known abandoned or active mines (ODNR 2022b) and locations of known or suspected karst geology (ODNR 2022c). The desktop assessment did not identify any caves, abandoned underground mines, active underground mines, or other potential bat hibernacula within the Project area or a 3-mile buffer of it (Figure 4, Appendix A). Additionally, no potential bat hibernacula were identified within the Project area. Potentially suitable summer roosting habitat was identified within the Project area. AEP intends to conduct any necessary tree clearing between October 1 and March 31. If any tree clearing is required outside of that timeframe, AEP will conduct the required agency coordination and proceed accordingly with agency recommendations.



## MARYSVILLE-UNION COUNTY SOLAR GENERATION TIE LINE PROJECT ECOLOGICAL SURVEY REPORT

Conclusions and Recommendations  
January 24, 2023

The ODNR states that the Project is within the range of the following federally listed and/or state-listed threatened and endangered mussel species: snuffbox, clubshell, northern riffleshell, rayed bean, rabbitsfoot, elephant-ear, and pondhorns. Furthermore, the ODNR states that this Project must not have an impact on freshwater native mussels at the Project site and this applies to both listed and non-listed mussel species. Per the Ohio Mussel Survey Protocol (ODNR and USFWS 2020), all Group 2, 3, and 4 streams require a mussel survey if impacts to them will be required for construction of the Project. Additionally, Group 1 streams and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the *Reconnaissance Survey for Unionid Mussels* (ODNR and USFWS 2020) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the ODNR recommends the applicant provide information to indicate no mussel impacts will occur. If impacts are unavoidable, a professional malacologist is recommended to conduct a mussel survey in the Project area. If mussels that cannot be avoided are found in the Project area, those mussels are to be collected and relocated by a professional malacologist and done in accordance with the Ohio Mussel Survey Protocol. Since no in-water work is proposed by AEP in a perennial stream, impacts to the above listed mussel species are not anticipated. As stated, no perennial streams were identified within the Project area.

The ODNR states that the Project is within the range of the state-listed endangered northern harrier. The northern harrier occasionally nests in large marshes and grasslands in Ohio. 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, the project is not likely to impact this species. However, no potentially suitable nesting habitat is present within the Project area for this species. Therefore, this Project is not likely to impact this species and nesting season avoidance dates are not applicable.

A technical assistance request letter was submitted to the USFWS on December 5, 2022. The USFWS response letter dated December 16, 2022, recommends that impacts to wetlands and other water resources be avoided or minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation (Appendix B).

According to the USFWS response, all projects in the State of Ohio lie within range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. In Ohio, presence of these species is assumed wherever suitable habitat occurs unless a presence/probable absence survey has been performed to document probable absence. The USFWS response letter states that, should the Project site contain trees  $\geq 3$  inches dbh, the USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees  $\geq 3$  inches dbh cannot be avoided, the USFWS recommends that removal of trees  $\geq 3$  inches dbh only occur between October 1 and March 31 in order to avoid adverse effects to these species. If implementation of seasonal tree clearing is not possible, the USFWS recommended that summer presence/probable absence surveys be conducted between June 1 and August 15.

## **MARYSVILLE-UNION COUNTY SOLAR GENERATION TIE LINE PROJECT ECOLOGICAL SURVEY REPORT**

Conclusions and Recommendations  
January 24, 2023

Additionally, the USFWS states that they do not anticipate adverse effects to any other federally endangered, threatened, proposed or candidate species due to the Project type, size, and location.

References  
January 24, 2023

## 5.0 REFERENCES

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## MARYSVILLE-UNION COUNTY SOLAR GENERATION TIE LINE PROJECT ECOLOGICAL SURVEY REPORT

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January 24, 2023

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## Appendix A FIGURES

### A.1 FIGURE 1 – PROJECT LOCATION MAP



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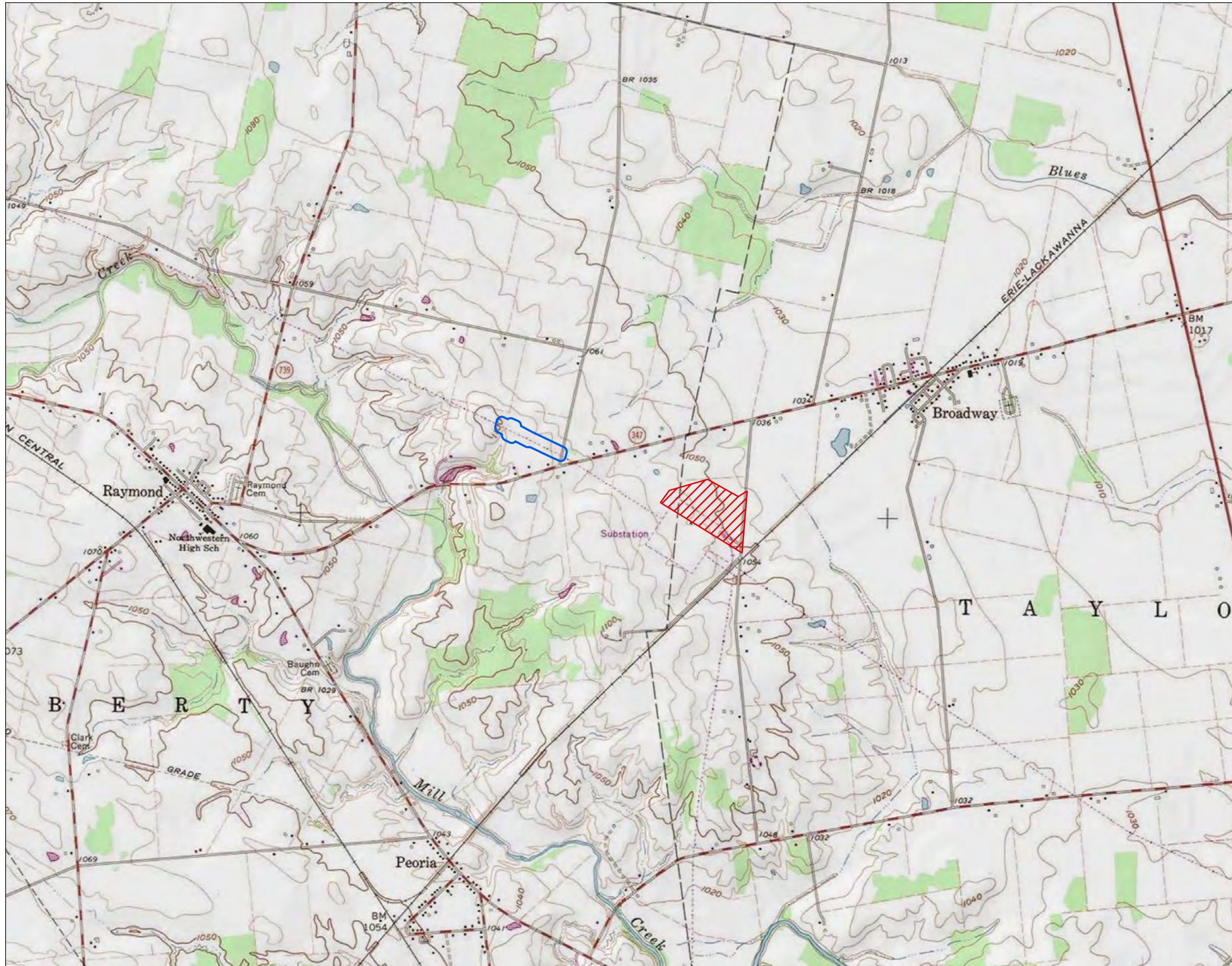


Figure No.

1

Title

### Project Location Map

Client/Project 193709207  
AEP Ohio Transmission Company, Inc.  
MYR Energy Services, Inc.  
Marysville-Union County Solar Generation Tie Line Project

Project Location Union County, Ohio Prepared by JDS on 2023-01-24  
TR by AJK on 2023-01-24  
IR by DJG on 2023-01-24



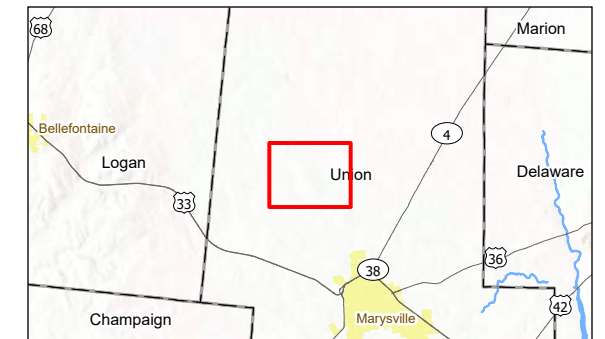
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(At original document size of 11x17)  
1:24,000

#### Legend

##### Status

Project Area

Area Previously Surveyed



- Notes**
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
  2. Data Sources: Stantec, AEP, MYR, USGS, NADS
  3. Background: USGS 7.5' Topographic Quadrangles





## A.2 FIGURE 2 – WETLAND AND WATERBODY DELINEATION MAP

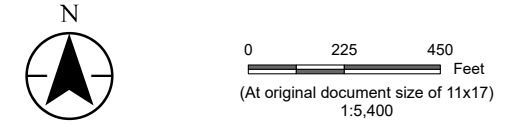


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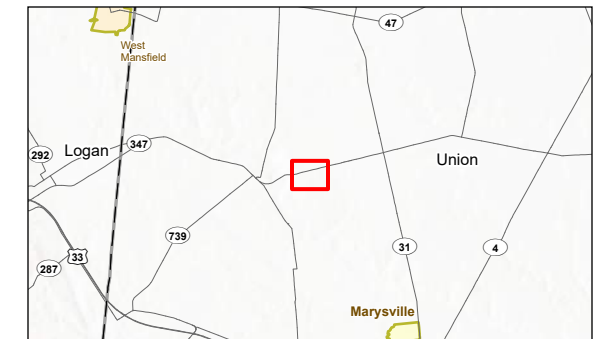
Figure No. **2**  
Title **Wetland and Waterbody Delineation Map**

Client/Project 193709207  
AEP Ohio Transmission Company, Inc.  
MYR Energy Services, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Project Location Union County, Ohio Prepared by JDS on 2023-01-10  
TR by AJK on 2023-01-24  
IR by DJG on 2023-01-24



- Legend
- Status
- Project Area
  - Area Previously Surveyed
  - Photo Location
  - Wetland Determination Sample Point
  - Existing Culvert
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
  - National Wetlands Inventory Feature
- National Hydrography Dataset
- Perennial Stream\*
  - Intermittent Stream
  - Waterbody
- FEMA Flood Hazard Area\*
- 100-year Floodplain
  - Floodway

\*No features within data frame



Notes  
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
2. Data Sources: Stantec, AEP, USGS, USFWS, FEMA, NADS, OGRIP  
3. Orthophotography: 2021 NAIP





### A.3 FIGURE 3 – HABITAT ASSESSMENT MAP



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Figure No.

**3**

Title

**Habitat Assessment Map**

Client/Project 193709207  
AEP Ohio Transmission Company, Inc.  
MYR Energy Services, Inc.  
Marysville-Union County Solar Generation Tie Line Project

Project Location Union County, Ohio Prepared by SWT on 2023-01-11  
TR by AJK on 2023-01-24  
IR by DJG on 2023-01-24

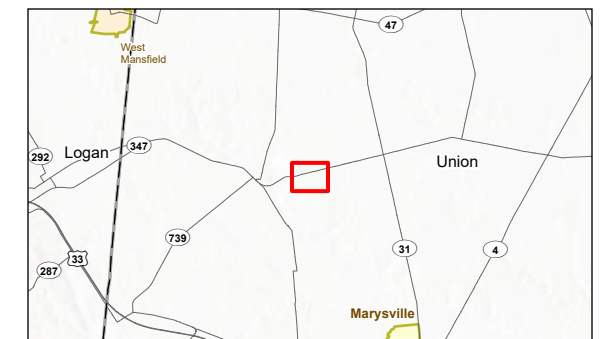


0 225 450 Feet  
(At original document size of 11x17)  
1:5,400

Legend

- Project Area
  - Area Previously Surveyed
  - Photo Location
  - Existing Culvert
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
- Habitat Area
- Agricultural Field
  - Residential Lawn
  - Old Field
  - Mixed Early Successional/Second Growth Deciduous Forest
  - Existing Road

\*No features within data frame



- Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
  2. Data Sources: Stantec, AEP, USGS, NADS, OGRIP
  3. Orthophotography: 2021 NAIP





**A.4 FIGURE 4 – BAT HIBERNACULA DESKTOP STUDY MAP**



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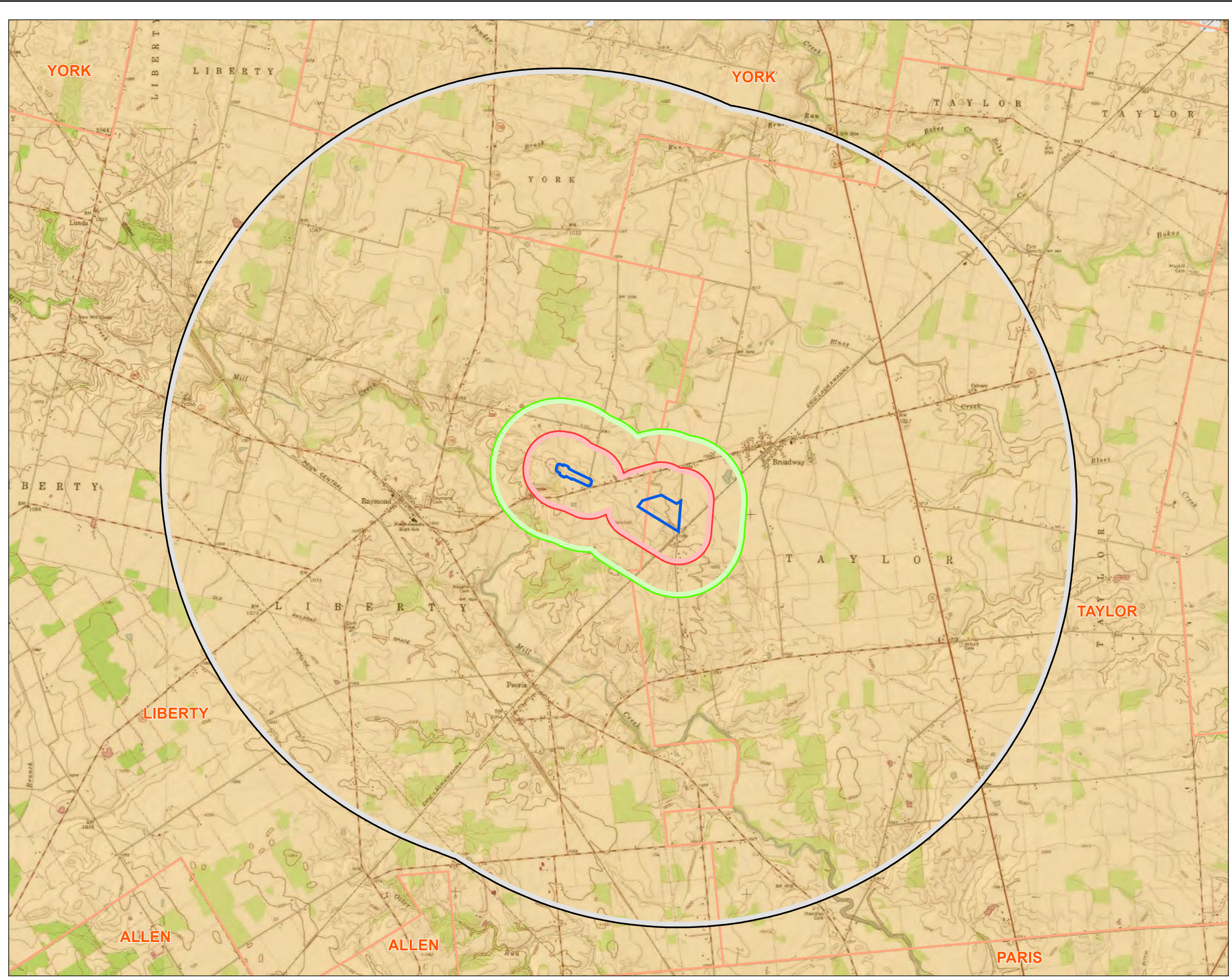
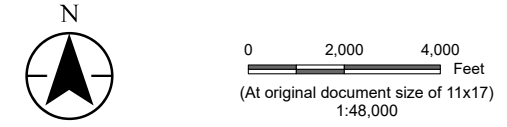
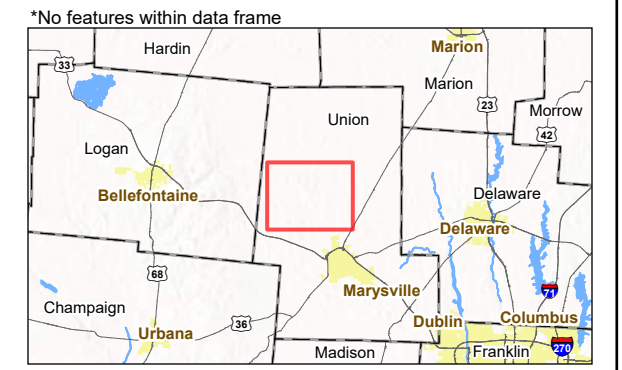


Figure No. **4**  
Title **Bat Hibernacula Desktop Study Map**

Client/Project 193709207  
AEP Ohio Transmission Company, Inc.  
MYR Energy Services, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Project Location Union County, Ohio Prepared by JDS on 2023-01-10  
TR by AJK on 2023-01-24  
IR by DJG on 2023-01-24



- Legend
- Project Area
  - 0.25-Mile Project Area Buffer
  - 0.5-Mile Project Area Buffer
  - 3-Mile Project Area Buffer
  - Township Boundary
  - Municipal Boundary
  - Karst Feature\*
  - Area of Karst Geology
  - Abandoned Underground Mine\*
  - Inactive Mine\*
  - Active Surface Mine\*
  - Abandoned Surface Mine Area\*
  - Abandoned Underground Mine Area\*
  - Inactive Surface Mine Area\*
  - Active Surface Mine Area\*
  - Surface Mine Area (Unknown Status)\*



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, ODNR, NADS
3. Background: USGS 7.5' Topographic Quadrangles





## Appendix B AGENCY CORRESPONDENCE



# Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR

MARY MERTZ, DIRECTOR

## Office of Real Estate

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

January 10, 2023

Daniel Godec  
Stantec Consulting Services Inc.  
11687 Lebanon Road  
Cincinnati, OH 45241

**Re:** 22-1237; Marysville-Union County Solar Generation Tie Line Project

**Project:** The proposed project involves facilitating the interconnection of the Cadence Solar generating facility and storage facility into AEP's existing Marysville 345 kV Station facility.

**Location:** The proposed project is located in Taylor and Liberty Townships, Union 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:** A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. 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 any particular 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 Eileen Wyza at [Eileen.Wyza@dnr.ohio.gov](mailto:Eileen.Wyza@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 & NORTHERN LONG-EARED 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 Eileen Wyza 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

snuffbox (*Epioblasma triquetra*)

clubshell (*Pleurobema clava*)

Northern riffleshell (*Epioblasma torulosa rangiana*)

rayed bean (*Villosa fabalis*)

Federally Threatened

rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Endangered

elephant-ear (*Elliptio crassidens crassidens*)

State Threatened

pondhorn (*Unio merus tetralasmus*)

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

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

Mike Pettegrew  
Environmental Services Administrator



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Ecological Services  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230  
(614) 416-8993 / FAX (614) 416-8994



December 16, 2022

Project Code: 2023-0021802

Reference: Marysville-Union County Solar Generation Tie Line project

Dear Mr./Ms,

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  $\geq 3$  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  $\geq 3$  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  $\geq 3$  inches dbh cannot be avoided, we recommend removal of any trees  $\geq 3$  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 <https://ecos.fws.gov/ecp/species/9045>), 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 it is important to conserve the functions and values of the remaining wetlands in Ohio ([https://epa.ohio.gov/portals/47/facts/ohio\\_wetlands.pdf](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](mailto: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](mailto:ohio@fws.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Patrice Ashfield", written in a cursive style.

Patrice Ashfield  
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW  
Eileen Wyza, ODNR-DOW

## **Appendix C REPRESENTATIVE PHOTOGRAPHS**

### **C.1 WETLAND AND WATERBODY PHOTOGRAPHS**



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 1. View of Stream 1. Photograph taken facing upstream/north.



Photograph Location 1. View of Stream 1. Photograph taken facing downstream/south.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 1. View of substrates of Stream 1.



Photograph Location 2. View of upland (agricultural field) at wetland determination sample point location SP01. Photograph taken facing east.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 2. View of upland (agricultural field) at wetland determination sample point location SP01. Photograph taken facing west.



Photograph Location 2. View of soil profile at wetland determination sample point location SP01.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 3. Representative view of an upland drainage feature within the Project area. Photograph taken facing east.



Photograph Location 3. Representative view of an upland drainage feature within the Project area. Photograph taken facing west.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 4. View of upland (old field habitat) at wetland determination sample point location SP02. Photograph taken facing north.



Photograph Location 4. View of upland (agricultural field) at wetland determination sample point location SP02. Photograph taken facing south.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 4. View of soil profile at wetland determination sample point location SP02.



Photograph Location 5. Representative view of existing culvert within the Project area.  
Photograph taken facing east.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 5. Representative view of existing culvert within the Project area.  
Photograph taken facing west.



Photograph Location 6. View of Wetland 1. Photograph taken facing north.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 6. View of Wetland 1. Photograph taken facing east.



Photograph Location 6. View of Wetland 1 and residential lawn habitat located south of it.  
Photograph taken facing south.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 6. View of Wetland 1. Photograph taken facing west.



Photograph Location 6. View of soil profile at wetland determination sample point location SP03.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 7. View upland (agricultural field) at wetland determination sample point location SP04. Photograph taken facing southeast.



Photograph Location 7. View upland (agricultural field) at wetland determination sample point location SP04. Photograph taken facing northwest.

AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 7. View of soil profile at wetland determination sample point location SP04.

## C.2 HABITAT PHOTOGRAPHS



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 1. Representative view of mixed early successional/second growth deciduous forest habitat within the Project area. Photograph taken facing northwest.



Photograph Location 1. Representative view of mixed early successional/second growth deciduous forest habitat within the Project area. Photograph taken facing southeast.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 2. Representative view of agricultural field habitat within the Project area. Photograph taken facing southeast.



Photograph Location 2. Representative view of agricultural field habitat within the Project area. Photograph taken facing south.



AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 3. Representative view of old field habitat within the Project area.  
Photograph taken facing north.



Photograph Location 3. Representative view of old field habitat within the Project area.  
Photograph taken facing west

AEP Ohio Transmission Company, Inc.  
Marysville-Union County Solar Generation Tie Line Project  
Liberty Township, Union County, Ohio



Photograph Location 4. Representative view of residential lawn and agricultural field habitats within the Project area. Photograph taken facing south.



## **Appendix D DATA FORMS**

### **D.1 WETLAND DETERMINATION DATA FORMS**

Project/Site: <b>Marysville-Union County Solar Generation Tie Line Project</b>		Stantec Project #: <b>193709207</b>	Date: <b>01/05/23</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Cyrus Chastain</b>	Investigator #2: <b>Matt Denzler</b>		State: <b>Ohio</b>
Soil Unit: <b>Gwe1B2 - Glynwood silt loam, end moraine, 2-6% slopes</b>	NWI/WWI Classification: <b>NA</b>		Wetland ID: <b>N/A</b>
Landform: <b>Dip</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP01</b>
Slope (%): <b>0-2%</b>	Latitude: <b>40.33807</b>	Longitude: <b>-83.443714</b>	Datum: <b>--</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input checked="" type="checkbox"/> , Soil <input checked="" type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydic Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is This Sampling Point Within A Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks: **Ag Field**

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present)

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input checked="" type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test
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**Field Observations:**

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	
Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	

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

Remarks:

**SOILS**

Map Unit Name: **Gwe1B2 - Glynwood silt loam, end moraine, 2-6% slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)		
			Color (Moist)	%	Color (Moist)	%	Type	Location			
0	6	1	10YR	4/2	100	--	--	--	--	silty clay loam	
6	14	2	10YR	5/2	60	10YR	4/6	40	C	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present) <input checked="" type="checkbox"/></p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions	<p><b>Indicators for Problematic Soils</b><sup>1</sup></p> <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>Compacted Clay</b> Depth: <b>14</b>	<b>Hydic Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	--

Remarks: **Redox features may be fill**

Project/Site: **Marysville-Union County Solar Generation Tie Line Project**

Wetland ID: **N/A**

Sample Point: **SP01**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 30 ft radius)</b>				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
<b>Sapling/Shrub Stratum (Plot size: 15 ft radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
<b>Herb Stratum (Plot size: 5 ft radius)</b>				
1.	<i>Glycine max</i>	60	Y	UPL
2.	<i>Draba verna</i>	5	N	UPL
3.	<i>Leucanthemum vulgare</i>	10	N	UPL
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		75		
<b>Woody Vine Stratum (Plot size: 30 ft radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
<b>Dominance Test Worksheet</b>				
Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A)				
Total Number of Dominant Species Across All Strata: <u>1</u> (B)				
Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)				
<b>Prevalence Index Worksheet</b>				
Total % Cover of:				
OBL spp.	<u>0</u>	x 1 =	<u>0</u>	
FACW spp.	<u>0</u>	x 2 =	<u>0</u>	
FAC spp.	<u>0</u>	x 3 =	<u>0</u>	
FACU spp.	<u>0</u>	x 4 =	<u>0</u>	
UPL spp.	<u>75</u>	x 5 =	<u>375</u>	
Total		<u>75</u> (A)	<u>375</u> (B)	
Prevalence Index = B/A = <u>5.000</u>				
<b>Hydrophytic Vegetation Indicators:</b>				
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation		
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Dominance Test is > 50%		
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Prevalence Index is ≤ 3.0 *		
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Morphological Adaptations (Explain) *		
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *		
* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Definitions of Vegetation Strata:</b>				
<b>Tree</b> - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.				
<b>Sapling/Shrub</b> - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.				
<b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.				
<b>Woody Vines</b> - All woody vines greater than 3.28 ft. in height.				
<b>Hydrophytic Vegetation Present</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Remarks:				

**Additional Remarks:**

Project/Site: <b>Marysville - Union County Solar Generation Tie Line Project</b>		Stantec Project #: <b>193709207</b>	Date: <b>01/05/23</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Cyrus Chastain</b>	Investigator #2: <b>Matt Denzler</b>		State: <b>Ohio</b>
Soil Unit: <b>Ble1A1 - Blount silt loam, end moraine, 0-2% slopes</b>	NWI/WWI Classification: <b>NA</b>		Wetland ID: <b>N/A</b>
Landform: <b>Depression</b>	Local Relief: <b>Concave</b>		Sample Point: <b>SP02</b>
Slope (%): <b>0-1%</b>	Latitude: <b>40.33758</b>	Longitude: <b>-83.442324</b>	Datum: <b>--</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydic Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is This Sampling Point Within A Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present)

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test
---	---	---

**Field Observations:**

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	
Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	

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

Remarks:

**SOILS**

Map Unit Name: **Ble1A1 - Blount silt loam, end moraine, 0-2% slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%	Color (Moist)	%	Type	Location		
0	4	1	10YR 4/2	100	--	--	--	--	--	silty clay loam
4	10	2	10YR 4/2	95	10YR	3/6	5	C	M	silty clay loam
10	14	3	10YR 4/2	50	--	--	--	--	--	silty clay loam
--	--	--	10YR 4/6	50	--	--	--	--	--	silty clay loam
--	--	--	--	--	--	--	--	--	--	--
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--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present) <input checked="" type="checkbox"/></p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions	<p><b>Indicators for Problematic Soils</b><sup>1</sup></p> <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>N/A</b>	Depth: <b>N/A</b>	<b>Hydic Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	-------------------	--

Remarks: **10-14 had high percentage of fill**



Project/Site: **Marysville - Union County Solar Generation Tie Line Project** Wetland ID: **N/A** Sample Point: **SP02**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)					<b>Dominance Test Worksheet</b>  Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)																												
#	Species Name	% Cover	Dominant	Ind. Status																													
1.	--	--	--	--																													
2.	--	--	--	--																													
3.	--	--	--	--																													
4.	--	--	--	--																													
5.	--	--	--	--																													
6.	--	--	--	--																													
7.	--	--	--	--																													
8.	--	--	--	--																													
9.	--	--	--	--																													
10.	--	--	--	--																													
Total Cover =		<b>0</b>																															
Sapling/Shrub Stratum (Plot size: 15 ft radius)					<b>Prevalence Index Worksheet</b> Total % Cover of: <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td>OBL spp.</td><td><u>0</u></td><td>x 1 =</td><td><u>0</u></td> </tr> <tr> <td>FACW spp.</td><td><u>0</u></td><td>x 2 =</td><td><u>0</u></td> </tr> <tr> <td>FAC spp.</td><td><u>5</u></td><td>x 3 =</td><td><u>15</u></td> </tr> <tr> <td>FACU spp.</td><td><u>65</u></td><td>x 4 =</td><td><u>260</u></td> </tr> <tr> <td>UPL spp.</td><td><u>40</u></td><td>x 5 =</td><td><u>200</u></td> </tr> <tr> <td colspan="2">Total</td> <td><u>110</u> (A)</td> <td><u>475</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A =</td> <td colspan="2"><u>4.318</u></td> </tr> </table>	OBL spp.	<u>0</u>	x 1 =	<u>0</u>	FACW spp.	<u>0</u>	x 2 =	<u>0</u>	FAC spp.	<u>5</u>	x 3 =	<u>15</u>	FACU spp.	<u>65</u>	x 4 =	<u>260</u>	UPL spp.	<u>40</u>	x 5 =	<u>200</u>	Total		<u>110</u> (A)	<u>475</u> (B)	Prevalence Index = B/A =		<u>4.318</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>																														
FACW spp.	<u>0</u>	x 2 =	<u>0</u>																														
FAC spp.	<u>5</u>	x 3 =	<u>15</u>																														
FACU spp.	<u>65</u>	x 4 =	<u>260</u>																														
UPL spp.	<u>40</u>	x 5 =	<u>200</u>																														
Total		<u>110</u> (A)	<u>475</u> (B)																														
Prevalence Index = B/A =		<u>4.318</u>																															
1.	--	--	--	--																													
2.	--	--	--	--																													
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9.	--	--	--	--																													
10.	--	--	--	--																													
Total Cover =		<b>0</b>																															
Herb Stratum (Plot size: 5 ft radius)					<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   Dominance Test is > 50% <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   Prevalence Index is ≤ 3.0 * <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   Morphological Adaptations (Explain) * <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   Problem Hydrophytic Vegetation (Explain) *  * Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																												
1.	<i>Rubus allegheniensis</i>	10	N	FACU																													
2.	<i>Dipsacus fullonum</i>	20	Y	FACU																													
3.	<i>Solidago canadensis</i>	15	N	FACU																													
4.	<i>Lamium purpureum</i>	40	Y	UPL																													
5.	<i>Setaria faberi</i>	20	Y	FACU																													
6.	<i>Apocynum cannabinum</i>	5	N	FAC																													
7.	--	--	--	--																													
8.	--	--	--	--																													
9.	--	--	--	--																													
10.	--	--	--	--																													
11.	--	--	--	--																													
12.	--	--	--	--																													
13.	--	--	--	--																													
14.	--	--	--	--																													
15.	--	--	--	--																													
Total Cover =		<b>110</b>																															
Woody Vine Stratum (Plot size: 30 ft radius)					<b>Definitions of Vegetation Strata:</b>  <p><b>Tree</b> - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.</p> <p><b>Sapling/Shrub</b> - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.</p> <p><b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.</p> <p><b>Woody Vines</b> - All woody vines greater than 3.28 ft. in height.</p>																												
1.	--	--	--	--																													
2.	--	--	--	--																													
3.	--	--	--	--																													
4.	--	--	--	--																													
5.	--	--	--	--																													
Total Cover =		<b>0</b>																															
Hydrophytic Vegetation Present <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																	

Remarks:

**Additional Remarks:**

Project/Site: <b>Marysville - Union County Solar Generation Tie Line Project</b>		Stantec Project #: <b>193709207</b>	Date: <b>01/05/23</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Cyrus Chastain</b>	Investigator #2: <b>Matt Denzler</b>		State: <b>Ohio</b>
Soil Unit: <b>Ble1B1 - Blount silt loam, end moraine, 2-4% slopes</b>	NWI/WWI Classification: <b>NA</b>		Wetland ID: <b>Wetland 1</b>
Landform: <b>Depression</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP03</b>
Slope (%): <b>0-2%</b>	Latitude: <b>40.33675</b>	Longitude: <b>-83.439916</b>	Datum: <b>--</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input checked="" type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input checked="" type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydic Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks: **Farmed wetland**

**HYDROLOGY**

Wetland Hydrology Indicators (Check here if indicators are not present)

<p><u>Primary:</u></p> <input checked="" type="checkbox"/> A1 - Surface Water <input checked="" type="checkbox"/> A2 - High Water Table <input checked="" type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input checked="" type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input checked="" type="checkbox"/> D1 - Stunted or Stressed Plants <input checked="" type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test
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**Field Observations:**

Surface Water Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>2</b> (in.)	<b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Table Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>0</b> (in.)	
Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>0</b> (in.)	

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

Remarks:

**SOILS**

Map Unit Name: **Ble1B1 - Blount silt loam, end moraine, 2-4% slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)		
			Color (Moist)	%	Color (Moist)	%	Type	Location			
0	3	1	10YR	4/2	100	--	--	--	--	<b>silty clay loam</b>	
3	7	2	10YR	3/2	98	10YR	3/6	2	C	M	<b>clay</b>
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
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--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present) <input checked="" type="checkbox"/></p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions	<p><b>Indicators for Problematic Soils</b><sup>1</sup></p> <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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Restrictive Layer (If Observed) Type: <b>Compacted Clay</b>	Depth: <b>7</b>	<b>Hydic Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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Remarks: **Water perched on compacted clay layer, farm till prevents redox features from forming.**

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Project/Site: **Marysville - Union County Solar Generation Tie Line Project** Wetland ID: **Wetland 1** Sample Point: **SP03**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		

Herb Stratum (Plot size: 5 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Packera glabella</i>	40	Y	FACW
2.	<i>Amaranthus retroflexus</i>	5	N	FACU
3.	<i>Ranunculus sceleratus</i>	10	N	OBL
4.	<i>Lamium purpureum</i>	5	N	UPL
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		60		

Woody Vine Stratum (Plot size: 30 ft radius)				
	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		

**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 spp.	<u>10</u>	x 1 =	<u>10</u>
FACW spp.	<u>40</u>	x 2 =	<u>80</u>
FAC spp.	<u>0</u>	x 3 =	<u>0</u>
FACU spp.	<u>5</u>	x 4 =	<u>20</u>
UPL spp.	<u>5</u>	x 5 =	<u>25</u>
Total		<u>60</u> (A)	<u>135</u> (B)
Prevalence Index = B/A =		<u>2.250</u>	

**Hydrophytic Vegetation Indicators:**

Yes  No Rapid Test for Hydrophytic Vegetation

Yes  No Dominance Test is > 50%

Yes  No Prevalence Index is ≤ 3.0 \*

Yes  No Morphological Adaptations (Explain) \*

Yes  No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

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

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

Remarks:

**Additional Remarks:**

Project/Site: <b>Marysville - Union County Solar Generation Tie Line Project</b>		Stantec Project #: <b>193709207</b>	Date: <b>01/05/23</b>
Applicant: <b>AEP Ohio Transmission Company, Inc.</b>			County: <b>Union</b>
Investigator #1: <b>Cyrus Chastain</b>	Investigator #2: <b>Matt Denzler</b>		State: <b>Ohio</b>
Soil Unit: <b>Ble1B1 - Blount silt loam, end moraine, 2-4% slopes</b>	NWI/WWI Classification: <b>NA</b>		Wetland ID: <b>N/A</b>
Landform: <b>Terrace</b>	Local Relief: <b>Linear</b>		Sample Point: <b>SP04</b>
Slope (%): <b>0-1%</b>	Latitude: <b>40.3368</b>	Longitude: <b>-83.440045</b>	Datum: <b>--</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input checked="" type="checkbox"/> , Soil <input checked="" type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>			Township: <b>--</b>
Range: <b>--</b>			Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydic Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is This Sampling Point Within A Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present)

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test
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**Field Observations:**

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	
Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>0</b> (in.)	

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

Remarks: **Ag Field**

**SOILS**

Map Unit Name: **Ble1B1 - Blount silt loam, end moraine, 2-4% slopes**

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%	Color (Moist)	%	Type	Location		
<b>0</b>	<b>16</b>	<b>1</b>	<b>10YR</b>	<b>3/2</b>	<b>100</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>clay loam</b>
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<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present) <input checked="" type="checkbox"/></p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A10 - 2 cm Muck <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat	<input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions	<p><b>Indicators for Problematic Soils</b><sup>1</sup></p> <input type="checkbox"/> A16 - Coast Prairie Redox <input type="checkbox"/> S7 - Dark Surface <input type="checkbox"/> F12 - Iron-Manganese Masses <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
---	---	---

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>N/A</b>	Depth: <b>N/A</b>	<b>Hydic Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	-------------------	--

Remarks:



Project/Site: **Marysville - Union County Solar Generation Tie Line Project**

Wetland ID: **N/A**

Sample Point: **SP04**

VEGETATION (Species identified in all uppercase are non-native species.)																																				
Tree Stratum (Plot size: 30 ft radius)																																				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind. Status</u>																																
1.	--	--	--	--																																
2.	--	--	--	--																																
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Total Cover =		0																																		
Sapling/Shrub Stratum (Plot size: 15 ft radius)																																				
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Total Cover =		0																																		
Herb Stratum (Plot size: 5 ft radius)																																				
1.	<i>Glycine max</i>	80	Y	UPL																																
2.	<i>Cardamine hirsuta</i>	20	Y	FACU																																
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Total Cover =		100																																		
Woody Vine Stratum (Plot size: 30 ft radius)																																				
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2.	--	--	--	--																																
3.	--	--	--	--																																
4.	--	--	--	--																																
5.	--	--	--	--																																
Total Cover =		0																																		
<p><b>Dominance Test Worksheet</b></p> <p>Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>2</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)</p>																																				
<p><b>Prevalence Index Worksheet</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Total % Cover of:</td> <td colspan="2">Multiply by:</td> </tr> <tr> <td>OBL spp.</td> <td style="text-align: center;"><u>0</u></td> <td>x 1 =</td> <td style="text-align: center;"><u>0</u></td> </tr> <tr> <td>FACW spp.</td> <td style="text-align: center;"><u>0</u></td> <td>x 2 =</td> <td style="text-align: center;"><u>0</u></td> </tr> <tr> <td>FAC spp.</td> <td style="text-align: center;"><u>0</u></td> <td>x 3 =</td> <td style="text-align: center;"><u>0</u></td> </tr> <tr> <td>FACU spp.</td> <td style="text-align: center;"><u>20</u></td> <td>x 4 =</td> <td style="text-align: center;"><u>80</u></td> </tr> <tr> <td>UPL spp.</td> <td style="text-align: center;"><u>80</u></td> <td>x 5 =</td> <td style="text-align: center;"><u>400</u></td> </tr> <tr> <td colspan="2">Total</td> <td style="text-align: center;"><u>100</u> (A)</td> <td style="text-align: center;"><u>480</u> (B)</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Prevalence Index = B/A = <u>4.800</u></td> </tr> </table>					Total % Cover of:		Multiply by:		OBL spp.	<u>0</u>	x 1 =	<u>0</u>	FACW spp.	<u>0</u>	x 2 =	<u>0</u>	FAC spp.	<u>0</u>	x 3 =	<u>0</u>	FACU spp.	<u>20</u>	x 4 =	<u>80</u>	UPL spp.	<u>80</u>	x 5 =	<u>400</u>	Total		<u>100</u> (A)	<u>480</u> (B)			Prevalence Index = B/A = <u>4.800</u>	
Total % Cover of:		Multiply by:																																		
OBL spp.	<u>0</u>	x 1 =	<u>0</u>																																	
FACW spp.	<u>0</u>	x 2 =	<u>0</u>																																	
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Total		<u>100</u> (A)	<u>480</u> (B)																																	
		Prevalence Index = B/A = <u>4.800</u>																																		
<p><b>Hydrophytic Vegetation Indicators:</b></p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Yes</td> <td><input checked="" type="checkbox"/> No</td> <td>Rapid Test for Hydrophytic Vegetation</td> </tr> <tr> <td><input type="checkbox"/> Yes</td> <td><input checked="" type="checkbox"/> No</td> <td>Dominance Test is &gt; 50%</td> </tr> <tr> <td><input type="checkbox"/> Yes</td> <td><input checked="" type="checkbox"/> No</td> <td>Prevalence Index is ≤ 3.0 *</td> </tr> <tr> <td><input type="checkbox"/> Yes</td> <td><input checked="" type="checkbox"/> No</td> <td>Morphological Adaptations (Explain) *</td> </tr> <tr> <td><input type="checkbox"/> Yes</td> <td><input checked="" type="checkbox"/> No</td> <td>Problem Hydrophytic Vegetation (Explain) *</td> </tr> </table> <p>* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p>					<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Dominance Test is > 50%	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Prevalence Index is ≤ 3.0 *	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Morphological Adaptations (Explain) *	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *																	
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<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *																																		
<p><b>Definitions of Vegetation Strata:</b></p> <p><b>Tree</b> - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.</p> <p><b>Sapling/Shrub</b> - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.</p> <p><b>Herb</b> - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.</p> <p><b>Woody Vines</b> - All woody vines greater than 3.28 ft. in height.</p>																																				
<p align="right"><b>Hydrophytic Vegetation Present</b>   <input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</p>																																				
Remarks:																																				

**Additional Remarks:**

## D.2 ORAM DATA FORM

<b>Version 5.0</b>	<b>Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization</b>	
	<b>Background Information</b> <b>Scoring Boundary Worksheet</b> <b>Narrative Rating</b> <b>Field Form Quantitative Rating</b> <b>ORAM Summary Worksheet</b> <b>Wetland Categorization Worksheet</b>	Ohio EPA, Division of Surface Water Final: February 1, 2001

### Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

## Background Information

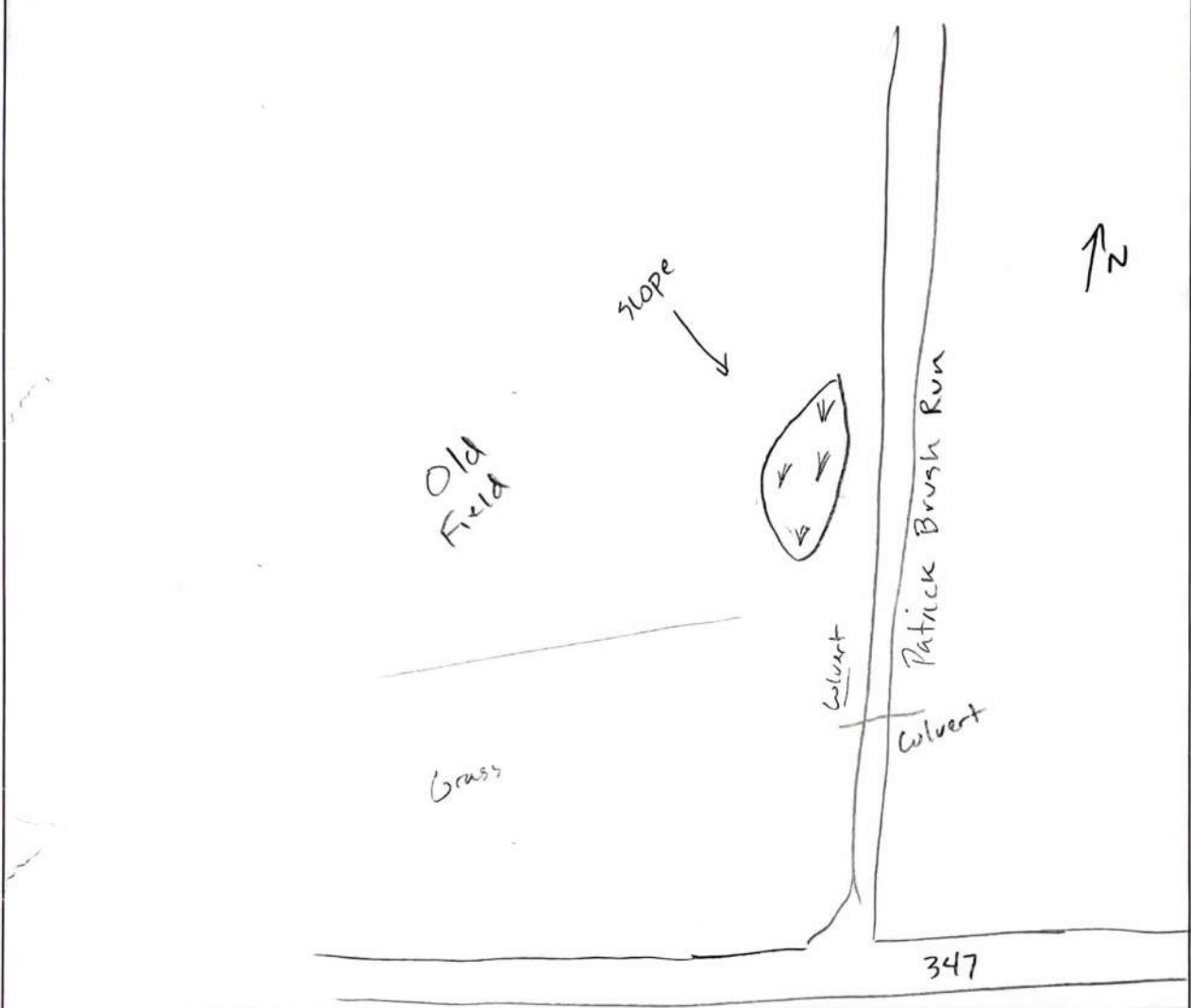
<b>Name:</b>	Cyms Chaustain
<b>Date:</b>	11/5/2023
<b>Affiliation:</b>	stantec Consulting Services, Inc
<b>Address:</b>	10200 Alliance Road, suite 300 Cincinnati, OH 45242
<b>Phone Number:</b>	513-913-9115
<b>e-mail address:</b>	Cyms.Chastain@stantec.com
<b>Name of Wetland:</b>	Wetland 1
<b>Vegetation Community(ies):</b>	PEM
<b>HGM Class(es):</b>	depressional
<b>Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.</b>	
<b>Lat/Long or UTM Coordinate</b>	40.376754 - 83.439116
<b>USGS Quad Name</b>	Richwood, Ohio
<b>County</b>	Union County
<b>Township</b>	Liberty
<b>Section and Subsection</b>	N/A
<b>Hydrologic Unit Code</b>	050600010603
<b>Site Visit</b>	11/5/2022
<b>National Wetland Inventory Map</b>	N/A
<b>Ohio Wetland Inventory Map</b>	N/A
<b>Soil Survey</b>	Ble1B1 - Blount Silt Loam, end moraine, 2 to 4 percent slopes
<b>Delineation report/map</b>	See Ecological Resources Inventory Report



Name of Wetland: Wetland 1

Wetland Size (acres, hectares): 0.05 ac

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 14 Category: 1

## Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**



## Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	<input checked="" type="radio"/> NO  Go to Question 2
2	<b>Threatened or Endangered Species.</b> Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	<input checked="" type="radio"/> NO  Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	<input checked="" type="radio"/> NO  Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES  Wetland is a Category 3 wetland  Go to Question 5	<input checked="" type="radio"/> NO  Go to Question 5
5	<b>Category 1 Wetlands.</b> Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES  Wetland is a Category 1 wetland  Go to Question 6	<input checked="" type="radio"/> NO  Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	<input checked="" type="radio"/> NO  Go to Question 7
7	<b>Fens.</b> Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 8a	<input checked="" type="radio"/> NO  Go to Question 8a
8a	<b>"Old Growth Forest."</b> Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	<input checked="" type="radio"/> NO  Go to Question 8b

8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	<input checked="" type="radio"/> NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	<input checked="" type="radio"/> NO  Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES  Go to Question 9d	NO  Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO  Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	<input checked="" type="radio"/> NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	<input checked="" type="radio"/> NO  Complete Quantitative Rating



**Table 1. Characteristic plant species.**

<b>Invasive/exotic spp</b>	<b>fen species</b>	<b>bog species</b>	<b>Oak Opening species</b>	<b>wet prairie species</b>
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccus</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

**End of Narrative Rating. Begin Quantitative Rating on next page.**

<b>Site:</b> Wetland 1	<b>Rater(s):</b> Cyrus Chastain	<b>Date:</b> 1/5/2023
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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)
  - <0.1 acres (0.04ha) (0 pts)

1	1
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)
  - 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), shrub land, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

6	7
max 30 pts.	subtotal

### Metric 3. Hydrology.

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - 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)
  - <0.4m (<15.7in) (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- Semi- to permanently inundated/saturated (4)
  - 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.

<ul style="list-style-type: none"> <li><input type="checkbox"/> None or none apparent (12)</li> <li><input type="checkbox"/> Recovered (7)</li> <li><input type="checkbox"/> Recovering (3)</li> <li><input checked="" type="checkbox"/> Recent or no recovery (1)</li> </ul>	<p>Check all disturbances observed</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> ditch</td> <td><input type="checkbox"/> point source (nonstormwater)</td> </tr> <tr> <td><input checked="" type="checkbox"/> tile</td> <td><input type="checkbox"/> filling/grading</td> </tr> <tr> <td><input type="checkbox"/> dike</td> <td><input type="checkbox"/> road bed/RR track</td> </tr> <tr> <td><input type="checkbox"/> weir</td> <td><input type="checkbox"/> dredging</td> </tr> <tr> <td><input type="checkbox"/> stormwater input</td> <td><input checked="" type="checkbox"/> other <u>Ag</u></td> </tr> </table>	<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)	<input checked="" type="checkbox"/> tile	<input type="checkbox"/> filling/grading	<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track	<input type="checkbox"/> weir	<input type="checkbox"/> dredging	<input type="checkbox"/> stormwater input	<input checked="" type="checkbox"/> other <u>Ag</u>
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<input type="checkbox"/> weir	<input type="checkbox"/> dredging										
<input type="checkbox"/> stormwater input	<input checked="" type="checkbox"/> other <u>Ag</u>										

3	10
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)
  - 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)
  - Fair (3)
  - Poor to fair (2)
  - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.

<ul style="list-style-type: none"> <li><input type="checkbox"/> None or none apparent (9)</li> <li><input type="checkbox"/> Recovered (6)</li> <li><input type="checkbox"/> Recovering (3)</li> <li><input checked="" type="checkbox"/> Recent or no recovery (1)</li> </ul>	<p>Check all disturbances observed</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> mowing</td> <td><input type="checkbox"/> shrub/sapling removal</td> </tr> <tr> <td><input type="checkbox"/> grazing</td> <td><input type="checkbox"/> herbaceous/aquatic bed removal</td> </tr> <tr> <td><input type="checkbox"/> clearcutting</td> <td><input type="checkbox"/> sedimentation</td> </tr> <tr> <td><input type="checkbox"/> selective cutting</td> <td><input type="checkbox"/> dredging</td> </tr> <tr> <td><input type="checkbox"/> woody debris removal</td> <td><input checked="" type="checkbox"/> farming</td> </tr> <tr> <td><input type="checkbox"/> toxic pollutants</td> <td><input checked="" type="checkbox"/> nutrient enrichment</td> </tr> </table>	<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal	<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal	<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation	<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging	<input type="checkbox"/> woody debris removal	<input checked="" type="checkbox"/> farming	<input type="checkbox"/> toxic pollutants	<input checked="" type="checkbox"/> nutrient enrichment
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<input type="checkbox"/> toxic pollutants	<input checked="" type="checkbox"/> nutrient enrichment												

10
subtotal this page



<b>Site:</b> Wetland 1	<b>Rater(s):</b> Cyrus Chastian	<b>Date:</b> 1/5/2023
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10

subtotal first page

0	10
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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)

4	14
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max 20 pts.

subtotal

### Metric 6. Plant communities, interspersions, microtopography.

#### 6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

#### 6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- 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)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

14

**End of Quantitative Rating. Complete Categorization Worksheets.**

# ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	6	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	4	
	TOTAL SCORE	14	Category based on score breakpoints 1

**Complete Wetland Categorization Worksheet.**



## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<p><input checked="" type="radio"/> NO</p> <p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p><input checked="" type="radio"/> NO</p> <p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<p><input checked="" type="radio"/> NO</p> <p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p><input checked="" type="radio"/> YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO</p> <p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p><input checked="" type="radio"/> NO</p> <p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p><input checked="" type="radio"/> NO</p> <p>Wetland is assigned to category as determined by the ORAM.</p> <p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

**Final Category**

Choose one     Category 1     Category 2     Category 3

**End of Ohio Rapid Assessment Method for Wetlands.**

### D.3 HHEI DATA FORM



## Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3)

15

SITE NAME/LOCATION Marysville - Union County Solar Generation Tie Line  
 SITE NUMBER Stream 1 RIVER BASIN Ohio RIVER CODE \_\_\_\_\_ DRAINAGE AREA (mF) <0.1 mi  
 LENGTH OF STREAM REACH (ft) 65 LAT 40.337532 LONG -83.443837 RIVER MILE \_\_\_\_\_  
 DATE 01/05/2023 SCORER MD COMMENTS Ephemeral stream from Ag Drainage

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY

<p><b>1. SUBSTRATE</b> (Estimate percent of every type present). Check <u>ONLY two</u> 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 &amp; B</p> <table border="0"> <thead> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Bldr Slabs [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> SILT [3 pts]</td> <td><u>40</u></td> </tr> <tr> <td><input type="checkbox"/> Boulder (&gt;256 mm) [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td><u>50</u></td> </tr> <tr> <td><input type="checkbox"/> Bedrock [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Cobble (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Gravel (2-64 mm) [9 pts]</td> <td>_____</td> <td><input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Sand (&lt;2 mm) [6 pts]</td> <td><u>5</u></td> <td><input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td><u>5</u></td> </tr> </tbody> </table> <p>Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u> (A) <u>6</u> (B) <u>4</u></p> <p>SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: <u>6</u> TOTAL NUMBER OF SUBSTRATE TYPES: <u>4</u></p>		TYPE	PERCENT	TYPE	PERCENT	<input type="checkbox"/> Bldr Slabs [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pts]	<u>40</u>	<input type="checkbox"/> Boulder (>256 mm) [16 pts]	_____	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>50</u>	<input type="checkbox"/> Bedrock [16 pts]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> Cobble (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____	<input type="checkbox"/> Gravel (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> Sand (<2 mm) [6 pts]	<u>5</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<u>5</u>	<p><b>HHEI Metric Points</b></p> <p>Substrate Max = 40</p> <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">10</div> <p>A + B</p>
TYPE	PERCENT	TYPE	PERCENT																											
<input type="checkbox"/> Bldr Slabs [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pts]	<u>40</u>																											
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<input type="checkbox"/> Sand (<2 mm) [6 pts]	<u>5</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<u>5</u>																											
<p><b>2. Maximum Pool Depth</b> (Measure the <u>maximum</u> 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 <u>ONLY one</u> box):</p> <table border="0"> <tbody> <tr> <td><input type="checkbox"/> &gt; 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 22.5 - 30 cm [30 pts]</td> <td><input type="checkbox"/> &lt; 5 cm [5pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 10 - 22.5 cm [25 pts]</td> <td><input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </tbody> </table> <p>COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): <u>0</u></p>		<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]	<p><b>Pool Depth</b></p> <p>Max = 30</p> <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">0</div>																						
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<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																													
<p><b>3. BANK FULL WIDTH</b> (Measured as the average of 3 - 4 measurements) (Check <u>ONLY one</u> box):</p> <table border="0"> <tbody> <tr> <td><input type="checkbox"/> &gt; 4.0 meters (&gt; 13') [30 pts]</td> <td><input type="checkbox"/> &gt; 1.0 m - 1.5 m (&gt; 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 3.0 m - 4.0 m (&gt; 9' 7" - 13') [25 pts]</td> <td><input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 1.5 m - 3.0 m (&gt; 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </tbody> </table> <p>COMMENTS <u>TOBH: 0.5' TOBW: 2.0' OHWH: 0.25' OHWH: 1.5'</u> AVERAGE BANKFULL WIDTH (meters) <u>0.15</u></p>		<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]		<p><b>Bankfull Width</b></p> <p>Max=30</p> <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">5</div>																						
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]																													
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]																													
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																														

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)		FLOODPLAIN QUALITY (Most Predominant per Bank)			
L	R	L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS \_\_\_\_\_

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

Flat (0.5 @ 100 ft)  Flat to Moderate  Moderate (2 @ 100 ft)  Moderate to Severe  Severe (10 @ 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: Mill Creek Distance from Evaluated Stream \_\_\_\_\_  
 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: Peoria, Ohio NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
County: Union Township/City: Liberty

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): N Date of last precipitation: 01/03/2023 Quantity: \_\_\_\_\_

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): N Canopy (% open): 50

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) N/A Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Y If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): \_\_\_\_\_

Salamanders Observed? (Y/N) N Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) 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

