Letter of Notification for Fulton-Windfall 138 kV Switch

PUCO Case No. 16-1774-EL-BLN

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

Submitted by:
AEP Ohio Transmission Company, Inc.

October 28, 2016
Letter of Notification

AEP Ohio Transmission Company, Inc. Fulton-Windfall 138 kV Switch

4906-6-05

AEP Ohio Transmission Company, Inc. (“AEP Ohio Transco”) is providing the following information to the Ohio Power Siting Board (“OPSB”) in accordance with the accelerated application requirements of Ohio Administrative Code Section 4906-6-05.

4906-6-5(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 Letter of Notification.

AEP Ohio Transco is proposing the Fulton-Windfall 138 kV Switch project (the “Project”) which is located between AEP Ohio Transco’s Fulton station in Lincoln Township, Morrow County, Ohio and AEP Ohio Transco’s Windfall Switch station in Richland Township, Marion County, Ohio. The length of the Project is approximately 10.4 miles. Seventy-four (74) existing wood pole structures will be replaced with new steel structures. All of the transmission line rebuild work will occur within existing AEP Ohio Transco’s right-of-way (“ROW”). Figure 1.1 in Appendix A shows the location of the Project. Figures 1.2 and 1.3 in Appendix A show the existing AEP Ohio Transco ROW corridors and substations, pole structure locations, and planned access road locations. The Project has been assigned PUCO Case No. 16-1774-EL-BLN.

The Project meets the requirements for a Letter of Notification because it is within the types of projects defined by Item (2)(b) of 4906-1-01 Appendix A Application Requirement Matrix For Electric Power Transmission Line. This item states:

(2) Adding new circuits on existing structures designed for multiple circuit use, replacing conductors on existing structures with larger or bundled conductors, adding structures to an existing transmission line, or replacing structures with a different type of structure for a distance of:

(b) More than two miles.
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.

This Project is part of a series of improvements planned for AEP Ohio Transco’s Mount Vernon to South Kenton 138 kV transmission line to improve the reliability of electric service in Knox, Morrow and Marion Counties, Ohio. The planned facility upgrade is required to alleviate voltage concerns and replace aging wood pole structures. Many of the causes for customer outages were attributed to line defects such as crossarm failures and insect damage to knee braces and poles. The Project will improve the reliability of the transmission network in north-central Ohio and provide adequate voltage on the local 138 kV system under N-1 contingency conditions per applicable system planning criteria.

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.

Figures 1.1, 1.2, and 1.3 in Appendix A show the location of the Project in relation to existing AEP Ohio Transco facilities, including the Fulton station, the Windfall Switch station, and other AEP Ohio Transco transmission lines.

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.

All of the proposed transmission line rebuild work will occur within existing AEP Ohio Transco ROW (see Figure 1.2 in Appendix A) on the existing transmission line centerline. Therefore, no alternatives were considered for this Project.

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.

AEP Ohio Transco did not develop a public information plan with respect to this Project, as all of the proposed transmission line rebuild work will occur within existing AEP Ohio Transco ROW (see Figure 1.2 in Appendix A) and AEP Ohio Transco has reached agreements with adjacent property owners to access AEP Ohio Transco’s ROW during construction work.
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 November 2017 with an anticipated in-service date of May 2020.

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 1.1 in Appendix A identifies the location of the Project on Marengo and Ashley 7.5’ USGS quadrangle maps. Figure 1.2 in Appendix A shows the location of the Project on aerial photographs. Figure 1.4 in Appendix A shows the general location of the Project relative to local communities and the primary road network. To visit the Project from Columbus, drive north on Interstate 71 to State Route 61 (Exit 140). Drive north on State Route 61 to Phillips Road. Drive west on Phillips Road to Worthington-New Haven Road. Drive west on Worthington-New Haven Road and Fulton station will be on the west side of the road. The Project extends northwest approximately 10.4 miles to Windfall Switch station, located along the south side of Newmans Cardington Road, approximately five miles northeast of Waldo, Ohio.

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.

All of the proposed transmission line rebuild work for the Project will occur within existing AEP Ohio Transco ROW (see Figure 1.2 in Appendix A). AEP Ohio Transco has reached agreements with adjacent property owners to access AEP Ohio Transco ROW during construction. AEP Ohio Transco planned access road locations are shown on Figures 1.1, 1.2, and 1.3 in Appendix A. No other 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.
The Project will include the installation of new 1033.5 kcmil 54/7 ACSR (Curlew) conductors, along with a 7#8 alumoweld shield wire and 0.646 diameter OPGW. The existing conductor is 477 kcmil ACSR and the existing shield wire is (2) 7#8 alumoweld. All deadends will utilize pier foundations with anchor cages.

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. The discussion shall include:

B(9)(b)(i) Calculated Electric and Magnetic Field Strength Levels

Three loading conditions were examined: (1) normal maximum loading, (2) emergency line loading, and (3) winter normal conductor rating. Normal maximum loading represents the peak flow expected with all system facilities in service; daily/hourly flows fluctuate below this level. Emergency loading is the maximum current flow during unusual (contingency) conditions, which exist only for short periods of time. Winter normal (WN) conductor rating represents the maximum current flow that a line, including its terminal equipment, can carry during winter conditions. It is not anticipated that this line would operate at its WN rating in the foreseeable future. Loading levels and the calculated electric and magnetic fields (“EMF”) are summarized below.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Circuit Load (A)</th>
<th>Electric Field (kV/m)*</th>
<th>Magnetic Field (mG)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Normal Max. Loading</td>
<td>128.3</td>
<td>0.6/1.1/0.6</td>
<td>6.6/18.8/6.8</td>
</tr>
<tr>
<td>(2) Emergency Line Loading</td>
<td>232.5</td>
<td>0.6/1.1/0.6</td>
<td>12.0/34.1/12.3</td>
</tr>
<tr>
<td>(3) WN Conductor Rating</td>
<td>1568.9</td>
<td>0.7/1.9/0.7</td>
<td>99.0/419.4/100.4</td>
</tr>
</tbody>
</table>

*EMF levels (left ROW edge/maximum/right ROW edge) computed one meter above ground at the point of minimum ground clearance, assuming balanced phase currents and nominal voltages. Electric fields reflect normal and emergency operations; lower electric fields are expected during emergency conditions when one mutually-coupled line is out of service.

B(9)(b)(ii) Design Alternatives

A discussion of the applicant's consideration of design alternatives with respect to electric and magnetic fields and their strength levels, including alternate conductor configuration and phasing, tower height, corridor location, and right-of-way width.

Because transmission line rebuild work associated with the Project will occur within the existing AEP Ohio Transco ROW, no alternatives were considered.

B(9)(c) Project Cost
The estimated capital cost of the project.

The 2016 capital cost estimates for the Project is $15,600,000.

B(10) Social and Economic Impact

The applicant shall describe the social and ecological impacts of the project.

B(10)(a) Operating 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.

The Project is located within Cardington, Westfield, and Lincoln Townships, Morrow County, Ohio and Richland Township, Marion County, Ohio. According to the Morrow County zoning regulations, Cardington, Westfield, and Lincoln Townships are all zoned. Westfield and Lincoln Townships are primarily Agricultural and Residential, however, Cardington did not have detailed information on the zoning ([http://morrowcountyohio.gov/www/index.php/zoning-resolutions](http://morrowcountyohio.gov/www/index.php/zoning-resolutions)). According to Marion County zoning regulations, Richland Township is zoned and is primarily Residential and Rural Residential ([http://www.marionohioplanning.org/index.php/zoning-regulations](http://www.marionohioplanning.org/index.php/zoning-regulations)).

Land uses in the Project area primarily consist of agricultural land (cultivated cropland; see Figure 1.3 in Appendix A). Within AEP Ohio Transco’s existing ROW, agricultural land uses are actively farmed crops (see Figure 1.2 in Appendix A for aerial photography showing AEP Ohio Transco’s ROW corridor). Appendix D contains photographs and descriptions of specific ecological habitat types within AEP Ohio Transco’s ROW. There are currently 70 residences within 1,000 feet of the centerline of the Project. Two churches and one cemetery are also within 1,000 feet of the centerline of the Project. No schools, parks, preserves, or wildlife management areas are located within 1,000 feet of the centerline of the Project (see Figure 1.3 in Appendix A).

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.

Based on field surveys, there are approximately 92 acres of agricultural land in the Project area, comprised primarily of cultivated cropland. According to the Morrow County Auditor's Office, there are no registered agricultural district parcels located in the Project area. According to the Marion County Auditor's Office, there are three (3) parcels registered as agricultural district lands, including 290300000900, 290300001100 and 290290001200 within the Project (see Figure 1.3 in Appendix A).
B(10)(c) Archaeological and Cultural Resources

Provide a description of the applicant's investigation concerning the presence or absence of significant archeological 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.

An archaeological investigation has been conducted by an AEP Ohio Transco consultant for the Project. A copy of the Phase I Archeological Investigation is attached as Appendix B. As indicated in Appendix B, AEP Ohio Transco's consultant concludes that no historic properties will be affected by the Project.

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.

A Notice of Intent will be filed with the Ohio Environmental Protection Agency for authorization of construction storm water discharges under General Permit OHCD00004. AEP Ohio Transco will also coordinate storm water permitting needs with local government agencies, as necessary. AEP Ohio Transco will implement and maintain best management practices as outlined in the project-specific Storm Water Pollution Prevention Plan to minimize erosion and control sediment to protect surface water quality during storm events.

There are 100-year floodplains mapped at two locations within the Project area. They are along Shaw Creek and along Whetstone Creek (see Appendix D). One proposed pole structure replacement and an access road are located within the Shaw Creek floodplain. AEP Ohio Transco is evaluating the potential need for a floodplain permit for these activities and will coordinate with the Morrow County Floodplain Administrator, as necessary. No pole replacements or access roads are proposed in the Whetstone Creek floodplain.

Other than one structure that is being replaced within a palustrine emergent wetland (with an anticipated amount of fill to be 0.001 acre or less), Project construction activities (including access roads) are not expected to require the placement of any permanent fills within streams or wetlands, or require any mechanical clearing within forested or scrub-shrub wetlands (see Appendix D). Therefore, the Project is expected to be completed under a Clean Water Act Section 404 Permit (Nationwide Permit 12), without the need for a pre-construction notification letter to be submitted to the U.S. Army Corps of Engineers. There are no other known local, state or federal requirements that must be met prior to commencement of the Project.
LETTER OF NOTIFICATION FOR
FULTON-WINDFALL 138 KV SWITCH

October 28, 2016

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.

The United States Fish and Wildlife Service (“USFWS”) *Federally Listed Species by Ohio Counties October 2015* (available at www.fws.gov/midwest/ohio/pdf/OhioTEListByCountyOct2015.pdf) was reviewed to determine the threatened and endangered species currently known to occur in Marion and Morrow counties. This USFWS publication lists Indiana bat (*Myotis sodalis*; federally listed endangered) and northern long-eared bat (*Myotis septentrionalis*; federally listed threatened) as threatened and endangered species currently known to occur in both Marion and Morrow counties. The publication lists rayed bean (*Villosa fabalis*; federally listed endangered) and eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*; proposed threatened) as occurring in Marion County. The bald eagle (*Haliaeetus leucocephalus*; species of concern) is also on this list of species for Marion and Morrow counties. As part of the ecological study completed for this project, a coordination letter was submitted to the USFWS Ohio Ecological Services Field Office seeking an environmental review of the Project for potential impacts to threatened or endangered species. The October 5, 2016 response letter from USFWS (see Appendix D) indicated that the Project is within the range of the Indiana bat and northern long-eared bat in Ohio and recommends saving trees ≥3 inches diameter at breast height whenever possible. The USFWS response letter indicated that, due to the project type, size, and location, if caves and mines (potential bat hibernacula) will not be disturbed and seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) to avoid impacts to Indiana bats and northern long-eared bats is implemented, they do not anticipate adverse effects to any federally endangered, threatened, proposed, or candidate species.

As summarized in Appendix D, ecological field surveys conducted by AEP’s consultant did not identify any potentially suitable Indiana bat/northern long-eared bat roost trees within the Project area. No suitable habitat for the bald eagle was observed within the Project area, and the USFWS has indicated that due to the project type, size, and location, no adverse effects to this species are anticipated.

As part of the ecological study completed for the Project, coordination letters were also submitted to the Ohio Department of Natural Resources (“ODNR”) Division of Wildlife (“DOW”) Ohio Natural Heritage Program (“ONHP”) and ODNR-Office of Real Estate. Correspondence received from ODNR-ONHP (Appendix D) indicated that Project area does not contain any known occurrences of state-listed species, federally-listed species, or rare species within the Project area. According to the ODNR-ONHP, Creek heelsplitter (*Lasigmona compressa*), a state species of concern, has a documented location within a mile of the Project in Whetstone Creek. A response from ODNR-Office of Real Estate has not yet been received. Several state-listed threatened and endangered species are listed by the ODNR-DOW (http://wildlife.ohiodnr.gov/species-and-habitats/state-listed-species/state-listed-species-by-county) as
occurring, or potentially occurring in Marion and Morrow counties. As summarized in Appendix D, suitable habitat for the state-listed endangered loggerhead shrike (*Lanius ludovicianus*), regal fritillary (*Speyeria idalia*), rayed bean (*Villosa fabalis*), and eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*), as well as the state-listed threatened pondhorn (*Uniomerus tetralasmus*) and state species of concern creek heelsplitter, was observed in the Project area during ecological field surveys conducted by AEP Ohio Transco’s consultant. However, no impacts to these 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.

Correspondence received from USFWS (see Appendix D) indicated that there are no federal wilderness areas, wildlife refuges, or designated critical habitat in the vicinity of the Project. Correspondence from ODNR-ONHP (see Appendix D) indicated that they are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, or other protected natural areas within a one mile radius of the Project area.

There are mapped 100-year floodplains at two locations in the Project area: along Shaw Creek and along Whetstone Creek (see Appendix D). One proposed structure replacement and an access road are located within the Shaw Creek floodplain. AEP Ohio Transco is evaluating the potential need for a floodplain permit for these activities and will coordinate with the Morrow County Floodplain Administrator, as necessary. No pole replacements or access roads are proposed in the Whetstone Creek floodplain.

On September 26 and September 27, 2016, a wetland and stream reconnaissance survey was completed by AEP Ohio Transco’s consultant within the AEP Ohio Transco ROW and proposed access roads. Two (2) wetlands and seven (7) streams were identified. The locations of these features can be found on Figure 2 in Appendix D. AEP Ohio Transco will avoid these features or cross using temporary timber mat structures (to the extent possible). Project construction activities may require the placement of a small amount of permanent fill (anticipated to be 0.001 acre or less) within one wetland (Wetland 1). See Appendix D for more information regarding this wetland and its location within the Project area. AEP Ohio Transco is evaluating the potential need for a Clean Water Act Section 404 Permit and will coordinate with the U.S. Army Corps of Engineers, as necessary. It is anticipated that the Project can be completed under Nationwide Permit 12, without the need for pre-construction notification to the U.S. Army Corps of Engineers.
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 AEP Ohio Transco’s knowledge, there are no known unusual conditions that would result in significant environmental, social, health or safety impacts.
LETTER OF NOTIFICATION FOR
FULTON-WINDFALL 138 KV SWITCH

Appendix A  Project Maps
October 28, 2016

Appendix A  Project Maps

Figures 1.1, 1.2, 1.3 and 1.4
Project Location Map

Client/Project
AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Notes
2. Data Sources Include: Stantec, AEP, NADS
3. Background: USGS 7.5' Topographic Quadrangles Ashley (OH, 1963), Denmark (OH, 1962), Marion East (OH, 1983) and Waldo (OH, 1965)

Legend
- Existing Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Roads

Map Credits: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for data accuracy and compatibility with their systems. No representations are made regarding the accuracy, completeness, or authority of any data, and all users assume any risks from the use of any data. Revised: 2016-10-21 By: hbellone

Prepared by HDB on 2016-09-19
Technical Review by JDP on 2016-09-20
Independent Review by DJG on 2016-10-20

Figure No. 3.1
Title
Project Location Map

Project Location
1.1

AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Windfall Switch
40.498241, -82.997003
Project Layout Map

Project Location
Client/Project
Figure No.
Title

ST 61
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Notes
1.
2.
3.

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Road
- Existing Transmission Line
- Existing 100-foot Right-Of-Way

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Data Sources Include: Stantec, AEP, NADS
Orthophotography: 2015 NAIP

Fulton Station
40.453486, -82.842689

Page 2

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AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Figure No.: 1.2
Title: Project Layout Map

 répondant

1. Morrow County, Ohio
2. Township Road 167
3. County Road 25
4. Township Road 166
5. County Road 168
6. Township Road 165

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Road
- Existing Transmission Line
- Existing 100-foot Right-Of-Way
- Existing 100-foot Right-Of-Way

Notes:
2. Data Source: AEP, Stantec, NADS
3. Orthophotography: 2015 MAP

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Figure No. 1.2

Title
Project Layout Map

Legend

- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Road
- Existing Transmission Line
- Existing 100-foot Right-Of-Way
- Existing 100-foot Right-Of-Way

Notes
2. Data Source: AEP, NAD83, Orthophotography: 2015 MAP

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Project Location: Fulton Station - Windfall Switch

Client/Project: AEP Ohio Transmission Company

Figure No.: ST 529

Title: 138 kV Transmission Line Rebuild Project

Notes:
2. Base Surface data: Stantec, AEP, NAD93
3. Orthophotography: 2015 MAP

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Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

Data Sources Include: Stantec, AEP, NADS

Orthophotography: 2015 NAIP

Notes:
2. Data Source: AEP, Stantec, NAIDS
3. Orthophotography: 2015 NAIP

Marion and Morrow County, Ohio
Prepared by HDB on 2016-09-19
Technical Review by JDP on 2016-09-20
Independent Review by DJG on 2016-10-20
Project Location
Client/Project
Figure No.
Title

ST
529
£¤
42
Morrow
1
2
3
4
5
6
County Road 168
Township Road 167
County Road 25
165
166
167
168
169
170
171
172
173
Page 2
Page 4
Land Use Map

1.3

Notes
1.
2.
3.

Legend

- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Road
- Existing Transmission Line
- Existing 100-foot Right-of-Way
- Residence
- School
- Cemetery
- Church
- Agricultural District Parcel

National Land Cover Database
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Deciduous Forest
- Evergreen Forest
- Shrub/Scrub
- Grassland/Herb...
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Data Sources Include: Stantec, AEP, NLCD, NADS
Orthophotography: 2015 World Imagery USDA FSA

*No feature within map extents.
Land Use Map

Land Use Map

Title

Figure No.

Project Location

Client/Project

Notes

Legend

National Land Cover Database

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Deciduous Forest
- Evergreen Forest
- Shrub/Scrub
- Grassland/Herb...
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

Data Sources Include: Stantec, AEP, NLCD, NADS

Orthophotography: 2015 World Imagery USDA FSA

*No feature within map extents.

Notes

2. Data Sources: AEP, NLCD, Stantec
3. orthophotography: 2015 World Imagery USDA FSA

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Marion County, Ohio

Prepared by HDB on 2016-09-19

Technical Review by JDP on 2016-09-20

Independent Review by DJG on 2016-10-20

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Land Use Map

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Road
- Existing Transmission Line
- 100-foot Right-of-Way
- Residence
- School
- Cemetery
- Church
- Agricultural District Parcel

National Land Cover Database
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Deciduous Forest
- Evergreen Forest
- Shrub/Scrub
- Grassland/Herb....
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Data Sources Include: Stantec, AEP, NLCD, NADS
Orthophotography: 2015 World Imagery USDA FSA

*No feature within map extents.

Notes:
2. Data Sources Include: Stantec, AEP, NLCD, NADS
3. Orthophotography: 2015 World Imagery USDA FSA

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Figure No. 1.3

Title: Land Use Map

Project Location
Client/Project
Figure No.
Title

Notes
2. Data Sources in order: Stantec, AEP, NLCD, NADS
3. Orthophotography: 2015 World Imagery USDA FSA

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Road
- Existing Transmission Line
- Existing 100-foot Right-of-Way
- Residence
- Church
- Cemetery
- Agricultural District Parcel

National Land Cover Database
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Deciduous Forest
- Evergreen Forest
- Shrub/Scrub
- Grassland/Herb...
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 5401 Feet
Data Sources Include: Stantec, AEP, NLCD, NADS
Orthophotography: 2015 World Imagery USDA FSA

*No feature within map extents.*
Land Use Map

Client/Project
AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Project Location
Marion County, Ohio
Prepared by HDB on 2016-09-19
Technical Review by JDP on 2016-09-20
Independent Review by DJG on 2016-10-20

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
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- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Deciduous Forest
- Evergreen Forest
- Shrub/Scrub
- Grassland/Herb.
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Data Sources Include: Stantec, AEP, NLCD, NADS
Orthophotography: 2015 World Imagery USDA FSA

*No feature within map extents.

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Land Use Map

Figure No. 1.3

Title

Land Use Map

Project Location

Client/Project

Figure No.

Title

Notes

1.

2.

3.

Legend

National Land Cover Database

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Deciduous Forest
- Evergreen Forest
- Shrub/Scrub
- Grassland/Herb...
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

Data Sources Include: Stantec, AEP, NLCD, NADS

Orthophotography: 2015 World Imagery USDA FSA

*No feature within map extents.

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Figure No. 1.3

Title

Land Use Map

Legend

- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line Rebuild
- Access Road
- Existing Transmission Line
- Existing 100-foot Right-of-Way
- Residence
- School*
- Cemetery
- Church
- Agricultural District Parcel

National Land Cover Database

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Deciduous Forest
- Evergreen Forest
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LETTER OF NOTIFICATION FOR
FULTON-WINDFALL 138 KV SWITCH

Appendix B  Phase I Archeological Investigation
October 28, 2016

Appendix B  Phase I Archeological Investigation
Phase I Archaeological Investigations for the Approximately 18.5 km (11.5 mi) Fulton Station to Windfall Switch 138kV Rebuild Project in Richland Township, Marion County and Cardington/Westfield Lincoln Townships, Morrow County, Ohio

Ryan Weller

August 24, 2016
Phase I Archaeological Investigations for the Approximately 18.5 km (11.5 mi) Fulton Station to Windfall Switch 138kV Rebuild Project in Richland Township, Marion County and Cardington/Westfield/Lincoln Townships, Morrow County, Ohio

By

Ryan Weller

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__________________________
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August 24, 2016

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Abstract

In March, April, and August of 2016, Weller & Associates, Inc. conducted Phase I archaeological investigations for the approximately 18.5 km (11.5 mi) Fulton Station to Windfall Switch 138kV Rebuild Project in Richland Township, Marion County and Cardington/Westfield/Lincoln Townships, Morrow County, Ohio. These investigations were conducted to meet guidelines that were set forth by the Ohio Power Siting Board; the survey was conducted in a manner that is conducive and reflective of current state guidelines and evaluates the resources in a manner that is reflective of Section 106 of the National Historic Preservation Act. The work involved a literature review and field investigations within the existing electric line easement and the access corridors. These investigations resulted in the identification of 10 previously unrecorded archaeological sites including 33MW0192-201.

The project is mostly located in an upland and rural environment that is in the eastern part of Marion County and the west central part of Morrow County. This is an area that is entirely within the Scioto River watershed and involves Whetstone Creek and Alum Creek. The work will involve the replacement of the existing 138kV wooden electric line structures with metal ones. These investigations were conducted within the electric line easement in the spring and for the access corridors in late summer. The western terminus of the project is at Windfall Switch in Marion County and the eastern terminus is at Fulton Station in Morrow County. This is in the vicinity of the communities of Cardington and Fulton. The project extends in a general east-west manner through agricultural countryside. The majority of this area was suitable for surface collection methods of investigation.

The literature review for this project indicated that there are few sites identified in the vicinity of this project area. Mills (1914) indicates that there is a mound nearby and in the western part of the project area. Goodfellow et al. (1997) conducted investigations for a corridor that briefly intercepts the project area; it identified site 33MW0149 within the project area; this is not a significant site. Archaeological site 33MW0031 is a prehistoric period site that is within the project area and was identified during surface collection; it was not formally evaluated. There are no National Register of Historic Places/Determination of Eligibility sites in the study area.

These investigations involved subsurface testing, surface collection, and visual inspection. The testing identified 10 sites, 33MW0192-201 and they are not regarded as being significant. An appropriate finding of ‘no historic properties affected’ is considered for the project area; the project will not involve or impact any National Landmarks. No further archaeological work is deemed necessary for this aspect of the project.
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Introduction

In March, April, and August of 2016, Weller & Associates, Inc. conducted Phase I archaeological investigations for the approximately 18.5 km (11.5 mi) Fulton Station to Windfall Switch 138kV Rebuild Project in Richland Township, Marion County and Cardington/Westfield/Lincoln Townships, Morrow County, Ohio (Figures 1-5). This is part of a larger electric line considered as the West Mount Vernon-South Kenton 138 kV. The work was completed for American Electric Power Transco (AEP). These investigations were conducted in a manner that is reflective of procedures pertaining to the National Register of Historic Places (NRHP) and pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]). This work was completed to satisfy requirements for the Ohio Power Siting Board. This report summarizes the results of the fieldwork and literature review and the report format and design is similar to that established in Archaeology Guidelines (Ohio State Historic Preservation Office [SHPO] 1994).

It is important to note that the digital file for this project was corrupted and all of the original photographs in the field and the original text was lost. The field investigations that were conducted for the access corridors in August also took pictures of the existing electric line easement; however, the difference in the conditions is most evident in cropped field areas. The majority of the survey was conducted in the existing right-of-way in the spring, when the crops had just been planted or prior to planting. The access corridors were investigated when the crops had nearly reached maturity.

Chad Porter conducted the literature review on March 29, 2016 and it was re-inspected in August. Ryan Weller served as the Principal Investigator and Chris Nelson was the Project Manager. The history/architectural work was conducted by Chris Nelson and Jackie Lehmann and is contained in a separate and stand-alone document. The archaeological field crew included Alex Thomas, Matt Sanders, Ryan Weller, Brittany Vance, and Craig Schaefer. The report preparation was by Ryan Weller, with Chad Porter and Jon Walker completing the figures.

Project Description

The project will include a rebuild of Section 3 (Fulton Station to Windfall Switch portion) of the West Mount Vernon-South Kenton 138 kV transmission line. This proposal covers the approximate 18.5 km (11.5 mi) right-of-way (ROW) extending from the Fulton Station in Morrow County to Windfall Switch in Marion County, Ohio. Poles for the existing line will be replaced with steel structures. There appears to be several older properties (possibly farmsteads) remaining in the area that may have historic value. Based on this and the change in structure type, an architectural survey will also be conducted along the route. This report includes the extant right-of-way corridor and its proposed access corridors. This assumption has added substantial cost to the survey that may be more than necessary once plans are further developed.
Environmental Setting

Climate

Marion/Morrow Counties, like all of Ohio, has a continental climate with hot and humid summers and cold winters. The winters average 27 degrees F and the summers are around 71 degrees F. The average annual precipitation is around 34”, which mostly occurs during the spring. The winter accumulation and saturation of the soils is sufficient to support nearly all crops without issue of drought in the fall (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1989).

Physiography, Relief and Drainage

The project area is contained within both Marion and Morrow counties, Ohio. Marion County is almost exclusively located within the Central Ohio Clayey Till Plains region of Ohio (Brockman 1998). This region is characterized as having “well-defined moraines with intervening flat-lying ground moraine and inter-morainal lake basins” (Brockman 1998). The glacial geomorphological aspects of the region pertain to Wisconsinan-age deposits. The Western portion of Morrow County falls within the Central Ohio Clayey Till Plains region, and is comparable to the Marion County portion of the project area. The project area is located in the Scioto River watershed. It crosses or involves named drainages including: Turkey Run, Alum Creek, West Branch Alum Creek, Whetstone Creek, Mud Run, Mitchell Run, and Shaw Creek.

Geology

The geology of this region is “clayey, high-lime Wisconsin age till from a northeastern source (Erie glacial lobe) and lacustrine materials over Lower Paleozoic age carbonate rocks and in the east shales, loess is thin to absent (Brockman 1998)”.

According to Pavey et al. (1999) the undertaking is located on a Late Wisconsin outwash.

Soils

The project area is located in two counties with soils that are formed similarly. The soils in this area are formed in the Till Plains region. These soils are indicative of ground and end moraine areas that are occasionally bisected by drainages. The terrain consists of a level to gently rolling till plain with well-defined moraines (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1989). There are 14 specific soils in the project area (Table 1); some are duplicates, but from different counties. Slope is limited to (<12 percent), with limited relief in the ground moraines and stream terrace areas. These soils are indicative of glacial till plain situations including ground moraine, end moraine, outwash, and kames (USDA, SCS 1986 and 2016; Table 1).

<table>
<thead>
<tr>
<th>Soil Symbol</th>
<th>Soil Name</th>
<th>% Slope</th>
<th>Location</th>
</tr>
</thead>
</table>

Table 1. Soils in the Project Area.
There was, and continues to be, great floral diversity in Ohio. This diversity is relative to the soils and the terrain that generally includes the till plain, lake plain, terminal glacial margins, and unglaciated plateau (Forsyth 1970). Three major glacial advances, including the Kansan, Illinoian, and Wisconsinan, have affected the landscape of Ohio. The effects of the Wisconsin glaciation are most pronounced and have affected more than half of the state (Pavey et al. 1999).

The least diverse part of Ohio extends in a belt from the northeast below the lake-affected areas through most of western Ohio (Gordon 1966). These areas are part of the late Wisconsin ground moraine and lateral end moraines. It is positioned between the lake plains region and the terminal glacial moraines. This area included broad forested areas of beech maple forests interspersed with mixed oak forests in elevated terrain or where relief is greater (Forsyth 1970; Gordon 1966). Prairie environments such as those in Wyandot and Marion County areas would contain islands of forests, but were mostly expansive open terrain dominated by grasses.

The northwestern Ohio terrain is nearly flat because of ancient glacial lakes and glaciation, which affected the flora. However, the vegetation was more diverse than the till plain to the south and east because of the variety of factors that contributed to its terrain. Forests within the Black Swamp were generally comprised of elm/ash stands; however, dissected areas along drainages and drier, elevated areas from beach deposits would contain mixed forests of oak and hickory (Gordon 1966; 1969). There was little upland floral diversity in the lake plains (Black Swamp region) except for the occasional patches of oak and hickory. Floral variety was most evident in narrow sleeves along larger stream valleys where there is relief.

The most biological diversity in Ohio is contained within the Allegheny Plateau, which encompasses the southeastern two-thirds of the state (Sheaffer and Rose 1998).

<table>
<thead>
<tr>
<th>Soil Symbol</th>
<th>Soil Name</th>
<th>% Slope</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blg1A1</td>
<td>Blount silt loam</td>
<td>0-2</td>
<td>Ground Moraines, Foot slope</td>
</tr>
<tr>
<td>Blg1B1</td>
<td>Blount silt loam</td>
<td>2-4</td>
<td>Ground Moraine</td>
</tr>
<tr>
<td>Pk</td>
<td>Pewamo silty clay loam</td>
<td>0-1</td>
<td>Depressions on till plains, drainageways</td>
</tr>
<tr>
<td>Bgl1A1</td>
<td>Blount silt loam</td>
<td>0-2</td>
<td>End moraines</td>
</tr>
<tr>
<td>Bgl1B1</td>
<td>Blount silt loam</td>
<td>2-4</td>
<td>End moraines</td>
</tr>
<tr>
<td>GaB</td>
<td>Gallman silt loam</td>
<td>2-6</td>
<td>Kames, outwash plains, outwash terraces, moraines</td>
</tr>
<tr>
<td>Gwe5B2</td>
<td>Glynwood clay loam</td>
<td></td>
<td>End moraines</td>
</tr>
<tr>
<td>Gwg1B1</td>
<td>Glynwood silt loam</td>
<td>2-6</td>
<td>Ground moraines</td>
</tr>
<tr>
<td>Gwg5C2</td>
<td>Glynwood clay loam</td>
<td>6-12</td>
<td>Ground moraines</td>
</tr>
<tr>
<td>Mf</td>
<td>Milford silty clay loam</td>
<td>0-2</td>
<td>Depressions, drainage ways</td>
</tr>
<tr>
<td>Pm</td>
<td>Pewamo silty clay loam</td>
<td>0-1</td>
<td>Depressions on till plains, drainage ways on till plains</td>
</tr>
<tr>
<td>Sh</td>
<td>Shoals silt loam</td>
<td>0-2</td>
<td>Floodplains</td>
</tr>
<tr>
<td>Tg</td>
<td>Tioga loam</td>
<td>0-2</td>
<td>Floodplains</td>
</tr>
<tr>
<td>So</td>
<td>Sloan silty clay loam</td>
<td></td>
<td>Floodplains</td>
</tr>
</tbody>
</table>

**Flora**

There was, and continues to be, great floral diversity in Ohio. This diversity is relative to the soils and the terrain that generally includes the till plain, lake plain, terminal glacial margins, and unglaciated plateau (Forsyth 1970). Three major glacial advances, including the Kansan, Illinoian, and Wisconsinan, have affected the landscape of Ohio. The effects of the Wisconsin glaciation are most pronounced and have affected more than half of the state (Pavey et al. 1999).

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The northwestern Ohio terrain is nearly flat because of ancient glacial lakes and glaciation, which affected the flora. However, the vegetation was more diverse than the till plain to the south and east because of the variety of factors that contributed to its terrain. Forests within the Black Swamp were generally comprised of elm/ash stands; however, dissected areas along drainages and drier, elevated areas from beach deposits would contain mixed forests of oak and hickory (Gordon 1966; 1969). There was little upland floral diversity in the lake plains (Black Swamp region) except for the occasional patches of oak and hickory. Floral variety was most evident in narrow sleeves along larger stream valleys where there is relief.

The most biological diversity in Ohio is contained within the Allegheny Plateau, which encompasses the southeastern two-thirds of the state (Sheaffer and Rose 1998).
Because this area is higher and has drier conditions, it is dominated by mixed oak forests. Some locations within the central part of this area contain beech and mixed mesophytic forests. There are large patches of oak and sugar maple forests to the south of the terminal moraine from Richland to Mahoning County (Gordon 1966).

Southwestern Ohio from about Cincinnati to Bellefontaine east to the Scioto River historically contained a very diverse floral landscape. This is an area where moraines from three glacial episodes are prevalent (Pavey et al. 1999). Forests in this area include elm-ash swamp, beech, oak-sugar maple, mixed mesophytic, prairie grasslands, mixed oak, and bottomland hardwoods (Core 1966; Gordon 1966; 1969). These forest types are intermingled with prairies being limited to the northern limits of this area mostly in Clark and Madison Counties.

Generally, beech forests are the most common variety through Ohio and could be found in all regions. Oak and hickory forests dominated the southeastern Ohio terrain and were found with patchy frequency across most of northern Ohio. Areas that were formerly open prairies and grasslands are in glacial areas, but are still patchy. These are in the west central part of the state. Oak and sugar maple forests occur predominantly along the glacial terminal moraine. Elm-ash swamp forests are prevalent in glaciated areas including the northern and western parts of Ohio (Gordon 1966; Pavey et al. 1999).

The majority of the project area’s original vegetation was comprised of Beech forestation, with the western part being associated with oak-sugar maple forestation (Gordon 1966).

**Fauna**

The upland forest zone offered a diversity of mammals to the prehistoric diet. This food source consisted of white-tailed deer, black bear, Eastern cottontail rabbit, opossum, a variety of squirrels, as well as other less economically important mammals. Several avian species were a part of the upland prehistoric diet as well (i.e. wild turkey, quail, ruffed grouse, passenger pigeon, etc.). The lowland zone offered significant species as well. Raccoon, beaver, and muskrat were a few of the mammals, while wood duck and wild goose were the economically important birds. Fishes and shellfish were also an integral part of the prehistoric diet. Ohio muskellunge, yellow perch, white crappie, long nose gar, channel catfish, pike, and sturgeon were several of the fish, whereas, the Ohio naiad mollusc, butterfly’s shell, long solid, common bullhead, knob rockshell, and cod shell were the major varieties of shellfish. Reptiles and amphibians, such as several varieties of snakes, frogs, and turtles, were also part of the prehistoric diet (Trautman 1981; Lafferty 1979; Mahr 1949).

**Cultural Setting**

The first inhabitants of Ohio were probably unable to enter this land until the ice sheets of the Wisconsin glacier melted around 14,000 B.C. Paleoindian sites are considered rare due to the age of the sites and the effects of land altering activities such as erosion. Such sites were mostly used temporarily and thus lack the accumulation of human occupational deposits that would have been created by frequent visitation.
Paleoindian artifact assemblages are characteristic of transient hunter-gatherer foraging activity and subsistence patterns. In Ohio, major Paleoindian sites have been documented along large river systems and near flint outcrops in the Unglaciated Plateau (Cunningham 1973). Otherwise, Paleoindian sites in the glaciated portions of Ohio are encountered infrequently and are usually represented by isolated finds or open air scatters.

The Paleoindian period is characterized by tool kits and gear utilized in hunting Late Pleistocene megafauna and other herding animals including but not limited to short-faced bear, barren ground caribou, flat-headed peccary, bison, mastodon, giant beaver (McDonald 1994; Bamforth 1988; Brose 1994). Groups have been depicted as being mobile and nomadic (Tankersley 1989); artifactual remains reflective of Paleoindian activity include projectile points, multi-purpose unifacial tools, burins, gravers, and spokeshaves (Tankersley 1994). The most diagnostic artifacts affiliated with this period are fluted points that exhibit a groove or channel positioned at the base to facilitate hafting. The projectiles dating from the late Paleoindian period generally lack this trait; however, the lance form of the blade is retained and is often distinctive from the following Early Archaic period (Justice 1987).

The Archaic period has been broken down into three sub-categories including the Early, Middle, and Late Archaic. During the Early Archaic period (ca. 10000-8000 BP (before present)), the environment was becoming increasingly arid as exhibited by the canopy (Shane 1987). This period of dryness allowed for the exploitation of areas that were previously inaccessible or undesirable. The Early Archaic period does not diverge greatly from the Paleoindian regarding the type of settlement. Societies still appear to be largely mobile with reliance on herding animals (Fitting 1963). For these reasons, Early Archaic artifacts can be encountered in nearly all settings throughout Ohio. Tool diversity increased at this time including hafted knives that are often re-sharpened by the process of beveling the utilized blade edge and intense basal grinding (Justice 1987). There is a basic transition from lance-shaped points to those with blades that are triangular. Notching becomes a vogue aspect of hafting. Another characteristic trait occurring almost exclusively in the Early and Middle Archaic periods is basal bifurcation and large blade serrations. Tool forms begin to vary more and may be a reflection of increasingly differential resource exploitation. Finished tools from this period can include bifacial knives, points, drills/perforators, utilized flakes, and scrapers.

The Middle Archaic period (8000-6000 BP) is poorly known or understood in archaeological contexts within Ohio. Some (Justice 1987) regard small bifurcate points as being indicative of this period. Groundstone artifacts become more prevalent at this time. Other hafted bifaces exhibit large side notches with squared bases, but this same trait can extend back to the Paleoindian period. The climate at this time is considered to be reflective of today. The Middle Archaic period subsistence tended to be affiliated with small patch foraging involving a consistent need for mobility with a shift towards stream valleys (Stafford 1994). Sites encountered from this time period through most of Ohio tend to be reflective of lithic scatters or isolated finds. The recognition of regional traits may be apparent at this time.

The Late Archaic period in Ohio (ca 6000-3000 BP) diverges from the previous periods in many ways. Preferred locations within their regional setting appear to have
been repeatedly occupied. The more intensive and repeated occupations often resulted in the creation of greater social and artifact complexity. The environment at this time is warmer and drier. Most elevated landforms in northeastern Ohio have yielded Late Archaic artifacts (Prufer and Long 1986:7) and the same can be stated for the remainder of Ohio.

Various artifacts are diagnostic of the Late Archaic period. Often, burial goods provide evidence that there was some long-distance movement of materials, while lithic materials used in utilitarian assemblages are often from a local chert outcrop. There is increased variation in projectile point styles that may reflect regionalism. Slate was often used in the production of ornamental artifacts. Ground and polished stone artifacts reached a high level of development. This is evidenced by such artifacts as grooved axes, celts, bannerstones, and other slate artifacts.

It is during the Terminal Archaic period (ca 3500-2500 BP) that extensive and deep burials are encountered. Regional expressionism within Ohio is observed in the forms of the Crab Orchard (southwest), Glacial Kame (northern), and Meadowood (central to Northeastern). Along the Ohio River the Riverton Culture is considered and can exemplify intensive occupations. Pottery makes its first appearance during the Terminal Late Archaic.

The Early Woodland period (ca 3000-2100 BP) in Ohio is often affiliated with the Adena Culture and the early mound builders (Dragoo 1976). Early and comparably simple geometric earthworks first appear with mounds spread across the landscape. Pottery at this time is often thick and tempered with grit, grog, or limestone; however, it becomes noticeably thinner towards the end of the period. There is increased emphasis on gathered plant material including maygrass, chenopodium, sunflower, and squash. Habitation sites have been countered that include structural evidence. Houses that were constructed during this period were circular, having a diameter of up to 18.3 m (Webb and Baby 1963) and often with paired posts (sui generis Cramer 1989). Artifacts dating from this period include leaf-shaped blades with parallel to lobate hafting elements, drilled slate pieces, ground stone, thick pottery, and increased use of copper. Early Woodland artifacts can be recovered from every region of Ohio.

The Middle Woodland period (ca 2200-1600 BP) is often considered to be equivalent with the Hopewell Culture. The largest earthworks in Ohio date from this time period. There is dramatic increase in the appearance of exotic materials that appear most often in association with earthworks and burials. Artifacts representative of this period include grit-tempered and thinner pottery, dart-sized projectile points (Lowe Flared, Steuben, Snyders, and Chesser) [Justice 1987], exotic materials (mica, obsidian, and marine shell, etc.). The points are often thin, bifacially beveled, and with flat-cross sections. There seems to have been a marked increase in the population as well as increased levels of social organization. Middle Woodland sites seem to reflect a seasonal exploitation of the environment. There is a notable increase in the amount of Eastern Agricultural Complex plant cultigens including Chenopodium, knotweed, sumpweed, and little barley. This seasonal exploitation may have followed a scheduled resource extraction year in which the populations moved camp several times per year, stopping at known resource extraction loci. Middle Woodland land use appears to center or focus in
the regions surrounding earthworks (Dancey 1992; Pacheco 1996); however, there has been evidence of repeated occupation away from earthworks (Weller 2005a). Household structures at this time vary with many of them being squares with rounded corners (Weller 2005a). Exotic goods are often attributed to funerary activities affiliated with the mounds and earthworks. Utilitarian items are more frequently encountered outside of funerary/ritual contexts. The artifact most diagnostic of this period is the bladelet (and their cores), a prismatic and thin razor-like tool. Middle Woodland remains are more commonly recovered from central Ohio south and lacking from most areas in the northern and southeastern part of the State.

The Late Woodland period (ca 400-900 AD) is separable from the previous period in several ways. There appears to be a population increase and a more noticeable aggregation of groups into formative villages. The villages are often positioned along large streams, on terraces, and likely were occupied seasonally (Cowan 1987; Weller 2005b). This increased sedentism was due in part to a greater reliance on horticultural garden plots, much more so than in the preceding Middle Woodland period. The early Late Woodland groups were growing a wide variety of crop plants that are collectively referred to as the Eastern Agricultural Complex. These crops included maygrass, sunflower, and domesticated forms of goosefoot and sumpweed. This starch and protein diet was supplemented with wild plants and animals. Circa A.D. 800 to 1000, populations adopted maize agriculture and around this same time, shell-tempered ceramics appear. Other technological innovations and changes during this time period included the bow and arrow and changes in ceramic vessel forms.

The Cole complex (ca 1000-1300 AD) has been identified in central and south central Ohio. Sites that have been used to define the Cole complex include the W.S. Cole (33DL11), Ufferman (33DL12), and Decco (33DL28) sites along the Olentangy; the Zencor Village site, located along the Scioto River in southern Franklin County; and the Voss Mound site (33FR52), located along the Big Darby Creek in southwestern Franklin County. It has been suggested that this cultural manifestation developed out of the local Middle Woodland cultures and may have lasted to be contemporaneous with the Late Prehistoric period (Barkes 1982; Baby and Potter 1965; Potter 1966). Cole is a poorly defined cultural complex as its attributes are a piecemeal collection gathered from various sites. Some have suggested that it may be affiliated with the Fort Ancient period (Pratt and Bush 1981). Artifacts recovered from sites considered as Cole include plain and cordmarked pottery, triangular points, Raccoon-notched points, chipped slate discs, rectangular gorgets, and chipped stone celts. The vessels often have a globular form with highly variable attributes and rim treatment. There have been few structures encountered from this period, but those that have are typically rounded or circular (Pratt and Bush 1981; Weller 2005b). Dates affiliated with Cole occupations are considered to be from 1100 AD to about 1300 AD (the late prehistoric period).

The Late Prehistoric period (ca 1000-1550 AD) is distinctive from former periods. At this time, regions were a major focus of specific groups. Large and sometimes palisaded villages were usually tied to a regional focus such as Fort Ancient (southern half of Ohio), Cole (?) [central Ohio], or Monongahela (east and southeast Ohio). There is a marked increase of evidence supporting residential sedentism. Population density rose sharply with new and more effective means of resource and land exploitation.
Communal aggregations such as villages are comparably marked after 700 AD (Fuller 1981; Pollack and Henderson 2000). Maize or corn agriculture as well as other cultigens made up a significant portion of the prehistoric diet. There appears to be an increase in domestic pottery production. Social organization is presumed to have become more complex and possibly moved towards a chiefdom model during the Late Prehistoric period. Artifact types are similar to those from the previous period; however, pottery is often thinner with differing décor often affiliated with respective regional expression. Structures can be round or elongated ovals with larger sites often being located in large stream valleys.

**Protohistoric to Settlement**

By the mid-1600s, French explorers traveled through the Ohio country as trappers, traders, and missionaries. They kept journals about their encounters and details of their travels. These journals are often the only resource historians have regarding the early occupants of seventeenth century Ohio. The earliest village encountered by the explorers in 1652 was a Tionontati village located along the banks of Lake Erie and the Maumee River. Around 1670, it is known that three Shawnee villages were located along the confluence of the Ohio River and the Little Miami River. Because of the Iroquois Wars, which continued from 1641-1701, explorers did not spend much time in the Ohio region and little else is known about the natives of Ohio during the 1600s. Although the Native American tribes of Ohio may have been affected by the outcome of the Iroquois Wars, no known battles occurred in Ohio (Tanner 1987).

French explorers traveled extensively through the Ohio region from 1720-1761. During these expeditions, the locations of many Native American villages were documented. In 1751, a Delaware village known as Maguck existed near present-day Chillicothe. In 1758, a Shawnee town known as Lower Shawnee 2 existed at the same location. The French also documented the locations of trading posts and forts, which were typically established along the banks of Lake Erie or the Ohio River (Tanner 1987).

While the French were establishing a claim to the Ohio country, many Native Americans were also entering new claims to the region. The Shawnee were being forced out of Pennsylvania because of English settlement along the eastern coast. The Shawnee created a new headquarters at Shawnee Town, which was located at the mouth of the Scioto River. This headquarters served as a way to pull together many of the tribes which had been dispersed because of the Iroquois Wars (Tanner 1987).

Warfare was bound to break out as the British also began to stake claims in the Ohio region by the mid-1700s. The French and Indian War (1754-1760) affected many Ohio Native Americans; however, no battles were recorded in Ohio (Tanner 1987). Although the French and Indian War ended in 1763, the Native Americans continued to fight against the British explorers. In 1764, Colonel Henry Bouquet led a British troop from Fort Pitt, Pennsylvania to near Zanesville, Ohio.

In 1763, the Seven Years' War fought between France and Britain, also known as the French and Indian War, ended with The Treaty of Paris. In this Peace of Paris, the French ceded their claims in the entire Ohio region to the British. When the American
Revolution ended with the Second Treaty of Paris in 1783, the Americans gained the entire Ohio region from the British; however, they designated Ohio as Indian Territory. Native Americans were not to move south of the Ohio River but Americans were encouraged to head west into the newly acquired land to occupy and govern it (Tanner 1987).

By 1783, Native Americans had established fairly distinct boundaries throughout Ohio. The Shawnee tribes generally occupied southwest Ohio, while the Delaware tribes stayed in the eastern half of the state. Wyandot tribes were located in north-central Ohio, and Ottawa tribes were restricted to northeast Ohio. There was also a small band of Mingo tribes in eastern Ohio along the Ohio River, and there was a band of Mississauga tribes in northeastern Ohio along Lake Erie. The Shawnee people had several villages within Ross County along the Scioto River (Tanner 1987). Although warfare between tribes continued, it was not as intense as it had been in previous years. Conflicts were contained because boundaries and provisions had been created by earlier treaties.

In 1795, the Treaty of Greenville was signed as a result of the American forces defeat of the Native American forces at the Battle of Fallen Timbers. This allocated the northern portion of Ohio to the Native Americans, while the southern portion was opened for Euro-American settlement. Although most of the battles which led up to this treaty did not occur in Ohio, the outcome resulted in dramatic fluctuations in the Ohio region. The Greenville Treaty line was established, confining all Ohio Native Americans to northern Ohio, west of the Tuscarawas River (Tanner 1987).

Ohio Native Americans were again involved with the Americans and the British in the War of 1812. Unlike the previous wars, many battles were fought in the Ohio country during the War of 1812. By 1815, peace treaties began to be established between the Americans, British, and Native Americans. The Native Americans lost more and more of their territory in Ohio. By 1830, the Shawnee, Ottawa, Wyandot, and Seneca were the only tribes remaining in Ohio. These tribes were contained on reservations in northwest Ohio. By the middle 1800s, the last of the Ohio Native Americans signed treaties and were removed from the Ohio region.

Marion County History

Nathan Brundige and Nathaniel Wyatt were the first settlers within modern Marion County, coming to the region in 1806 while the land was still part of Franklin County. The Greenville Treaty Line placed most of the modern county in Indian Territories, a small portion was part of the Virginia Military District, and the remainder was within U.S. Military Lands. Migration was mild until the end of the War of 1812 and after new treaties had been struck with the very near Indian neighbors. The 1820s brought new citizens from New England, Pennsylvania, Kentucky, and Virginia. From the 1830s to the 1860s a significant influx of international immigration added to Marion County’s citizenry, mostly German and later Irish (Howe 1888; Jacoby 1907; Leggett, Conway, & Co. 1883; Wilson and Wilson 1950).
The State Legislature created Marion County in 1820. The name they chose to honor the Revolutionary general and hero Francis Marion, “The Swamp Fox.” For its first three years, Marion depended on Delaware County for its judicial and legal affairs. In 1823, Marion detached itself and thenceforward functioned as a separate county. The borders of the county changed in 1845 and 1848 with the erection of Wyandot and Morrow Counties respectively. The State appointed three men to choose the new county a seat of justice; and in 1822, they selected the town of Marion (Jacoby 1907; Leggett, Conway, & Co. 1883; Wilson and Wilson 1950).

Eber Baker, acting as a land agent for the proprietor Alexander Holmes, came to Holmes’ holdings in 1821 and found some squatters at a place they were calling ‘Jacob’s Well.’ Baker and Holmes’ son Samuel laid out a town the following spring. This location was the one that the county seat agents chose in 1822 and the little whole in the forest became Marion. The village became a town in 1830, but slow growth warranted a revocation of the charter until increased population and demand commanded a reinstatement of town status in 1847. City class came in 1890. Marion remains the only city in the county. Other villages are Caledonia, Green Camp, LaRue, Morral, New Bloomington, Prospect, and Waldo (Jacoby 1907; Wilson and Wilson 1950).

Marion City continues to be a center for business, industry, commercial, and residential development. Today, Marion County is dominated by the agricultural industry along with some gravel quarrying found in the southern portion of the county. Clay was also quarried in the early days for use in pottery and brick manufacture. One of the most famous items within Marion is the grave of President Warren G. Harding, who lived in Marion for some time during his adult life (Jacoby 1907; Wilson and Wilson 1950).

Richland Township History (Marion County)

Richland Township was organized in the year 1827. It is located in the southeast portion of Marion County. Neighboring townships include Claridon to the north, Cardington to the east, Waldo to the southeast, and Pleasant to the west. The topography is level with little to no rolling areas (Howe 1854). In the years prior to European settlement dense forests populated Richland Township. The timber was later removed to clear space for agricultural land. It was also used for the construction of homes, barns, churches, and schools. The main crops consisted of corn, wheat, potatoes, and apples. During this period, children were steady farm hands who helped with farm duties when not attending school. Schooling frequently fell low on the list of priorities for farm children. Children would often skip lessons to instead work on the farm (Winter 1917).

School houses were typically constructed with one room and a fireplace for winter sessions. During the early years of settlement, schools were not given an adequate amount of funding. The windows were composed of greased paper and text books were in short supply. Funding was not only lacking in the educational system, but in the church as well (Howe 1854).
Churches in the beginning stages of Richland Township’s settlement were similar to the school houses. They too consisted of one room cabins. Religion was an important facet within the culture. The primary denomination was Methodist. Gatherings at the church allowed for residents to seek spiritual solace, discuss local issues and organize community events (Howe 1854).

**Morrow County History**

Morrow County is number eighty-five chronologically of Ohio’s eighty-eight counties. The reason for its late beginning lies in the contention through which people who, for one reason or another, opposed the establishment of Marion as the county seat of Marion County. At that time, 1824, the land that would become Morrow was the outlying land of four counties: Richland, Knox, Delaware, and the source of contention – Marion. Soon however, the contention shifted from external to internal and the main opposition to progress came from the various towns within the would-be county. Gilead and Chester were the main rivals in this race for Morrow’s county seat. Finally, in 1848, the Gilead backers saw their side win the contest as the state legislature formally accepted their bid for the establishment of the new county centered around Mt. Gilead (Baskin 1880; Baughman 1911; Howe 1888; Morrow County Centennial Committee [MCCC] 1979).

Though Morrow County was not established until after the pioneer period ended, there were certainly those who settled the land that would eventually come under the jurisdiction of Morrow and they deserve brief recognition. Evan Holt was the first to settle on what would become Morrow County land. He built a home near present day Chesterville in 1807. Asa Mosher built the county’s first mill in 1819. The first schools in the county began about 1817. Even Johnny Appleseed reportedly roamed through Morrow during the War of 1812 giving the settlers the latest news of the war and, of course, planting orchards (Baskin 1880; Baughman 1911; Howe 1888; MCCC 1979; Morrow County History Book Committee [MCHBC] 1989).

Progress of education, culture and industry came with the establishment of schools churches and transportation lines. Subscription schools provided education early on, with the first union school coming to Mt. Gilead in 1853. Through history, there have been three colleges in Morrow: Hesper Mount Seminary in 1845, Iberia College from 1855, and Alum Creek Academy some twenty years later. The “Old School Baptists” built the first church in 1816. This building was also the home of the first organized community school. The early roadways were the Delaware-Mansfield road and the Worthington-New Haven Road both before 1825. Railroads began construction in the late 1840’s and the New York Central ran the first cars beginning in 1851 (Baskin 1880; MCCC 1979; MCHBC 1989).

The first village to have a plat was Friendsborough in 1822; probably so named because of the Quaker influence among the earliest pioneers of Morrow County. However, the town was as meek as its namesakes and the town never developed beyond its own plat. The first surviving town was Whetstone. Jacob Young laid it out two years after Friendsborough submitted their plat. In his honor, the inhabitants also hailed themselves from Youngstown; but in 1832, the name permanently became Mt. Gilead.
The state granted the town incorporation in 1844. Other towns came in subsequent years. Today there are only eight others in the county: Bloomfield, Cardington, Sparta, Iberia, Marengo, Chesterville, Edison, and Fulton (Baskin 1880; Baughman 1911; Howe 1888; MCCC 1979).

Outside of these few communities, the rest of the county focuses on agriculture and save a couple manufacturing enterprises early on farming has been the only business to have any significant export. Early on, Morrow County had several small quarries and a few clay foundries but they were mostly small affairs all of which had closed by the middle 1900’s (Baughman 1911; MCCC 1979; MCHBC 1989).

Morrow County has exported more people of significance than product. There have been members of Congress, Senators, Governors, members of State Legislature, Major League Baseball players, and even a U.S. President born in Morrow. Warren G. Harding was born in Blooming Grove in 1865 (MCCC 1979; MCHBC 1989).

**Cardington Township History (Morrow County)**

Cardington Township was organized in the year 1821. It is five square miles and located in the western portion of Morrow County. Neighboring townships include Canaan to the north, Lincoln to the southeast, and Richland to the west. The topography in Cardington Township is primarily level with little to no rolling or hilly areas. Due to the lay of the land, the drainage is poor. The land consists of quarries and a silty clay loam that yields an excellent crop (Perrin 1880).

Before the arrival of European influence, dense forests of maple, oak, beech populated the majority of Cardington Township. Hundreds of acres of vegetation were later cleared for agricultural and construction purposes. Much of the land was low and wet upon arrival which limited space for settlement. Performing this task during this period was a difficult undertaking considering it was primarily done by hand. The timber was used to build homes, barns, churches and other various crafting. Early European settlers came from surrounding states such as Indiana, Kentucky, Pennsylvania and New York. Many of whom have ancestries that can be traced back to Germany, Ireland, and France (Howe 1888).

Agriculture was the leading source of economic success in Cardington Township during it’s infancy. The main products were wheat, barley, corn, potatoes and cheese. Other less crucial staples included honey, peaches and apples. During the early years of settlement, children were essential to the success of crops and livestock. Many children stayed home from school in order to help their families tend the land and other household duties. Schoolhouses during this time were typically one-room construction with a fireplace implemented for winter sessions. They not only served as a place of education but also as a place of religious practice (Perrin 1880).

Spirituality played an important role within the culture of the township. The primary denomination is Methodist. Gatherings at the church allowed the residents to seek spiritual solace, discuss local issues and organize community events. The church doctrine
was not only used to direct one’s personal life but was implemented into school teachings and public policy as well (Howe 1888).

**Westfield Township History (Morrow County)**

Westfield Township was organized in the year 1822. It is located in the western portion of Morrow County. Neighboring townships include Cardington to the northeast, Lincoln to the east, Oxford and Delaware to the south and Waldo and Marion to the west. It is divided by the Whetstone River which runs from the northern end down to the southwestern corner. The topography in Westfield Township is primarily level with some rolling areas where the rivers are located. Numerous springs are also located within the township (Howe 1888).

Dense forests filled the land before the arrival of European settlers. Species such as walnut, beech, elm, sycamore and willow were abundant throughout the township. Thousands of acres were later removed in order to make space for agricultural fields. The timber was used construct homes, barns, school houses, mills and other various forms of crafting. Early pioneers were drawn to the land due to its water sources, rich soils and quantity of game. Another contributing factor was that Ohio had been admitted into the union, creating an influx of immigration. Many of the immigrants came into Westfield from surrounding states and come from British, French and German backgrounds (Howe 1888).

Agriculture was the leading source of economic success during Westfield’s infancy before the rise of industrialism. The main products in the township were potatoes, tobacco, apples, peaches and wine (Howe 1888). Apple orchards were notable aspect of the farming culture in Westfield Township. The orchards date back beyond any written recollection and are rumored to have been planted by Johnny Appleseed (Perrin 1880).

**Lincoln Township History (Morrow County)**

What is now Lincoln Township was surveyed in 1803 and then again in 1807 by Jesse Spenser (Baughman & Bartlett 1911). The earliest known settlement in Lincoln Township is what was eventually known as Peru. Benjamin Collins was the first person to purchase land here. He was an elderly man who emigrated from Junius, New York. Edmund Buck and Amos Earl arrived and built a cabin, purchased by Collins, and a bachelor’s hall. Alexander Edgar settled in the area and established a store and distillery in 1818. Most trade in this area happened in Edgar’s store until the businesses were opened in nearby Chesterville and Cardington. The first roads in the township were laid out in approximately 1823 (Baughman & Bartlett 1911).

Lincoln Township was formed on March 3, 1828 from Harmony and Westfield Townships and named in honor of General Benjamin Lincoln, known for his military service during the Revolutionary War. Settlers in this region were often involved in nearby Quaker church services. Most citizens of Lincoln Township were part of Protestant religions. The first church was Lincoln Christian Church, organized by
Reverend William Ashley in 1843. The group held meetings in log cabins until 1858 when the first church building was constructed.

Fulton is one of the more prominent settlements in Lincoln Township. While Morrow County is mainly an agricultural community, Fulton sprung up quickly because of the presence of a stone quarry and a railroad station along the Toledo and Ohio Central Railroad. Fulton had two post offices, two general stores, and two Protestant churches (Baughman & Bartlett 1911). The town hall also housed an Independent Order of Oddfellows group.

**Research Design**

The purpose of a Phase I survey is to locate and identify archaeological resources that will be affected by the planned electric line rebuild project as well as its access corridors. This report is being prepared to address only the archaeological concerns regarding this project. Once these resources are identified and sampled, they are evaluated for their eligibility or potential eligibility to the NRHP. These investigations are directed to answer or address the following questions:

1) Did the literature review reveal anything that suggests the project area had been previously surveyed, and what is the relationship of previously recorded properties to the project area?
2) Are cultural resources likely to be identified in the project area?

**Archaeological Field Methods**

The survey conducted within the project used four methods of sampling and testing to identify and evaluate cultural resources. These included surface collection, shovel test unit excavation, shovel probe excavation, and visual inspection.

**Surface Collection.** Surface collection was conducted when suitable conditions were encountered. This pertains to agricultural fields that have a minimum of 50 percent bare ground surface visibility. Pedestrian transects were spaced at 7.5 m intervals. Artifacts that are identified in this manner are typically plotted using a Trimble GeoXT global positioning system.

**Shovel test unit excavation.** Shovel test units were placed at 15-m intervals. Shovel test units measure 50 cm on a side and are excavated to 5 cm below the topsoil/subsoil interface. Individual shovel test units were documented regarding their depth, content and color (Munsell). Wherever sites are encountered, Munsell color readings are taken per shovel test unit. All of the undisturbed soil matrices from shovel test units are screened using .6 cm hardware mesh. When sites are encountered, additional shovel test units will be excavated at 7.5 m intervals extending on grid and in the two cardinal directions within the corridor from the positive locations.

**Shovel probe excavation.** Shovel probes were excavated during these investigations to document the extent of the disturbance associated with modern
construction activities. These probes were excavated similarly to shovel test units. They had the same dimensions of 50 cm on a side, but were not screened. They were excavated at 15-m intervals and to a depth of 15-20 cm or deep enough to establish lack of soil integrity.

*Visual inspection.* Locations where cultural resources were not expected, such as sloped, wetlands, or disturbed areas were walked over and visually inspected. This method was used to verify the absence or likelihood of any cultural resources being located in these areas. This method was also utilized to document the general terrain and the surrounding area.

The application of the resulting field survey methods was documented in field notes, field maps, and project plan maps.

**Prehistoric Artifact Analysis**

An artifact inventory was accomplished upon completion of the fieldwork. This involved identifying the functional attributes of individual artifacts, as well as the artifact cluster(s) or site assemblage collectively. The prehistoric artifact types and material were identified during the inventory process. The lithic artifact categories are modeled after Flenniken and Garrison (1975) and include the following:

*Biface.* A biface is defined as an artifact that has been culturally modified on two faces (ventral and dorsal). Complete and fragmentary preforms, manufacturing rejects, projectiles, or knives are included in this category.

*Blocky Irregular.* These are chunks and amorphous chert fragments that are produced during core reduction. These frequently occur during the creation of a striking platform or by accident. They represent a transitional core reduction stage similar to that of primary thinning.

*Broken Flake.* This flake type is common. Flakes for this investigation are considered broken when diagnostic attributes (e.g., flake scarring or platform) are absent from the artifact. Therefore, a flake that is broken in half and retains the platform is considered complete because the function can be ascertained regardless of its obvious fragmentary nature.

*Core.* A core represents the initial stage of chert procurement and reduction. A core has evidence of flake removal or checking present to delineate that the object has been culturally modified. Cores can be recovered from bedded outcrops or gathered from alluvial and glacial deposits.

*Primary Decortication Flake.* This flake type represents the initial reduction of a core. Generally, these flakes have a natural patina or cortex over most of the dorsal side and are void of other flake scars. Artifact assemblages with chert resources obtained from bedded resources usually do not have decortication flakes of any kind because there is no patina/cortex formation.
Primary Thinning Flake. This flake type represents a transitional mode of chert reduction. The intent of this reduction activity is to reduce a core to a crude biface. Flakes have a steep platform angle (i.e., >65°) and lack cortex. However, occasional small remnants of cortex are prevalent at this point, especially on the striking platform.

Secondary Decortication Flake. These flakes occur as a by-product of patina/cortex removal of a core. They are differentiated from the previous flake type by a lesser amount of cortex evident on the dorsal side and at least one or part of one previous flake scar. These flakes have steep flake platform angles (>75°).

Secondary Thinning Flake. These flake types represent a reduction mode that is a direct result of the previous reduction activities (i.e., primary thinning). Soft, antler billet percussion and pressure flaking are used for this mode of reduction. At this point, the chert artifact being reduced or thinned is a biface rather than a core. The striking platform for this flake type is commonly represented by the edge of the biface. The platform angle is typically acute but can range from 30° to 65°. Previously removed flake scars are common on the dorsal side.

Shatter or Angular Shatter. These artifacts most frequently occur during percussion flake reduction of cores. These artifacts lack striking platforms, are thin, narrow, and triangular. They cannot be definitively associated with a specific functional category of chert reduction due to their ubiquity.

Uniface. A uniface only has evidence of use-wear on one side of the artifact. Unifacial artifacts include utilized flakes, end and side scrapers, and bladelets. However, bladelets are typically categorized as blades or lamellar flakes and are diagnostic of the Middle Woodland period.

Identification of the material type of individual artifacts is based on several attributes, including color, inclusions, and luster. Several resources were used to aid in the inventory of the material types, including Converse (1994), DeRegnaucourt and Georgiady (1998), and Stout and Schoenlaub (1945).

**Historic Period Artifact Analysis**

The artifacts recovered during these investigations will be inventoried and analyzed. The inventory will be specific to type and age if the artifact is temporally diagnostic. The functional inventory of the site will be similar to that of South (1977) where artifacts are segregated into categories such as kitchen, arms, architecture, and etcetera. South’s (1977) theoretical approach also emphasizes the development and interpretation of artifact patterns found at sites. This method can be used to understand depositional patterning on the intra- and inter-site level. Ball (1984) modified this approach, making it applicable for use in the Ohio Valley.
Artifacts recovered from the subsurface testing will be inventoried and the results analyzed to identify differential patterning of functionally specific artifact groups within areas of high and low artifact density. The specific historic period temporal affiliation of the artifacts will be determined by relative dating. The identification of historic artifacts for purposes of determining age is guided by ceramic/artifact analyses or source books by Carskadden et al. (1985); Cushion (1980); Dalrymple (1989); Deiss (1981); Esary (1982); Ewins (1997); Greer (1981); Hughes and Lester (1981); Hume (1991); Lang (1995); Majewski and O’Brien (1987); Mansberger (1981); Manson and Snyder (1997); McConnell (1992); McCorvie (1987); Miller (1987); Newman (1970); Ramsay (1976); Sonderman (1979); Spargo (1926); Sprague (2002); Stelle (2001); Sunbury (1979); Sussman (1977); Visser (1997); and Zimler (1987).

Curation

The landowner was sent a letter regarding artifacts and it has not been received by the time this report was compiled. Notes and maps affiliated with this project will be maintained at Weller & Associates, Inc. files.

Literature Review

The literature review study area is defined as a 305 m (1,000 ft) study area from the center of the project (Figure 2 and 3). In conducting the literature review, the following resources were consulted at SHPO and the State Library of Ohio:

1) Archeological Atlas of Ohio (Mills 1914);
2) SHPO United States Geological Survey (USGS) 7.5’ series topographic maps;
3) Ohio Archaeological Inventory (OAI) files;
4) Ohio Historic Inventory (OHI) files;
5) National Register of Historic Places (NRHP) files;
6) SHPO CRM/contract archaeology files; and
7) SHPO consensus determination of eligibility files;
8) ODNR mining resource maps; and
9) Marion and Morrow County atlases, histories, historic USGS 15’series topographic map(s), and current USGS 7.5’ series topographic map(s);
10) Genealogical and cemetery resources.

A review of the Archeological Atlas of Ohio (Mills 1914) indicates a mound near the western part of the project area (Figure 6).

The SHPO topographic maps indicated that there are 17 sites identified within the study area (Table 2). Archaeological sites include: three sites with both prehistoric and historic components, one prehistoric sites, and one historic site. Sites 33MW0148, 33MW0149, and 33MW0150 are small prehistoric lithic scatters, with sites 33MW0148, 33MW0149, 33MW0150 being multi-component, containing Prehistoric/Historic period components. Site 33MW0031 does not appear to have been originally identified during a professional survey; this is a lithic scatter (S. Baker, personal communication). Only
sites 33MW0031 and 33MW0149 are located within the project area (Appendix A; Figure 2 and 3).

<table>
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<th>Site Type</th>
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</tbody>
</table>

The OHI files indicated no previously recorded OHIs located in the project or its study area.

A review of the NRHP/DOE files indicate a single property within the study area. This resource will not be affected by the current project.

A review of the CRM surveys was conducted and this indicated that there were two Phase I surveys conducted in the study area. One survey was conducted for a waterline corridor that is to the north of the project in Marion county (DeRegnaucourt 1998) and near the Western terminus of this project. The other survey was for an electric transmission survey near the Eastern terminus of the project area, for Ohio Edison (Goodfellow 1997). This survey only involves a small part of the current project area; it identified site 33MW0149 that is within the project area; it was not regarded as being significant.

The *Atlas of Marion, Ohio* (Harrison, Sutton & Hare 1878) indicates buildings/structures are in the vicinity of the project area, but nothing that is definitively within it. The USGS 1915 Marengo, Ohio 15 Minute Series (Topographic) map indicates that there are some buildings located near the project (Figure 7). Inspection of the 1999 Ashley, 1995 Marengo, Ohio 7.5 Minute Series (Topographic) maps did not indicate any buildings or structures within the project area (Figure 2 and 3).

The study area was inspected for cemeteries. There is one cemetery in the study area, Windfall Cemetery. This is not near the project area.

**Evaluation of Research Questions 1 and 2**

There were two questions presented in the research design that will be addressed at this point. These are:

1) Did the literature review reveal anything that suggests the project had been previously surveyed and what is the relationship of previously recorded properties to the project?
2) Are cultural resources likely to be identified in the project?
These investigations were conducted for the existing electric line right-of-way as well as proposed access corridors. There are few recorded cultural resources in the study area for this project. This is probably a byproduct of the remoteness of the area and lack of professional surveys. The electric line corridor crosses many streams and it is expected that prehistoric period materials will be identified.

Fieldwork Results

The field investigations for this project were conducted in two stages. The initial investigations for the electric line easement was in March and April of 2016; the field investigations for the access corridors were conducted in August of 2016 (Figures 8-48). The weather and conditions were non-factors in the completion of the field investigations; the temperature ranged from 50-88 degrees F and the cover ranged from overcast to sunny. Surface collection methods were the most apt and prevalent means of investigation as much of the project was contained in agricultural field situations. Less frequently were areas that were found to be severely disturbed or steeply sloped, these areas were subject to visual inspection. Subsurface testing was conducted in the locations where bare ground visibility was lacking. This work was conducted to address the planned construction limits, which include access roads, work areas, and the existing right-of-way. The archaeological investigations resulted in the identification of 10 previously unrecorded sites including 33MW0192-201.

Most of the project area is located in rural farm country and was contained in active crop fields. The survey for the electric line corridor was conducted in the spring; surface collection methods were applicable in soybean stubble, winter wheat, tilled areas, and occasionally cornfields. Pedestrian transects were paced throughout these conditions provided at least 50 percent bare ground surface visibility was available. The winter wheat fields were investigated first as they have active crops that would not be suitable for surface collection by the middle to late April. Harvested cornfields were occasionally suitable for surface collection. This was determined in the field and was often relative to the productivity of the corn and whether the fields were in a no-till rotation. Cornfields that were cut for silage and those with poor stands of crops had bare ground surface visibility that ranged from 50-80 percent. All of the soybean stubble fields that were subject to these investigations were suitable for surface collection methods. These fields offered bare ground surface visibility that averaged 75-80 percent. Additionally, these fields are very weathered, which increases the likelihood of identifying cultural materials. The majority of the sites identified during these investigations were the results of surface collection sampling methods. The areas that were not readily recognized as being severely disturbed, fallow, and not deemed adequate for surface collection were subject to shovel testing methods of investigation.

Areas that precluded archaeological investigations were identified sporadically during these investigations. Severe disturbance accounts for minimal areas and generally involved historic period transportation-based constructions. This includes roads, railroads, grading for residential buildings, etc. Saturated conditions like streams, ponds, and possible wetlands were identified repeatedly. These situations inhibited testing, but it was recognized that these would likely be poorly suited for occupation or cultural use.
since they are seasonally inundated. Many of the larger wetland areas were identified along the relatively larger streams (the streams in this area are typically not very sizeable) and where the electric line corridor easement cuts through wooded lots. Steep slope (>15 percent) was identified infrequently, but documented accordingly as it was encountered. These inhibitive survey conditions were not a predominant factor throughout this survey area.

Shovel testing methods were appropriate in the generally intact situations that were ill-suited for surface collection (Figures 8-22). This pertains to fallow fields or pastures, corn stubble fields, bisected and cleared former woods, and manicured lawns. The vast majority of the electric line corridor had been farmed, was being farmed, or had been in the distant past. The amount of area contained in farm fields decreased from west to east as the terrain become for more rolling and there were more imperfectly drained situations. Most of the shovel testing that was conducted identified the topsoil being consistent with the plowzone; the topsoil deposits ranged in depth from 20-29 cm below ground surface. The project area is within glaciated conditions and does not have great topographic diversity. The elevations have a lighter hue of topsoil versus the low-lying areas as they are more eroded. A typical shovel test unit excavated in and elevated area identified topsoil that was brown (10YR4/3) silt loam with subsoil that was dark yellowish brown (10YR4/6) (Figure 47). Some areas were typically wetter than others and is reflected by the soil hue. The topsoil in this particular area was dark grayish brown (10YR3/2 or 4/2) silt loam and the subsoil was dark yellowish brown (10YR4/4) silt loam; the interface is clear, but somewhat broken by rutting. There were 194 shovel test units and 19 shovel probes excavated during these investigations, this includes the areas involving the access corridors.

The literature review indicated that there were two previously identified involved in this project area. Site 33MW0149 is in an area that is adjacent to a railroad and it has been severely disturbed by the installation of a gravel parking area. Site 33MW0031 is a lithic scatter that was identified during excellent surface survey conditions (Stan Baker, personal communication, April 2016). There were only a few artifacts identified from this site and they were diffuse. Weller did not re-identify either of these sites. Mills (1914) indicated a mound near the eastern part of the project; there was no mound identified during these investigations.

In August of 2016, Weller was provided with the access corridor locations that are relative to this project (Figures 8-22). Most of the access corridors are contained within the existing electric line corridor, which had already been investigated in March/April. The investigations conducted in August encountered nearly mature fields of soybeans and corn, but most were consistent with existing gravel and earthen graded drives. The majority of the access corridors were found to be severely disturbed or had been previously investigated. There were no new cultural resources identified during the survey for the access corridors.

**Archaeological Site Descriptions**

The field investigations identified 10 previously unrecorded archaeological sites (33MW0192-201). These sites include prehistoric and historic period components. The
following text describes the archaeological deposits further, in more detail, and evaluates them per the NRHP.

**33MW0192**

This site is a prehistoric period isolated find spot that was identified surface collection of an immature winter wheat field (Figure 11). The bare ground surface visibility in this field averaged 50 percent. Intensified inspection of the surrounding area failed to identify any additional materials. The site is just southeast of the Marion-Morrow County line and is south of Cardington Western Road. The site is located on a bluff that is on the west side of Shaw Creek; this is part of the Olentangy River/Scioto River watershed. Isolated artifact finds have a site size that is considered to be 1 sq m.

The artifact is a utilized flake of Upper Mercer chert (Table 3). This is functionally indicative of expedient cutting or scraping activity; it is not regarded as being temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

<table>
<thead>
<tr>
<th>Site (33MW)</th>
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<th>Northing</th>
<th>Artifact</th>
<th>Material</th>
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<tr>
<td></td>
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</tbody>
</table>
This site is a prehistoric period isolated find spot that was identified surface collection of an immature winter wheat field (Figure 12). The bare ground surface visibility in this field was at 50 percent. Intensified inspection of the surrounding area failed to identify any additional materials. The site is southeast of the Marion-Morrow County line and is south of Cardington Western Road. The site is located on an elevation that is on the east side of Shaw Creek; this is part of the Olentangy River/Scioto River watershed. The site size is regarded as being 1 sq m as the artifacts were identified in close proximity to one another.

There were two artifacts identified from this site (Table 3). The material assemblage includes two flakes of Upper Mercer chert. The artifacts are functionally indicative of middle stage lithic reduction. These artifacts are not temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

This site is a prehistoric period isolated find spot that was identified surface collection of an immature winter wheat field (Figure 12). The bare ground surface visibility in this field averaged 50 percent. Intensified inspection of the surrounding area failed to identify any additional materials. The site is southeast of the Marion-Morrow County line and is south of Cardington Western Road. The site is located on a bluff that is on the west side of Shaw Creek; this is part of the Olentangy River/Scioto River watershed. Isolated artifact finds have a site size that is considered to be 1 sq m.

The artifact that was identified from this site is a distal biface fragment of Upper Mercer chert (Table 3). The artifact lacks distinctive characteristics that would make it functionally and temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.
33MW0195

This site is a prehistoric period isolated find spot that was identified surface collection of a soybean stubble field (Figure 12). The bare ground surface visibility in this field was at 80 percent. Intensified inspection of the surrounding area failed to identify any additional materials. This is to the east of SR 42 and is north of Beatty Road. The site is located on a bluff margin overlooking the eastern floodplain of Whetstone Creek. Whetstone Creek is part of the Olentangy River/Scioto River watershed. Isolated artifact finds have a site size that is considered to be 1 sq m.

The artifact that was identified from this site is a distal biface fragment of Upper Mercer chert (Table 3). The artifact lacks distinctive characteristics that would make it functionally and temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

33MW0196

This site is a prehistoric period isolated find spot that was identified surface collection of a soybean stubble field (Figure 14). The bare ground surface visibility in this field was at 80 percent. Intensified inspection of the surrounding area failed to identify any additional materials. This is to the east of SR 42 and is north of Beatty Road. The site is located near a bluff margin overlooking the eastern floodplain of Whetstone Creek. Whetstone Creek is part of the Olentangy River/Scioto River watershed. Isolated artifact finds have a site size that is considered to be 1 sq m.

The artifact that was identified from this site is a primary thinning flake of Upper Mercer chert (Table 3). The artifact is functionally indicative of core reduction activity; it is not regarded as being temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.
33MW0197

This site is a prehistoric period lithic scatter that was identified surface collection of a soybean stubble field (Figure 18). The bare ground surface visibility in this field was at 75 percent. Intensified inspection of the surrounding area was conducted to identify additional materials and further examine the horizontal site limits. The site is located to the west of Ault Road and is north of Chesterville Road. The site is located a gently sloping bluff margin that is east of the West Branch Alum Creek. This stream is part of the Alum Creek/Scioto River watershed. The site size is regarded as being 2 sq m, which is a reflection of the distance between the two artifacts that were identified.

The artifacts that were identified from this site are two primary thinning flakes of Upper Mercer chert (Table 3). They are functionally indicative of core reduction activity; these materials are not considered to be temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

33MW0198

This site is a prehistoric period isolated find spot that was identified surface collection of a soybean stubble field (Figure 18). The bare ground surface visibility in this field was at 75 percent. Intensified inspection of the surrounding area was conducted to identify additional materials and further examine the horizontal site limits. The site is located to the west of Ault Road and is north of Chesterville Road. The site is located a gently sloping bluff margin that is east of the West Branch Alum Creek. This stream is part of the Alum Creek/Scioto River watershed. Isolated artifact finds have a site size that is considered to be 1 sq m.

The artifact that was identified from this site is a primary thinning flake of Upper Mercer chert (Table 3). The artifact is functionally indicative of core reduction activity; it is not regarded as being temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

33MW0199

This site has a nineteenth-twentieth century historic period component as well as a prehistoric period component. The prehistoric period component is a single artifact; the
historic period component is an artifact scatter. The site was identified during surface collection of tilled agricultural field that offered 100 bare ground surface visibility. (Figure 19). The bare ground surface visibility in this field was at 75 percent. This site is located just west of Reader Road and in an upland area that is to the east of West Branch Alum Creek; the nearest drainage is of Turkey Run. This is part of the Alum Creek-Scioto River watershed. The site size is considered to be 4,105 sq m and its dimensions are 71.2 m north-south by 74.4 m east-west. The site limits appear to extend to the north and south (outside) of the survey limits for this project.

The historic period artifacts date from the nineteenth to early twentieth century (Table 3; Figure 48). A sherd of whiteware with a backstamp was identified. This indicated it was made at the Buffalo Pottery Company, which was in operation since 1901 (Lang 1995). There are transfer print and Spongeware from the site that are indicative of middle to late nineteenth century manufacture (Majewski & O’Brien 1987). The remainder of the historic period artifact assemblage is not indicative of a specific temporal period.

Inspection of an atlas dating from 1871 does not indicate any residence/building at this location. An early twentieth century topographic map, indicates that there was a residence at this location or the immediate vicinity. There are no buildings evident at this location according to modern topographic maps (Figure 2).

There was one prehistoric period artifact identified from this site. This is the proximal portion of a Kirk Corner Notched point (Figure 48) that was made from Upper Mercer chert. The base is nearly straight and it is nearly squared on the sides. There is moderate grinding evident on the base. The remaining distal portion if slightly beveled. This tool would have functioned as a knife. Kirk points date from the Early Archaic period from about 7500-6900 BC (Justice 1987:71).

This site was evaluated for its eligibility for the NRHP. This portion of the site that is within the survey corridor lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory and history of the area. The site has a numerically and functionally limited and diffuse artifact assemblage. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

33MW0200

This site is a prehistoric period isolated find spot that was identified surface collection of a tilled field (Figure 17). The bare ground surface visibility in this field was at 100 percent. Intensified inspection of the surrounding area was conducted to identify additional materials and further examine the horizontal site limits. The site is located to the east of Kilbourne-Cardington Road and is west of Pompey Road. The site is located a gently sloping bluff margin that is east of an unnamed tributary of West Branch Alum Creek; this is part of the Alum Creek/Scioto River watershed. Isolated artifact finds have a site size that is considered to be 1 sq m.
The artifact that was identified from this site is a secondary thinning flake of Upper Mercer chert (Table 3). The artifact is functionally indicative of bifacial reduction activity; it is not regarded as being temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

33MW0201

This site is a prehistoric period isolated find spot that was identified surface collection of a tilled field (Figure 17). The bare ground surface visibility in this field was at 100 percent. Intensified inspection of the surrounding area was conducted to identify additional materials and further examine the horizontal site limits. The site is located to the east of Kilbourne-Cardington Road and is west of Pompey Road. The site is located a gently sloping bluff margin that is east of an unnamed tributary of West Branch Alum Creek; this is part of the Alum Creek/Scioto River watershed. Isolated artifact finds have a site size that is considered to be 1 sq m.

The artifact that was identified from this site is a secondary thinning flake of Delaware chert (Table 3). The artifact is functionally indicative of bifacial reduction activity; it is not regarded as being temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site has a numerically and functionally limited, diffuse artifact assemblage, and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work is not deemed necessary.

Fieldwork Summary

The field investigations for this project utilized several means of sampling and documentation to address archaeological concerns. The work resulted in the identification of 10 sites, 33MW0192-201. All of these site include a prehistoric period component, which are expected in nearly all suitable settings in this area. However, site 33MW0199 dates from the historic period from about 1900. These investigations identified what is generally regarded as being short-termed occupations that likely transpired through logistical, transient hunting-foraging behavior (Binford 1980). There is an increase in the amount of Upper Mercer/Nellie chert in this area, which can be expected since the outcrops are not too far from the survey area and within the same watershed.

There have been very few sites identified in this part of Ohio. This is primarily because amateurs tend to not record them and this area has not been the subject of much
development that would involve professional cultural resource surveys. These investigations provided useful information regarding the types of sites, conditions, and prehistoric land use in this area.

**APE Definition and NRHP Determination**

The APE is a term that must be applied on an individual project basis. The nature of the project or undertaking is considered in determining the APE. This may include areas that are off the property or outside of the actual project’s boundaries to account for possible visual impacts. This project involves the replacement of structures within an existing electric line corridor. The work is to be conducted in a lowly populated area that is in southeastern Marion County and west-central Morrow County. The project involves the removal of older wooden H-frame structures that are in a state of disrepair and replacing them with newer metal structures. The archaeological investigations were conducted for the footprint of the planned construction activities and includes the work areas for the new structures and their access roads.

These investigations identified 10 archaeological sites, 33MW0192-201. These sites are not considered to be significant as they lack sufficient integrity. These are low-density prehistoric period sites and one historic period scatter that can be frequently identified in this region. The archaeological aspect of this project addressed the footprint of the planned construction areas. There were 10 sites identified and these are not considered to be historic properties and the planned construction will not impact any significant archaeological deposits.

There are no buildings present within the APE that are older than 50 years. These investigations did not identify any significant cultural deposits and a finding of no historic properties affected is deemed appropriate.

**Recommendations**

In March, April, and August of 2016, Weller & Associates, Inc. conducted Phase I archaeological investigations for the approximately 18.5 km (11.5 mi) Fulton Station to Windfall Switch 138kV Rebuild Project in Richland Township, Marion County and Cardington/Westfield/Lincoln Townships, Morrow County, Ohio. The archaeological investigations involved surface, subsurface testing, and visual inspection and resulted in the identification of 10 sites, 33MW0192-201. These are prehistoric period isolated artifacts, lithic scatters, and a historic period artifact scatter/prehistoric period isolated find spot; these sites are not considered to be significant. It is Weller’s opinion that this planned work will not affect any significant archaeological deposits. No further archaeological work is considered to be necessary.
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Figure 44. View of the conditions east of CR-169.
Figure 45. View of the conditions at the eastern end of the project facing west.

Figure 46. A disturbed shovel probe from the project.
Schematic of a Test Unit Profile

Blount Silt Loam (Blg1A1)

Ap  10YR4/3 Dark Brown silt loam

B  10YR4/6 Dark Yellowish Brown silty clay loam

Provenience:  Test Unit 5
Depth to Subsoil:  30 cm
Excavator:  MS

Figure 47.  A typical shovel test unit excavated within the project.
Figure 48. Some of the artifacts from the project.
Figure 49. Portions of the USGS 1999 Ashley and 1988 Marengo, Ohio 7.5 Minute Series (Topographic) maps indicating the location of the project and sites MW192 - MW201.
Appendix A

OAI Files for MW0031 and MW0149
Continuation Sheet: Specify Section & Item (use additional Continuation Sheets if necessary)

No. 33 (w3) Quad. ASHLEY 7 1/2 Culture
Name  
Location  E 335 900  N 448 4200

Excavated by:
Reference:

Type of Site: Camp

Location of material: SW Carved

UTM Coordinates
Easting: 335905
Northing: 4483180

7.5 Quad:  
Quad. Date:

T: 7N  R: 18W Sect.: 1 1/4 Sect.: NE
Township Name: Cardington
Major Drainage: Olentangy River
Minor Drainage: Wheatstone Creek
OHIO ARCHAEOLOGICAL INVENTORY

*Response required for acceptance of form

A. Identification

*1. Type of Form (select as many as appropriate):
   X New Form   Revised Form   Transcribed Data
2. County   Morrow
3. Trinomial State Site Number   33-MW-149
4. Site Name (s)
5. Project Site Number   96-501-3
6. Other State Site Number
7. Source (of Item A.5. and/or A.6.)

B. Location

1. UTM Zone   16 or X 17
   Easting   3 379 8 0
   Northing   4 823 2 0
2. Latitude   °   "   "
   Longitude   °   "   "
3. Township   IN   Range 17W   Not Applicable
   Section 2   1/4 Section: SW   SE   NW   NE
   Township Name   Westfield
4. Quadrangle Name   Ashland, Ohio
5. Quadrangle Date   1961   Photo Inspected 1973
6. Confident of Site Location   Yes   No

C. Ownership

1. Name (s)
   Address
   City/Town, State, Zip
   Phone ( )
2. Tenant (if any)
   Address
   City/Town, State, Zip
   Phone ( )
3. Ownership Status (select only one, as appropriate):
   X Private (single)   Private (multiple)   Local Govt.
   State Govt.   Federal Govt.   Multiple Govt.
   Mixed-Govt./Private   Unknown

D. Temporal Affiliations

*1. Affiliations Present (select only one, as appropriate):
   X Prehistoric and Historic
   Prehistoric   Historic
   Unknown   Unrecorded

© 1985
Prehistoric

*2. Prehistoric Temporal Period(s) Represented (select as many as appropriate):

- Unassigned Prehistoric
- Paleoindian
- Archaic: Unassigned Early Middle Late
- Woodland: Unassigned Early Middle Late
- Late Prehistoric Protohistoric Other (specify)

*3. Minimum Number of Prehistoric Temporal Periods Represented

*4. Basis for Assignment of Prehistoric Temporal Period(s) (select as many as appropriate):

- Diagnostic Artifacts
- Diagnostic Features
- Radiometric
- Unrecorded
- Other (specify)

5. Prehistoric Cultural Component(s) Represented (see manual):

a. 

b. 

c. 

d. 

e. 

f. 

6. Describe how Prehistoric Temporal Period(s) and Cultural Component(s) were determined (list diagnostic artifacts and/or features; include type names, attach photographs and/or illustrations, and identify researcher). When listing artifacts and/or features please specify Prehistoric Cultural Component(s) by using letter designations from Item D.5.

7. Categories of Prehistoric Materials Present at Site (select as many as appropriate):

- Lithics
- Ceramics
- Metal
- Faunal Remains
- Floral Remains
- Human Skeletal Remains
- Unrecorded
- Other (specify)

8. Specific Prehistoric Cultural Materials Collected:

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
<th>Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distal Blade Fragments</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Historic

*9. Affiliation Present (select only one, as appropriate):

- Aboriginal
- Non-Aboriginal
- Both
- Undetermined

*10. Historic Temporal Period(s) Represented (select as many as appropriate):

a. Pre-1795
b. 1796-1829
c. 1830-1849
d. 1850-1879
e. 1880-1899
f. 1900-1929
g. 1930-1949
h. 1950-1974
i. 1975-2000
j. Historic
k. 18th Century
l. 19th Century
m. 20th Century
n. Historic Aboriginal
11. Minimum Number of Historic Temporal Periods Represented: Four

12. Basis for Assignment of Historic Temporal Period (s) (select as many as appropriate):
   - Diagnostic Artifacts
   - Diagnostic Architectural Remains
   - Diagnostic Features
   - Documentary Evidence
   - Oral Tradition
   - Unrecorded
   - Other (specify)

13. Describe how Historic Temporal Period (s) were determined (list any diagnostic architectural remains, diagnostic artifacts and/or features; include type names, attach photographs and/or illustrations, and identify researcher). When listing artifacts and/or features specify Historic Temporal Period (s) by using letter designations from Item D.10.

pecanware - a, b, c
redware - a, b, c, d
cut nails - b, c, d

Researcher: E. Joane Harris

14. Functional Categories of Historic Materials Present at Site (select as many as appropriate):
   - Kitchen
   - Toys & Games
   - Military
   - Architectural
   - Agricultural
   - Clothing
   - Other (specify)

15. Specific Historic Cultural Materials Collected:

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brich window glaze</td>
<td>3</td>
</tr>
<tr>
<td>Cut staggner nail</td>
<td>3</td>
</tr>
<tr>
<td>Edge decorated pecking</td>
<td>1</td>
</tr>
<tr>
<td>Red ware</td>
<td>1</td>
</tr>
</tbody>
</table>

General

16. Describe Prehistoric and/or Historic Cultural Materials observed but not collected. State reason (s) for not collecting.

Numerous small pieces of brick fragments were observed but not collected.

17. Affiliated Ohio Historic Inventory Site Number and Name:
E. Physical Description

1. Archaeological Setting (select only one, as appropriate):
   - Rockshelter/Cave
   - Open
   - Unrecorded
   - Unknown
   - Submerged
   - Other (specify)

2. Prehistoric Site Type (select as many as appropriate):
   - Habitation: ________ Camp ________ Village ________ Hamlet ________ Unspecified Habitation
   - Extractive: ________ Quarry ________ Workshop
   - Ceremonial: ________ Unspecified Mound ________ Earth Mound ________ Stone Mound
   - ________ Effigy Mound ________ Mound Group ________ Hilltop Enclosure
   - ________ Geometrical Earthwork ________ Cemetery ________ Isolated Burial(s)
   - Petroglyph/Pictograph
   - Other: ________ Unknown ________ Unrecorded ________ Other (specify)

3. Historic Site Type (select as many as appropriate):
   - ________ Residential ________ Commercial ________ Social ________ Government
   - ________ Religious ________ Educational ________ Mortuary ________ Recreation
   - ________ Subsistence ________ Industrial ________ Health Care ________ Military
   - ________ Transportation ________ Unrecorded ________ Unknown
   - Other (specify)

4. State the bases on which site type assignment(s) were made.
   

5. Site Condition (select only one, as appropriate):
   - ________ Undisturbed ________ Disturbed - Extent Unknown ________ Fully disturbed
   - ________ Destroyed ________ Unrecorded ________ Unknown

6. Dominant Agent(s) of Disturbance (select as many as appropriate):
   - ________ None Apparent ________ Agriculture ________ Historic Construction ________ Water
   - ________ Transportation ________ Archaeological Excavation ________ Mining ________ Vandalism
   - ________ Unrecorded ________ Other (specify)

7. Nature of Disturbance/Destruction:

8. Current Dominant Land Use (see manual):
   - Agriculture

9. Land Use History:
   - Area has been under cultivation since the early nineteenth century

10. Site Elevation 30.7 Meters A.M.S.L. (elevation to be taken from UTM point)

11. Physiographic Setting of Site (select only one, as appropriate):
   - ________ Lake Plain ________ Lexington Peneplain ________ Unglaciated Plateau
   - ________ Till Plain ________ Glaciated Plateau ________ Unrecorded
12. Glacial Geomorphology (select only one, as appropriate):

- Not Applicable
- Kansan Ground Moraine
- Illinoian Ground Moraine
- Illinoian Outwash
- Wisconsin Ground Moraine
- Wisconsin Outwash
- Unrecorded
- Other (specify)

13. Regional Geomorphological Setting (select only one, as appropriate):

- Stream Valley
- Upland Hill Slope
- Beach Ridge
- Hill or Ridge Top
- Lake Plains Interfluvial Zone
- Unrecorded

14. Local Environmental Setting (select only one, as appropriate):

- Terrace: Unknown
- T-1
- T-2
- T-3
- T-4
- Beach Ridge
- Terrace Remnant
- Natural Levee
- Floodplain
- Low Rise on Floodplain
- Alluvium
- Island
- Kame
- Drumlín
- Esker
- Moraine
- Glacial Hummock
- Wetland Hummock
- Bluff
- Bluff Base
- Bluff Edge
- Saddle
- Hill or Ridge Top
- Closed Depression
- Unrecorded
- Other (specify)

15. Soils:

- Soil Association: Blount-Pawnee
- Soil Series-Phase/Complex: Blount Silt loam 0-2% slope
- USDA
- Soil Survey of Morrow County, Ohio
- 1993

16. Down Slope Direction (select only one, as appropriate):

- N
- NW
- NE
- E
- All
- Flat
- S
- SW
- SE
- W
- Unrecorded

17. Slope Gradient (percent): 0-2%

18. Drainage System (see manual):

- Major Drainage: (specify)
- Minor Drainage: (specify)

19. Closest Water Source (select only one, as appropriate):

- Permanent Stream
- Lake/Pond
- Ephemeral Stream
- Permanent Spring
- Swamp/Bog
- Intermittent Spring/Seep
- Slough/Oxbow Lake
- Artificial Lake/Pond (historic sites only)
- Artificial Stream/Ditch (historic sites only)
- Unrecorded
- Other (specify)

20. Horizontal Distance to Closest Water Source 300 (meters from UTM point)

21. Elevation Above Closest Water Source 2 (meters A.M.S.L. from UTM point)

F. Reporting Information

1. Investigation Type (select as many as appropriate):

- Reported
- Examination of Collection
- Surface Collection
- Auger/Soil Corer
- Shovel Test(s)
- Test Pit(s)
- Test Trench(es)
- Deep Test(s)
- PZ or Humus Removal
- Testing/Excav. (strategy unknown)
- Mitigation/Bulk Excavation
- Aerial Photograph
- Remote Sensing (specify)
- Chemical Analysis (specify)
- Unrecorded
- Other (specify)
2. Surface Collection Strategy (select as many as appropriate):
   - Not Applicable
   - Greb Sample
   - Diagnostics
   - Controlled-Unknown
   - Controlled-Sample
   - Other (specify)

3. If surface collection strategy is Controlled-Total, Controlled-Sample, or Other, describe methodology and percentage.

4. Surface Visibility (select only one, as appropriate):
   - None
   - Less than 10%
   - 51-90%
   - 91-100%
   - 11-50%
   - Unrecorded

5. Describe surface conditions.

6. Site Area (square meters) 3180

7. Basis for Site Area Estimate (select only one, as appropriate):
   - Guessed
   - Historic Maps
   - Aerial Photograph
   - Taped
   - Transit/Alidade
   - Range Finder
   - Other (specify)

8. Confident of Site Boundaries: No

9. Estimated Percentage of Site Excavated

10. Name of Form Preparer
    - Patricia M. Bennett
    - Unrecorded
    - Unknown

11. Institution
    - GA-41-066-77

12. Date of Form (year/month)
    - 1997

13. Field Date (year/month)
    - 1997

14. Time Spent at Site
    - 1.5 hours

15. Weather Conditions
    - Cool and misty

16. Name(s), Address(es), Phone Number(s) of Local Informants

17. Artifact Repository (ies)
    - OTHER

18. Name(s), Address(es), Phone Number(s) of Owners of Collections From Site (attach inventories of private collections).
19. Photographs (select as many as appropriate):
   No. of Slides  —  No. of Prints  2
   Aerials:  —  Black/White  —  Color  —  Infrared
   —  None

20. Name and Address of Institution Where Photos Are Filed (include photo log number if available)
   Gray & Pape Co.
   1318 Main St.
   Cincinnati, Ohio 45210

21. National Register Status (select only one, as appropriate):
   —  National Register Property†
   —  Determined Eligible for National Register†
   —  National Register Status Not Assessed
   —  Removed from National Register†
   —  Determined Not Eligible†
   †Determination made by Keeper of the National Register (date) ________

22. State Registry Status (select only one, as appropriate):
   —  State Registry Listed†
   —  Not Assessed for State Registry
   —  Removed from State Registry†
   —  Determined Not Eligible†
   †Determination made by Ohio Historical Society (date) ________

23. Discuss the potential significance of the site (does it meet National Register and/or State Registry criteria of significance in your opinion? Why or why not? Upon what evidence have you based your opinion?)

   This historic site may be associated with a structure depicted on the 1871 Monroe County atlas along the north side of Hurst Road. Further work in the form of archival and archaeological testing need to be accomplished in order to determine potential significance.

24. Special Status (select only one, as appropriate):
   —  None
   —  Wilderness Area
   —  Wildlife Preserve
   —  Park
   —  Scenic River
   —  Nature Preserve
   —  Forest
   —  Military Installation
   —  Archaeological Preserve
   —  Archaeological District
   —  Unknown
   —  Other (specify) ________
G. References - List Primary Documentary References (see manual):
1. **Proposed Cardinal-Galion Transmission Line in Monroe County, Ohio**

H. Radiometric Dates
1. Materials (s) Dated
   Date (uncorrected C14 years)
   Laboratory
   Sample #
   Reference (s)

2. Materials (s) Dated
   Date (uncorrected C14 years)
   Laboratory
   Sample #
   Reference (s)

3. Additional Radiometric Dates  Yes  No
   (use Continuation Section to list other dates)

I. Description of Site
1. State physical description of the site and its setting, including dimensions, features (with measurements), nature and location of artifacts and concentrations, extent and location of disturbances, etc.

Site 33Mw-3 is an historic site situated on the north side of Hunt Road in Segment 1 Field A (Figure 02-5). The site consists of a small collection of historic and prehistoric artifacts recovered from the plowzone layer in ten shovel tests. Site dimensions are 350 feet (110 meters) north-south by 100 feet (30 meters) east-west. A single prehistoric distal flake of Upper Mercer was also recovered. Historic materials recovered from this site include 11 brick fragments, 4 cut nails, 1 redware sherd, and 1 pearlware sherd.

Eighteen historic artifacts were recovered from Site 33Mw03. Date-specific information was derived from one pearlware sherd (1780-1830), one redware sherd (1750-1900), and four cut nails (1815-1870s). The majority of artifacts were functionally classified as Architectural debris (n=15) and consisted of nails and brick fragments. Two ceramic sherds were identified as domestic refuse. The high relative frequency of architectural debris indicates a structure was associated with the assemblage. While the presence of domestic refuse suggests a residential setting for the assemblage, the relative frequency of domestic refuse is too low to make a determination.
2. Discuss the relationship between the site and other known sites in the area in terms of location, physical characteristics, size, etc.

This site is very similar in setting and artifact assemblage to Site 33MW 147 which is located on the south side of Hunt Road.

J. Continuation Section: Specify Section & Item (use additional Continuation Sheet(s) if necessary)
**K. Sketch Map or Copy of Project Map of Site**

Include north arrow and scale. Attach a Xeroxed section of the appropriate U.S.G.S. quadrangle on a separate sheet. Outline total area surveyed and include locations of all identified sites on the Xerox of the quadrangle.

SEE CONTINUATION SHEET

<table>
<thead>
<tr>
<th>Site Location</th>
<th>Distance (m)</th>
<th>Direction/Bearing from Site to Terrain Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunt Road</td>
<td>10</td>
<td>South</td>
</tr>
<tr>
<td>Council Trees</td>
<td>10</td>
<td>East</td>
</tr>
<tr>
<td>Graduation Road</td>
<td>609</td>
<td>East</td>
</tr>
</tbody>
</table>
Continuation Sheet: Specify Section & Item (use additional Continuation Sheets if necessary)

E13 Change to Upland Hill Slope
E14 Change to Moraine

E18 Change to Major: Olentangy River
Minor: Wheatstone Creek

F8 Change to No
KDS 3/11/03
LETTER OF NOTIFICATION FOR
FULTON-WINDFALL 138 KV SWITCH

Appendix C  Cultural Historic Investigation
October 28, 2016

Appendix C  Cultural Historic Investigation
Cultural Historic Investigations for the Proposed Fulton Station-Windfall
Switch 138 kV Rebuild Project,
Lincoln and Cardington Townships, Morrow County, and Richland
Township, Marion County, Ohio

Prepared for:
AEP Transco Ohio
700 Morrison Road
Gahanna, OH 43230

Prepared by:
Weller & Associates, Inc.
1395 West Fifth Ave
Columbus, Ohio 43212
(614) 485-9435

Written by:
Jacquelyn Lehmann, M.H.P

____________________________
Christopher L. Nelson
Principal Investigator

May 11, 2016

Lead Agency: Ohio Power Siting Board
Ohio State Historic Preservation Office ID: not assigned
ABSTRACT

Under contract with AEP Transco Ohio, Weller & Associates, Inc., conducted a cultural historic survey for the proposed rebuild of the existing Fulton Station-Windfall Switch 138kV Rebuild line within Morrow and Marion Counties, Ohio. This is part of a larger electric line considered as the West Mount Vernon -South Kenton 138 kV. The existing right-of-way is the only route currently under consideration and the replacement structures will be constructed within the cleared right of way. The existing wooden H-frames will be replaced with steel monopoles. The line is approximately 11.5 miles in length and located in Lincoln, and Cardington Townships, Morrow County, and Richland Township, Marion County. Preliminary provided information indicates that the route will cross a mixture of agricultural, and residential properties. The project is subject to Ohio Power Siting Board Application requirements under Chapter 4906 of the Ohio Revised Code. The investigations, including a background literature review and intensive field survey, were conducted in accordance with the guidelines set forth by the Ohio State Historic Preservation Office and Ohio Administrative Code Chapter 4906-15-06(F), which concerns socioeconomic and land use impact analysis in applications for certificates for electric transmission facilities through the Ohio Power Siting Board.

The investigations were conducted in two parts: cultural historic (architectural) survey and archaeological investigation. This report covers the results of the cultural historic survey of the entire area that may be affected by the proposed development of the project. The cultural historic investigations consisted of a systematic survey of all properties 50 years of age or older that are situated within 1,000 feet of the proposed project site. The results of the archaeological investigations will be presented in a separate report.

In total, twenty-three individual properties 50 years of age or older were identified within the survey APE that may have a direct line-of-sight to the project. Photographs and structural data for each property were collected in the field. Twenty-one properties were determined not eligible for listing in the National Register of Historic Places. The remaining two properties within the survey area were advanced to detailed study, but not found eligible for listing in the National Register of Historic Places. Therefore, Weller & Associates, Inc. recommends that no historic properties will be affected by the project.
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<td>Assessment of Effects</td>
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<tr>
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INTRODUCTION

Under contract with AEP Transco Ohio, Weller & Associates, Inc., conducted a cultural historic survey for the proposed rebuild of the existing 13.6 mile Fulton Station-Windfall Switch 138kV Rebuild Project in Lincoln, and Cardington Townships, Morrow County, and Richland Township, Marion County, Ohio. The existing right-of-way (ROW) is the only route currently under consideration and the replacement structures will be constructed within the cleared ROW. The existing wooden H-frames will be replaced with steel monopoles. The existing right-of-way for this project includes an approximate 100 ft. wide transmission line corridor. The lines will be rebuilt for continued operation at 138 kV.

The investigations, including a background literature review and intensive field survey, were conducted in accordance with the guidelines set forth by the Ohio State Historic Preservation Office (SHPO) and Ohio Administrative Code Chapter 4906-15-06(F), which concerns socioeconomic and land use impact analysis in applications for certificates for electric transmission facilities through the Ohio Power Siting Board (OPSB).

The investigations were conducted in two parts: cultural historic (architectural) survey and archaeological investigation. This report covers the results of the cultural historic survey of the entire area that may be affected by the proposed development of the project. The cultural historic investigations consisted of a systematic survey of all properties 50 years of age or older that are situated within 1,000 feet of the centerline of the proposed project.

The proposed transmission line will follow the right-of-way for the existing line to be replaced in a general north-south and west-east orientation. The line runs through portions of Morrow and Marion Counties. A large majority of the line will run through rural areas and agricultural areas with intermittent forested areas dominating the landscape.

The documentation of properties in the field, archival research, and report authoring were conducted by Christopher Nelson who served as Principal Investigator for the project and Jacquelyn Lehmann. Mapping for the project was generated by Jacquelyn Lehmann. The field survey and archival research was conducted on May 10, 2016.

RESEARCH DESIGN

The purpose of the cultural historic portion of the project was to identify any historic properties in the area that may be affected by the proposed development of the project. These effects may be direct or indirect. Direct effects occur within the boundaries of the project, while indirect effects can occur for areas outside the direct boundaries and can include visual, audible, and atmospheric effects that are associated with the development of the project. Based on the nature of the project, the cultural historic investigations consisted of a systematic survey of all properties 50 years of age or older that are situated within 1,000 feet of the centerline of the proposed project.
METHODS

This survey was conducted following the guidelines established in Archeology and Preservation: Secretary of the Interior’s Standards and Guidelines (National Park Service 1983) and Guidelines for Local Surveys: A Basis for Preservation Planning. National Register Bulletin No. 24 (National Park Service 1997). When properties are identified, they are subjected to the guidelines outlined in National Register Bulletin 15, How to Apply the National Register Criteria for Evaluation (National Park Service 1996).

There are four criteria for eligibility to be listed in the National Register of Historic Places (NRHP). Only one of these criteria must be met to be considered eligible for listing; however, oftentimes more than one of the criteria is met. The criteria for significance include:

A. Association with historic events or patterns of events;
B. Association with persons important to our past;
C. Exceptional or important architectural characteristics; and/or
D. Data potential.

Architectural properties typically qualify under Criteria A, B, or C. Criterion D is typically reserved for archaeological sites.

In addition to meeting at least one of the established criteria, the appropriate integrity must also be retained by the resource. There must be integrity of location, design, workmanship, setting, materials, feeling, and association.

Prior to commencing fieldwork, a literature review was conducted to determine if any previously recorded architectural properties, NRHP properties, or Ohio Genealogical Society cemeteries were present within the APE. Historic maps were also reviewed to aid in guiding the fieldwork and detecting the possible presence of properties 50 years of age or older within the APE. Background research was also conducted in order to establish a historic context of the region. The context was compiled by utilizing materials from the SHPO, archival materials at the respective county courthouses, local libraries, and several online resources. The establishment of the historic context helped to guide the interpretation of the field survey results.

The field survey included a systematic approach to identifying all properties 50 years of age or older within the survey APE (1,000 feet to either side of project) of the proposed project. Some areas will be blocked from having a direct line-of-sight to the proposed project by topography and forested areas. The areas that did not have a direct line-of-sight to the project were visually verified in the field and the survey did not include all of these areas. An advantage for this project is the presence of an existing line to gauge the direct line-of-sight from properties through field verification during the survey. Each property identified within the survey area that will have a direct line-of-sight was photographed and annotated on appropriate mapping and included in the report. Each property identified within the survey area was photographed and annotated on appropriate mapping and included in the report. The approach was to identify those properties with NRHP potential, followed by a more intensive documentation and evaluation of those potentially eligible aboveground resources. The comprehensive survey
involved recording of each property 50 years of age or older to a baseline level of documentation.

Weller focused on the ground plan, the height, and the roof configuration of each structure, noting all visible materials, appendages, extensions, or other alterations. Housing types and structural details within the report and utilized on OHI forms follow the terminology used by geographers Jakle, Bastian, and Meyer (1988), architectural historians McAlester and McAlester (1992), and Gordon (1992). Weller then supplemented the field survey data with an examination of available tax records, aerial photographs, and cartographic sources.

A summary and analysis of the field data detailing the overall architectural character of the survey APE is included as a narrative in the report. Photographs of every resource that is 50 years of age or older that were not advanced to detailed study as discussed below are included as an appendix to the report (Appendix A). Weller historians analyzed the data and identified properties that are clearly not eligible for the NRHP due to a lack of significance or loss of integrity, as well as identified potential NRHP properties and advanced them to a more advanced level of documentation and evaluation.

**Definitions**

Within this report, an *architectural resource* is defined as aboveground buildings or structures that are 50 years of age or older. A *historic property* is defined as a building, structure, object, or site that is listed in, or considered eligible for listing in, the NRHP. An *effect* is defined as an activity associated with the project that alters a characteristic of a historic property that qualified it for inclusion in the NRHP.

**HISTORIC CONTEXT**

*Morrow County History*

Morrow County is number eighty-five chronologically of Ohio’s eighty-eight counties. The reason for its late beginning lies in the contention through which people who, for one reason or another, opposed the establishment of Marion as the county seat of Marion County. At that time, 1824, the land that would become Morrow was the outlying land of four counties: Richland, Knox, Delaware, and the source of contention – Marion. Soon however, the contention shifted from external to internal and the main opposition to progress came from the various towns within the would-be county. Gilead and Chester were the main rivals in this race for Morrow’s county seat. Finally, in 1848, the Gilead backers saw their side win the contest as the state legislature formally accepted their bid for the establishment of the new county centered around Mt. Gilead (Baskin 1880; Baughman 1911; Howe 1888; Morrow County Centennial Committee [MCCC] 1979).

Though Morrow County was not established until after the pioneer period ended, there were certainly those who settled the land that would eventually come under the jurisdiction of Morrow and they deserve brief recognition. Evan Holt was the first to settle on what would become Morrow County land. He built a home near present day Chesterville in 1807. Asa
Mosher built the county’s first mill in 1819. The first schools in the county began about 1817. Even Johnny Appleseed reportedly roamed through Morrow during the War of 1812 giving the settlers the latest news of the war and, of course, planting orchards (Baskin 1880; Baughman 1911; Howe 1888; MCCC 1979; Morrow County History Book Committee [MCHBC] 1989).

Progress of education, culture and industry came with the establishment of schools churches and transportation lines. Subscription schools provided education early on, with the first union school coming to Mt. Gilead in 1853. Through history, there have been three colleges in Morrow: Hesper Mount Seminary in 1845, Iberia College from 1855, and Alum Creek Academy some twenty years later. The “Old School Baptists” built the first church in 1816. This building was also the home of the first organized community school. The early roadways were the Delaware-Mansfield road and the Worthington-New Haven Road both before 1825. Railroads began construction in the late 1840’s and the New York Central ran the first cars beginning in 1851 (Baskin 1880; MCCC 1979; MCHBC 1989).

The first village to have a plat was Friendsborough in 1822; probably so named because of the Quaker influence among the earliest pioneers of Morrow County. However, the town was as meek as its namesakes and the town never developed beyond its own plat. The first surviving town was Whetstone. Jacob Young laid it out two years after Friendsborough submitted their plat. In his honor, the inhabitants also hailed themselves from Youngstown; but in 1832, the name permanently became Mt. Gilead. The state granted the town incorporation in 1844. Other towns came in subsequent years. Today there are only eight others in the county: Bloomfield, Cardington, Sparta, Iberia, Marengo, Chesterville, Edison, and Fulton (Baskin 1880; Baughman 1911; Howe 1888; MCCC 1979).

Outside of these few communities, the rest of the county focuses on agriculture and save a couple manufacturing enterprises early on farming has been the only business to have any significant export. Early on, Morrow County had several small quarries and a few clay foundries but they were mostly small affairs all of which had closed by the middle 1900’s (Baughman 1911; MCCC 1979; MCHBC 1989).

Morrow County has exported more people of significance than product. There have been members of Congress, Senators, Governors, members of State Legislature, Major League Baseball players, and even a U.S. President born in Morrow. Warren G. Harding was born in Blooming Grove in 1865 (MCCC 1979; MCHBC 1989).

Lincoln Township History

What is now Lincoln Township was surveyed in 1803 and then again in 1807 by Jesse Spenser (Baughman & Bartlett 1911). The earliest known settlement in Lincoln Township is what was eventually known as Peru. Benjamin Collins was the first person to purchase land here. He was an elderly man who emigrated from Juniws, New York. Edmund Buck and Amos Earl arrived and built a cabin, purchased by Collins, and a bachelor’s hall. Alexander Edgar settled in the area and established a store and distillery in 1818. Most trade in this area happened in Edgar’s store until the businesses were opened in nearby Chesterville and
Cardington Township was organized in the year 1821. It is five square miles and located in the western portion of Morrow County. Neighboring townships include Canaan to the north, Lincoln to the southeast, and Richland to the west. The topography in Cardington Township is primarily level with little to no rolling or hilly areas. Due to the lay of the land, the drainage is poor. The land consists of quarries and a silty clay loam that yields an excellent crop (Perrin 1880).

Before the arrival of European influence, dense forests of maple, oak, beech populated the majority of Cardington Township. Hundreds of acres of vegetation were later cleared for agricultural and construction purposes. Much of the land was low and wet upon arrival which limited space for settlement. Performing this task during this period was a difficult undertaking considering it was primarily done by hand. The timber was used to build homes, barns, churches and other various crafting. Early European settlers came from surrounding states such as Indiana, Kentucky, Pennsylvania and New York. Many of whom have ancestries that can be traced back to Germany, Ireland, and France (Howe 1888).

Agriculture was the leading source of economic success in Cardington Township during its infancy. The main products were wheat, barley, corn, potatoes and cheese. Other less crucial staples included honey, peaches and apples. During the early years of settlement, children were essential to the success of crops and livestock. Many children stayed home from school in order to help their families tend the land and other household duties. Schoolhouses during this time were typically one-room construction with a fireplace implemented for winter sessions. They not only served as a place of education but also as a place of religious practice (Perrin 1880).

Spirituality played an important role within the culture of the township. The primary denomination is Methodist. Gatherings at the church allowed the residents to seek spiritual solace, discuss local issues and organize community events. The church doctrine was not only used to direct one’s personal life but was implemented into school teachings and public policy as well (Howe 1888).
Marion County History

Nathan Brundige and Nathaniel Wyatt were the first settlers within modern Marion County, coming to the region in 1806 while the land was still part of Franklin County. The Greenville Treaty Line placed most of the modern county in Indian Territories, a small portion was part of the Virginia Military District, and the remainder was within U.S. Military Lands. Migration was mild until the end of the War of 1812 and after new treaties had been struck with the very near Indian neighbors. The 1820s brought new citizens from New England, Pennsylvania, Kentucky, and Virginia. From the 1830s to the 1860s a significant influx of international immigration added to Marion County’s citizenry, mostly German and later Irish (Howe 1888; Jacoby 1907; Leggett, Conway, & Co. 1883; Wilson and Wilson 1950).

The State Legislature created Marion County in 1820. The name they chose to honor the Revolutionary general and hero Francis Marion, “The Swamp Fox.” For its first three years, Marion depended on Delaware County for its judicial and legal affairs. In 1823, Marion detached itself and thenceforward functioned as a separate county. The borders of the county changed in 1845 and 1848 with the erection of Wyandot and Morrow Counties respectively. The State appointed three men to choose the new county a seat of justice; and in 1822, they selected the town of Marion (Jacoby 1907; Leggett, Conway, & Co. 1883; Wilson and Wilson 1950).

Eber Baker, acting as a land agent for the proprietor Alexander Holmes, came to Holmes’ holdings in 1821 and found some squatters at a place they were calling ‘Jacob’s Well.’ Baker and Holmes’ son Samuel laid out a town the following spring. This location was the one that the county seat agents chose in 1822 and the little whole in the forest became Marion. The village became a town in 1830, but slow growth warranted a revocation of the charter until increased population and demand commanded a reinstatement of town status in 1847. City class came in 1890. Marion remains the only city in the county. Other villages are Caledonia, Green Camp, LaRue, Morral, New Bloomington, Prospect, and Waldo (Jacoby 1907; Wilson and Wilson 1950).

Marion City continues to be a center for business, industry, commercial, and residential development. Today, Marion County is dominated by the agricultural industry along with some gravel quarrying found in the southern portion of the county. Clay was also quarried in the early days for use in pottery and brick manufacture. One of the most famous items within Marion is the grave of President Warren G. Harding, who lived in Marion for some time during his adult life (Jacoby 1907; Wilson and Wilson 1950).

Richland Township History

Richland Township was organized in the year 1827. It is located in the southeast portion of Marion County. Neighboring townships include Claridon to the north, Cardington to the east, Waldo to the southeast, and Pleasant to the west. The topography is level with little to no rolling areas (Howe 1854). In the years prior to European settlement dense forests populated Richland Township. The timber was later removed to clear space for agricultural land. It was also used for the construction of homes, barns, churches, and schools. The main
crops consisted of corn, wheat, potatoes, and apples. During this period, children were steady farm hands who helped with farm duties when not attending school. Schooling frequently fell low on the list of priorities for farm children. Children would often skip lessons to instead work on the farm (Winter 1917).

School houses were typically constructed with one room and a fireplace for winter sessions. During the early years of settlement, schools were not given an adequate amount of funding. The windows were composed of greased paper and text books were in short supply. Funding was not only lacking in the educational system, but in the church as well (Howe 1854).

Churches in the beginning stages of Richland Township’s settlement were similar to the school houses. They too consisted of one room cabins. Religion was an important facet within the culture. The primary denomination was Methodist. Gatherings at the church allowed for residents to seek spiritual solace, discuss local issues and organize community events (Howe 1854).

RESULTS

The project APE consisted of primarily rural farms and rural residential areas. The residences within the APE consists of a mixture of older farm dwellings as well as modern houses. One bridge was additionally identified. (see maps in Appendix B). The terrain within the APE was mostly flat or lightly rolling with agricultural fields.

In total, 23 individual resources 50 years of age or older were identified within the survey APE that may have a direct line-of-sight to the project. Summarized data for all documented structures within the APE is provided in Table 1 (Appendix C).

In light of the results of the field survey, the historic context, the condition of the resources, and larger setting, Weller concluded that 21 of the 23 remaining individual architectural resources are clearly not individually eligible for the NRHP. These architectural resources are not individually eligible for inclusion in the NRHP under Criteria A, B, or C due to a lack of associative significance, a loss of integrity, or a lack of character defining features. A large portion of these resources have experienced multiple alterations that have compromised their historic integrity. Photographs of each of these resources are provided in Appendix A.

Following is a summary of the twenty-one structures that were not advanced to detailed study. The houses dated to an age range of ca. 1880 to 1948, with most structures dating to within the later nineteenth and early twentieth centuries. All resources were of vernacular design with no specific subtypes represented, or had deteriorated beyond identification. The twenty-one resources were dominated by farm house types and one bridge.

The numbers of stories on the houses were represented by one story (1), one and a half story (9), two story (9) dwellings, and two and a half story dwellings (1). All structures were of wood frame (20), or metal construction (1). Foundation materials were of concrete block (2), brick (1), cut stone (10), and unknown foundation types (7) that were not visible due to vegetation coverage or distance from the ROW. Concrete abutments support the bridge.
Windows within the structures had various arrangements, but primarily consisted of modern replacement windows, 4/4, 6/6, and 8/8. All of the structures featured alterations of some type and many had additions. Most of the homes lacked integrity either through replacement of their historic materials, significant alterations, or physical deterioration. All of the resources lacked character defining features or have since otherwise undergone significant alterations.

The two remaining identified resources exhibited potential NRHP significance and they were advanced to detailed study and are discussed below. The resources were placed within the historic context and Weller evaluated them to determine if they had potential for inclusion in the NRHP. Since Weller did not have access to the interiors of the properties and access to resources was generally restricted to the public right-of-way during the survey, no documentation for any resource interiors are included unless available through archival records.

S-15/MRW0026809/Beatty Road House

Location: Beatty Road, Cardington, OH

Construction Date: ca. 1870

Description: The Beatty Road House is a Vernacular/Gothic Revival, two story, wood frame house. The house rests on a cut stone foundation. The house is sheltered by a cross gable, asphalt shingle roof with decorative fish scale shingles and steeply pitched gables. The house is protected by vinyl siding and has modern fenestration. A single story addition is attached at the northerly elevation. (Figure 6).

A large single story outbuilding with a metal, side gable roof, and vinyl siding is located to the south of the house. The building has two small 2/2 windows at the gabled ends and two garage doors. Aerial photos show that the outbuilding was constructed after 1995.

History: The Beatty Road House was owned by John Ocker in 1871, at which time the property was 49.5 acres in size. John Ocker was born in Pennsylvania in 1804 and later married a woman named Margaret, with whom he had a daughter also named Margaret. Beatty Road may have been named for Saml Beatty who owned 106.5 acres of property adjacent to Beatty Road in 1871. A building is present on the property in the 1915 Marengo topographic map. The transmission line appears as early as the 1961 Ashley topographic map.

NRHP Evaluation: The Beatty Road House was not found to be substantially associated with events, patterns of events, or individuals important to our history in a manner necessary for inclusion in the NRHP under Criteria A and B. The Beatty Road house has experienced alterations such as modern vinyl siding, fenestration, and roofing, as well as an addition. As such the house is not eligible under Criterion C.

S-21/MAR0047614/Crothers House

Location: 5556 Ashley Road, Cardington, OH
**Construction Date:** 1858

**Description:** The Crothers House is an 1858 Vernacular style, wood frame house. The two story, three bay wide house rests on a cut stone foundation. The house is sheltered by a side gabled asphalt shingle roof, which supports a brick chimney at the southerly end. The house is protected by vinyl siding. A large single story addition is attached at the front elevation. The addition includes a two car garage, open porch, and entryway. (Figure 7).

A stone outbuilding built in 1875 was likely used as a summer kitchen. The kitchen is sheltered by a gabled metal roof, and is located at the northerly elevation. A barn built in 1950 is located adjacent to the kitchen.

**History:** Aerial photographs indicate that the addition of the Crothers House was built after 1995. The property is shown to belong to an M. Burggraff in 1878, at a size of 40 acres. M. Burggraff may have been Martin Burggraff, who lived in Richland Township from 1839 until his death in 1920. Burggraff was married to Anna M. Haberman until her death in 1864, with whom he had three children. The 1915 Marengo topographic map shows the presence of a building on the Crothers House property. The transmission line appears as early as the 1960 Ashley topographic map.

**NRHP Evaluation:** The Crothers house was not found to be substantially associated with events, patterns of events, or individuals important to our history in a manner necessary for inclusion in the NRHP under Criteria A and B. The house does not represent a specific architectural type or subtype. The house has been altered with vinyl siding, modern fenestration, and has had significant additions that have changed the façade and entry, as well as the original massing. As such, the Crothers house is not eligible under Criterion C.

**CONCLUSIONS**

Under contract with AEP Transco Ohio, Weller & Associates, Inc., conducted a cultural historic survey for the proposed rebuild of the existing 11.5 mile Fulton Station-Windfall Switch 138kV Rebuild Project in Lincoln, and Cardington Townships, Morrow County, and Richland Township, Marion County, Ohio. The existing right-of-way (ROW) is the only route currently under consideration and the replacement structures will be constructed within the cleared ROW. The existing wooden H-frames will be replaced with steel monopoles. The existing right-of-way for this project includes an approximate 100 ft. wide transmission line corridor. The lines will be rebuilt for continued operation at 138 kV.

The project is subject to Ohio Power Siting Board Application requirements under Chapter 4906 of the Ohio Revised Code.

The investigations were conducted in two parts: cultural historic (architectural) survey and archaeological investigation. This report covers the results of the cultural historic survey of the entire area that may be affected by the proposed development of the project. The results of the archaeological investigations are presented in a separate report.
The APE contained a mix of a bridge, a few commercial properties, modern and older residential properties, of which farm houses were predominant. Overall the survey area was contained within rural agricultural areas.

The viewshed within the survey APE includes several modern intrusions. Besides the existing 138 kV transmission line, there are multiple additional transmission, telephone, and other types of lines crossing throughout the APE and areas beyond. In addition, there are several cell towers, and other tall tower types within portions of the APE. The APE was largely rural during the nineteenth century as it still is today. Many of the modern rural residential areas occur along the outer boundaries of farmlands where farmers have parceled off small lots for modern residential development. While some older farmsteads remain, a vast majority of the residential properties and the structures on them have been modified.

In total, 23 individual resources 50 years of age or older were identified within the survey APE that may have a direct line-of-sight to the project. Twenty-one resources were determined not eligible for listing in the National Register of Historic Places. The remaining 2 properties within the survey area were advanced to detailed study, but not found eligible for listing in the National Register of Historic Places. Therefore, Weller & Associates, Inc. recommends that no historic properties will be affected by the project.
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Figures
Figure 1. Political map of Ohio showing the approximate location of the project.
Figure 2. Portion of the USGS 1988 Marengo, and the 1999 Ashley, Ohio 7.5 Minute Series (Topographic) maps indicating the location of the project and previously recorded resources in the study area.
Figure 3. Portion of the USGS 1999 Ashley, Ohio 7.5 Minute Series (Topographic) map indicating the location of the project and previously recorded resources in the study area.
Figure 4. Aerial map indicating the location of the eastern portion of the project and previously recorded resources in the study area.
Figure 5. Aerial map indicating the location of the western portion of the project and previously recorded resources in the study area.
Figure 6: S-15/MRW0026809/Beatty Road House Southern Elevation.

Figure 7: S-21/MAR0047614/Crothers House.
Appendix A

Photographs of All Resources 50 Years of Age or Older Not Advanced to Detailed Study
Appendix B

Project Mapping Resource Locations
Fulton Station to Windfall Switch
Fulton Station to Windfall Switch
Fulton Station to Windfall Switch
Fulton Station to Windfall Switch
Appendix C

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<td>Domestic - Single Dwelling</td>
<td>Ca.1900</td>
<td>Vernacular</td>
<td>Side Gable</td>
<td>House</td>
<td>4 2 1.5</td>
<td>Side Gable</td>
<td>Wood Frame</td>
<td>Cut Stone</td>
<td>Vinyl</td>
<td>Asphalt Shingle</td>
<td>6/6</td>
<td>Yes</td>
<td>Yes</td>
<td>Not Eligible</td>
</tr>
<tr>
<td>5-9</td>
<td>Morrow</td>
<td>Appendix B: Map 2</td>
<td>Building</td>
<td>Domestic - Single Dwelling</td>
<td>Domestic - Single Dwelling</td>
<td>Ca.1900</td>
<td>Vernacular</td>
<td>Side Gable</td>
<td>House</td>
<td>3 1 1.5</td>
<td>Side Gable</td>
<td>Wood Frame</td>
<td>Cut Stone</td>
<td>Vinyl</td>
<td>Metal</td>
<td>Modern Replacement</td>
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<td>Vernacular</td>
<td>Gable Front</td>
<td>House</td>
<td>2 1 2</td>
<td>Side Gable</td>
<td>Wood Frame</td>
<td>Unknown</td>
<td>Clapboard</td>
<td>Metal</td>
<td>Modern Replacement</td>
<td>Yes</td>
<td>Yes</td>
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Table 1. Summary Data on Survey Results
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<th>Architectural Style</th>
<th>Façade</th>
<th>Orientation</th>
<th>Material</th>
<th>Replacement</th>
<th>Eligible</th>
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<td>Appendix B</td>
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<td>Vernacular</td>
<td>Side Gable House</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>Side Gable</td>
<td>Wood Frame</td>
</tr>
<tr>
<td>5-13</td>
<td>Morrow</td>
<td>Appendix B</td>
<td>Domestic - Single Dwelling</td>
<td>Ca.1900</td>
<td>Vernacular</td>
<td>Gable Front</td>
<td>3</td>
<td>1</td>
<td>1.5</td>
<td>Gable Front</td>
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<td>5-14</td>
<td>Morrow</td>
<td>Appendix B</td>
<td>Bridge Transportation</td>
<td>1915</td>
<td>Pratt Through Truss</td>
<td>Pratt Through Truss</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Metal</td>
<td>Concrete Abutments</td>
</tr>
<tr>
<td>5-15/</td>
<td></td>
<td></td>
<td>Domestic - Single Dwelling</td>
<td>Ca.1870</td>
<td>Gothic Revival/Vernacular</td>
<td>Cross Gable House</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>Cross Gable</td>
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</tr>
<tr>
<td>5-16</td>
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<td>Domestic - Single Dwelling</td>
<td>Ca.1900</td>
<td>Vernacular</td>
<td>Side Gable House</td>
<td>3</td>
<td>2</td>
<td>1.5</td>
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<td>5-17</td>
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<td>Vernacular</td>
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<td>Vernacular</td>
<td>Cross Gable House</td>
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<td>1.5</td>
<td>Cross Gable</td>
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<td>Ca.1900</td>
<td>Vernacular</td>
<td>Cross Gable House</td>
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<td>1</td>
<td>2</td>
<td>Cross Gable</td>
<td>Wood Frame</td>
</tr>
<tr>
<td>5-20</td>
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<td>Appendix B</td>
<td>Domestic - Single Dwelling</td>
<td>Ca.1900</td>
<td>Vernacular</td>
<td>Cross Gable House</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>Cross Gable</td>
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</tr>
<tr>
<td>5-21/</td>
<td></td>
<td></td>
<td>Domestic - Single Dwelling</td>
<td>1858</td>
<td>Vernacular</td>
<td>Side Gable House</td>
<td>3</td>
<td>2</td>
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<td>Side Gable</td>
<td>Wood Frame</td>
</tr>
<tr>
<td>5-22</td>
<td>Marion</td>
<td>Appendix B</td>
<td>Domestic - Single Dwelling</td>
<td>Ca.1900</td>
<td>Vernacular</td>
<td>Side Gable House</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>Side Gable</td>
<td>Wood Frame</td>
</tr>
<tr>
<td>5-23</td>
<td>Marion</td>
<td>Appendix B</td>
<td>Domestic - Single Dwelling</td>
<td>1948</td>
<td>Vernacular</td>
<td>Vernacular Cottage</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>Multiple Façade Orientation</td>
<td>Wood Frame</td>
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</tbody>
</table>
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

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1.0 Introduction

AEP Ohio Transmission Company (AEP) is proposing to rebuild/upgrade 74 structures on the Fulton Station to Windfall Switch 138 kilovolt (kV) Transmission Line in Marion and Morrow Counties, Ohio (Figure 1, Appendix A). The Project will include the rebuild/upgrade of these structures within the existing right-of-way (ROW) and construction of associated access roads needed to perform the rebuild/upgrade activities (Figure 1, Appendix A). The existing ROW, including workspaces surrounding each of the 74 structures to be replaced, and proposed access roads were surveyed for wetlands, waterbodies, and potential threatened, endangered, and rare species habitat by Stantec Consulting Services Inc. (Stantec) biologists on September 26 and 27, 2016. The approximate locations of features located up to approximately 50 feet outside of the ROW limits 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 ROW. These features are shown on the Figure 2 maps in Appendix A as “approximate” wetlands, streams (waterways), and upland drainage features.
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 surveys, 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 and/or OHWM locations of each waterway were identified and surveyed using a handheld sub-meter accuracy GPS unit and mapped with 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.
3.0 Results

3.1 Terrestrial Habitat

Stantec completed field surveys within the Project area on September 26 and 27, 2016, 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 upland drainage features identified within the Project area. Figure 3 (Appendix A) shows the habitats and locations of any identified rare, threatened or endangered species habitat observed within the Project area during the rare, threatened, and endangered species habitat assessment surveys. 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). Completed wetland determination, ORAM, QHEI, and HHEI data forms are included in Appendix D.

Table 1. Vegetation Communities and Land Cover Found within the Fulton Station to Windfall Switch 138 kV Transmission Line Rebuild Project Area, Marion and Morrow Counties, Ohio

<table>
<thead>
<tr>
<th>Vegetation Communities and Land Cover Types within the Project Area</th>
<th>Degree of Human-Related Ecological Disturbance</th>
<th>Unique, Rare, or High Quality?</th>
<th>Approximate Acreage Within Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural/Row Crop</td>
<td>Extreme Disturbance/ Ruderal Community (dominated by planted non-native row crop species, opportunistic invaders, and/or native highly tolerant taxa)</td>
<td>No</td>
<td>84.6</td>
</tr>
<tr>
<td>Hay Field</td>
<td>Extreme Disturbance/ Ruderal Community (dominated by planted non-native herbaceous species, opportunistic invaders, and/or native highly tolerant taxa)</td>
<td>No</td>
<td>4.5</td>
</tr>
<tr>
<td>Pasture</td>
<td>Extreme Disturbance/ Ruderal Community (dominated by planted non-native species, opportunistic invaders, and/or native highly tolerant taxa)</td>
<td>No</td>
<td>2.2</td>
</tr>
<tr>
<td>New Field</td>
<td>Extreme Disturbance/ Ruderal Community (dominated by planted non-native herbaceous species, opportunistic invaders, and/or native highly tolerant taxa)</td>
<td>No</td>
<td>0.6</td>
</tr>
<tr>
<td>Old Field</td>
<td>Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders and/or native highly tolerant taxa)</td>
<td>No</td>
<td>3.8</td>
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</table>
### Vegetation Communities and Land Cover Types within the Project Area

<table>
<thead>
<tr>
<th>Vegetation Community</th>
<th>Degree of Human-Related Ecological Disturbance</th>
<th>Unique, Rare, or High Quality?</th>
<th>Approximate Acreage Within Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Lawn</td>
<td>Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa)</td>
<td>No</td>
<td>2.9</td>
</tr>
<tr>
<td>Existing Paved Road</td>
<td>Extreme Disturbance/existing paved road</td>
<td>No</td>
<td>8.4</td>
</tr>
<tr>
<td>Early Successional/Second Growth Deciduous Forest</td>
<td>Intermediate Disturbance (dominated by plants that typify a stable phase of a native community that is recovering from some disturbance), dominated by young trees and saplings and various woody vegetation such as oaks (Quercus spp.), maples (Acer spp.), blackberry (Rubus sp.), and multiflora rose (Rosa multiflora). These areas usually contain a thick understory dominated by native and non-native taxa.</td>
<td>No</td>
<td>1.1</td>
</tr>
<tr>
<td>Palustrine Emergent Wetland</td>
<td>Moderate Disturbance/Natural Community (dominated by native herbaceous species and/or opportunistic invaders)</td>
<td>No</td>
<td>1.3</td>
</tr>
<tr>
<td>Palustrine Scrub-Shrub Wetland</td>
<td>Moderate Disturbance/Natural Community (dominated by native herbaceous species, native woody species, and/or opportunistic invaders)</td>
<td>No</td>
<td>0.0</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>109.5</strong></td>
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### 3.2 WETLANDS

#### Table 2. Summary of Wetland Resources Found within the Fulton Station to Windfall Switch 138 kV Transmission Line Rebuild Project Area, Marion and Morrow Counties, Ohio

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Photo Numbers</th>
<th>Isolated?</th>
<th>Wetland Classification</th>
<th>ORAM Score</th>
<th>ORAM Category</th>
<th>Delineated Area (acres) within Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 1</td>
<td>1, 2, 3</td>
<td>No</td>
<td>PEM/PFO</td>
<td>28.5</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Wetland 2</td>
<td>9, 10, 11</td>
<td>No</td>
<td>PEM/PSS</td>
<td>8.5</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>1.4</strong></td>
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</table>
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Photo Numbers¹</th>
<th>Isolated?</th>
<th>Wetland Classification²</th>
<th>ORAM Score⁶</th>
<th>ORAM Category⁶</th>
<th>Delineated Area (acres) within Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Appendix C – Representative Photographs
² Wetland classification is based on Cowardin et al. (1979).
³ PEM = Palustrine Emergent Wetland
⁴ PSS = Palustrine Scrub-Shrub Wetland
⁵ PFO = Palustrine Forested Wetland
⁶ ORAM Score and Category are based on the Ohio Rapid Assessment Method for Wetlands v. 5.0 (Mack 2001).
⁷ This acreage is all PEM wetland; PFO portion of wetland is located outside of existing ROW.

3.3 STREAMS

Table 3. Summary of Stream Resources Found within the Fulton Station to Windfall Switch 138 kV Transmission Line Rebuild Project Area, Marion and Morrow Counties, Ohio

<table>
<thead>
<tr>
<th>Stream Name</th>
<th>Photo Numbers¹</th>
<th>Receiving Waters</th>
<th>Stream Flow Regime²</th>
<th>Stream Evaluation Method</th>
<th>Stream Evaluation Score</th>
<th>OHWM Width (feet)³</th>
<th>Delineated Length (feet) within Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream 1 (Turkey Run)</td>
<td>2, 3</td>
<td>West Branch Alum Creek</td>
<td>Intermittent</td>
<td>HHEI</td>
<td>56</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Stream 2</td>
<td>7, 8</td>
<td>Turkey Run</td>
<td>Ephemeral</td>
<td>HHEI</td>
<td>33</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Stream 3 (West Branch Alum Creek)</td>
<td>12, 13</td>
<td>Alum Creek</td>
<td>Intermittent</td>
<td>QHEI</td>
<td>28</td>
<td>8</td>
<td>107</td>
</tr>
<tr>
<td>Stream 4 (Mud Run)</td>
<td>14, 15</td>
<td>Whetstone Creek</td>
<td>Intermittent</td>
<td>QHEI</td>
<td>40</td>
<td>4</td>
<td>169</td>
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<tr>
<td>Stream 5 (Whetstone Creek)</td>
<td>17, 18</td>
<td>Delaware River</td>
<td>Perennial</td>
<td>QHEI</td>
<td>65</td>
<td>35</td>
<td>101</td>
</tr>
<tr>
<td>Stream 6 (Shaw Creek)</td>
<td>19, 20</td>
<td>Whetstone Creek</td>
<td>Perennial</td>
<td>QHEI</td>
<td>46</td>
<td>30</td>
<td>128</td>
</tr>
<tr>
<td>Stream 7</td>
<td>22, 23</td>
<td>Shaw Creek</td>
<td>Ephemeral</td>
<td>HHEI</td>
<td>34</td>
<td>3.5</td>
<td>103</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>808</td>
</tr>
</tbody>
</table>

¹ Appendix C – Representative Photographs
² Stream classification is based on Federal Register/Vol. 67, No. 10 (USACE 2002).
³ OHWM = Ordinary High Water Mark
### 3.4 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 4. Summary of Potential Ohio State-Listed Species within the Fulton Station to Windfall Switch 138 kV Transmission Line Rebuild Project Area, Marion and Morrow County, Ohio

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>State Listing</th>
<th>Known to Occur in Marion County</th>
<th>Known to Occur in Morrow County</th>
<th>Known Within One Mile of Project Area</th>
<th>Habitat Preference</th>
<th>Potential Habitat Observed in Project Area?</th>
<th>Impact Assessment</th>
<th>ODNR Comments/Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loggerhead Shrike</td>
<td>Lanius ludovicianus</td>
<td>E</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Breeding habitats for the loggerhead shrike are open country with scattered trees and shrubs, savanna, desert scrub and, occasionally, open woodland (NatureServe 2016)</td>
<td>Yes</td>
<td>Yes</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td>Circus cyaneus</td>
<td>E</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>This bird hunts low over grassland and breed in large marshes and grasslands (ODNR 2016b).</td>
<td>No</td>
<td>No</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td><strong>Butterflies/Moths</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regal Fritillary</td>
<td>Speyeria idalia</td>
<td>E</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Occurs in tall grass prairie remnants (Butterflies and Moths of North America 2016). This species prefers open grassland, savannah, and old field habitats; all with varying degrees of hydrology. Heavily treed areas are not utilized due to the impediment of movement and migration (NatureServe 2016).</td>
<td>Yes</td>
<td>Yes</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Eastern Massasauga</td>
<td>Sistrurus catenatus catenatus</td>
<td>E</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>This species is found in wet prairies, sedge meadows, and early successional fields. Preferred wetland habitats are marshes and fens. They avoid open water and seem to prefer the cover of broad-leaved plants, emergents, and sedges (ODNR 2016b).</td>
<td>Yes</td>
<td>Yes</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td><strong>Mussels</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Snuffbox</td>
<td>Epioblasma triquetra</td>
<td>E</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>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 2016).</td>
<td>No</td>
<td>No</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
<td>State Listing</td>
<td>Known to Occur in Marion County</td>
<td>Known to Occur in Morrow County</td>
<td>Known Within One Mile of Project Area</td>
<td>Habitat Preference</td>
<td>Potential Habitat Observed in Project Area?</td>
<td>Impact Assessment</td>
<td>ODNR Comments/Recommendations</td>
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</tr>
<tr>
<td>Clubshell</td>
<td>Pleurobema clava</td>
<td>E</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>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 2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.</td>
<td>No</td>
<td>No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td>Rabbitsfoot</td>
<td>Quadrula cylindrica</td>
<td>E</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>The typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bar or gravel and cobbles close to the fast current. Found in medium to large rivers in sand and gravel shoals (NatureServe 2016).</td>
<td>No</td>
<td>No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td>Rayed Bean</td>
<td>Villosa fabalis</td>
<td>E</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>The rayed bean is generally known from smaller headwater creeks, but records exist in larger rivers. They usually are found in or near shoal or riffle areas, and the shallow wave-washed area of glacial lakes (NatureServe 2016).</td>
<td>Yes</td>
<td>Potentially suitable habitat was identified in the Project area (Stream 5, Whetstone Creek). Due to no in-stream work being planned by AEP, there are no impacts anticipated to this species.</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td>Pondhorn</td>
<td>Uniomerus tetralasmus</td>
<td>T</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>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 buffered 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 2016).</td>
<td>Yes</td>
<td>Potentially suitable habitat was identified in the Project area (Stream 5, Whetstone Creek). Due to no in-stream work being planned by AEP, there are no impacts anticipated to this species.</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
<tr>
<td>Creek Heelsplitter</td>
<td>Lasiorhynchus compressa</td>
<td>SOC</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>This species occurs principally in rivers and streams of various sizes, even in very small creeks and is rare in lakes. It is found on substrates of gravel, sand, or mud (NatureServe 2016).</td>
<td>Yes</td>
<td>Potentially suitable habitat was identified in the Project area (Stream 5, Whetstone Creek). Due to no in-stream work being planned by AEP, there are no impacts anticipated to this species.</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
</tbody>
</table>

Mammals
### Fulton Station to Windfall Switch 138 kV Transmission Line Rebuild Project, Marion and Morrow Counties, Ohio

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>State Listing</th>
<th>Known to Occur in Marion County</th>
<th>Known to Occur in Morrow County</th>
<th>Known Within One Mile of Project Area</th>
<th>Habitat Preference</th>
<th>Potential Habitat Observed in Project Area</th>
<th>Impact Assessment</th>
<th>ODNR Comments/Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana bat</td>
<td>Myotis sodalis</td>
<td>E</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>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 2015b). Rodents have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primary use caves for hibernacula, although they are also known to hibernate in abandoned underground mines (Brack et al. 2010).</td>
<td>No</td>
<td>No potential hibernacula or potential roost trees were observed within the Project area. Therefore, no adverse effects are anticipated.</td>
<td>ODNR Office of Real Estate comments are pending.</td>
</tr>
</tbody>
</table>

1+Endangered; T=Threatened; SDC =Species of Concern
2According to Ohio Department of Natural Resources, State Listed Wildlife Species by County (ODNR 2016a).
3According to Ohio Natural Heritage Program (Appendix B).
Table 5. Summary of Potential Federally-Listed Species within the Fulton Station to Windfall Switch 138 KV Transmission Line Rebuild Project Area, Marion and Morrow Counties, Ohio

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Federal Listing</th>
<th>Known to Occur in Marion County</th>
<th>Known to Occur in Morrow County</th>
<th>Habitat Preference</th>
<th>Potential Habitat Observed in Project Area?</th>
<th>USFWS Comments/Recommendations</th>
<th>Impact Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Indiana Bat</td>
<td>Myotis sodalis</td>
<td>E</td>
<td>Yes</td>
<td>Yes</td>
<td>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 2016). 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).</td>
<td>No</td>
<td>No potential hibernacula or potential roost trees were observed within the Project area. Therefore, adverse effects to this species are not anticipated.</td>
<td>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. Following this seasonal tree clearing recommendation should ensure that no adverse effects to the Indiana bat will occur.</td>
</tr>
<tr>
<td>Northern Long-eared Bat</td>
<td>Myotis septentrionalis</td>
<td>T</td>
<td>Yes</td>
<td>Yes</td>
<td>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).</td>
<td>No</td>
<td>No potential hibernacula or potential roost trees were observed within the Project area. Therefore, adverse effects to this species are not anticipated.</td>
<td>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. Following this seasonal tree clearing recommendation should ensure that no adverse effects to the northern long-eared bat will occur.</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Massasauga</td>
<td>Sistrurus catenatus</td>
<td>T</td>
<td>Yes</td>
<td>No</td>
<td>They are found in wet prairies, sedge meadows, and early successional fields. Preferred wetland habitats are marshes and fens. They avoid open water and seem to prefer the cover of broad-leaved plants, emergents, and sedges (ODNR 2016b).</td>
<td>Yes</td>
<td>Some potentially suitable habitat is present within the Project area (old field; pasture; emergent wetland habitats). However, no adverse effects to this species are anticipated due to the overall rarity of this species and lack of known occurrences within Project vicinity.</td>
<td>Due to the Project type, size, and location, the USFWS does not anticipate adverse effects to this species.</td>
</tr>
<tr>
<td><strong>Mussels</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Rayed Bean</td>
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<td>The rayed bean is generally known from smaller headwater creeks, but records exist in larger rivers. They usually are found in or near shoal or riffle areas, and the shallow wave-washed area of glacial lakes (NatureServe 2016).</td>
<td>Yes</td>
<td>Potentially suitable habitat was identified in the Project area (Stream 5, Whetstone Creek). Due to no in-stream work being planned by AEP, adverse effects to this species are not anticipated.</td>
<td>Due to the Project type, size, and location, the USFWS does not anticipate adverse effects to this species.</td>
</tr>
</tbody>
</table>
### Fulton Station to Windfall Switch 138 kV Transmission Line Rebuild Project, Marion and Morrow Counties, Ohio

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Federal Listing(^1)</th>
<th>Known to Occur in Marion County(^2)</th>
<th>Known to Occur in Morrow County(^2)</th>
<th>Habitat Preference</th>
<th>Potential Habitat Observed in Project Area?</th>
<th>Impact Assessment</th>
<th>USFWS Comments/Recommendations</th>
</tr>
</thead>
</table>

\(^1\)E=Endangered; T=Threatened
\(^2\)According to USFWS (2015a).
4.0 Conclusions and Recommendations

Stantec conducted a wetland and waterbodies delineation and a preliminary habitat assessment for threatened and endangered species or their habitats within the Project area on September 26 and 27, 2016. During the field surveys, one palustrine emergent/palustrine forested wetland totaling approximately 1.3 acres (all acreage within Project area is palustrine emergent wetland; palustrine forested wetland portion was outside of the existing ROW) and one palustrine emergent/palustrine scrub-shrub wetland totaling approximately 0.1 acres were identified within the Project area. See Table 2 for more information regarding the wetland classifications and ORAM categories for wetlands identified within the Project area. Two ephemeral streams totaling approximately 203 linear feet in length, three intermittent streams totaling approximately 376 linear feet in length, and two perennial streams totaling approximately 229 linear feet in length were delineated within the Project area. USGS-named streams within the Project area include Turkey Run, West Branch Alum Creek, Mud Run, Whetstone Creek, and Shaw Creek. See 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 fieldwork. The delineations were performed by experienced and qualified professionals using regulatory agency-accepted practices and sound professional judgment.

The Project area includes potentially suitable habitat for the following state-listed threatened and endangered species: loggerhead shrike, regal fritillary, eastern massasauga, rayed bean, and pondhorn. However, no occurrences of this species are known from the Project area or a one-mile radius of it, according to correspondence received from the ODNR Natural Heritage Database (NHD) (Appendix B). The ODNR NHD response letter indicated that they have no records of state-listed or federally-listed threatened and endangered species within the Project area or a one-mile radius of it. However, ODNR NHD has records of creek heelsplitter (Lasmigona compressa), a state species of concern, within one mile of the Project area. Potentially suitable habitat for creek hillsplitter is present within Whetstone Creek within the Project area. However, no impacts to this species are anticipated due to no in-stream work within Whetstone Creek being required for the Project. The ODNR NHD is also unaware of any geologic features, animal assemblages, scenic rivers, state nature preserves, parks or forests or national wildlife refuges, parks or forests within a one-mile radius of the Project area (Appendix B).

A technical assistance request letter was submitted to the USFWS. The USFWS response letter (Appendix B) indicated that, due to the project type, size, location, if caves and mines (potential bat hibernacula) will not be disturbed and seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) to avoid impacts to Indiana bats and northern long-eared bats is implemented, they do not anticipate adverse effects to any federally endangered, threatened, proposed or candidate species. 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).
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

No potential Indiana bat/northern long-eared bat roost trees or hibernacula were identified within the Project area during the field surveys. Therefore, the Project is not likely to adversely affect the Indiana bat and northern long-eared bat.

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.

A technical assistance/environmental review request letter has been sent to ODNR Office of Real Estate. However, a response has not been received as of the date of this report.
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

5.0 References


Ohio Environmental Protection Agency (OEPA). 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI).


FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT,
MARION AND MORROW COUNTIES, OHIO


Appendix A  Figures

A.1  FIGURE 1 – PROJECT LOCATION MAP
Client/Project
AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Notes
2. Data Sources Include: Stantec, AEP, NADS
3. Background: USGS 7.5' Topographic Quadrangles

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Prepared by HDB on 2016-10-07
Technical Review by MP on 2016-10-10
Independent Review by DJG on 2016-10-20

ST 746
ST 95
ST 61
ST 229
ST 529
£¤ 42
§¨¦ 71

Marion and Morrow Counties, Ohio
Project Area
Fulton Station 40.453486, -82.842689

Legend
- Existing Substation
- 138 kV Transmission Line
- Project Area

Grid:
0 1,000 2,000 Feet
1:24,000 (at original document size of 11x17)

Fulton Station, Windfall Switch - 138 kV Transmission Line Rebuild Project

Project Location Map
Windfall Switch, 40.498241, -82.997003

Legend
- Existing Substation
- 138 kV Transmission Line
- Project Area

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Data Sources Include: Stantec, AEP, NADS
Background: USGS 7.5’ Topographic Quadrangles

Notes:
2. Data Source: B. S. Sillar, AEP, NADE
3. Background: USGS 7.5’ Topographic Quadrangles

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A.2 FIGURE 2 – WETLAND AND WATERBODY DELINEATION MAP
Figure No. 2

Title: Wetland and Waterbody Delineation Map

Project Location:
Morrow County, Ohio

Client/Project:
AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Figure No.
1
2
3
4

Notes:
2. Data Sources: Stantec, AEP, NADL, FEMA, USGS, USFWS
3. Orthophotography: 2015 NAIP

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100’ RDW and 30’ Access Road)
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Waterway
  - Approximate Upland Drainage Feature
  - 100-year Flood Zone
  - 100-year Floodway
- Field Delineated Wetland
  - Emergent Wetland
  - Scrub-Shrub Wetland

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

Data Sources Include: Stantec, AEP, NADL, FEMA, USGS, USFWS
Orthophotography: 2015 NAIP

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Figure No. 2

Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Tamonkini Line Rebuild Project

Figure No.
1
2
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19
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Title
RD 169
RD 25
RD 155
RD 168
RD 254
RD 169
RD 24
RD 167

Notes
1.
2.
3.

Legend

AEP Substation
Structure to be Replaced
138 kV Transmission Line
Access Road
Project Area (100' RDW and 30' Access Road)
Wetland Determination Sample Point
Existing Culvert
Existing Culvert
Approximate Upland Drainage Feature
Upland Drainage Feature
Approximate Upstream Waterway
Field Delineated Waterway
Field Delineated Wetland
Emergent Wetland
Scrub-Shrub Wetland
Approximate Wetland

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

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Marion and Morrow Counties, Ohio
Prepared by HDB on 2016-10-07
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Independent Review by DJG on 2016-10-20

Figure No. 2

Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Tamonkini Line Rebuild Project

Figure No.
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Title
RD 169
RD 25
RD 155
RD 168
RD 254
RD 169
RD 24
RD 167

Notes
1.
2.
3.

Legend

AEP Substation
Structure to be Replaced
138 kV Transmission Line
Access Road
Project Area (100' RDW and 30' Access Road)
Wetland Determination Sample Point
Existing Culvert
Existing Culvert
Approximate Upland Drainage Feature
Upland Drainage Feature
Approximate Upstream Waterway
Field Delineated Waterway
Field Delineated Wetland
Emergent Wetland
Scrub-Shrub Wetland
Approximate Wetland

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Data Sources Include: Stantec, AEP, NADS, FEMA, USGS, USFWS
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Page 4

Wetland and Waterbody Delineation Map

AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Figure No. 2

Notes
2. Data Sources Include: Stantec, AEP, NAOS, FEMA, USGS, USFWS
3. Orthophotography: 2015 NAIP

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' RDW and 30' Access Road)
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Approximate Wetland
- Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- 100-year Flood Zone
- 100-year Floodway
- Field Delineated Wetland
- Scrub-Shrub Wetland
- Upland Drainage Feature
- Approximate Waterway
- Field Delineated Waterway
- Approximate Waterway
- Upland Drainage Feature

Orthophotography: 2015 NAIP

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Independent Review by DJG on 2016-10-20

Marion and Morrow Counties, Ohio
Prepared by HDB on 2016-10-07
Technical Review by MP on 2016-10-10
Independent Review by DJG on 2016-10-20
Figure 2

Wetland and Waterbody Delineation Map

Project Location

Client/Project

Figure No.

Title

Notes

2. Data Sources: Stantec, AEP, NAOS, FEMA, USFWS, USGS
3. Orthophotography: 2015 NAIP

Legend

- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' RDW and 30' Access Road)
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Wetland and Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Upland Drainage Feature
- Right-of-Way
- 100-year Flood Zone
- 100-year Floodway
- Field Delineated Wetland
- Emergent Wetland
- Approximate Wetland
- Approximate Waterway
- Upland Drainage Feature
- Field Delineated Waterway
- Waterbody
- Field Delineated Waterway
- Approximate Waterway

Orthophotography: 2015 NAIP

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for all errors or omissions in the data. The recipient agrees to hold Stantec, its owners, employees, consultants and agents, harmless from any and all claims arising in any way from the received or provision of the data.

Prepared by HDB on 2016-10-07
Technical Review by MP on 2016-10-10
Independent Review by DJG on 2016-10-20
Figure No. 2

Title: Wetland and Waterbody Delineation Map

Project Location: AEP Ohio Transmission Company
Client/Project: Fulton Station - Windfall Switch
Project: 138 kV Transmission Line Rebuild Project

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' RDW and 30' Access Road)
- Wetland
- Approximate Wetland Sample Point
- Existing Culvert
- Existing Culvert Sample Location
- Field Delineated Waterway
- Approximate Waterway
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Wetland
- Approximate Wetland
- 100-year Flood Zone
- 100-year Floodway
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

Notes:
2. Data Sources Include: Stantec, AEP, NAD, FEMA, USGS, USFWS
3. Orthophotography: 2015 NAIP

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Figure No. 2

Wetland and Waterbody Delineation Map

AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Notes
2. Data Sources Include: Stantec, AEP, NAD, FEMA, USGS, USFWS
3. Orthophotography: 2015 MAP

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Wetland and Waterbody Delineation Map

Figure No. 2

AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Notes
2. Data Sources Include: Stantec, AEP, NADL, FEMA, USGS, USFWS
3. Orthophotography: 2015 NAIP

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' RDW and 30' Access Road)
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Approximate Waterway
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- 100-year Flood Zone
- 100-year Floodway
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Waterway

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Revised: 2016-10-21 By: hbellone

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Wetland and Waterbody Delineation Map

Project Location: 138 kV Transmission Line Rebuild Project
Client/Project: AEP Ohio Transmission Company

Figure No.: RD 25
Title: Wetland and Waterbody Delineation Map

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100’ RDW and 30’ Access Road)
- Wetland
- Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Approximate Wetland
- 100-year Flood Zone
- 100-year Floodway
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway

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

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

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Figure No. 2

Title: Wetland and Waterbody Delineation Map

Project Location: Marion and Morrow Counties, Ohio

Client/Project: AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Notes:
2. Data Sources Include: Stantec, AEP, NADL, FEMA, USGS, USFWS
3. Orthophotography: 2015 NAIP

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Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' RDW and 30' Access Road)
- Wetland
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- 100-year Flood Zone
- 100-year Floodway
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Waterway
- Upland Drainage Feature
- Approximate Waterway

Orthophotography: 2015 NAIP

Stantec
Prepared by: HDB on 2016-10-07
Technical Review by: MP on 2016-10-10
Independent Review by: DJG on 2016-10-20

Prepared by: HDB on 2016-10-07
Technical Review by: MP on 2016-10-10
Independent Review by: DJG on 2016-10-20

Orthophotography: 2015 NAIP

Stantec
Prepared by: HDB on 2016-10-07
Technical Review by: MP on 2016-10-10
Independent Review by: DJG on 2016-10-20

Orthophotography: 2015 NAIP

Stantec
Prepared by: HDB on 2016-10-07
Technical Review by: MP on 2016-10-10
Independent Review by: DJG on 2016-10-20

Orthophotography: 2015 NAIP

Stantec
Figure No. 2

Title: Wetland and Waterbody Delineation Map

Project Location: AEP Ohio Transmission Company Fulton Station - Windfall Switch 138 kV Transmission Line Rebuild Project

Client/Project: Marion Morrow County

Notes:
2. Data Sources Include: Stantec, AEP, NAOS/FEMA, USFWS, USGS
3. Orthophotography: 2015 MAP

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Road)
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- 100-year Flood Zone
- 100-year Floodway

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Independent Review by DJG on 2016-10-20
Wetland and Waterbody Delineation Map

Figure No. 2

Title: Wetland and Waterbody Delineation Map

Project Location: AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Marion and Morrow Counties, Ohio
Prepared by HDB on 2016-10-07
Technical Review by MP on 2016-10-10
Independent Review by DJG on 2016-10-20

Notes:
1. Coordinate System - NAD 1983 StatePlane Ohio South FIPS 3401 Feet
2. Data Sources Include: Stantec, AEP, NAD3, FEMA, USGS, USFWS
3. Orthophotography: 2015 NAIP

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100’ ROW and 30’ Access Road)
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Approximate Waterway
- 100-year Flood Zone
- 100-year Floodway
- Upland Drainage Feature
- Field Delineated Waterway
- Emergent Wetland
- Scrub-Shrub Wetland

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Wetland and Waterbody Delineation Map

Project Location
Client/Project
Figure No.
Title

ST 746
Marion Morrow
15 16 17 18 19 20
RD 11
YAKE RD 149
NEWMANS CARDINGTON GROLL
RD 229 CLARIDON WESTFIELD
ASHLEY RD 147
RD 148 NEIBAUER

Notes

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

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Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Wetland
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- 100-year Flood Zone
- 100-year Floodway
- Field Delineated Waterway
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Waterway
- Approximate Waterway
Figure 2

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100° RDW and 30° Access Road)
- Wetland
- Wetland Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Watershed
- 100-year Flood Zone
- 100-year Floodway
- Field Delineated Wetland
- Emergent Wetland
- Scrub/Shrub Wetland
- Approximate Wetland

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

Notes:
2. Data Sources: Stantec, AEP, NADS, FEMA, USGS, USFWS
3. Orthophotography: 2015 Map

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Figure No. 2
Title: Wetland and Waterbody Delineation Map

Project Location: Marion and Morrow Counties, Ohio
Client/Project: AEP Ohio Transmission Company
Figure No.: 17
Title: Fulton Station - Windfall Switch 138 kV Transmission Line Rebuild Project

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' RDW and 30' Access Road)
- Wetland
- Determination Sample Point
- Existing Culvert
- Photo Location
- Field Delineated Wetland
- Wetland
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- 100-year Flood Zone
- 100-year Floodway

Notes:
2. Data Sources Include: Stantec, AEP, NAD, FEMA, USGS, USFWS
3. Orthophotography: 2015 MAP

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FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

A.3 FIGURE 3 – HABITAT ASSESSMENT MAP
Habitat Assessment Map

Figure No. 3

The habitat assessment map displays the following key features:

- **AEP Substation**: Structure to be Replaced
- **138 kV Transmission Line & Access Road**: Project Area (100' ROW and 30' Access Road)
- **Existing Culvert**: Existing Drainage Feature
- **Photo Location**: Approximate Drainage Feature
- **Field Delineated Wetland**: Approximate Wetland
- **Emergent Wetland**: Field Delineated Wetland
- **Scrub-Shrub Wetland**: Approximate Wetland
- **Agricultural/Crop Field**: Field Delineated Wetland
- **Residential Lawn**: Field Delineated Wetland
- **Maintained Lawn**: Field Delineated Wetland
- **Old Field**: Field Delineated Wetland
- **New Field**: Field Delineated Wetland
- **Early Successional/Second Growth**: Field Delineated Wetland
- **Deciduous Forest**: Field Delineated Wetland
- **Hay Field**: Field Delineated Wetland
- **Pasture**: Field Delineated Wetland
- **Agriculture/Row Crop**: Field Delineated Wetland

**Legend**

- **Field Delineated Wetland**: Field Delineated Wetland
- **Existing Road**: Existing Road
- **Residential Lawn**: Residential Lawn
- **Maintained Lawn**: Maintained Lawn
- **Old Path**: Old Path
- **New Path**: New Path
- **Early Successional/Second Growth**: Early Successional/Second Growth
- **Deciduous Forest**: Deciduous Forest
- **Hay Field**: Hay Field
- **Pasture**: Pasture
- **Agriculture/Row Crop**: Agriculture/Row Crop

**Coordinate System**: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

**Data Sources Include**: Stantec, AEP, NADS, USGS, USFWS

**Orthophotography**: 2015 NAIP

**Notes**

2. Data Sources include Stantec, AEP, NADS, USGS, USFWS
3. Orthophotography: 2015 NAIP
Figure No. 3
Title: Habitat Assessment Map

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Road)
- Existing Culvert
- Photo Location
- Field Delimited Waterway
- Approximate Waterway
- Isolated Drainage Feature
- Approximate Upland Drainage Feature
- Field Delimited Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

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

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Habitat Assessment Map

Project Location: Morrow West RD
Client/Project: Fulton Station - Windfall Switch 138 kV Transmission Line Rebuild Project
Figure No.: 3
Title: AEP Ohio Transmission Company Fulton Station - Windfall Switch 138 kV Transmission Line Rebuild Project

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

Legend:
- AEP Substation
- Project Area (100’ ROW and 30’ Access Roads)
- Existing Culvert
- Photo Location
- Field Delimited Waterway
- Approximate Waterway
- Upland Drainage Feature
- Field Delimited Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland
- Stantec

Orthophotography: 2015 NAIP

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Figure No. 3

Habitat Assessment Map

Project Location

Client/Project

Figure No.

Title

Coord/Project

AEP Ohio Transmission Company

Fulton Station - Windfall Switch

138 kV Tamomakin Line Rebuild Project

Notes

2. Data Sources Include: Stantec, AEP, N ADS, USGS, USFWS
3. Orthophotography: 2015 NAIP

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Page 5 of 20
Habitat Assessment Map

Project Location: Morrow and Marion Counties, Ohio

Client/Project: AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Figure No.: 3
Title: Habitat Assessment Map

Legend:
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Existing Culvert
- Photo Location
- Field Delimited Waterway
- Approximate Waterway
- Island Drainage Feature
- Approximate Upland Drainage Feature
- Field Delimited Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

Legend Keys:
- Field Delimited Waterway
- Existing Road
- Residential Lawn
- Maintained Lawn (Existing ROW)
- Old Field
- New Field
- Early Successional Forest
- Second Growth
- Deciduous Forest
- Hay Field
- Feature
- Agriculture/Row Crop
- Orthophotography: 2015 NAIP
- Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
- Data Sources Include: Stantec, AEP, NADS, USGS, USFWS

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

Prepared by HDB on 2016-10-10
Technical Review by MP on 2016-10-11
Independent Review by DJG on 2016-10-20

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Habitat Assessment Map

Project Location

Client/Project

Figure No.

Title

Notes

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

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Habitat Assessment Map

AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Existing Culvert
- Photo Location
- Field Delimited Waterway
- Approximate Waterway
- Island Drainage
- Feature
- Approximate Upland Drainage Feature
- Field Delimited Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

Notes:
2. Data Sources include: AEP, USGS, USFWS
3. Orthophotography: 2015 NAIP

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Habitat Assessment Map

Legend

- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100’ ROW and 30’ Access Road)
- Existing Culvert
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Islanded Drainage
- Peatland
- Approximate Upland
- Drainage Feature
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland
- Existing Road
- Residential Lawn
- Maintained Lawn (Existing ROW)
- Old Field
- New Field
- Early Successional
- Second Growth
- Deciduous Forest
- Hay Field
- Feature
- Agriculture/Row Crop
- Field
- Approximate Upland
- Drainage Feature
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

Data Sources Include: Stantec, AEP, NADS, USGS, USFWS

Orthophotography: 2015 NAIP

Notes:
2. Data Source: Stantec, AEP, NADS, USGS, USFWS
3. Orthophotography: 2015 NAIP

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Habitat Assessment Map

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Field Delineated Waterway
- Existing Road
- Residential Lawn
- Maintained Lawn
- Old Field
- New Field
- Early Successional
- Deciduous Forest
- Hay Field
- Feature
- Upland Drainage Feature
- Wetland
- Approximate Upland Drainage Feature
- Field Delineated Wetland
- Emergent Wetland
- Saltmarsh Wetland
- Approximate Wetland

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Data Sources Include: Stantec, AEP, NADS, USGS, USFWS
Orthophotography: 2015 NAIP

Notes:
2. Data Sources: Stantec, AEP, NADS, USGS, USFWS
3. Orthophotography: 2015 NAIP

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Habitat Assessment Map

Legend

- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Existing Culvert
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Island Drainage Feature
- Peatland
- Approximate Upland Drainage Feature
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

Legend

- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Existing Culvert
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Island Drainage Feature
- Peatland
- Approximate Upland Drainage Feature
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

Data Sources Include: Stantec, AEP, NADS, USGS, USFWS

Orthophotography: 2015 NAIP

Notes:
1. Coordinate System: NAD 1863 StatePlane Ohio South FIPS 2402 Feet
2. Data Sources: Stantec, AEP, NAOS, USGS & USFWS
3. Orthophotography: 2015 MAP

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Figure No. 3

Title: Habitat Assessment Map

Project Location
Client/Project:
Figure No.
Title

Marion and Morrow Counties, Ohio
Prepared by HDB on 2016-10-10
Technical Review by MP on 2016-10-11
Independent Review by DJG on 2016-10-20

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

Legend
- AEP Substation
- Structure to be Replaced
- 138 kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Existing Culvert
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Upland Drainage Feature
- Field Delineated Wetland
- Emergent Wetland
- Scrub-Shrub Wetland
- Approximate Wetland

Orthophotography: 2015 NAIP

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Habitat Assessment Map
AEP Ohio Transmission Company
Fulton Station - Windfall Switch
138 kV Transmission Line Rebuild Project

Orthophotography: 2015 NAIP

Ortho500S_03mxd_138kVRL_AEP_FultonSwitch_V1_20161021.mxd

Revised: 2016-10-21 By: hbellone

[Coordinates and other details from the map]
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

Appendix B  Agency Correspondence
September 21, 2016

Dan Godec
Stantec Consulting Services, Inc.
11687 Lebanon Rd.
Cincinnati, OH 45241

Dear Mr. Godec,

I have reviewed the Natural Heritage Database for the Fulton Station-Windfall Switch 138 kV Transmission Line Rebuild project area, including a one mile radius, in Richland Township, Marion County and Westfield, Cardington and Lincoln Townships, Morrow County, Ohio. We have one record within the project area and one mile radius. The location for the Creek Heelsplitter (Lasmigona compressa), species of concern, is shown in red on the attached map.

We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests, or other protected natural areas within a one mile radius of the project area.

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

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

Sincerely,

Debbie Woischke
Ohio Natural Heritage Program
Fulton Station-Windfall Switch 138 kV Transmission Line Rebuild Project
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 ≥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 ≥3 inches dbh cannot be avoided, we recommend that removal of any trees ≥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.
If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

[Signature]

Dan Everson

Field Supervisor

cc: Nathan Reardon, ODNR-DOW
    Kate Parsons, ODNR-DOW
October 24, 2016

Dan Godec
Stantec
11687 Lebanon Road
Cincinnati OH 45241

Re: 16-697; Request for Environmental Review, Fulton Station – Windfall Switch 138 kV Line Rebuild Project

Project: The proposed project involves rebuilding approximately 7.7 miles of the Mt. Vernon Station – Hedding Station 138 kV transmission line.

Location: The proposed project is located in Richland, Westfield, Cardington and Lincoln Townships, Marion and Morrow Counties, 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 program provided a response to a data request on September 21, 2016 and it is included in the project documentation.

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 the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, and the pondhorn (*Uniomerus tetralasmus*), a state threatened mussel. This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2016), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 10 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2016) can be found at:


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

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered and a federally threatened snake species. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as drier upland habitat. Due to the location, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the American bittern (*Botaurus lentiginosus*), a state endangered bird. Nesting bitterns prefer large undisturbed wetlands that have scattered small pools amongst dense vegetation. They occasionally occupy bogs, large wet meadows, and dense shrubby swamps. If this type of habitat will be impacted, construction should be avoided in this habitat during the species’ nesting period of May 1 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.
The project is within the range of the 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.

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/water-use-planning/floodplain-management#PUB

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
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

Appendix C Representative Photographs
Photograph 1. View of PEM wetland community within Wetland 1. Photograph taken facing northwest.

Photograph 2. View of PEM wetland community within Wetland 1. Photograph taken facing northwest.
AEP Ohio Transmission Company
Fulton Station to Windfall Switch 138kV Transmission Line Rebuild Project
Marion and Morrow Counties, Ohio

Photograph 3. View of upland (pasture habitat) at wetland determination sample point (SP-1) adjacent to Wetland 1. Photograph taken facing east.

Photograph 4. View of Stream 1 (Turkey Run). Photograph taken facing downstream/southwest.
Photograph 5. View of Stream 1 (Turkey Run). Photograph taken facing upstream/northeast.

Photograph 6. Representative view of agricultural row crop habitat. Photograph taken facing southeast.

Photograph 8. View of Stream 2. Photograph taken facing downstream/south.
Photograph 9. View of upland (hay field habitat) at wetland determination sample point (SP-5) adjacent to Wetland 2. Photograph taken facing south.

Photograph 10. View of PSS wetland community within Wetland 2. Photograph taken facing east.
Photograph 11. View of PEM wetland community within Wetland 2. Photograph taken facing west.

Photograph 12. View of Stream 3 (West Branch Alum Creek). Photograph taken facing downstream/south.
Photograph 13. View of Stream 3 (West Branch Alum Creek). Photograph taken facing upstream/northeast.

Photograph 15. View of Stream 4 (Mud Run). Photograph taken facing upstream/north.

Photograph 16. Representative view of new field habitat. Photograph taken facing southeast.
AEP Ohio Transmission Company
Fulton Station to Windfall Switch 138kV Transmission Line Rebuild Project
Marion and Morrow Counties, Ohio

Photograph 17. View of Stream 5 (Whetstone Creek). Photograph taken facing downstream/south.

Photograph 19. View of Stream 6 (Shaw Creek). Photograph taken facing downstream/southeast.

Photograph 20. View of Stream 6 (Shaw Creek). Photograph taken facing upstream/north.
Photograph 21. Representative view of pasture habitat. Photograph taken facing southeast.

Photograph 22. View of Stream 7. Photograph taken facing downstream/south.
AEP Ohio Transmission Company
Fulton Station to Windfall Switch 138kV Transmission Line Rebuild Project
Marion and Morrow Counties, Ohio


Photograph 25. Representative view of old field habitat. Photograph taken facing southeast.

Photograph 26. Representative view of residential lawn habitat. Photograph taken facing east.
Appendix D  Data Forms

D.1  WETLAND DETERMINATION DATA FORMS
**WETLAND DETERMINATION DATA FORM**

**Midwest Region**

---

**Project/Site:** Fulton - Windfall 138 kV Line Rebuild Project

**Stantec Project #:** 193704279

**Applicant:** AEP

**Investigator #1:** Aaron Kwolek

**Investigator #2:** Bill Leopold

**County:** Morrow

**State:** Ohio

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

**NWI Classification:** NA

**Landform:** Depression

**Local Relief:** Concave

**Latitude:** 40.456508°N

**Longitude:** -82.850852°W

**Datum:** NAD83

---

**SUMMARY OF FINDINGS**

**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

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

---

**HYDROLOGY**

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

- [ ] Primary: A1 - Surface Water
- [ ] A2 - High Water Table
- [ ] A3 - Saturation
- [ ] A4 - Hydrogen Sulfide
- [ ] A5 - Sediment Deposits
- [ ] A6 - Drift Deposits
- [ ] A7 - Algal Mat or Crust
- [ ] A8 - Iron Deposits
- [ ] A9 - Inundation Visible on Aerial Imagery
- [ ] A10 - Sparse Vegetated Concave Surface

- [ ] Secondary: B1 - Water Marks
- [ ] B2 - Sediment Deposits
- [ ] B3 - Drift Deposits
- [ ] B4 - Metallic Crust
- [ ] B5 - Mudcracks
- [ ] B6 - Surface Soil Cracks
- [ ] B7 - Surface Water
- [ ] B8 - Water-Stained Leaves
- [ ] B9 - True Aquatic Plants
- [ ] B10 - Drainage Patterns
- [ ] B11 - Presence of Reduced Iron
- [ ] B12 - Presence of Reduced Iron
- [ ] B13 - Aquatic Fauna
- [ ] B14 - True Aquatic Plants
- [ ] B15 - Iron Deposits
- [ ] B16 - Coast Prairie Redox
- [ ] C1 - Hydrogen Sulfide Odor
- [ ] C2 - Drainage Patterns
- [ ] C3 - Oxidized Rhizospheres on Living Roots
- [ ] C4 - Presence of Reduced Iron
- [ ] C5 - Aquatic Vegetation
- [ ] C6 - Presence of Reduced Iron
- [ ] C7 - Thin Muck Surface
- [ ] C8 - Grayish Burrows
- [ ] C9 - Presence of Reduced Iron
- [ ] C10 - Presence of Reduced Iron
- [ ] C11 - Presence of Reduced Iron
- [ ] C12 - Presence of Reduced Iron
- [ ] C13 - Oxidized Rhizospheres on Living Roots
- [ ] C14 - Presence of Reduced Iron
- [ ] C15 - Oxidized Rhizospheres on Living Roots
- [ ] C16 - Coast Prairie Redox

**Field Observations:**

- Surface Water Present? Yes No Depth: 0 (in.)
- Water Table Present? Yes No Depth: 0 (in.)
- Saturation Present? Yes No Depth: 0 (in.)

**SOILS**

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

**Profile Description**

<table>
<thead>
<tr>
<th>Top Depth</th>
<th>Bottom Depth</th>
<th>Horizon</th>
<th>Color (Moist)</th>
<th>%</th>
<th>Color (Moist)</th>
<th>%</th>
<th>Type</th>
<th>Location</th>
<th>Texture</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>1</td>
<td>10YR</td>
<td>5/2</td>
<td>90</td>
<td>10YR</td>
<td>6/8</td>
<td>C</td>
<td>M</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>2</td>
<td>10YR</td>
<td>4/1</td>
<td>85</td>
<td>10GY</td>
<td>6/8</td>
<td>15</td>
<td>C</td>
</tr>
</tbody>
</table>

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

- [ ] A1 - Histosol
- [ ] A2 - Histite Epipeder
- [ ] A3 - Black Histic
- [ ] A4 - Hydrogen Sulfide
- [ ] A5 - Stratified Layers
- [ ] A6 - Calcareous Loam
- [ ] A7 - Rendzina
- [ ] A8 - Mucky Peat
- [ ] A9 - Mucky Peat

**Indicators for Problematic Soils**

- [ ] A16 - Coast Prairie Redox
- [ ] A17 - Salt Marsh
- [ ] A18 - Mucky Peat

**Remarks:**

---

**Hydric Soil Present?** Yes No
### VEGETATION

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

#### Tree Stratum (Plot size: 30 ft radius)

<table>
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<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
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#### Sapling/Shrub Stratum (Plot size: 15 ft radius)

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<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
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#### Herb Stratum (Plot size: 5 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinochloa crus-galli</td>
<td>20</td>
<td>Y</td>
<td>FACW</td>
</tr>
<tr>
<td>Persicaria sagittata</td>
<td>20</td>
<td>Y</td>
<td>OBL</td>
</tr>
<tr>
<td>Bidens cernua</td>
<td>15</td>
<td>Y</td>
<td>OBL</td>
</tr>
<tr>
<td>Cyperus strigosus</td>
<td>5</td>
<td>N</td>
<td>FACW</td>
</tr>
<tr>
<td>Lyginaria nummularia</td>
<td>5</td>
<td>N</td>
<td>FACW</td>
</tr>
<tr>
<td>Glyceria striata</td>
<td>5</td>
<td>N</td>
<td>OBL</td>
</tr>
<tr>
<td>Eleocharis obtusa</td>
<td>10</td>
<td>N</td>
<td>OBL</td>
</tr>
<tr>
<td>Bidens frondosa</td>
<td>5</td>
<td>N</td>
<td>FACW</td>
</tr>
<tr>
<td>Carex frankii</td>
<td>5</td>
<td>N</td>
<td>OBL</td>
</tr>
<tr>
<td>Ludwigia palustris</td>
<td>10</td>
<td>N</td>
<td>OBL</td>
</tr>
</tbody>
</table>

#### Woody Vine Stratum (Plot size: 30 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
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### 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:

<table>
<thead>
<tr>
<th>Species Name</th>
<th>Multiply by</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL spp.</td>
<td>65 x 1</td>
<td>65</td>
</tr>
<tr>
<td>FACW spp.</td>
<td>35 x 2</td>
<td>70</td>
</tr>
<tr>
<td>FAC spp.</td>
<td>0 x 3</td>
<td>0</td>
</tr>
<tr>
<td>FACU spp.</td>
<td>0 x 4</td>
<td>0</td>
</tr>
<tr>
<td>UPL spp.</td>
<td>0 x 5</td>
<td>0</td>
</tr>
</tbody>
</table>

Total 100 (A) 135 (B)

Prevalence Index = B/A = 1.350

### Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- 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
WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Fulton - Windfall 138 kV Line Rebuild Project
Applicant: AEP
Investigator #1: Aaron Kwolke
Investigator #2: Bill Leopold

Soil Unit: Blount silt loam, end moraine, 0 to 2 percent slopes
Landform: Depression
Slope (%): --
Latitude: 40.457182°N Longitude: -82.851352°W
Datum: NAD83

SUMMARY OF FINDINGS
Hydrophytic Vegetation Present? [ ] Yes [ ] No
Wetland Hydrology Present? [ ] Yes [ ] No
Is This Sampling Point Within A Wetland? [ ] Yes [ ] No

HYDROLOGY

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

Primary: Secondary:
A1 - Surface Water B9 - Water-Stained Leaves B6 - Surface Soil Cracks
A2 - High Water Table B13 - Aquatic Fauna B10 - Drainage Patterns
A3 - Saturation B14 - True Aquatic Plants C2 - Dry-Season Water Table
A4 - Hydrogen Sulfide F1 - Loamy Muck Mineral C8 - Grayfish Burrows
A5 - Stratified Layers F2 - Loamy Gleyed Matrix C9 - Saturation Visible on Aerial Imagery
A6 - Inundation Visible on Aerial Imagery D1 - Stunted or Stressed Plants
B1 - Water Marks C6 - Recent Iron Reduction in Tilled Soils D2 - Geomorphic Position
B2 - Sediment Deposits C7 - Thin Muck Surface D5 - FAC-Neutral Test
B3 - Drift Deposits C8 - Crayfish Burrows C9 - Saturation Visible on Aerial Imagery
B4 - Algal Mat or Crust C10 - Muck Surface
B5 - Iron Deposits C11 - 2 cm Muck
B6 - Oxidized Rhizospheres on Living Roots C12 - 5 cm Mucky Peat or Peat
B7 - Inundation Visible on Aerial Imagery C13 - Other (Explain in Remarks)
B8 - Sparsely Vegetated Concave Surface

Field Observations:
Surface Water Present? [ ] Yes [ ] No Depth: 0 (in.)
Water Table Present? [ ] Yes [ ] No Depth: 0 (in.)
Saturation Present? [ ] Yes [ ] No Depth: 0 (in.)

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.)

Top Depth Bottom Depth Horizon Color (Moist) % Color (Moist) % Type Location Texture
0 16 1 10YR 5/3 98 10YR 6/8 2 C M silt

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

[ ] A4 - Hydrogen Sulfide [ ] A5 - Stratified Layers [ ] A10 - 2 cm Muck
[ ] A11 - Depleted Below Dark Surface [ ] A12 - Thick Dark Surface [ ] S1 - Sandy Muck Mineral
[ ] S3 - 5 cm Mucky Peat or Peat

Indicators for Problematic Soils:
[ ] A16 - Coast Prairie Redox
[ ] S7 - Dark Surface
[ ] F12 - Iron-Manganese Masses
[ ] Other (Explain in Remarks)

Restrictive Layer (if Observed) Type: N/A Depth: N/A

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

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 30 ft radius)</th>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant Status</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. --</td>
<td>--</td>
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<td>6. --</td>
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</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Species</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL spp.</td>
<td>0 x 1 = 0</td>
</tr>
<tr>
<td>FACW spp.</td>
<td>0 x 2 = 0</td>
</tr>
<tr>
<td>FAC spp.</td>
<td>5 x 3 = 15</td>
</tr>
<tr>
<td>FACU spp.</td>
<td>70 x 4 = 280</td>
</tr>
<tr>
<td>UPL spp.</td>
<td>30 x 5 = 150</td>
</tr>
</tbody>
</table>

- Total: 105 (A) 445 (B)
- Prevalence Index = B/A = 4.238

**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

**Total Cover:**
- 105

**Remarks:**

**Additional Remarks:**
HYDROLOGY

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

- **Primary**
  - A1 - Surface Water
  - A2 - High Water Table
  - A3 - Saturation
  - A4 - Water Mark
  - B2 - Sediment Depots
  - B3 - Drain Deposits
  - B4 - Algal Mat or Crust
  - B5 - Iron Deposits
  - B7 - Inundation Visible on Aerial Imagery
  - B8 - Sparsely Vegetated Concave Surface

- **Secondary**
  - B9 - Water-Stained Leaves
  - B13 - Aquatic Fauna
  - B14 - True Aquatic Plants
  - C1 - Hydrogen Sulfide Odor
  - C3 - Oxidized Rhizospheres on Living Roots
  - C4 - Presence of Reduced Iron
  - C6 - Recent Iron Reduction in Tilled Soils
  - C7 - Thin Muck Surface
  - C9 - Saturation Visible on Aerial Imagery
  - D1 - Stunted or Stressed Plants

### Field Observations:

- **Surface Water Present?**
  - Yes ☐ No ☐
  - Depth: 0 (in.)
- **Water Table Present?**
  - Yes ☐ No ☐
  - Depth: 0 (in.)
- **Saturation Present?**
  - Yes ☐ No ☐
  - Depth: 0 (in.)

**Wetland Hydrology Present?**
- Yes ☐ 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, 0 to 2 percent slopes

### Profile Description

<table>
<thead>
<tr>
<th>Top Depth</th>
<th>Bottom Depth</th>
<th>Horizon</th>
<th>Color (Moist)</th>
<th>%</th>
<th>Color (Moist)</th>
<th>%</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>1</td>
<td>10YR</td>
<td>93</td>
<td>5Y</td>
<td>4/6</td>
<td>7</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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

- A1 - Histisol
- A2 - Histic Epipedon
- A3 - Black Histic
- A4 - Hydrogen Sulfide
- A5 - Stratified Layers
- A10 - 2 cm Muck
- A11 - Depleted Below Dark Surface
- A12 - Thick Dark Surface
- S1 - Sandy Muck Mineral
- S3 - 5 cm Mucky Peat or Peat

**Indicators for Problematic Soils**

- A16 - Coast Prairie Redox
- S7 - Dark Surface
- F12 - Very Shallow Dark Surface

**Remarks:**

Hydric Soil Present?
- Yes ☐ No ☐
VEGETATION (Species identified in all uppercase are non-native species.)

### Tree Stratum (Plot size: 30 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quercus palustris</td>
<td>30</td>
<td>Y</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Fraxinus pennsylvanica</td>
<td>10</td>
<td>N</td>
<td>FACW</td>
</tr>
<tr>
<td>3. Ulmus americana</td>
<td>30</td>
<td>Y</td>
<td>FACW</td>
</tr>
<tr>
<td>4. Acer rubrum</td>
<td>15</td>
<td>N</td>
<td>FAC</td>
</tr>
<tr>
<td>5. --</td>
<td>--</td>
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<td>6. --</td>
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<td>9. --</td>
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<tr>
<td>10. --</td>
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</tr>
</tbody>
</table>

Total Cover = 85

### Sapling/Shrub Stratum (Plot size: 15 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fraxinus pennsylvanica</td>
<td>15</td>
<td>Y</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Ulmus americana</td>
<td>15</td>
<td>Y</td>
<td>FACW</td>
</tr>
<tr>
<td>3. Lindera benzoin</td>
<td>20</td>
<td>Y</td>
<td>FACW</td>
</tr>
<tr>
<td>4. Crataegus crus-galli</td>
<td>2</td>
<td>N</td>
<td>FAC</td>
</tr>
<tr>
<td>5. Rosa palustris</td>
<td>3</td>
<td>N</td>
<td>OBL</td>
</tr>
<tr>
<td>6. --</td>
<td>--</td>
<td>--</td>
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<tr>
<td>7. --</td>
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<td>9. --</td>
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<tr>
<td>10. --</td>
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</tr>
</tbody>
</table>

Total Cover = 55

### Herb Stratum (Plot size: 5 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carex grayi</td>
<td>10</td>
<td>N</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Impatiens capensis</td>
<td>15</td>
<td>Y</td>
<td>FACW</td>
</tr>
<tr>
<td>3. Toxicodendron radicans</td>
<td>20</td>
<td>Y</td>
<td>FAC</td>
</tr>
<tr>
<td>4. Carex frankii</td>
<td>5</td>
<td>N</td>
<td>OBL</td>
</tr>
<tr>
<td>5. Echinochloa crus-galli</td>
<td>5</td>
<td>N</td>
<td>FACW</td>
</tr>
<tr>
<td>6. Poa palustris</td>
<td>5</td>
<td>N</td>
<td>FAC</td>
</tr>
<tr>
<td>7. Symphyotrichum lanceolatum</td>
<td>5</td>
<td>N</td>
<td>FAC</td>
</tr>
<tr>
<td>8. Juncus effusus</td>
<td>5</td>
<td>N</td>
<td>OBL</td>
</tr>
<tr>
<td>9. Rosa palustris</td>
<td>5</td>
<td>N</td>
<td>OBL</td>
</tr>
<tr>
<td>10. Persicaria virginiana</td>
<td>15</td>
<td>Y</td>
<td>FAC</td>
</tr>
<tr>
<td>11. --</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>12. --</td>
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<tr>
<td>13. --</td>
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<tr>
<td>14. --</td>
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<tr>
<td>15. --</td>
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<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Total Cover = 90

### Woody Vine Stratum (Plot size: 30 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. --</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. --</td>
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<td>4. --</td>
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<tr>
<td>5. --</td>
<td>--</td>
<td>--</td>
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</tr>
</tbody>
</table>

Total Cover = 0

### 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

- No

### Remarks:

Additional Remarks:
Project/Site: Fulton - Windfall 138 kV Line Rebuild Project
Applicant: AEP
Investigator #1: Aaron Kwolek
Investigator #2: Bill Leopold
State: Ohio
Wetland ID: Wetland 2
County: Morrow
Wetland: --
Sample Point: SP 4

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? Yes No
Wetland Hydrofringe of pond wetland Yes No

HYDROLOGY

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

**Primary:**
- A1 - Surface Water
- A2 - High Water Table
- A3 - Saturation
- A4 - Water Mark Deposits
- A5 - Drift Depositions
- A6 - Algal Mat or Crust
- A7 - Inundation Visible on Aerial Imagery
- A8 - Sparser Vegetated Concave Surface

**Secondary:**
- B9 - Water-Stained Leaves
- B13 - Aquatic Fauna
- B14 - True Aquatic Plants
- B15 - Oxidized Rhizospheres on Living Roots
- C4 - Presence of Reduced Iron
- C6 - Recent Iron Reduction in Tilled Soils
- C7 - Thin Muck Surface
- Other (Explain in Remarks)

Field Observations:
- Surface Water Present? Yes No Depth: 0 (in.)
- Water Table Present? Yes No Depth: 0 (in.)
- Saturation Present? Yes No Depth: 0 (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, 0 to 2 percent slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators) (e.g. clay, sand, loam)

<table>
<thead>
<tr>
<th>Top Depth</th>
<th>Bottom Depth</th>
<th>Horizon</th>
<th>Color (Moist)</th>
<th>Redox Features</th>
<th>Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>16</td>
<td>1</td>
<td>10YR</td>
<td>5/1</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10Y</td>
<td>6/8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>mucky loam</td>
</tr>
</tbody>
</table>

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

- A1 - Histosol
- A2 - Histic Epipedon
- A3 - Black Histic
- A4 - Hydrogen Sulfide
- A5 - Stratified Layers
- A6 - 2 cm Muck
- A7 - Depleted Below Dark Surface
- A8 - Thick Dark Surface
- A9 - Sandy Muck Mineral
- A10 - 5 cm Mucky Peat or Peat

Indicators for Problematic Soils:

- A16 - Coast Prairie Redox
- S7 - Dark Surface
- F12 - Iron-Manganese Masses
- TF12 - Very Shallow Dark Surface

Remarks:
### Dominance Test Worksheet

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- 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

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL spp. 15</td>
<td>x 1 = 15</td>
</tr>
<tr>
<td>FACW spp. 152</td>
<td>x 2 = 304</td>
</tr>
<tr>
<td>FAC spp. 0</td>
<td>x 3 = 0</td>
</tr>
<tr>
<td>FACU spp. 0</td>
<td>x 4 = 0</td>
</tr>
<tr>
<td>UPL spp. 0</td>
<td>x 5 = 0</td>
</tr>
</tbody>
</table>

- Total 167 (A) 319 (B)
- Prevalence Index = B/A = 1.910

### Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- 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. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- **Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 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.

### Additional Remarks:

- Additional Remarks:
WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Fulton - Windfall 138 kV Line Rebuild Project
Applicant: AEP
Investigator #1: Aaron Kwolek
Investigator #2: Bill Leopold

Soil Unit: Blount silt loam, end moraine, 0 to 2 percent slopes

Landform: Side slope
Slope (%): --
Latitude: 40.467072°N
Longitude: -82.880091°W
Datum: NAD83

Wetland ID: Wetland 2
Sample Point: SP 5
Community ID: UPL

Soil Unit:

Wetland ID:

Section:

Towship:

Range:

Dir:

SUMMARY OF FINDINGS

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

Are Vegetation, Soil, or Hydrology significantly disturbed?

Are Vegetation, Soil, or Hydrology naturally problematic?

Are normal circumstances present?

Is This Sampling Point Within A Wetland?

HYDROLOGY

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

Primary:
- A1 - Surface Water
- A2 - High Water Table
- A3 - Saturation
- A4 - Water Marks
- A5 - Drift Deposits
- A6 - Algal Mat or Crust
- A7 - Inundation Visible on Aerial Imagery
- A8 - Sparsely Vegetated Concave Surface

Secondary:
- B1 - Water Marks
- B2 - Sediment Deposits
- B3 - Drift Deposits
- B4 - Algal Mat or Crust
- B5 - Iron Deposits
- B6 - Surface Soil Cracks
- B7 - Inundation Visible on Aerial Imagery
- B8 - Sparsely Vegetated Concave Surface

Field Observations:
- Surface Water Present? Yes No Depth: 0 (in.)
- Water Table Present? Yes No Depth: 0 (in.)
- Saturation Present? Yes No Depth: 0 (in.)

Wetland Hydrology Present? Yes No

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
0 8 1 10YR 3/2 100 -- -- -- -- -- -- -- -- --

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

Primary:
- A1 - Histosol
- A2 - Histic Epipedon
- A3 - Black Histic
- A4 - Hydrogen Sulfide
- A5 - Stratified Layers
- A6 - 2 cm Muck
- A7 - Depleted Below Dark Surface
- A8 - Thick Dark Surface
- A9 - Sandy Muck Mineral
- A10 - 5 cm Mucky Peat or Peat

Secondary:
- B1 - Water Marks
- B2 - Sediment Deposits
- B3 - Drift Deposits
- B4 - Algal Mat or Crust
- B5 - Iron Deposits
- B6 - Surface Soil Cracks
- B7 - Inundation Visible on Aerial Imagery
- B8 - Sparsely Vegetated Concave Surface

Restrictive Layer (if Observed)

Type: Rock
Depth: 8

Hydric Soil Present? Yes No

Remarks:
**WETLAND DETERMINATION DATA FORM**

**Midwest Region**

**Project/Site:** Fulton - Windfall 138 kV Line Rebuild Project

**Wetland ID:** Wetland 2

**Sample Point:** SP 5

### VEGETATION

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

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 30 ft radius)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species Name</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>1. --</td>
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<tr>
<td>2. --</td>
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<td>3. --</td>
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<td>8. --</td>
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<tr>
<td>9. --</td>
</tr>
<tr>
<td>10. --</td>
</tr>
</tbody>
</table>

**Total Cover = 0**

### Woody Vine Stratum (Plot size: 30 ft radius)

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 30 ft radius)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species Name</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>1. --</td>
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<tr>
<td>2. --</td>
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<td>3. --</td>
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<tr>
<td>4. --</td>
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<tr>
<td>5. --</td>
</tr>
</tbody>
</table>

**Total Cover = 0**

### Sapling/Shrub Stratum (Plot size: 15 ft radius)

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15 ft radius)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species Name</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>1. --</td>
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<tr>
<td>2. --</td>
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<td>3. --</td>
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<td>7. --</td>
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<td>8. --</td>
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<tr>
<td>9. --</td>
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<tr>
<td>10. --</td>
</tr>
</tbody>
</table>

**Total Cover = 0**

### Herb Stratum (Plot size: 5 ft radius)

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5 ft radius)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species Name</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>1. <em>Setaria faberi</em></td>
</tr>
<tr>
<td>2. <em>Asclepias syriaca</em></td>
</tr>
<tr>
<td>3. <em>Daucus carota</em></td>
</tr>
<tr>
<td>4. <em>Medicago lupulina</em></td>
</tr>
<tr>
<td>5. <em>Ribes americanum</em></td>
</tr>
<tr>
<td>6. <em>Solidago altissima</em></td>
</tr>
<tr>
<td>7. --</td>
</tr>
<tr>
<td>8. --</td>
</tr>
<tr>
<td>9. --</td>
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<td>10. --</td>
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<tr>
<td>11. --</td>
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<tr>
<td>12. --</td>
</tr>
<tr>
<td>13. --</td>
</tr>
<tr>
<td>14. --</td>
</tr>
<tr>
<td>15. --</td>
</tr>
</tbody>
</table>

**Total Cover = 105**

### 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.

### Dominance Test Worksheet

<table>
<thead>
<tr>
<th>Number of Dominant Species that are OBL, FACW, or FAC:</th>
<th>0 (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Dominant Species Across All Strata:</td>
<td>1 (B)</td>
</tr>
<tr>
<td>Percent of Dominant Species That Are OBL, FACW, or FAC:</td>
<td>0% (A/B)</td>
</tr>
</tbody>
</table>

### Prevalence Index Worksheet

| Total % Cover of: | Multiply by: | | | |
|-------------------|-------------|---|---|
| OBL spp.          | 0 x 1 = 0   | |
| FACW spp.         | 2 x 2 = 4   | |
| FACU spp.         | 98 x 3 = 392| |
| UPL spp.          | 5 x 5 = 25  | |
| Total             | 105 (A) 421 (B) |

**Prevalence Index = B/A = 4.010**

### 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.

### Additional Remarks:

Remarks:
**WETLAND DETERMINATION DATA FORM**  
Midwest Region

**Project/Site:** Fulton - Windfall 138 kV Line Rebuild Project  
**Applicant:** AEP  
**Investigator #1:** Aaron Kwolak  
**Investigator #2:** Bill Leopold  

**Soil Unit:** Blount silt loam, end moraine, 0 to 2 percent slopes  
**Landform:** Depression  
**Local Relief:** Concave  
**Wetland ID:** Wetland 2  
**Lat/Lon:** 40.467029°N 82.880461°W

---

**SUMMARY OF FINDINGS**

- **Hydrophytic Vegetation Present?**  
  - [ ] Yes  
  - [ ] No

- **Wetland Hydrology Present?**  
  - [ ] Yes

- **Is This Sampling Point Within A Wetland?**  
  - [ ] Yes  
  - [ ] No

---

**HYDROLOGY**

**Wetland Hydrology Indicators**

<table>
<thead>
<tr>
<th>Primary Indicators</th>
<th>Secondary Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 - Surface Water</td>
<td>B6 - Surface Water</td>
</tr>
<tr>
<td>A2 - High Water Table</td>
<td>Drainage Patterns</td>
</tr>
<tr>
<td>A3 - Saturation</td>
<td>B13 - Aquatic Fauna</td>
</tr>
<tr>
<td>A4 - Hydrogen Sulfide Odor</td>
<td>B14 - True Aquatic Plants</td>
</tr>
<tr>
<td>A5 - Oxidized Rhizospheres on Living Roots</td>
<td>C1 - Hydrogen Sulfide Odor</td>
</tr>
<tr>
<td>B1 - Water Marks</td>
<td>C3 - Oxidized Rhizospheres on Living Roots</td>
</tr>
<tr>
<td>B2 - Sediment Deposits</td>
<td>C4 - Presence of Reduced Iron</td>
</tr>
<tr>
<td>B3 - Drift Deposits</td>
<td>C5 - Sediment Deposits</td>
</tr>
<tr>
<td>B4 - Algal Mat or Crust</td>
<td>C6 - Recent Iron Reduction in Tilled Soils</td>
</tr>
<tr>
<td>B5 - Iron Deposits</td>
<td>C7 - Thin Muck Surface</td>
</tr>
<tr>
<td>B6 - Inundation Visible on Aerial Imagery</td>
<td>C8 - Surface Irregularities</td>
</tr>
<tr>
<td>B7 - Sparsely Vegetated Concave Surface</td>
<td>C9 - Surface Irregularities</td>
</tr>
<tr>
<td>B8 - Frequent Inundation</td>
<td>C10 - Surface Irregularities</td>
</tr>
</tbody>
</table>

**Field Observations:**

- **Surface Water Present?**  
  - [ ] Yes  
  - [ ] No

- **Water Table Present?**  
  - [ ] Yes  
  - [ ] No

- **Saturation Present?**  
  - [ ] Yes  
  - [ ] No

**SOILS**

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

**Profile Description**

<table>
<thead>
<tr>
<th>Depth</th>
<th>Horizon</th>
<th>Color</th>
<th>Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>10YR</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>10YR</td>
<td>C</td>
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<tr>
<td>...</td>
<td>...</td>
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</tr>
</tbody>
</table>

**NRCS Hydric Soil Field Indicators**

- **A1 - Histosol**
- **A2 - Histic Epipedon**
- **A3 - Black Histic**
- **A4 - Hydrogen Sulfide**
- **A5 - Stratified Layers**
- **A10 - 2 cm Muck**
- **A11 - Depleted Below Dark Surface**
- **A12 - Thick Dark Surface**
- **S1 - Sandy Muck Mineral**
- **S3 - 5 cm Mucky Peat or Peat**

---

**Remarks:**

---

**Indicators for Problematic Soils**

- **A16 - Coast Prairie Redox**
- **S7 - Dark Surface**
- **F12 - Iron-Manganese Masses**
- **TF12 - Very Shallow Dark Surface**

---

**Restrictive Layer**

<table>
<thead>
<tr>
<th>Type</th>
<th>Depth</th>
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<tbody>
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</table>

**Hydric Soil Present?**  
- [ ] Yes  
- [ ] No

---

**Remarks:**

---

**Hydric Soil Present?**  
- [ ] Yes  
- [ ] No

---

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

#### Tree Stratum (Plot size: 30 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

| Total Cover = | 0 |

#### Sapling/Shrub Stratum (Plot size: 15 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

| Total Cover = | 0 |

#### Herb Stratum (Plot size: 5 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Typha angustifolia</td>
<td>95</td>
<td>Y</td>
</tr>
<tr>
<td>2.</td>
<td>Phalaris arundinacea</td>
<td>5</td>
<td>N</td>
</tr>
<tr>
<td>3.</td>
<td>Impatiens capensis</td>
<td>3</td>
<td>N</td>
</tr>
<tr>
<td>4.</td>
<td>Vitis riparia</td>
<td>3</td>
<td>N</td>
</tr>
<tr>
<td>5.</td>
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<td>6.</td>
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<td>11.</td>
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<td>12.</td>
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<tr>
<td>13.</td>
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</tr>
<tr>
<td>14.</td>
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<td>--</td>
<td>--</td>
</tr>
<tr>
<td>15.</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

| Total Cover = | 106 |

#### Woody Vine Stratum (Plot size: 30 ft radius)

<table>
<thead>
<tr>
<th>Species Name</th>
<th>% Cover</th>
<th>Dominant</th>
<th>Ind Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
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<td>--</td>
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<tr>
<td>2.</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>3.</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>4.</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>5.</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

| Total Cover = | 0 |

---

### 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.

---

### 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

- Multiply by:
  - OBL spp.: 95 x 1 = 95
  - FACW spp.: 11 x 2 = 22
  - FAC spp.: 0 x 3 = 0
  - FACU spp.: 0 x 4 = 0
  - UPL spp.: 0 x 5 = 0
- Total: 106 (A), 117 (B)

  Prevalence Index = B/A = 1.104

---

### 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.

---

### Additional Remarks:

Remarks:
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

D.2 ORAM DATA FORMS
<table>
<thead>
<tr>
<th>Version 5.0</th>
<th>Ohio EPA, Division of Surface Water Final: February 1, 2001.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization</td>
<td></td>
</tr>
<tr>
<td>Background Information</td>
<td></td>
</tr>
<tr>
<td>Scoring Boundary Worksheet</td>
<td></td>
</tr>
<tr>
<td>Narrative Rating</td>
<td></td>
</tr>
<tr>
<td>Field Form Quantitative Rating</td>
<td></td>
</tr>
<tr>
<td>ORAM Summary Worksheet</td>
<td></td>
</tr>
<tr>
<td>Wetland Categorization Worksheet</td>
<td></td>
</tr>
</tbody>
</table>

**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](http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx)
# Background Information

<table>
<thead>
<tr>
<th>Name:</th>
<th>Aaron Kwolkek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>9/26/16</td>
</tr>
<tr>
<td>Affiliation:</td>
<td>Stantec</td>
</tr>
<tr>
<td>Address:</td>
<td>11687 Lebanon Rd, Cincinnati, OH 45241</td>
</tr>
<tr>
<td>Phone Number:</td>
<td>513-842-8200</td>
</tr>
<tr>
<td>e-mail address:</td>
<td><a href="mailto:aaron.kwolkek@stantec.com">aaron.kwolkek@stantec.com</a></td>
</tr>
<tr>
<td>Name of Wetland:</td>
<td>Wetland 1</td>
</tr>
<tr>
<td>Vegetation Communit(ies):</td>
<td>PEM/PFO</td>
</tr>
<tr>
<td>HGM Class(es):</td>
<td>Depression</td>
</tr>
</tbody>
</table>

**Location of Wetland:** Include map, address, north arrow, landmarks, distances, roads, etc.

![Map Diagram]

**Lat/Long or UTM Coordinates:** 40.416330, -82.856075

**USGS Quad Name:** Ashley

**County:** Morrow

**Township:** Cardington

**Section and Subsection:** 1

**Hydrologic Unit Code:** N/A

**Site Visit:** 9/26/16

**National Wetland Inventory Map:** none

**Ohio Wetland Inventory Map:** none

**Soil Survey:** Blunt silt loam, end moraine, 0-2% slopes

**Delineation report/map:**
<table>
<thead>
<tr>
<th>Name of Wetland:</th>
<th>wetland 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Size (acres, hectares):</td>
<td>2.8 ac</td>
</tr>
</tbody>
</table>

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

Comments, Narrative Discussion, Justification of Category Changes:

Final score: 28.5 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.

<table>
<thead>
<tr>
<th>#</th>
<th>Steps in properly establishing scoring boundaries</th>
<th>done?</th>
<th>not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5</td>
<td>In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 6</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**Wetland**

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/dnapp. 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.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Circle one</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Critical Habitat. 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 &quot;critical habitat&quot; 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 (50 CFR 1800.3, July 6, 2000).</td>
<td>YES</td>
</tr>
<tr>
<td>2</td>
<td>Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?</td>
<td>YES</td>
</tr>
<tr>
<td>3</td>
<td>Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?</td>
<td>YES</td>
</tr>
<tr>
<td>4</td>
<td>Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?</td>
<td>YES</td>
</tr>
<tr>
<td>5</td>
<td>Category 1 Wetlands. 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 Phalaris arundinacea, Lythrum salicaria, or Phragmites australis, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?</td>
<td>YES</td>
</tr>
<tr>
<td>6</td>
<td>Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly Sphagnum spp., 3) the acidic pH value of the water has &lt;30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is &lt;25%?</td>
<td>YES</td>
</tr>
<tr>
<td>7</td>
<td>Fens. 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 (5.5-6.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is &lt;25%?</td>
<td>YES</td>
</tr>
<tr>
<td>8a</td>
<td>&quot;Old Growth Forest.&quot; 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 canopy; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?</td>
<td>YES</td>
</tr>
<tr>
<td>Question</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td><strong>8b</strong> MATURE FORESTED WETLANDS: is the wetland a forested wetland with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50% or more of the cover of upper forest canopy consisting of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deciduous trees with large diameters at breast height (dbh), generally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>diameters greater than 45cm (17.7in) dbh?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9a</strong> Lake Erie Coastal and Tributary Wetlands: is the wetland located</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at an elevation less than 575 feet on the USGS map, adjacent to this</td>
<td></td>
<td></td>
</tr>
<tr>
<td>elevation, or along a tributary to Lake Erie that is accessible to fish?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9b</strong> Does the wetland's hydrology result from measures designed to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prevent erosion and the loss of aquatic plants, i.e. the wetland is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>partially hydrologically restricted from Lake Erie due to lakeward or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>landward dikes or other hydrological controls?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9c</strong> Are Lake Erie water levels the wetland's primary hydrological</td>
<td></td>
<td></td>
</tr>
<tr>
<td>influence, i.e. the wetland is hydrologically unrestricted (no lakeward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or upland border alterations), or the wetland can be characterized as an</td>
<td></td>
<td></td>
</tr>
<tr>
<td>estuarine wetland with lake and river influenced hydrology. These</td>
<td></td>
<td></td>
</tr>
<tr>
<td>include sandbar deposition wetlands, estuarine wetlands, river mouth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>wetlands, or those dominated by submerged aquatic vegetation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9d</strong> Does the wetland have a predominance of native species within its</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vegetation communities, although non-native or disturbance tolerant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>native species can also be present?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9e</strong> Does the wetland have a predominance of non-native or disturbance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tolerant native plant species within its vegetation communities?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10</strong> Lake Plain Sand Prairies (Oak Openings): is the wetland located</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in Lucas, Fulton, Henry, or Wood Counties and can the wetland be</td>
<td></td>
<td></td>
</tr>
<tr>
<td>characterized by the following description: the wetland has a sandy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>substrate with interspersed organic matter, a water table often within</td>
<td></td>
<td></td>
</tr>
<tr>
<td>several inches of the surface, and often with a dominance of the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gramineous vegetation listed in Table 1 (woody species may also be</td>
<td></td>
<td></td>
</tr>
<tr>
<td>present). The Ohio Department of Natural Resources Division of Natural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Areas and Preserves can provide assistance in confirming this type of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>wetland and its quality.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>11</strong> ROLLING WETLANDS: is the wetland a rolling wetland community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dominated by some or all of the species in Table 1. Extensive prairies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>were formerly located in the Darby Plains (Madison and Union Counties),</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invasive/exotic spp</td>
<td>Fen species</td>
<td>Bog species</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Lythrum salicaria</td>
<td>Zygadenus elegans var. glauces</td>
<td>Calla palustris</td>
</tr>
<tr>
<td>Myriophyllum spicatum</td>
<td>Cacalia plantaginea</td>
<td>Carex atlantica var. capillacea</td>
</tr>
<tr>
<td>Najas minor</td>
<td>Carex flavus</td>
<td>Carex echinata</td>
</tr>
<tr>
<td>Phalaris arundinacea</td>
<td>Carex sterilis</td>
<td>Carex oligosperma</td>
</tr>
<tr>
<td>Phragmites australis</td>
<td>Carex stricta</td>
<td>Carex trisperma</td>
</tr>
<tr>
<td>Potamogeton crispus</td>
<td>Deschampsia caespitosa</td>
<td>Chamaedaphne calycata</td>
</tr>
<tr>
<td>Ranunculus ficaria</td>
<td>Eleocharis rostellata</td>
<td>Decodon verticillatus</td>
</tr>
<tr>
<td>Rhamnus frangula</td>
<td>Eriophorum viridicaulisum</td>
<td>Eriophorum virginicum</td>
</tr>
<tr>
<td>Typha angustifolia</td>
<td>Gentianopsis spp.</td>
<td>Larix laricina</td>
</tr>
<tr>
<td>Typha xalauca</td>
<td>Lobelia kalmii</td>
<td>Nemopandus mucronatus</td>
</tr>
<tr>
<td></td>
<td>Parnassia glauca</td>
<td>Scehochoria palustris</td>
</tr>
<tr>
<td></td>
<td>Potentilla fruticosa</td>
<td>Sphagnum spp.</td>
</tr>
<tr>
<td></td>
<td>Rhamnus alnifolia</td>
<td>Vaccinium macrocarpon</td>
</tr>
<tr>
<td></td>
<td>Rhynchospora capillacea</td>
<td>Vaccinium corymbosum</td>
</tr>
<tr>
<td></td>
<td>Salix candida</td>
<td>Vaccinium oxyccocca</td>
</tr>
<tr>
<td></td>
<td>Salix myricoides</td>
<td>Woodwardia virginica</td>
</tr>
<tr>
<td></td>
<td>Salix serissima</td>
<td>Xyris diffinis</td>
</tr>
<tr>
<td></td>
<td>Salix ohioensis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taftasia glutinosa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Triglochin maritimum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Triglochin palustrie</td>
<td></td>
</tr>
</tbody>
</table>

End of Narrative Rating. Begin Quantitative Rating on next page.
## 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) (2 pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

## 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)

## 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)

3d. 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)

## 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

- ditch
- pile
- dike
- weir
- stormwater input
- point source (nonstormwater)
- sedimentation
- mowing/dredging
- shrub/sapling removal
- grazing
- selective cutting
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/waterfowl habitat or usage (10)
- Category 1 Wetland. See question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland vegetation communities.

Score all present using 0 to 3 scale.

- Aquatic bed (2)
- Emergent (2)
- Shrub (2)
- Forest (2)
- Mutiflats (2)
- Open water (2)
- Other (2)

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 (2)
- Coarse woody debris >15 cm (6in)
- Standing dead >25 cm (10in) dbh (2)
- Amphibian breeding pools (2)

Vegetation Community Cover Scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Absent</td>
<td>-0.1ha (0.247 acres) contiguous area</td>
</tr>
<tr>
<td>1 Present</td>
<td>and comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality</td>
</tr>
<tr>
<td>2 Present</td>
<td>and comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality</td>
</tr>
<tr>
<td>3 Present</td>
<td>and comprises significant part, or more, of wetland's vegetation and is of high quality</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Absent</td>
<td>&lt;0.1ha (0.247 acres)</td>
</tr>
<tr>
<td>1 Low</td>
<td>0.1 to &lt;1ha (0.247 to 2.47 acres)</td>
</tr>
<tr>
<td>2 Moderate</td>
<td>1 to &lt;4ha (2.47 to 9.88 acres)</td>
</tr>
<tr>
<td>3 High</td>
<td>4ha (9.88 acres) or more</td>
</tr>
</tbody>
</table>

Microtopography cover scale:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Absent</td>
<td>Present very small amounts or if more common of marginal quality</td>
</tr>
<tr>
<td>1 Moderate</td>
<td>Present in moderate amounts, but not of highest quality or in small amounts of highest quality</td>
</tr>
<tr>
<td>2 Present</td>
<td>Moderate or greater amounts and of highest quality</td>
</tr>
</tbody>
</table>

## ORAM Summary Worksheet

### Narrative Rating

<table>
<thead>
<tr>
<th>Question</th>
<th>Circle answer or insert score</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1: Critical Habitat</td>
<td>NO</td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 2: Threatened or Endangered Species</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 3: High Quality Natural Wetland</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 4: Significant bird habitat</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 5: Category 1 Wetlands</td>
<td></td>
<td>If yes, Category 1.</td>
</tr>
<tr>
<td>Question 6: Bogs</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 7: Fens</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 8a: Old Growth Forest</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 8b: Mature Forested Wetland</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 9b: Lake Erie Wetlands - Restricted</td>
<td></td>
<td>If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
<tr>
<td>Question 9d: Lake Erie Wetlands - Unrestricted with native plants</td>
<td></td>
<td>If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
<tr>
<td>Question 9e: Lake Erie Wetlands - Unrestricted with invasive plants</td>
<td></td>
<td>If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
<tr>
<td>Question 10: Oak Openings</td>
<td></td>
<td>If yes, Category 3.</td>
</tr>
<tr>
<td>Question 11: Relict Wet Prairies</td>
<td></td>
<td>If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
</tbody>
</table>

### Quantitative Rating

<table>
<thead>
<tr>
<th>Metric</th>
<th>Score</th>
<th>Category based on score breakpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric 1: Size</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Metric 2: Buffers and surrounding land use</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Metric 3: Hydrology</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Metric 4: Habitat</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>Metric 5: Special Wetland Communities</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Metric 6: Plant communities, interspersion, microtopography</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>TOTAL SCORE</td>
<td>28.5</td>
<td></td>
</tr>
</tbody>
</table>

**Complete Wetland Categorization Worksheet.**
<table>
<thead>
<tr>
<th>Choices</th>
<th>Circle one</th>
<th>Evaluation of Categorization Result of ORAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you answer “Yes” to any of the following questions:</td>
<td>YES</td>
<td>Wetland is categorized as a Category 3 wetland</td>
</tr>
<tr>
<td>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Did you answer “Yes” to any of the following questions:</td>
<td>YES</td>
<td>Wetland should be evaluated for possible Category 3 status</td>
</tr>
<tr>
<td>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Did you answer “Yes” to</td>
<td>YES</td>
<td>Wetland is categorized as a Category 1 wetland</td>
</tr>
<tr>
<td>Narrative Rating No. 5</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</td>
<td>YES</td>
<td>Wetland is assigned to the appropriate category based on the scoring range</td>
</tr>
<tr>
<td>Does the quantitative score fall with the “gray zone” for Category 1 or 2 or Category 2 or 3 wetlands?</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not 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?</td>
<td>YES</td>
<td>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</td>
</tr>
</tbody>
</table>

**Final Category**

<table>
<thead>
<tr>
<th>Choose one</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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End of Ohio Rapid Assessment Method for Wetlands.
<table>
<thead>
<tr>
<th>Version 5.0</th>
<th>Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Background Information</td>
</tr>
<tr>
<td></td>
<td>Scoring Boundary Worksheet</td>
</tr>
<tr>
<td></td>
<td>Narrative Rating</td>
</tr>
<tr>
<td></td>
<td>Field Form Quantitative Rating</td>
</tr>
<tr>
<td></td>
<td>ORAM Summary Worksheet</td>
</tr>
<tr>
<td></td>
<td>Wetland Categorization Worksheet</td>
</tr>
<tr>
<td></td>
<td>Ohio EPA, Division of Surface Water Final: February 1, 2001</td>
</tr>
</tbody>
</table>

**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](http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx)
# Background Information

<table>
<thead>
<tr>
<th>Name:</th>
<th>Aaron Kwoltek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>9/26/16</td>
</tr>
<tr>
<td>Affiliation:</td>
<td>Stantec</td>
</tr>
<tr>
<td>Address:</td>
<td>11687 Lebanon Rd, Cincinnati, OH 45241</td>
</tr>
<tr>
<td>Phone Number:</td>
<td>513 842 8209</td>
</tr>
<tr>
<td>e-mail address:</td>
<td><a href="mailto:aaron.kwoltek@stantec.com">aaron.kwoltek@stantec.com</a></td>
</tr>
</tbody>
</table>

**Name of Wetland:** wetland 2  

**Vegetation Community(ies):** PEM  

**HGM Class(es):** Depressional  

**Location of Wetland:** Include map, address, north arrow, landmarks, distances, roads, etc.

![Diagram of wetland location](image)

**Lat/Long or UTM Coordinate:** 40.466981, -82.880380

**UGSS Quad Name:** Ashley  

**County:** Morrow  

**Township:** Cardington  

**Section and Subsection:** N/A  

**Hydrologic Unit Code:** 050600011401  

**Site Visit:** 9/26/16  

**National Wetland Inventory Map:** none  

**Ohio Wetland Inventory Map:** none  

**Soil Survey:** Blount silty loam, endmoraine, 0-2% slopes  

**Delineation report/map:**
Name of Wetland: wetland 2
Wetland Size (acres, hectares): 0.12 ac
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

Comments, Narrative Discussion, Justification of Category Changes:

Final score: 8.5
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.

<table>
<thead>
<tr>
<th>#</th>
<th>Steps in properly establishing scoring boundaries</th>
<th>done?</th>
<th>not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.</td>
<td>![Checkmark]</td>
<td>![Blank]</td>
</tr>
<tr>
<td>Step 2</td>
<td>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.</td>
<td>![Checkmark]</td>
<td>![Blank]</td>
</tr>
<tr>
<td>Step 3</td>
<td>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.</td>
<td>![Checkmark]</td>
<td>![Blank]</td>
</tr>
<tr>
<td>Step 4</td>
<td>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.</td>
<td>![Checkmark]</td>
<td>![Blank]</td>
</tr>
<tr>
<td>Step 5</td>
<td>In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.</td>
<td>![Checkmark]</td>
<td>![Blank]</td>
</tr>
<tr>
<td>Step 6</td>
<td>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.</td>
<td>![Checkmark]</td>
<td>![Blank]</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Circle one</th>
<th></th>
</tr>
</thead>
</table>
| 1  | Critical Habitat. 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 | NO  
  Go to Question 2 |
| 2  | Threatened or Endangered Species. 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 | NO  
  Go to Question 3 |
| 3  | Documented High Quality Wetland. 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 | NO  
  Go to Question 4 |
| 4  | Significant Breeding or Concentration Area. 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 | NO  
  Go to Question 5 |
| 5  | Category 1 Wetlands. 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 percent areal cover) by Phalaris arundinacea, Lythrum salicaria, or Phragmites australis, 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 | NO  
  Go to Question 6 |
| 6  | Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly Sphagnum 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 | NO  
  Go to Question 7 |
| 7  | Fens. 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 (5.5-8.0) 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 | NO  
  Go to Question 8a |
| 8a | "Old Growth Forest." 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 | NO  
  Go to Question 8b |
<table>
<thead>
<tr>
<th>Question Number</th>
<th>Description</th>
<th>Yes/No</th>
<th>Next Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>8b</td>
<td>Mature forested wetlands. 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 (17.7&quot;) dbh?</td>
<td>Yes</td>
<td>Go to Question 9a</td>
</tr>
<tr>
<td>9a</td>
<td>Lake Erie coastal and tributary wetlands. 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?</td>
<td>Yes</td>
<td>Go to Question 9a</td>
</tr>
<tr>
<td>9b</td>
<td>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?</td>
<td>Yes</td>
<td>Go to Question 9b</td>
</tr>
<tr>
<td>9c</td>
<td>Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically un restricted (no lakeward or upland border alterations), or the wetland can be characterized as an &quot;estuarine&quot; wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submerged aquatic vegetation.</td>
<td>Yes</td>
<td>Go to Question 9c</td>
</tr>
<tr>
<td>9d</td>
<td>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?</td>
<td>Yes</td>
<td>Go to Question 9d</td>
</tr>
<tr>
<td>9e</td>
<td>Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?</td>
<td>Yes</td>
<td>Go to Question 9e</td>
</tr>
<tr>
<td>10</td>
<td>Lake Plain Sand Prairies (Oak Openings) 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 graminineous 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.</td>
<td>Yes</td>
<td>Go to Question 10</td>
</tr>
<tr>
<td>11</td>
<td>Rotic Wet Prairies. 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, Miam, Montgomery, Van Wert etc.).</td>
<td>Yes</td>
<td>Go to Question 11</td>
</tr>
<tr>
<td></td>
<td>Wetland should be evaluated for possible Category 3 status.</td>
<td>No</td>
<td>Complete Quantitative Rating</td>
</tr>
<tr>
<td>Invasive/exotic spp</td>
<td>Fern species</td>
<td>Bog species</td>
<td>Oak opening species</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Lythrum salicaria</td>
<td>Zygadenus elegans var. glaucescens</td>
<td>Carex palustris</td>
<td>Carex cryptolepis</td>
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<td>Myriophyllum spicatum</td>
<td>Calla palustris</td>
<td>Carex atlantica var. capillacea</td>
<td>Carex lasiocarpa</td>
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<td>Najas minor</td>
<td>Calla palustris</td>
<td>Carex echinata</td>
<td>Carex stricta</td>
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<tr>
<td>Phalaris arundinacea</td>
<td>Carex palustris</td>
<td>Carex stricta</td>
<td>Carex echinata</td>
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<tr>
<td>Phragmites australis</td>
<td>Carex palustris</td>
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<td>Potamogeton crispus</td>
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<td>Ranunculus ficaria</td>
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</tr>
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<td>Rhynchospora capillacea</td>
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</tr>
<tr>
<td>Typha angustifolia</td>
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<td>Carex stricta</td>
<td>Carex stricta</td>
</tr>
<tr>
<td>Typha zglauca</td>
<td>Carex palustris</td>
<td>Carex stricta</td>
<td>Carex stricta</td>
</tr>
</tbody>
</table>

End of Narrative Rating. Begin Quantitative Rating on next page.
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)
- 5 to <10 acres (2 to <4.0ha) (3 pts)
- 0.5 to <5 acres (0.2 to <2.0ha) (2 pts)
- 0.1 to <0.5 acres (0.04 to <0.2ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

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)
- VERY NARROW. Buffers average <25m (82ft) around wetland perimeter (1)

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)

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

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.
- None or none apparent (4)
- Recovered (3)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.
- Excellent (7)
- 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)
- Recent or no recovery (1)

Check all disturbances observed:
- ditch
- tile
- dike
- weir
- stormwater input
- point source (nonstormwater)
- filling/grading
- road bed/RR track
- dredging
- other
- shrub/sapling removal
- herbaceous/aquatic bed removal
- sedimentation
- dredging
- farming
- nutrient enrichment

last revised 1 February 2001 jmm
Metric 5. Special Wetlands.

Check all that apply and score as indicated.
- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetlands (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/waterfowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.
- Aquatic bed (3)
- Emergent (3)
- Shrub (3)
- Forest (3)
- Mudflats (3)
- Open water (3)
- 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 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 (3)
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh (6)
- Amphibian breeding pools (3)

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 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

## ORAM Summary Worksheet

<table>
<thead>
<tr>
<th>Narrative Rating</th>
<th>Detail</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1</td>
<td>Critical Habitat</td>
<td><img src="image" alt="No" /> If yes, Category 3.</td>
</tr>
<tr>
<td>Question 2</td>
<td>Threatened or Endangered Species</td>
<td><img src="image" alt="Yes" /> If yes, Category 3.</td>
</tr>
<tr>
<td>Question 3</td>
<td>High Quality Natural Wetland</td>
<td><img src="image" alt="Yes" /> If yes, Category 3.</td>
</tr>
<tr>
<td>Question 4</td>
<td>Significant bird habitat</td>
<td><img src="image" alt="Yes" /> If yes, Category 3.</td>
</tr>
<tr>
<td>Question 5</td>
<td>Category 1 Wetlands</td>
<td><img src="image" alt="Yes" /> If yes, Category 1.</td>
</tr>
<tr>
<td>Question 6</td>
<td>Bogs</td>
<td><img src="image" alt="Yes" /> If yes, Category 3.</td>
</tr>
<tr>
<td>Question 7</td>
<td>Fens</td>
<td><img src="image" alt="Yes" /> If yes, Category 3.</td>
</tr>
<tr>
<td>Question 8a</td>
<td>Old Growth Forest</td>
<td><img src="image" alt="Yes" /> If yes, Category 3.</td>
</tr>
<tr>
<td>Question 8b</td>
<td>Mature Forested Wetland</td>
<td><img src="image" alt="Yes" /> If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
<tr>
<td>Question 9b</td>
<td>Lake Erie Wetlands - Restricted</td>
<td><img src="image" alt="Yes" /> If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
<tr>
<td>Question 9d</td>
<td>Lake Erie Wetlands - Unrestricted with native plants</td>
<td><img src="image" alt="Yes" /> If yes, Category 3</td>
</tr>
<tr>
<td>Question 9e</td>
<td>Lake Erie Wetlands - Unrestricted with invasive plants</td>
<td><img src="image" alt="Yes" /> If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
<tr>
<td>Question 10</td>
<td>Oak Openings</td>
<td><img src="image" alt="Yes" /> If yes, Category 3</td>
</tr>
<tr>
<td>Question 11</td>
<td>Relict Wet Prairies</td>
<td><img src="image" alt="Yes" /> If yes, evaluate for Category 3; may also be 1 or 2.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quantitative Rating</th>
<th>Metric 1. Size</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metric 2. Buffers and surrounding land use</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Metric 3. Hydrology</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Metric 4. Habitat</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>Metric 5. Special Wetland Communities</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Metric 6. Plant communities, interspersion, microtopography</td>
<td>-4</td>
</tr>
<tr>
<td></td>
<td>TOTAL SCORE</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Category based on score breakpoints | 1 |

Complete Wetland Categorization Worksheet.
### Wetland Categorization Worksheet

<table>
<thead>
<tr>
<th>Choices</th>
<th>Circle one</th>
<th>Evaluation of Categorization Result of ORAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you answer &quot;Yes&quot; to any of the following questions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</td>
<td>YES</td>
<td>Is quantitative rating score less than the Category 2 scoring threshold (excluding 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.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Did you answer &quot;Yes&quot; to any of the following questions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</td>
<td>YES</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Did you answer &quot;Yes&quot; to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrative Rating No. 5</td>
<td>YES</td>
<td>Is quantitative rating score greater than the Category 2 scoring threshold (including 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.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</td>
<td>YES</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Does the quantitative score fall with the &quot;gray zone&quot; for Category 1 or 2 or Category 2 or 3 wetlands?</td>
<td>YES</td>
<td>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).</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not 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?</td>
<td>YES</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

### Final Category

<table>
<thead>
<tr>
<th>Choose one</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of Ohio Rapid Assessment Method for Wetlands.
FULTON STATION TO WINDFALL SWITCH 138 KV TRANSMISSION LINE REBUILD PROJECT, MARION AND MORROW COUNTIES, OHIO

D.3 HHEI AND QHEI DATA FORMS
**Ohio EPA**

**Primary Headwater Habitat Evaluation Form**

**HHEI Score (sum of metrics 1, 2, 3):** 56

**SITE NAME/LOCATION**: Turkey Run, Site Number: 11, River Basin: Ohio, Draining Area (? mi²)

**LENGTH OF STREAM REACH (ft)**: 2,000 ft

**DATE**: 9/26/98, SCORER: AK

**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**: Straightened 4y of channel

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PERCENT (%)</th>
<th>TYPE</th>
<th>PERCENT (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLD SLABS [£]</td>
<td>16 pts</td>
<td>SILT [£]</td>
<td>3 pts</td>
</tr>
<tr>
<td>BOULDER [£]</td>
<td>256 - 256 mm [£]</td>
<td>LEAF PACK/WOODY DEBRIS [£]</td>
<td>3 pts</td>
</tr>
<tr>
<td>BEDROCK [£]</td>
<td>16 pts</td>
<td>FINE DETRITUS [£]</td>
<td>3 pts</td>
</tr>
<tr>
<td>COBBLE [£]</td>
<td>65 - 256 mm [£]</td>
<td>CLAY or HARPAN [£]</td>
<td>0 pts</td>
</tr>
<tr>
<td>GRAVEL [£]</td>
<td>2 - 16 mm [£]</td>
<td>MUCK [£]</td>
<td>0 pts</td>
</tr>
<tr>
<td>SAND [£]</td>
<td>&lt; 2 mm [£]</td>
<td>ARTIFICIAL [£]</td>
<td>3 pts</td>
</tr>
</tbody>
</table>

Total of Percentages of Bld Stabs, Boulder, Cobble, Bedrock: 0

(A) [ ]

(B) [ ]

**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES**: 5

**TOTAL NUMBER OF SUBSTRATE TYPES**: 7

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):

- > 30 centimeters (20 pts)
- > 22.5 - 30 cm (30 pts)
- > 10 - 22.5 cm (25 pts)
- > 5 cm - 10 cm (15 pts)
- < 5 cm (5 pts)
- NO WATER OR MOIST CHANNEL (0 pts)

**COMMENTS**: 

**MAXIMUM POOL DEPTH (centimeters)**: 28

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

- > 4.0 meters (13') [350 pts]
- > 1.0 m (3' - 4') [50 pts]
- > 0.5 m (1' - 2') [25 pts]
- > 0.3 m (1' - 3') [20 pts]
- < 0.5 m (1' - 1') (5 pts)

**COMMENTS**: 

**AVERAGE BANKFULL WIDTH (meters)**: 2.0

---

This information must also be completed.

**RIparian Zone and Floodplain Quality**

□ NOTE: River Left (L) and Right (R) as looking downstream:

<table>
<thead>
<tr>
<th>R</th>
<th>L</th>
<th>(Per Bank)</th>
<th>(Most Predominant per Bank)</th>
<th>Conservation Tillage</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>M</td>
<td>Wide &gt;10m</td>
<td>Mature Forest, Wetland</td>
<td>Urban or Industrial</td>
</tr>
<tr>
<td>N</td>
<td>N</td>
<td>Moderate 5-10m</td>
<td>Immature Forest, Shrub or Old Field</td>
<td>Open Pasture, Row</td>
</tr>
<tr>
<td>N</td>
<td>R</td>
<td>Narrow &lt;5m</td>
<td>Residential, Park, New Field</td>
<td>Mining or Construction</td>
</tr>
</tbody>
</table>

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

√ Stream Flowing

**SINUOSITY** (Number of bends per 51 m (200 ft) of channel) (Check ONLY one box):

□ None □ 0.5 □ 1.0 □ 1.5 □ 2.0 □ 2.5 □ >3

**STREAM GRADIENT ESTIMATE**

□ Flat (0.5 ft/100 ft) □ Flat to Moderate □ Moderate (1 ft/100 ft) □ Moderate to Severe □ Severe (10 ft/100 ft)

---

PHWH Form Page - 1
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)

[Boxes for WWH Name, CWH Name, EWH Name with corresponding distances from evaluated stream]

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: ____________  NRCS Soil Map Page: ____________  NRCS Soil Map Stream Order ____________

County: ____________  Township / City: ____________

MISCELLANEOUS

Base Flow Conditions? (Y/N): □ Yes  □ No  Date of last precipitation: _______ Quantity: _______

Photograph Information: ____________

Elevated Turbidity? (Y/N): □ Yes  □ No  Canopy (% open): ________

Were samples collected for water chemistry? (Y/N): □ Yes  □ No  (Note lab sample no. or id. and attach results) Lab Number: ____________

Field Measures: Temp (°C)_______ Dissolved Oxygen (mg/l)_______ pH (S.U.)_______ Conductivity (umhos/cm)_______

Is the sampling reach representative of the stream? (Y/N): □ Yes  □ No  If not, please explain: ____________

Additional comments/description of pollution impacts: ____________

BIOTIC EVALUATION

Performed? (Y/N): □ Yes  □ No  (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): □ Yes  □ No  Voucher? (Y/N): □ Yes  □ No  Salamanders Observed? (Y/N): □ Yes  □ No  Voucher? (Y/N): □ Yes  □ No

Frogs or Tadpoles Observed? (Y/N): □ Yes  □ No  Voucher? (Y/N): □ Yes  □ No  Aquatic Macroinvertebrates Observed? (Y/N): □ Yes  □ No  Voucher? (Y/N): □ Yes  □ No

Comments Regarding Biology: ____________

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

Corn  

June 20, 2009 Revision
Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 33

SITE NAME/LOCATION: Fulton - Wolf Creek NEP Lititz Headwater Project

SITE NUMBER: 2
RIVER BASIN: Ohio
DRAINAGE AREA (m²): 1

LENGTH OF STREAM REACH: 200
LAT: 41°12'55" N
LONG: 82°48'17" W
RIVER CODE: 139
RIVER MILE: 5

DATE: 9/24/14
SCORER: A. K.
COMMENTS: dredged.

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 6). Final metric score is sum of boxes A & B.)

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PERCENT</th>
<th>TYPE</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLDR SLABS [16 pts]</td>
<td></td>
<td>SILT [3 pts]</td>
<td></td>
</tr>
<tr>
<td>BOULDER (&gt;256 mm) [16 pts]</td>
<td></td>
<td>LEAF PACK/MOODY DEBRIS [3 pts]</td>
<td></td>
</tr>
<tr>
<td>BEDROCK [16 pt]</td>
<td></td>
<td>FINE DETRITUS [3 pts]</td>
<td></td>
</tr>
<tr>
<td>COBBLE (05-256 mm) [12 pts]</td>
<td></td>
<td>CLAY or HARDPAN [3 pts]</td>
<td>2.5</td>
</tr>
<tr>
<td>GRAVEL (2-64 mm) [9 pts]</td>
<td>5</td>
<td>MUCK [3 pts]</td>
<td>1.5</td>
</tr>
<tr>
<td>SAND &lt;2 mm [6 pts]</td>
<td>15</td>
<td>ARTIFICIAL [3 pts]</td>
<td></td>
</tr>
</tbody>
</table>

Total Percentages of Blk Slabs, Boulder, Cobble, Bedrock: 0

Score of Two Most Predominate Substrate Types: 3

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):

- > 30 centimeters (20 pts)
- > 22.5 - 30 cm (30 pts)
- > 10 - 22.5 cm (25 pts)
- > 5 cm - 10 cm (15 pts)
- > 5 cm (5 pts)
- NO WATER OR MOIST CHANNEL (0 pts)

COMMENTS: maximum pool depth (centimeters): 1.6

3. Bank Full Width (Measured as the average of 3-4 measurements) (Check ONLY one box):

- > 4.0 meters (>13) (30 pts)
- > 3.0 - 4.0 m (>9'-7'-13') (25 pts)
- > 1.5 - 3.0 m (>4'-8'-9') (20 pts)
- > 1.0 m (>3') (5 pts)
- > 0.5 m (0') (5 pts)

COMMENTS: average bankfull width (meters): 1.6

RIPARIAN ZONE AND FLOODPLAIN QUALITY

- R L R
- L R
- L R
- L R
- L R

RIPARIAN WIDTH

- L R
- L R
- L R
- L R
- L R

FLOODPLAIN QUALITY

- L R
- L R
- L R
- L R
- L R

- Conservation Tillage
- Urban or Industrial
- Open Pasture, Row Crop
- Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

- Stream Flowing
- Subsurface flow with isolated pools (Intermittent)

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

- None
- 0.5
- 1.0
- 1.5
- 2.0
- 2.5
- >3

STREAM GRADIENT ESTIMATE

- Flat (< 0.5 ft/10 ft)
- Flat to Moderate
- Moderate (2-6 ft/10 ft)
- Moderate to Severe
- Severe (>10.5 ft/10 ft)

PHWH Form Page - 1
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: Tucky Run 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: Abiley NRCS Soil Map Page: __________ NRCS Soil Map Stream Order __________
County: Morrow Township / City: Cardington

MISCELLANEOUS

Base Flow Conditions? (Y/N): □ Y __________ Date of last precipitation: __________ Quantity: __________
Photograph Information:

highest Turbidity? (Y/N): □ N __________ Canopy (% open): __________
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: Herbicide, Pesticide, silt

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): □ N __________ Voucher? (Y/N): __________
Salamanders Observed? (Y/N): □ N __________ Voucher? (Y/N): __________
Frogs or Tadpoles Observed? (Y/N): □ N __________ Voucher? (Y/N): __________
Aquatic Macroinvertebrates Observed? (Y/N): □ N __________ Voucher? (Y/N): __________

Comments Regarding Biology: none observed

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW ➔

Res lawn

20 cm deep pool isolated

Res lawn

24" culvert

June 20, 2006 Revision

PWH Form Page - 2
Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

Stream & Location: Fulton-Wedgewood 138 km line Rebuild
Project Streams 3
 Scorers Full Name & Affiliation: Kwalit Stoltz

1) SUBSTRATE Check ONLY Two substrate TYPE BOXES, estimate % of each type present

<table>
<thead>
<tr>
<th>BEST TYPES</th>
<th>OTHER TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLDR /SLABS</td>
<td></td>
</tr>
<tr>
<td>BOULDER [9]</td>
<td></td>
</tr>
<tr>
<td>COBBLE [8]</td>
<td></td>
</tr>
<tr>
<td>GRAVEL [7]</td>
<td></td>
</tr>
<tr>
<td>SAND [6]</td>
<td></td>
</tr>
<tr>
<td>BEDROCK [5]</td>
<td></td>
</tr>
<tr>
<td>POOL RIFFLE</td>
<td></td>
</tr>
<tr>
<td>HARDPAN [4]</td>
<td></td>
</tr>
<tr>
<td>DETRITUS [3]</td>
<td></td>
</tr>
<tr>
<td>MUCK [2]</td>
<td></td>
</tr>
<tr>
<td>SILT [2]</td>
<td></td>
</tr>
<tr>
<td>ARTIFICAL [6]</td>
<td></td>
</tr>
</tbody>
</table>

NUMBER OF BEST TYPES: 4 or more [2] (sludge from point-sources)
3 or less [0]

Comments

2) INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

<table>
<thead>
<tr>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNDERCUT BANKS [1]</td>
</tr>
<tr>
<td>POOLS &gt; 76cm [2]</td>
</tr>
<tr>
<td>OXBOWS, BACKWATERS [1]</td>
</tr>
<tr>
<td>OVERHANGING VEGETATION [1]</td>
</tr>
<tr>
<td>ROOTWADS [1]</td>
</tr>
<tr>
<td>AQUATIC MACROPHYES [1]</td>
</tr>
<tr>
<td>SHALLOWS (IN SLOW WATER) [1]</td>
</tr>
<tr>
<td>BOULDERS [1]</td>
</tr>
<tr>
<td>LOGS OR WOODY DEBRIS [1]</td>
</tr>
</tbody>
</table>

Comments

3) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

<table>
<thead>
<tr>
<th>SINUOSITY</th>
<th>DEVELOPMENT</th>
<th>CHANNELIZATION</th>
<th>STABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH [4]</td>
<td></td>
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</tr>
<tr>
<td>MODERATE [3]</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LOW [2]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NONE [1]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments

4) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

<table>
<thead>
<tr>
<th>EROSION</th>
<th>RIPARIAN WIDTH</th>
<th>FLOOD PLAIN QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE / LITTLE [3]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODERATE [2]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEAVY / SEVERE [1]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WIDE &gt; 50m [4]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODERATE 10-50m [3]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NARROW 5-10m [2]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VERY NARROW &lt; 5m [1]</td>
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</tr>
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<td>NONE [0]</td>
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<td></td>
</tr>
<tr>
<td>FOREST, SWAMP [3]</td>
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</tr>
<tr>
<td>SHRUB OR OLD FIELD [2]</td>
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<td></td>
</tr>
<tr>
<td>RESIDENTIAL, PARK, NEW FIELD [1]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FENCED PASTURE [1]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPEN PASTURE / ROWCROP [0]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments

5) POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH

<table>
<thead>
<tr>
<th>MAXIMUM DEPTH</th>
<th>CHANNEL WIDTH</th>
<th>CURRENT VELOCITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 1m [6]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.7-&lt;1m [4]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.4-&lt;0.7m [2]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 0.2m [0]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

6) GRADIENT

<table>
<thead>
<tr>
<th>GRADIENT</th>
<th>DRAINAGE AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.7 ft/m</td>
<td>MODERATE [6-10]</td>
</tr>
<tr>
<td>15 ft/m</td>
<td>HIGH - VERY HIGH [10-8]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>%POOL</th>
<th>%GLIDE</th>
<th>%RUN</th>
<th>%RIFLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EPA 4520
06/16/06
Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: [40]

1) **SUBSTRATE** Check ONLY Two substrate TYPE BOXES; estimate % or note every type present
   - BEST TYPES
     - BLDR / SLABS [10]
     - BOULDER [9]
     - COBBLE [8]
     - GRAVEL [7]
     - SAND [6]
     - BEDROCK [5]
   - OTHER TYPES
     - POOL RIFFLE
     - HARDPAN [4]
     - DETRITUS [3]
     - MUCK [2]
     - SILT [2]
     - ARTIFICIAL [9]
   - ORIGIN
     - LIMESTONE [1]
     - TILLS [1]
     - WETLANDS [0]
     - HARDPAN [0]
     - SANDSTONE [0]
     - RIPRAP [0]
     - LACUSTURINE [0]
     - SHALE [1]
     - COAL FINES [2]
   - QUALITY
     - HEAVY [-2]
     - MODERATE [-1]
     - NORMAL [0]
     - FREE [1]
     - EXTENSIVE [-2]
     - MODERATE [-1]
     - NORMAL [0]
     - NONE [1]
   - SILT
   - AMOUNT
     - EXTENSIVE 75% [11]
     - MODERATE 25-75% [7]
     - SPARSE 0-25% [3]
     - NEARLY ABSENT <5% [1]
   - NUMBERS OF BEST TYPES: 4 or more (2)
   - Comments

2) **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well defined rock in deep or fast water, or deep, well-defined, functional pools).
   - UNDERCUT BANKS [1]
   - POOLS > 70 cm [2]
   - OXBOWS, BACKWATERS [1]
   - OVERHANGING VEGETATION [1]
   - ROOTWADS [1]
   - AQUATIC MACROPHYTES [1]
   - SHALLOWs (IN SLOW WATER) [1]
   - BOULDERs [1]
   - LOGS OR WOODY DEBRIS [1]
   - ROOTTMATE [1]
   - Comments

3) **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)
   - SINUOSITY
     - HIGH [4]
     - MODERATE [3]
     - LOW [2]
     - NONE [1]
   - DEVELOPMENT
     - EXCELLENT [7]
     - GOOD [5]
     - FAIR [3]
     - POOR [1]
   - CHANNELIZATION
     - NONE [6]
     - RECOVERED [4]
     - RECOVERING [3]
     - RECENT OR NO RECOVERY [1]
   - STABILITY
     - HIGH [3]
     - MODERATE [2]
     - LOW [1]
   - Comments

4) **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)
   - EROSION
     - NONE / LITTLE [3]
     - MODERATE [2]
     - HEAVY / SEVERE [1]
   - RIPARIAN WIDTH
     - WIDE > 50 m [4]
     - MODERATE 10-50 m [3]
     - NARROW 5-10 m [2]
     - VERY NARROW < 5 m [1]
   - FLOOD PLAIN QUALITY
     - FOREST, SWAMP [3]
     - SHRUB OR OLD FIELD [2]
     - RESIDENTIAL, PARK, NEW FIELD [1]
     - FENCED PASTURE [1]
   - Comments

5) **POOL / GLIDE AND RIFFLE / RUN QUALITY**
   - MAXIMUM DEPTH
     - Check ONE (ONLY)
     - > 1m [6]
     - 0.7-1m [4]
     - 0.4-0.7m [2]
     - < 0.4m [1]
   - CHANNEL WIDTH
     - POOL WIDTH > RIFFLE WIDTH [2]
     - POOL WIDTH = RIFFLE WIDTH [1]
     - POOL WIDTH > RIFFLE WIDTH [0]
   - CURRENT VELOCITY
     - TORRENTIAL [-1]
     - TURBID [-1]
     - VERY FAST [1]
     - FAST [1]
     - INTERMITTENT [-2]
     - MODERATE [1]
     - EDDIES [1]
   - Comments

6) **GRADIENT**
   - [%]
     - VERY LOW - LOW [2-4]
   - DRAINAGE AREA
     - MODERATE [6-10]
     - HIGH - VERY HIGH [10-6]
   - % POOL: 10
   - % GLIDE: 0
   - % RUN: 80
   - % RIFFLE: 10
   - Comments

EPA 4520
06/16/06
**A) SAMPLED REACH**

Check ALL that apply

<table>
<thead>
<tr>
<th>METHOD</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOAT</td>
<td>1st-sample pass, 2nd</td>
</tr>
<tr>
<td>WADE</td>
<td>HIGH, UP</td>
</tr>
<tr>
<td>L.LINE</td>
<td>NORMAL, DRY</td>
</tr>
<tr>
<td>OTHER</td>
<td>0.5 Km, 0.2 Km, 0.15 Km, 0.12 Km</td>
</tr>
<tr>
<td>CLARITY</td>
<td>0.57 cm, 0.7 cm, 0.4 cm, 0.3 cm</td>
</tr>
<tr>
<td>CANOPY</td>
<td>&gt; 85% OPEN, 55%-85%, 30%-55%, 10%-&lt;30%</td>
</tr>
</tbody>
</table>

**B) AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE ODOR
- CSOs/SSOs/OUTFALLS

**C) RECREATION**

- POOL: >100 ft, >3 ft

**D) MAINTENANCE**

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG SUCCESSION / OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMoured / SLUMPS
- ISLANDS / SCoured
- IMPounded / DESiccated
- FLOOD CONTROL / DRAINAGE

**E) ISSUES**

- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H2O / TILE / H2O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STANTGANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

**F) MEASUREMENTS**

- Width, Depth, Bankfull Width, Bankfull Depth, WQ Ratio, Floodprone x² Width, Entrance Ratio

Stream Drawing:

- Cornfield
- Undercut Bank
- Pool ~ 25 cm
- Overhanging Veg
- riffle
### Qualitative Habitat Evaluation Index (QHEI) Score: 65

**Stream & Location:** Middle Whetson Creek Rebuild Project

**Scorer's Full Name & Affiliation:** [Signature]

**River Code:** 385 567 890 123 456 789

**Comments:**

### 1. Substrate
- **BEST TYPES**
  - BLDR/SLABS [10]
  - BOULDER [9]
  - COBBLE [8]
  - GRAVEL [7]
  - SAND [6]
  - BEDROCK [5]

### 2. Instream Cover
- **UNDERCUT BANKS**
- **OVERHANGING VEGETATION**
- **SHALLOWS (IN SLOW WATER)**
- **ROOTMATS**

### 3. Channel Morphology
- **SINUOSITY**
- **DEVELOPMENT**
- **CHANNELIZATION**
- **STABILITY**

### 4. Bank Erosion and Riparian Zone
- **RIPARIAN WIDTH**
- **FLOODPLAIN QUALITY**

### 5. Pool / Glide and Riffle / Run Quality
- **MAXIMUM DEPTH**
- **CHANNEL WIDTH**
- **CURRENT VELOCITY**

### 6. Drainage Area
- **GRADIENT**
- **DRAINAGE AREA**

### AMOUNT
- **EXTENSIVE >75% [1]**
- **MODERATE 25-75% [7]**
- **SPARSE 5-25% [3]**
- **NEARLY ABSENT <5% [1]**

### Cover
- **Channel**

### Erosion
- **NONE / LITTLE [3]**
- **MODERATE [2]**
- **HEAVY / SEVERE [1]**

### Recreational Potential
- **Primary Contact**
- **Secondary Contact**

### Run
- **Riffle / Run Substrate**
- **Riffle / Run Embeddedness**

### % Pool: 15 % Glide: 5 % Run: 55 %

---

**EPA 4520**

06/16/06
### Qualitative Habitat Evaluation Index (QHEI)

#### Stream & Location:
- Fulton - Woodfill 136KU Line Resiliency Project
- Stream: New Shaw Creek
- Scorers Full Name & Affiliation: M. Keang / Stantec
- River Code: -
- STORET #: -
- Lat. / Long.: 18
- Office verified: □

#### 1) SUBSTRATE
- **BEST TYPES**
  - BDLR / SLABS [10]
  - BOULDER [9]
  - COBBLE [8]
  - GRAVEL [7]
  - SAND [6]
  - BEDROCK [5]
- **OTHER TYPES**
  - POOL RIFFLE
  - HARDPAN [4]
  - DETRITUS [3]
  - MUCK [2]
  - SILT [2]
  - ARTIFICIAL [0]
- **ORIGIN**
  - LIMESTONE [1]
  - TILLS [1]
  - WETLANDS [0]
  - HARDPAN [0]
  - SANDSTONE [0]
  - RIP/RAP [0]
  - LACUSTURINE [0]
  - SHALE [0]
  - COAL FINES [0]
- **QUALITY**
  - HEAVY [-2]
  - MODERATE [-1]
  - NORMAL [0]
  - FREE [1]
  - EXTENSIVE [-2]
  - MODERATE [1]
  - NORMAL [0]
  - NONE [1]

#### Comments
- 4 or more [2]
- 3 or less [0]
- Sludge from point-sources
- Score natural substrates; ignore maximum 20

#### 2) INSTREAM COVER
- **AMOUNT**
  - Check ONE (Or 2 & average)
  - EXTENSIVE > 75% [11]
  - MODERATE 25-75% [7]
  - SPARSE 5-25% [3]
  - NEARLY ABSENT < 5% [1]

- **COVER**
- Maximum 20

#### Comments
- POOLS > 70 cm [2]
- OXBOWS, BACKWATERS [1]
- AQUATIC MACROPHYTES [1]
- LOGS OR WOODY DEBRIS [1]
- BOULDERS [1]
- ROOTWADS [1]
- SHALLOW (in slow water) [1]
- OVERHANGING VEGETATION [1]
- ROOTMATS [1]

#### 3) CHANNEL MORPHOLOGY
- **CHANNELIZATION**
  - Check ONE in each category (Or 2 & average)
  - HIGH [4]
  - MODERATE [3]
  - LOW [2]
  - NONE [1]

- **STABILITY**
  - CHECK ONE
  - HIGH [3]
  - MODERATE [2]
  - LOW [1]
  - RECOVERING [3]
  - RECOVERED [4]
  - CURRENTLY OR NO RECOVERY [1]

- **Comments**

#### 4) BANK EROSION and RAPIDIAN ZONE
- **Erosion**
- Check ONE (Or 2 per bank & average)
- WIDE > 50 m [4]
- MODERATE 10-50 m [3]
- NARROW 1-10 m [2]
- VERY NARROW < 5 m [1]

- **Comments**

#### 5) POOL / GLIDE and RIFFLE / RUN QUALITY
- **MAXIMUM DEPTH**
- Check ONE (ONLY)
  - > 1 m [6]
  - 0.7 - 1 m [4]
  - 0.4 - 0.7 m [2]
  - 0.2 - 0.4 m [1]
  - < 0.2 m [0]

- **Comments**

#### 6) GRADIENT
- **DRAINAGE AREA**
- Check ONE (Or 2 & average)
- VERY LOW - LOW [2-4]
- MODERATE [8-10]
- HIGH - VERY HIGH [10-6]
- % POOL: 90
- % GLIDE: 10
- % RUN: 10
- % RIFFLE: 0

#### Comments
- Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species.
A] SAMPLED REACH

Check ALL that apply

METHOD

\[ ☐ \] BOAT
\[ ☐ \] WADE
\[ ☐ \] L. LINE
\[ ☐ \] OTHER

STAGE

\[ ☐ \] 1st sample pass 2nd
\[ ☐ \] HIGH
\[ ☐ \] UP
\[ ☐ \] NORMAL
\[ ☐ \] LOW
\[ ☐ \] DRY

DISTANCE

\[ ☐ \] 0.5 Km
\[ ☐ \] 0.2 Km
\[ ☐ \] 0.15 Km
\[ ☐ \] 0.12 Km
\[ ☐ \] OTHER

CLARITY

\[ ☐ \] 1st sample pass
\[ ☐ \] 2nd
\[ ☐ \] < 20 cm
\[ ☐ \] 20 - 40 cm
\[ ☐ \] 40 - 70 cm
\[ ☐ \] > 70 cm
\[ ☐ \] SECCHI DEPTH

CANOPY

\[ ☐ \] > 85% OPEN
\[ ☐ \] 55% - 85%
\[ ☐ \] 30% - 55%
\[ ☐ \] 10% - 30%
\[ ☐ \] < 10% CLOSED

C] RECREATION

AREA DEPTH

POOLS: \[ ☐ \] > 100 ft² \[ ☐ \] > 3 ft

B] AESTHETICS

\[ ☐ \] NUISANCE ALGAE
\[ ☐ \] INVASIVE MACROPHYTES
\[ ☐ \] EXCESS TURBIDITY
\[ ☐ \] DISCOLORATION
\[ ☐ \] FOAM / SCUM
\[ ☐ \] OIL SHEEN
\[ ☐ \] TRASH / LITTER
\[ ☐ \] NUISANCE ODOR
\[ ☐ \] SLUDGE DEPOSITS
\[ ☐ \] CSOs / SSos / OUTFALLS

D] MAINTENANCE

CIRCLE SOME & COMMENT

\[ ☐ \] PUBLIC / PRIVATE / BOTH / NA
\[ ☐ \] ACTIVE / HISTORIC / BOTH / NA
\[ ☐ \] YOUNG-SUCCESSION-OLD
\[ ☐ \] SPRAY / SNAG / REMOVED
\[ ☐ \] MODIFIED / DIPPED OUT / NA
\[ ☐ \] LEVEED / ONE SIDED
\[ ☐ \] RELOCATED / CUTOFFS
\[ ☐ \] MOVING-BEDLOAD-STABLE
\[ ☐ \] ARMOURED / SLUMPS
\[ ☐ \] ISLANDS / SCORED

E] ISSUES

\[ ☐ \] WWTP / CSO / NPDES / INDUSTRY
\[ ☐ \] HARDENED / URBAN / DIRT & GRIME
\[ ☐ \] CONTAMINATED / LANDFILL
\[ ☐ \] BMPs-CONSTRUCTION-SEDIMENT
\[ ☐ \] LOGGING / IRRIGATION / COOLING
\[ ☐ \] BANK / EROSION / SURFACE
\[ ☐ \] FALSE BANK / MANURE / LAGOON
\[ ☐ \] WASH H₂O / TILE / H₂O TABLE
\[ ☐ \] ACID / MINE / QUARRY / FLOW
\[ ☐ \] NATURAL / WETLAND / STAGNANT
\[ ☐ \] PARK / GOLF / LAWN / HOME
\[ ☐ \] ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

\[ ☐ \] width
\[ ☐ \] depth
\[ ☐ \] max. depth
\[ ☐ \] bankfull width
\[ ☐ \] bankfull depth
\[ ☐ \] WID ratio
\[ ☐ \] bankfull max. depth
\[ ☐ \] flood prone x² width
\[ ☐ \] entrench. ratio

Legacy Tree:
**Ohio EPA**

Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3): 24**

**SITE NAME**: Fulton - W-Wright 138 kv line rebuilt project

**SITE NUMBER**: 2

**LENGTH OF STREAM REACH (ft)**

**LONGITUDE**: 82.671

**LATITUDE**: 40.922

**LONG RIVER CODE**: 17

**DATE**: 7/16/16

**SCORED BY**: Knapp

**COMMENTS**: ephemeral

**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**: Agricultural ditch

---

### 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.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLDR SABS</td>
<td>16 pts</td>
</tr>
<tr>
<td>BCOULDER</td>
<td>&gt;256 mm</td>
</tr>
<tr>
<td>BEDROCK</td>
<td>18 pts</td>
</tr>
<tr>
<td>COBBLE</td>
<td>65-256 mm</td>
</tr>
<tr>
<td>GRAVEL</td>
<td>2-64 mm</td>
</tr>
<tr>
<td>SAND</td>
<td>&lt;2 mm</td>
</tr>
</tbody>
</table>

**TOTAL of Percentages of Blkd Sabs, Boulder, Cobble, Bedrock**: 12 (A)

**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES**: 12 (B)

**TOTAL NUMBER OF SUBSTRATE TYPES**: 2

### 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):

- > 30 centimeters [20 pts]
- 22.5 - 30 cm [30 pts]
- 10 - 22.5 cm [25 pts]
- > 5 cm - 10 cm [15 pts]
- < 5 cm [5 pts]
- NO WATER OR MOIST CHANNEL [0 pts]

**COMMENTS**: MAXIMUM POOL DEPTH (centimeters): 5

### 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

- > 4.0 meters (> 13') [30 pts]
- 3.0 m - 4.0 m (> 9’7” - 13) [25 pts]
- 1.5 m - 3.0 m (> 4’8” - 9’7”) [20 pts]

**COMMENTS**: AVERAGE BANKFULL WIDTH (meters): 12 (A)

---

**RIPARIAN ZONE AND FLOODPLAIN QUALITY**

<table>
<thead>
<tr>
<th>Width</th>
<th>Floodplain Quality</th>
<th>This information must also be completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Per Bank)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wide &gt;10m</td>
<td>□</td>
<td>□ Conservation Tillage</td>
</tr>
<tr>
<td>Moderate 5-10m</td>
<td>□</td>
<td>□ Urban or Industrial</td>
</tr>
<tr>
<td>Narrow &lt;5m</td>
<td>□</td>
<td>□ Open Pasture, Row Crop</td>
</tr>
<tr>
<td>None</td>
<td>□</td>
<td>□ Mining or Construction</td>
</tr>
</tbody>
</table>

**FLOW REGIME (At Time of Evaluation)**

- Stream Flowing
- Subsurface flow with isolated pools (Interstital)

**SINUOSITY (Number of bends per 61 m (200 ft) of channel)**

- None
- 0.5
- 1.0
- 1.5
- 2.0
- 2.5
- >3

**STREAM GRADIENT ESTIMATE**

- Flat (0 5/100 ft)
- Flat to Moderate
- Moderate (2-10/100 ft)
- Moderate to Severe
- Severe (>10/100 ft)

---

PHWH Form Page 1
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)
☐ KWH Name: show creek
☐ CWH Name:
☐ EWH Name: __________________________________________ Distance from Evaluated Stream _____________

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Asbury
NRCS Soil Map Page: ______ NRCS Soil Map Stream Order ______
County: Marion
Township / City: Marion

MISCELLANEOUS
Base Flow Conditions? (Y/N): ☑ Date of last precipitation: 9/26/16 Quantity: 0.1”

Photograph information: __________________________________________

Elevated Turbidity? (Y/N): ☐ Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): ☐ (Note lab sample no. or id, and attach results) Lab Number: __________

Field Measures: Temp (°C) _______ Dissolved Oxygen (mg/l) _______ pH (S.U.) _______ Conductivity (umhos/cm) _______

Is the sampling reach representative of the stream (Y/N)? ☐ If not, please explain: __________________________________________

Additional comments/description of pollution impacts: ____________________________________________________________

BIOTIC EVALUATION
Performed? (Y/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: ____________________________________________________________

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

[Diagram of stream reach with notes on hillside (old field) and soybean]

PHWH Form Page - 2