LETTER OF NOTIFICATION FOR Ginger Switch Repair and Upgrade Project

PUCO Case No. 18-0156-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.

June 1, 2018

LETTER OF NOTIFICATION

AEP Ohio Transmission Company, Inc.'s
Ginger Switch Repair and Upgrade Project

4906-6-05

AEP Ohio Transmission Company, Inc. ("AEP Ohio Transco") provides 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 proposes to construct the Ginger Switch Repair and Upgrade project ("Project") in Springfield Township, Ross County, Ohio. The Project is located west of Ginger Hill Road, and is bounded by Charleston Pike to the north and Ault Road to the south. The length of the proposed Project is approximately 0.5 miles and will require a 100-foot wide permanent right-of-way (ROW). The Project involves the replacement of four structures on the existing Berlin-Ross 69 kV line to address the failure of a switch on the central most structure that is to be replaced, structure 203. The existing switch pole, two wood H-frame structures, and one single wood poles will be replaced with steel monopole structures with 138kV design capabilities. AEP Ohio Transco has requested to upgrade the Berlin-Ross 69kV line to 138kV capabilities through separate applications with the OPSB (Ross-Ginger Switch 138kV Transmission Line Project [case number 17-0637-EL-BTX], Ginger Switch-Vigo 138kV Transmission Line Project [case number 17-0638-EL-BTX], Vigo-Pine Ridge Switch 138kV Transmission Line Project [case number 18-0030-EL-BTX), and Pine Ridge Switch-Heppner 138kV Transmission Line Project [case number 18-0031-EL-BTX]). In the interim, this Project is necessary in order to restore the ability to isolate a fault on the line and ultimately improve reliability at the Ginger Station. A portion of the transmission line rebuild work for this Project will occur within AEP Ohio Transco's existing transmission line ROW. However, supplemental easements will be required.

The Project meets the requirements for a Letter of Notification (LON) because it is within the types of projects defined by 1(b) of Appendix A to Ohio Administrative Code Section 4906-1-01, *Application Requirement Matrix For Electric Power Transmission Lines*:

(1) New construction, extension, or relocation of a single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows:

(b) Line(s) greater than 0.2 miles in length but not greater than two miles in length.

The Project has been assigned PUCO Case No. 18-0156-EL-BLN.

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 addresses the switch failure on structure 203. The failure of this switch poses a reliability concern for the Ginger Station. Currently, a temporary bypass was installed allowing the Ginger Station to be radially fed. The single source to AEP Ohio Transco's Ginger Station is a reliability challenge due to aging wood pole infrastructure. The switch pole and three other poles will be replaced to allow for installation of a new switch to feed AEP Ohio Transco's Ginger Station. In addition, the proposed Project is part of the overall Ross-Jackson County Area Improvements Project, which has been implemented to improve the reliability of the electric transmission grid in Ross and Jackson Counties, OH.

The existing 69 kV transmission facilities are in need of a rebuild and redesign to better meet the needs of customers in the area. The existing infrastructure was initially established in 1926 and has deteriorated to the point that its poor performance is causing long recovery times and frequent customer interruptions. In addition to the existing line's poor performance, there is a need to construct to 138 kV standards to relieve the only 138 kV source at the Ross Substation from the south (via the Waverly Station), which is currently loaded to 90%. By adding an additional 138 kV source from the south it will allow for future operational and construction flexibility and may avoid rebuilding the Waverly-Ross circuit in the future due to contingency overload.

AEP Ohio Transco has developed a multi-year construction plan for the Ross-Jackson Area Improvements Project that will replace the infrastructure in place today. The focus of the construction is to replace the existing 69 kV transmission facilities with new 138 kV transmission facilities. Although the Project is being built to 138 kV standards, the Project will initially be energized to 69 kV. The Ross-

Jackson Area Improvement Project serves several customers, which may not immediately have the ability to upgrade their facilities. Therefore, by constructing the line to 138 kV standards, AEP Ohio Transco will be able to energize the line at 138 kV in the future when customers are ready. The benefits of this Project include faster recovery of service after outages, fewer service interruptions and overall improved service to customers.

The Project has been submitted to PJM Interconnection as a supplemental reliability improvement project and was reviewed on November 2, 2017, at the PJM Interconnection Subregional RTEP Committee – Western meeting (see Appendix B). The Project is included in AEP Ohio Transco's Long Term Forecast Report (FE-T10, page 76 of 78, see Appendix B). The PJM identifier for the Project is S1432.

B(3) Project Location

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

The location of the Project in relation to existing transmission lines and stations is shown on Figure 1. Figure 2 identified the Project components on a 2015 aerial photograph.

B(4) Alternatives Considered

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

The Project proposes to be offset approximately 50 feet from the existing Berlin-Ross 69 kV transmission line. This allows for the Project to be built in the clear, without requiring an outage on the existing Berlin-Ross 69 kV transmission line. A large portion of the proposed transmission line repair/upgrade work will occur within existing ROW or Ohio Power Company property, therefore, no other alternatives were considered. The proposed Project will incur minimal socioeconomic, ecological, or construction impacts since the proposed Project will be able to utilize existing AEP Ohio Transco easement.

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 informs affected property owners and tenants about its projects through several different mediums. Within seven days after it files this LON, AEP Ohio Transco will issue a public notice in a newspaper of general circulation in the Project area. The notice will comply with all requirements under O.A.C. 4906-6-08(A)(1)-(6). Further, AEP Ohio Transco will mail a letter, via first class mail, to affected landowners, tenants, contiguous owners and any other landowner AEP Ohio approached for an easement necessary for the construction, operation, or maintenance of the Project. The letter will comply with all the requirements of O.A.C. 4906-6-08(B). AEP Ohio Transco also maintains a website (http://aeptransmission.com/ohio/) which provides the public access to an electronic copy of this LON and the public notice for this LON. A paper copy of the LON will be served to the public library in each political subdivision affected by this Project. AEP Ohio Transco will also serve an electronic copy of this LON on the chief executive officer and head of public agency required to be served under O.A.C. 4906-6-07(A)(1). Lastly, AEP Ohio Transco retains ROW land agents who discuss Project timelines, construction and restoration activities with affected owners and tenants.

B(6) Construction Schedule

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

AEP Ohio Transco anticipates that construction of the Project will begin in October 2018, and the in-service date (completion date) of the Project will be approximately December 2018.

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 identifies the location of the Project area on a United States Geological Survey 1:24,000 quadrangle map. Figure 2 is an aerial map of the Project area.

To visit the Project from Columbus, Ohio, drive south on Interstate 71-South (I-71 S) for approximately 5 miles, following signs for Cincinnati. Take exit 101 to merge onto I-270 E towards Wheeling. Take exit 52 and merge onto United States (US) Route 23 towards Circleville, and follow for approximately 40 miles. Take the US-50 W exit towards Main St/Chillicothe. Turn left onto US-50 E/Charleston Pike for 5 miles, then turn right to stay on Charleston Pike for 0.3 miles. Turn right onto Ginger Hill Road. The Project area is approximately 1.2 miles south on Ginger Hill Road. The structures to be constructed are four structures to the west of Ginger Hill Road, and three structures to the east of Ginger Hill Road.

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.

A portion of the proposed transmission line rebuild work for the Project will occur within existing ROW. AEP Ohio Transco will reach out to gain supplemental easements for the additional ROW and access to ROW during construction for the Project (see Table 1 below).

Table 1. List of Affected Properties

Parcel Number	Easement/Option Obtained (Yes/No)*
330603031000	Yes

*AEP Ohio Transco may supplement its existing rights under certain blanket easements identified above

B(9) The applicant shall describe the following information regarding the technical features of the Project:

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

The Project will include the replacement of two existing H-frame wood pole structures and 2 single wood pole structures with new steel single pole structures. The Project also will include the installation of new 1033.5 KCM 54/7 "Curlew" conductor, along with 0.646 diameter OPGW. The existing conductor type is 4/0 KCM ACSR 6/1 and the existing shield wire is 7#10 Alumoweld. The design voltage will be 138 kV, but initially energized to 69 kV, with future operational plans to operate at 138kV. A portion of the proposed transmission line rebuild work will occur within existing AEP Ohio Transco ROW. Additional supplemental property easements will be necessary to construct the Project and operate the transmission line.

(b) 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:

(i) Calculated Electric and Magnetic Field Strength Levels

Not applicable. The proposed Project is not located within 100 feet of an occupied residence or institution.

(ii) 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.

Not applicable. The proposed Project is not located within 100 feet of an occupied residence or institution.

(c) The estimated capital cost of the project.

The capital costs estimate for the proposed Project, comprised of applicable tangible and capital costs, is approximately $700,000.

B(10) The applicant shall describe the social and ecological impacts of the project.

(a) 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 in Springfield Township, Ross County, Ohio. The Project vicinity is rural in nature, comprised primarily of agricultural/row crop, early successional woodland, and old field/pasture (see Figure 2 in Appendix A). Approximately half of the new ROW is comprised of existing ROW from the Berlin-Ross 69 kV line (2.7 acres). Additional land use within the Project area includes old field/pasture (1.3 acres) and agricultural row crop (1.2 acres), together with existing ROW these land uses comprise approximately 90 percent of the total 5.8-acre Project area. There are no occupied residences, churches,

cemeteries, schools, parks, preserves, or wildlife management areas located within 1,000 feet of the centerline.

(b) 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 reconnaissance, there are approximately 1.8 acres of agricultural land in the Project area, comprised primarily of pasture and row crop. According to the Ross County Auditor's Office (May 2018), there are no registered agricultural district parcels located in the Project area.

(c) 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.

In March and August 2017, AEP Ohio Transco's consultant completed Phase I cultural resources investigations for the proposed Project, which will be provided to the OPSB under separate cover.

The Project will not impact or affect any archaeological sites and no further archaeological work is recommended by AEP Ohio Transco's consultant. Additionally, there are no significant buildings or structures that are older than 50 years identified in the study area. Therefore, AEP Ohio Transco's consultant recommends that no historic properties will be affected by the Project.

The Ohio History Connection concurrence letter for the Project can be found in Appendix C. AEP Ohio Transco's consultant recommends that no further work is deemed necessary for the Project.

(d) 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 (OEPA) for authorization of construction storm water discharges under General Permit OHCD00005. 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 no 100-year floodplains mapped within the Project area. Therefore, a floodplain permit will not be required for this Project.

The Project may temporarily impact wetlands during construction, however, it is anticipated that the Project will meet the terms and conditions of the pre-authorized Section 401 Water Quality Certification from the OEPA.
There are no other known local, state or federal requirements that must be met prior to commencement of the proposed Project.

(e) 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 May 2017 available at www.fws.gov/midwest/endangered/lists/pdf/OhioCtyListMay2017.pdf was reviewed to determine the threatened and endangered species known to occur in Ross County. This USFWS publication lists Indiana bat (*Myotis sodalis*; endangered), northern long-eared bat (*Myotis septentrionalis*; threatened), running buffalo clover (*Trifolium stoloniferum*; endangered), clubshell (*Pleurobema clava*; endangered), northern riffleshell (*Epioblasma torulosa rangiana*; endangered), rayed bean (*Villosa fabalis*; endangered), and snuffbox (*Epioblasma triquetra*; endangered) as occurring, or potentially occurring, in Ross County. The eastern hellbender (*Cryptobranchus alleganiensis*; species of concern), bald eagle (*Haliaeetus leucocephalus*; species of concern) and timber rattlesnake (*Cortalus horridus horridus*; species of concern) are also on this list of species for Ross County. As part of the ecological study completed for the Project, a coordination letter was submitted to the USFWS Ohio Ecological Services Field Office seeking an environmental review for potential impacts to threatened or endangered species. The June 2, 2017 response letter from USFWS (see Appendix D) indicates 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 indicates 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 Ohio Transco's consultant did identify several potentially suitable Indiana bat/northern long-eared bat roost trees within the Project area, though no potential winter hibernacula were encountered. No suitable habitat for federally-listed mussels was identified in the Project area and no in-water work is proposed by AEP Ohio Transco. No bald eagle nests were observed within the Project area or within the vicinity of the Project area.

Several state-listed threatened species, endangered species, and species of concern are listed by the Ohio Department of Natural Resources (available at http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/species%20and%20habitats/state-listed%20species/ross.pdf) as occurring, or potentially occurring in Ross County. These state-listed species are addressed in detail in the Ecological Survey Report included in Appendix D.

Coordination letters were submitted via email to the Ohio Department of Natural Resources ("ODNR") Division of Wildlife ("DOW") Ohio Natural Heritage Program ("ONHP") and the ODNR Office of Real Estate in May 2017, seeking an environmental review of the proposed Project for potential impacts on state-listed and federally-listed threatened or endangered species. A response from ODNR's DOW/ONHP was received on August 22, 2017 (Appendix D). The ODNR listed that the Project is within the range of the Indiana bat (*Myotis sodalis*), the snuffbox (*Epioblasma triquetra*), the sheepnose (*Plethobasus cyphyus*), the clubshell (*Pleurobema clava*), the fanshell (*Cyprogenia stegaria*), the northern riffleshell (*Epioblasma torulosa rangiana*), the rayed bean (*Villosa fabalis*), the rabbitsfoot (*Quadrula cylindrica cylindrica*), the long-solid (*Fusconaia maculata maculata*), the sharp-ridged pocketbook (*Lampsilis ovata*), the little spectaclecase (*Villosa lienosa*), the black sandshell (*Ligumia recta*), the fawnsfoot (*Truncilla donaciformis*), the threehorn wartyback (*Obliquaria reflexa*), the shovelnose sturgeon (*Scaphirhynchus platorynchus*), the blue sucker (*Cycleptus elongatus*), the spotted darter (*Etheostoma maculatum*), the shortnose gar (*Lepisosteus platostomus*), the northern madtom (*Noturus stigmosus*), the Tippecanoe darter (*Etheostoma Tippecanoe*), the channel darter (*Percina copelandi*), the American eel (*Anguilla rostrata*), the river darter (*Percina shumardi*), the eastern hellbender (*Cryptobranchus alleganiensis*), the timber rattlesnake (*Crotalus horridus*), the spotted turtle (*Clemmys guttata*), the mud salamander (*Pseudotriton montanus*), and the black bear (*Ursus americanus*). Tree clearing is proposed between October 1 and March 31 and no in water work is proposed for the Project. Therefore, no adverse impacts to these species are anticipated.

(f) 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) indicates that there are no federal wilderness areas, wildlife refuges, or designated critical habitat in the vicinity of the Project. Correspondence from ODNR-DOW/ONHP (Appendix D) indicates that they are unaware of any scenic rivers, unique ecological communities, significant geological features, or federal/state parks, preserves, or other managed areas within one mile of the Project area.

There are no 100-year floodplains mapped within the Project area.

On May 18 and 23, 2017, June 19, 2017, and July 31, 2017, wetland and stream delineation surveys were completed by AEP Ohio Transco's consultant within the Project area. One (1) emergent wetland and one (1) proposed jurisdictional ditch were identified within in the Project area (see Figure 2 in Appendix D).

(g) 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.

Appendix A Project Maps

Legend

- ▲ Station
- Proposed 138 kV Line
- Existing Berlin-Ross 69kV Line

Data Source: USGS-7.5 minute Topographic Quadrangles - Chillicothe East, published 1985 and Londonderry, published 1963

State Plane Ohio South NAD83

Date: 5/30/2018

FIGURE 1
TOPOGRAPHIC OVERVIEW

AEP TRANSMISSION
An AEP Company
BOUNDLESS ENERGY

Ginger Switch 138kV Repair and Upgrade Project

0 1,000 2,000 4,000

Feet

Legend

- Station
- Proposed 138 kV Line
- Existing Berlin-Ross 69kV Line

Data Source: ESRI Basemap
National Agricultural Imagery
Program (NAIP), 2015

State Plane Ohio South
NAD83

Date: 5/30/2018

FIGURE 2
AERIAL PROJECT MAP

AEP TRANSMISSION
An AEP Company
BOUNDLESS ENERGY

Ginger Switch 138kV Repair
and Upgrade Project

0 250 500 1,000
Feet

Appendix B PJM Submittal and 2018 Long Term Forecast Report

PJM Submittal

AEP Transmission Zone: Supplemental
Lick – Ross Line Rebuild

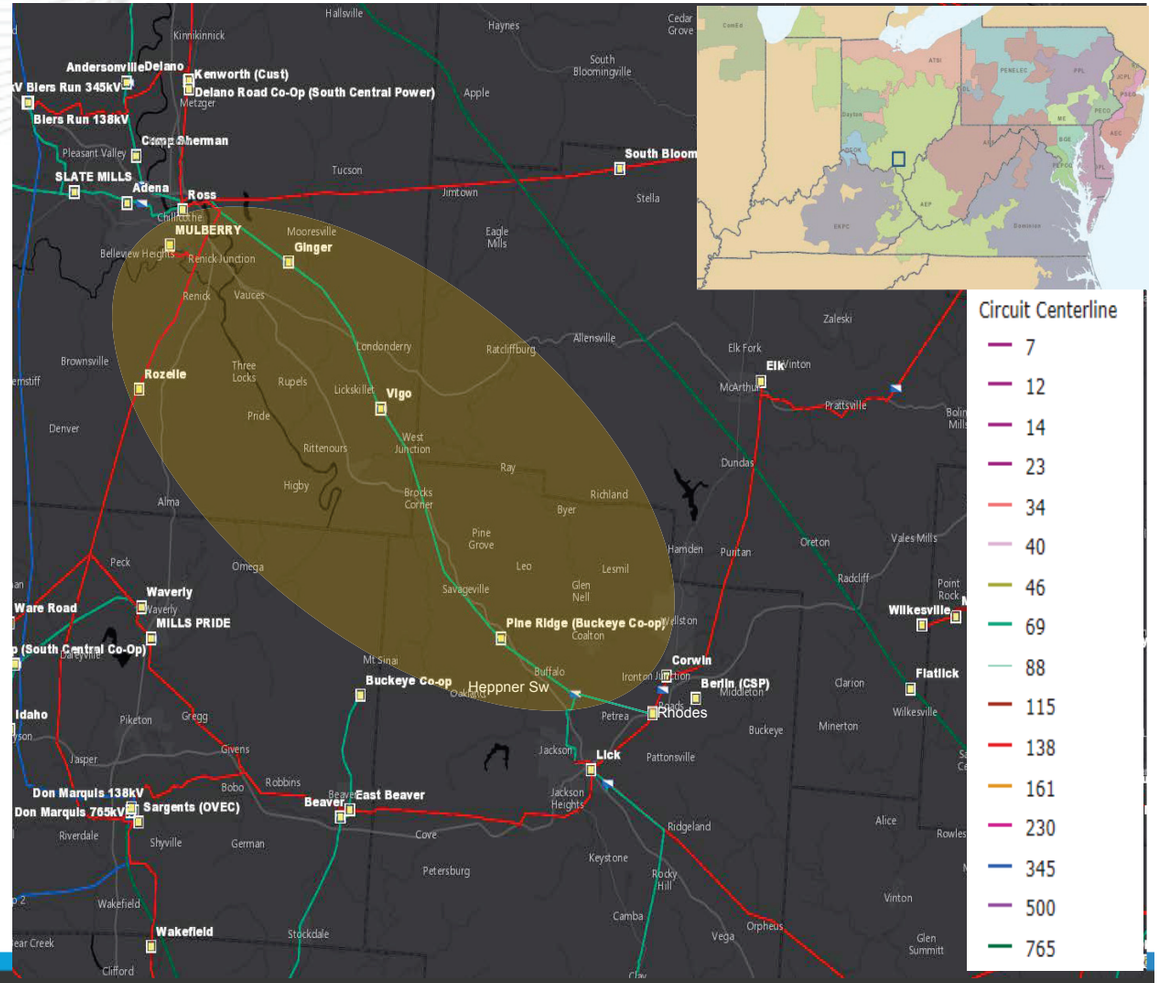
Problem Statement:

Equipment Material/Condition/Performance/Risk:

Of the 37+ miles of conductor on the entire circuit, 88% (32.96 miles) is original from the 1926 line construction – mostly 4/0 ACSR Penguin (50 MVA rating). Of the 275 structures, 98% (269) are wood and 43% (119) are older than 1960. There are 241 open conditions on the line (109 A & 132 B conditions), including issues with conductor, structures, and ROW encroachments. The line has been responsible for 1.4M CMI from 2013-2015, including over 12.5k customer interruptions. Every switch on the line is currently inoperable, lengthening all sustained outages because we have to dispatch personnel to each site and cut the line in order to restore customers. This has led to an average circuit restore time due to transmission outages of over 30 hours.

Operational Flexibility and Efficiency:

AEP's FOI calculations support the addition of MOABs on this circuit. However, considering the length of the line, rough terrain, and remote locations, breakers will be added at Vigo Station and MOABs at both Ginger and Pine Ridge Sw. The added sectionalizing will heavily reduce CMI for all customers attached to this circuit, which currently see average restore times of consistently over 30 hours to resolve issues on the transmission system.



AEP Transmission Zone: Supplemental
Lick – Ross Line Rebuild

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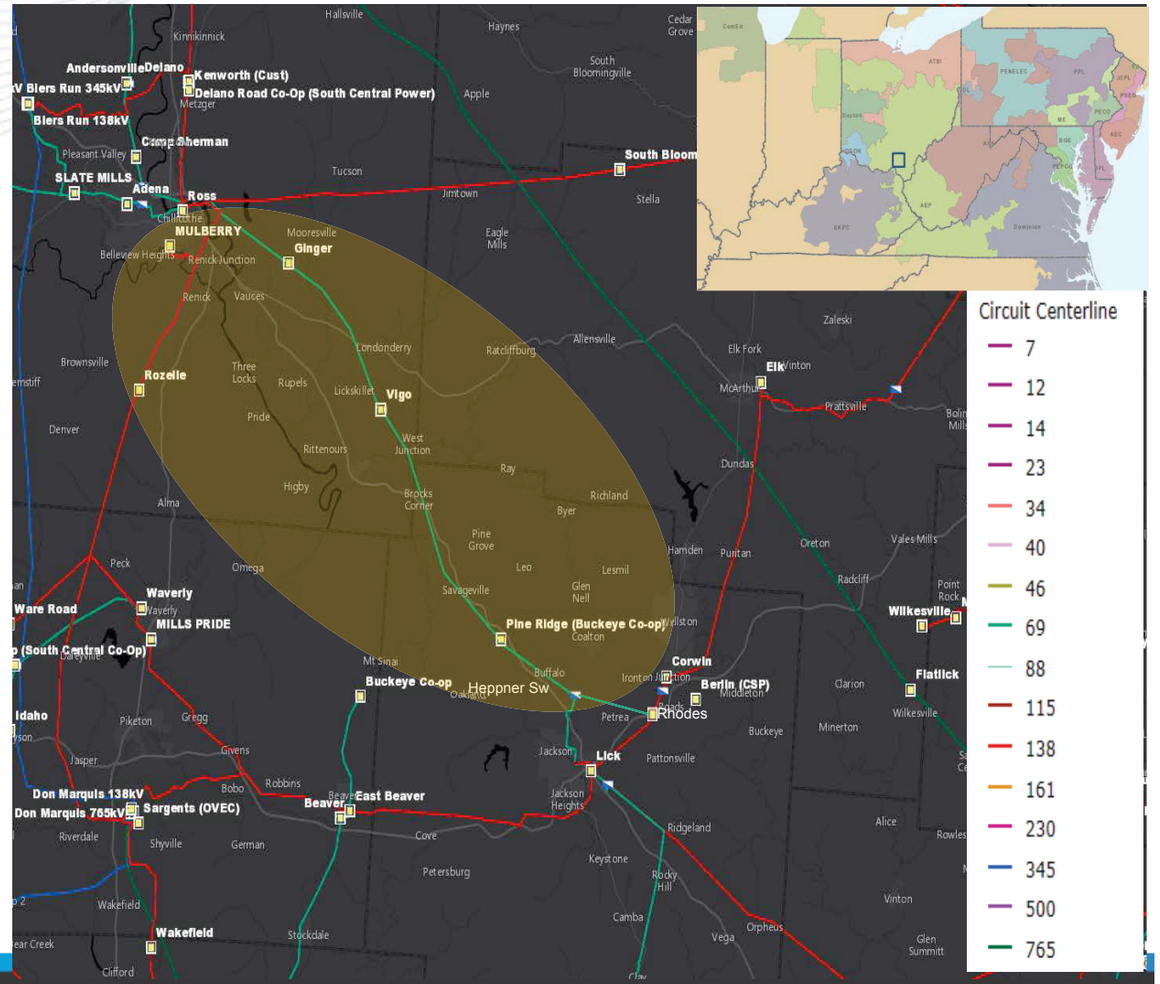
Potential Solution:
Rebuild from Ross to Heppner Sw (formerly Coalton Sw). Single Circuit 138kV Rebuild (Energized at 69kV) with 1033 ACSR Curlew Conductor (148 MVA SN rating)

Estimated Cost: $46.2M

Replace switches at Ginger with a new 138kV, 2000A phase-over-phase switch with MOABs. Replace switches at Vigo with a new box bay and 138kV, 3000A breakers. Replace Pine Ridge Switch with a new 138kV, 2000A phase-over-phase switch with MOABs.

Estimated Cost: $4.1M

Total Estimated Transmission Cost: $50.3M



AEP Transmission Zone: Supplemental
Lick – Ross Line Rebuild

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Alternative:
Construct the line to 69 kV standards. While this is a feasible alternative, constructing to 138kV standards will allow for an additional 138kV path to support Ross Station, as there is currently only one 138kV source that currently feeds Ross Station from the South (via Waverly Station) and that circuit is loaded to ~90% of its conductor rating (636 ACSR, 310 MVA rating) under N-1-1. The additional source will relieve the Waverly source and allow future operational and construction flexibility.

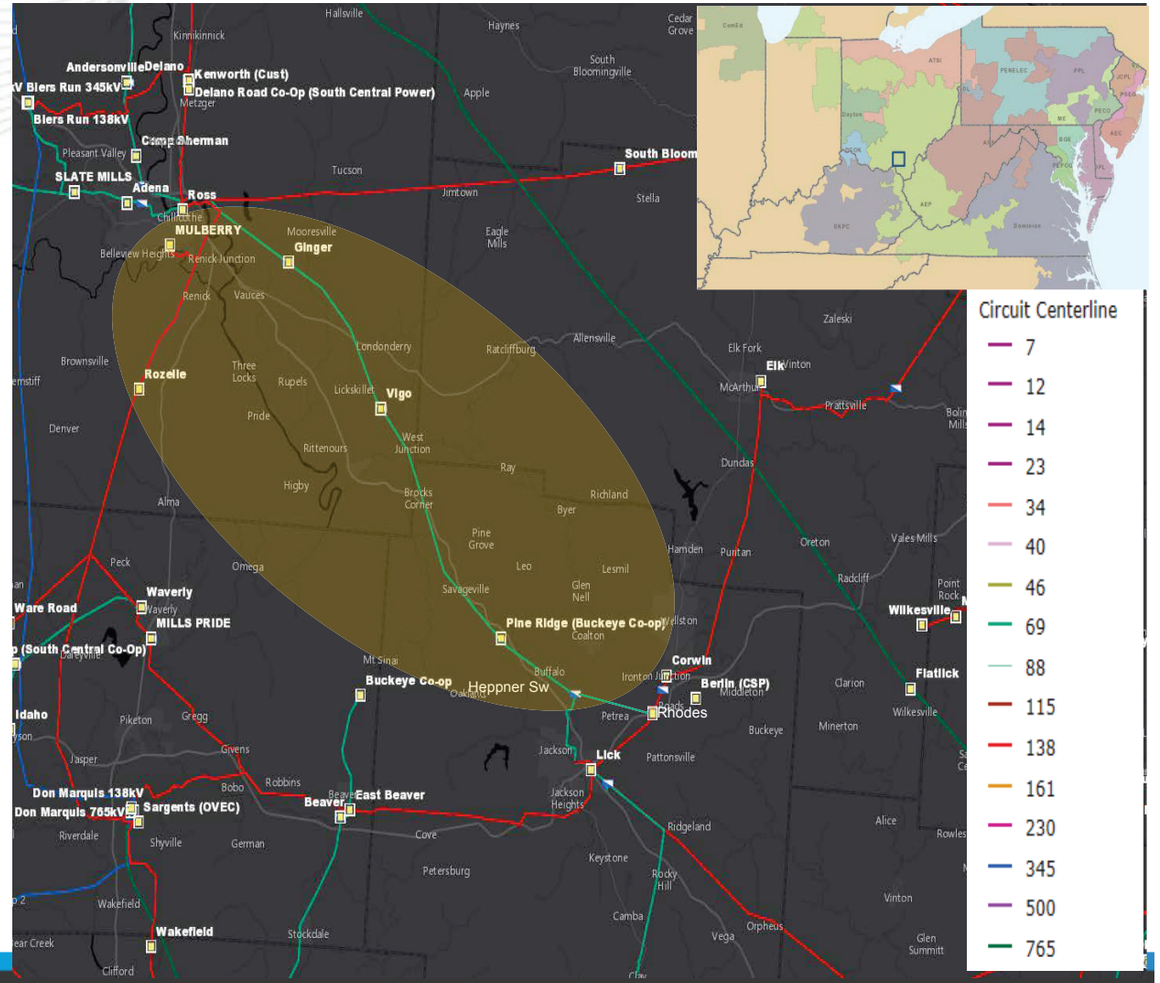
Since the existing Lick-Ross line was constructed in 1926, most of the easements are blanket easements, so as part of the project defined Right-of-Way widths will be obtained, resulting in the same ROW costs for the alternate. Construction and material costs would have a maximum increase of around 10%, yielding an approximate cost increase to construct to 138kV standards of $3M or an approximate 6% project cost increase.

The actual conversion of the line to 138kV will take some time due to there being 2-AEP and 1-Co-Op stations being served from this line, and is not anticipated for 5-10 years.

Estimated cost: $46M

Projected In-service: 12/31/2021

Project Status: Scoping



2018 Long Term Forecast Report

AMERICAN ELECTRIC POWER

BOUNDLESS ENERGY™

Legal Department

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AEP.com

May 31, 2018

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RE: *In the Matter of the Long-Term Forecast Report of AEP Ohio Transmission Company, Inc. and Related Matters*, Case No. 18-1501-EL-FOR

Dear Ms. McNeal:

On April 16, 2018, AEP Ohio Transmission Company, Inc. (the "Company") initiated this docket by filing its Long-Term Forecast Report (LTFR). In working with Staff and in reviewing the filing for accuracy and completeness, the Company identified several corrections to Forms FE-T9 and FE-T10 related to planned electric transmission lines and proposed substations that will operate at 125 kilovolts (kV) or higher. The Company therefore submits the attached corrected, supplemental Forms FE-T9 and FE-T10 for facilities above 125 kV. This filing supersedes and replaces the Company's previously-filed Forms FE-T9 and FE-T10 in their entirety.

Additionally, at Staff's request, the Company intends to file an additional supplement to its Forms FE-T9 and FE-T10 next month to provide information regarding planned electric transmission lines and proposed substations that will operate at 69 kV. At that time, the Company will submit an additional affidavit, as required by Ohio Adm. Code 4901:5-1-03(D), to support the complete supplemental filing.

If there are any additional questions, please do not hesitate to contact me. Thank you for your attention to this matter.

Respectfully submitted,

/s/ Christen M. Blend
Christen M. Blend

PUCO FORM FE-T10
AEP OHIO TRANSMISSION COMPANY
SUMMARY OF PROPOSED SUBSTATIONS

Filed May 31, 2018

Substation Name	Voltage(s) (kV)	Type Distribution (D) Transmission (T)	Timing	Line Association(s)	Line Existing or Proposed	Minimum Substation Site Acreage
Babbit (S1373)	345/138	T	8/1/2018	Jug-Kirk 138kV => Babbit-Jug 138kV & Babbit-Kirk 138kV	Existing	3.5
Bell Ridge Switch (s1160)	138	T	2020	Devola - Rouse switch 138 kV	Proposed	TBD
Buell (s1125)	138/12	D	2019-20	South Caldwell - Devola 138 kV line	Proposed	3
Devola (s1125)	138/12	D	2020	Mill Creek-Belmont 138kV tie-line; Lamping-Devola 138kV; South Caldwell-Devola 138kV; Gorsuch-Mill Creek 138kV	2 Existing; 2 Proposed	5
Gemini (Not yet submitted to PJM, S number not yet issued)	138	T	2019	Gristmill - Gemini 138kV, Gristmill - West Moulton 138kV	Proposed	3
Ginger Switch (s1432)	138 (energized at 69)	T	12/31/2021 is the overall project ISD	Lick-Ross 69kV line	Existing	< 1 acre
Gristmill (Not yet submitted to PJM, S number not yet issued)	345/138	T	2019	Gristmill - Shelby 345kV, Gristmill - Southwest Lima 345kV, Gristmill - Gemini 138kV	Proposed	3
Guernsey (IPP interconnection) (N5352)	765	T	2019 - 2020	Kammer-Vassell 765kV	Existing	6
Hannibal (IPP interconnection) (N5327)	138	T	2020	Kammer-Ormet #1 , #2, #3, #4 138kV	Existing	4
Heppner (b2885)	138kV Design, Operated	T	2018	Lick-Ross 69kV, Rhodes-Heppner 69kV	Existing	2 acres used, 5 acres
Herlan (b2701.1)	138	T	2020	Summerfield - Herlan 138kV; South Caldwell-Herlan 138kV; Herlan - Blue Racer 138kV; Herlan-Natrium #1 & #2 138kV	4 Existing, 1 Proposed	4
Hopetown (b1032)	138 kV	T	2020	Biers Run - Circleville 138kV	Proposed	estimated 6 acres
Ironman (b2885)	138 (energized at 69)	D	10/5/2018	Lick-Ross 69kV line	Proposed	~5 acres
Lamping (s1160)	345/138	T	2019	Kammer-Muskingum 345kV	Existing	6
Lawshe Tap Switch (pjm# not yet known)	138 kV	T	2022	Adams-Seaman 138kV	Existing	Estimated 1 acre

Appendix C Ohio History Connection Concurrence Letter

OHIO HISTORY CONNECTION

In reply refer to
2017-ROS-38488

September 26, 2017

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

RE: Ginger Switch Upgrade Project, Springfield Township, Ross County, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received on August 30, 2017 regarding the proposed Ginger Switch Upgrade Project, Springfield Township, Ross County, Ohio. We appreciate the opportunity to comment on this project. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Section 149.53 of the Ohio Revised Code and the Ohio Power Siting Board rules for siting this project (OAC 4906-4). The comments of the Ohio SHPO are also submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C.470 [36 CFR 800]).

The following comments pertain to the *Phase I Cultural Resource Management Investigations for the Proposed 11.8 ha (29.1 ac) Ginger Switch Upgrade Project in Springfield Township, Ross County, Ohio* by Weller & Associates, Inc. (2017). This coordination letter supersedes the coordination letter dated April 18, 2017, as the project area has expanded.

A literature review, visual inspection, shovel probe excavation, surface collection and shovel test unit excavation was completed as part of the investigations. One (1) Ohio Archaeological Inventory (OAI) site was identified, Site#33RO1358. The site is a prehistoric isolated find consisting of a secondary thinning flake. The site was recommended not eligible for listing in the National Register of Historic Places (NRHP). Based on the information provided, we agree the archaeological site is not eligible for listing in the NRHP and no additional archaeological survey is needed.

The investigations included a background literature review and systematic survey of all properties 50 years of age or older within the project area or that have a potential view of the proposed project. One architectural resource was identified within the APE. Weller recommends that this property is not eligible for listing in the National Register of Historic Places (NRHP) due to a lack of architectural and/or historic significance, and lack of integrity. Our office agrees with Weller's recommendations regarding eligibility.

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

Based on the information provided, we agree the project will not affect historic properties. No further coordination with this office is necessary, unless the project changes or unless new or additional historic properties are discovered during implementation of this project. In such a situation, this office should be contacted.

If you have any questions, please contact me at (614) 298-2022, or by e-mail at khorrocks@ohiohistory.org. Thank you for your cooperation.

RPR Serial No: 1070314

Sincerely,

Krista Horrocks, Project Reviews Manager
Resource Protection and Review

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

RPR Serial No: 1070314

Appendix D Ecological Survey Report

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Ecological Survey Report

AEP Ohio Transmission Company
Ginger Switch Replacement Project
Ross County, Ohio

GAI Project Number: C170352.02, Task 001

June 2017

Revised July, August, and September, 2017

AMERICAN ELECTRIC POWER℠

BOUNDLESS ENERGY℠

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Ecological Survey Report

AEP Ohio Transmission Company
Ginger Switch Replacement Project
Ross County, Ohio

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1.0 Introduction

GAI Consultants, Inc. (GAI), on behalf of American Electric Power Ohio Transmission Company (AEP), completed an ecological survey for the Ginger Switch Replacement Project (Project) located in Ross County, Ohio (OH). The Project involves replacement of the Ginger Switch and up to seven structures along the existing Berlin – Ross 69kV transmission line.

Ecological surveys were completed on May 18 and 23, 2017, June 19, 2017, and July 31, 2017. The study area consisted of an approximate 12 acre area surrounding the existing Ginger Switch site and a 400-foot-wide corridor along approximately 0.8 mile of the existing transmission line, as shown on Figure 1.

The Project study area is located within the Lick Run-Walnut Creek [United States Geological Survey (USGS) Hydrologic Unit Code (HUC) #050600021004] and Dry Run (HUC #050600021002) watersheds.

This report details the results of the ecological surveys regarding the existence of aquatic resources within the Project area (Figure 2). The United States Army Corps of Engineers (USACE) Wetland Determination Data Forms are provided in Appendix B. Ohio Environmental Protection Agency (OEPA) Primary Headwater Habitat Evaluation (HHEI) Data Forms are provided in Appendix C and Ohio Rapid Assessment Method for Wetlands (ORAM) Data Forms are provided in Appendix D.

2.0 Methods

2.1 Wetlands

The 1987 USACE *Corps of Engineers Wetlands Delineation Manual* (Wetlands Delineation Manual) (USACE, 1987) and the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Version 2.0* (Regional Supplement) (USACE, 2012) describe the methods used to identify and delineate wetlands that fall under the jurisdiction of the USACE. This approach recognizes the three parameters of wetland hydrology, hydrophytic vegetation, and hydric soils to identify and delineate wetland boundaries. In accordance with the Wetland Delineation Manual and Regional Supplements, GAI completed preliminary data gathering and on-site inspections.

2.1.1 Preliminary Data Gathering

The preliminary data gathering was used to compile and review information that may be helpful in identifying wetlands and/or areas that warrant further inspection during the investigation. The preliminary data gathering included a review of the following:

- USGS 7.5-minute topographic mapping for Chillicothe East (USGS, 1985) and Londonderry (USGS, 1963), OH (Figure 1);
- United States Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) mapping (USFWS, 2015) (Figure 2);
- Federal Emergency Management Agency (FEMA), National Flood Hazard Layer (FEMA, 2015) (Figure 2); and
- United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS, 2015) soil mapping (Figure 2).

Topographic mapping was used to identify mapped streams and the overall shape of the landscape in the Project area to determine potential locations for wetlands, such as floodplains and depressions. NWI mapping was used to determine locations where probable wetlands are

located based on infrared photography. Soil mapping was reviewed to determine the location and extent of mapped hydric soils that have a high probability of containing wetlands.

2.1.2 Onsite Inspection

The methodology described in the Regional Supplement identifies areas meeting the definition of a wetland by evaluating three parameters: hydrology, vegetation, and soil. During the on-site inspection, GAI staff traversed the Project study area on foot to determine if any indicators of wetlands were present. When indicators of wetlands were observed, an observation point was established, and a Wetland Determination Data Form (Data Form) was completed to determine if all three wetland indicators were present.

The presence of wetland hydrology was determined by examining the observation point for primary and secondary indicators of wetland hydrology. The presence of any primary indicator signified the presence of wetland hydrology, or the presence of two or more secondary indicators signified the presence of wetland hydrology.

Vegetation was characterized by four different strata. This included trees (woody plants, excluding vines, three inches or more in diameter at breast height [DBH]), saplings/shrubs (woody plants, excluding vines, less than three inches DBH and greater than or equal to 3.28 feet tall), herbs (non-woody plants, regardless of size, and all other plants less than 3.28 feet tall), and woody vines (greater than 3.28 feet tall). In general, trees and woody vines were sampled within a 30-foot radius, saplings and shrubs were sampled within a 15-foot radius, and herbs were sampled within a five-foot radius.

When evaluating an area for the presence of hydrophytes, classification of the indicator status of vegetation was based on *The National Wetland Plant List: 2016 Update of Wetland Ratings* (Lichvar et al., 2016). The list of possible indicator statuses for plants is as follows:

- Obligate Wetland (OBL) - Obligate Wetland plants occur in standing water or in saturated soils;
- Facultative Wetland (FACW) - Facultative Wetland plants nearly always occur in areas of prolonged flooding or require standing water or saturated soils but may on rare occasions, occur in non-wetlands;
- Facultative (FAC) - Facultative plants occur in a variety of habitats, including wetland and mesic to xeric non-wetland habitats but often occur in standing water or saturated soils;
- Facultative Upland (FACU) - Facultative Upland plants typically occur in xeric or mesic non-wetland habitats but may frequently occur in standing water or saturated soils; and
- Obligate Upland (UPL) - Obligate Upland plants almost never occur in water or saturated soils.

Presence of hydrophytic vegetation was determined by using a Rapid Test, Dominance Test or Prevalence Index (USACE, 2010). The Rapid Test finds a vegetation community to be hydrophytic if all dominant species are OBL or FACW. Hydrophytic vegetation was considered present based on the Dominance Test if more than 50 percent of dominant species are OBL, FACW, or FAC. The Prevalence Index weighs the total percent of vegetation cover based on the indicator status of each plant. Hydrophytic vegetation was considered present when the Prevalence Index is less than or equal to 3.0.

To determine the presence of hydric soils, soil data was collected by digging a minimum 16-inch soil pit. The soil profile was studied and described, while possible hydric indicators were examined. Soil indicators described in the Wetlands Delineation Manual and Regional

Supplement were used to determine the presence of hydric soils. The presence of any of these indicators signified a hydric soil.

If all three parameters including wetland hydrology, a dominance of hydrophytic vegetation, and hydric soils were identified at a single observation point, the area was determined to be a wetland. Once a wetland was identified, the boundary was delineated.

Wetland boundaries were determined by looking for locations in which one of the three wetland indicators would transition into an upland characteristic. When the transition was identified, a Data Form was completed in the Upland Area. Wetland boundaries were then marked in the field using pink flagging labeled "WETLAND DELINEATION." The locations of the flags were recorded using a Global Positioning System (GPS) unit. Each wetland was codified with a unique identifier indicating the feature type and number (e.g., W001).

Wetlands were then classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979) as modified for NWI Mapping Convention. This system classifies wetlands based on topographic position and vegetation type. Palustrine system wetlands found within the study area are classified as Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS), Palustrine Forested (PFO), or Palustrine Unconsolidated Bottom (PUB) based on aerial coverage of the vegetative community across the extent of the wetland boundary (Cowardin et al., 1979).

2.2 Waterbodies

As with wetlands, Section 404 of the Clean Water Act (CWA) and state regulations protect waterbodies in OH. Generally, waterbodies are defined as environmental features that have defined beds and banks, ordinary high water mark (OHWM), and contain flowing or standing water for at least a portion of the year.

2.2.1 Preliminary Data Gathering

During the preliminary data gathering, the USGS 7.5-minute topographic mapping was examined for the presence of mapped waterbodies including perennial and intermittent streams. In addition, the topographic mapping was used to identify areas likely to contain unmapped waterbodies including ephemeral streams (USGS, 1963 and 1985) (Figure 1).

The OEPA Stream Eligibility Web Map was used to determine eligibility coverage under the 401 Water Quality Certification (WQC) for the 2017 Nationwide Permits (NWPs). Furthermore, the map was used to identify any ineligible areas that may require a CWA Section 401 individual permit from the OEPA should stream impacts occur within the Project area (OEPA, 2017) (Figure 3).

2.2.2 Onsite Inspection

During the onsite inspection, GAI staff traversed the study area, concurrently with the wetland inspection, and waterbodies were identified. Waterbodies were identified based on the morphological and hydrologic characteristics of the channel and the presence of aquatic macroinvertebrates.

When a waterbody was identified, field measurements were collected. The measurements included top of bank width, top of bank depth, pool depth, water depth, OHWM width, and OHWM depth. A detailed description of substrate composition was also recorded. Waterbodies were then delineated using white flagging marked with the GAI stream code (e.g., S001). The tops-of-bank for streams wider than 10 feet were delineated and the centerline of smaller streams were delineated. The locations of the flags were recorded using a sub-meter capable hand-held GPS unit.

2.3 Rare, Threatened, and Endangered Species

GAI conducted a literature review of potential Rare, Threatened, and Endangered species (RTE) in the vicinity of the Project study area. Potential habitat for RTE species as a result of the literature review was noted during the ecological survey.

2.3.1 Preliminary Data Gathering

A request for review of the Ohio Natural Heritage Database (ONHD) was submitted to the Ohio Department of Natural Resources (ODNR) to determine if any state-listed threatened or endangered species occur within a one-mile radius of the Project area. A request was also submitted to the USFWS Ohio Ecological Services Field Office to determine if any federally-listed threatened or endangered species occur within the vicinity of the Project area.

2.3.2 Onsite Inspection

During the onsite inspections, GAI staff traversed the study area in conjunction with the wetland and waterbody inspections to determine if suitable habitat for state- and/or federally-listed RTE species are present within the study area.

3.0 Results

3.1 Wetlands

3.1.1 Preliminary Data Gathering

Desktop review of available USFWS NWI digital data for the Project did not reveal any NWI mapped wetlands within the Project study area (USFWS, 2015).

According to the USDA-NRCS soil mapping, a total of 10 soil map units are located within the Project study area (Figure 2). None of the soil map units are classified as hydric and one is known to contain hydric inclusions (Taggart silt loam [TbA]).

3.1.2 Onsite Inspection

Three PEM wetlands were identified and delineated within the study area. In order to document site conditions, USACE Data Forms were completed for each wetland and upland reference. Information on the delineated wetlands can be found in Table 1 and photographs of the wetlands are included in Appendix A.

3.1.3 Regulatory Discussion

The USACE guidance divides waterbodies into three groups: Traditionally Navigable Waters (TNWs), non-navigable Relatively Permanent Waters (RPWs), and non-navigable Non-RPWs. TNWs are waterbodies which have been, are, or may be susceptible to use in interstate commerce, including recreational use of the waterbody. RPWs are waterbodies that flow year round, or at a minimum seasonally, by exhibiting continuous flow for at least three consecutive months, but are not TNWs (USACE, 2007). Non-RPWs are waterbodies that do not flow continuously for at least three consecutive months, are not TNWs or RPWs, but typically exhibit characteristic beds, banks, and ordinary high water marks (USACE, 2007).

The status of wetlands is determined partly based on the classification of the waterbody that the wetland is associated with, and the degree of that association. Wetlands that abut or are adjacent to TNWs are jurisdictional. Wetlands that abut RPWs are jurisdictional. Wetlands that are adjacent to RPWs and wetlands that abut or are adjacent to Non-RPWs must be subjected to the Significant Nexus Test (SNT) to determine their jurisdictional status. Generally, the USACE considers wetlands that are isolated, meaning that they are not associated with any

other surface water feature, as non-jurisdictional; and wetlands that abut or are adjacent to Non-RPWs as needing further examination by the USACE to determine and verify whether they exhibit a significant nexus to waters of the United States. If these wetlands exhibit a significant nexus, they are jurisdictional; if not, they are not subject to USACE jurisdiction.

Wetlands that do not exhibit an association with any surface water are categorized as "isolated" under present USACE guidance and policy. These wetlands are regulated by the OEPA Division of Surface Water (DSW), and may require an Isolated Wetland Permit.

As regulated by Ohio Administrative Code (OAC) rules 3745-1-50 through 3745-1-54, wetlands were also evaluated using the ORAM to determine the appropriate wetland category. Any wetland score that fell within a gray zone between categories was scored one of two ways. Either the wetland was assigned to the higher of the two categories or it was assessed using a non-rapid method to determine its quality (Mack, 2001). The category assigned to a particular wetland determines the requirement, if any, for additional levels of protection administered by the OEPA.

All wetlands within the study area were identified as jurisdictional. Jurisdictional status is the opinion of GAI and must be confirmed by USACE and state agencies through the Jurisdictional Determination (JD) process.

3.2 Waterbodies

3.2.1 Preliminary Data Gathering

Desktop review of the available USGS topographic mapping did not reveal any previously mapped stream segments located within the Project study area (Figure 1). Desktop review of OEPA's Stream Eligibility Web Map revealed the Project is located within an ineligible area for automatic 401 WQC coverage (Figure 3).

3.2.2 Onsite Inspection

One proposed jurisdictional ditch was identified. One ephemeral stream segment was also identified within the study area. Information on the delineated waterbody and its classification can be found in Table 2, and photographs of the identified stream are included in Appendix A.

3.2.3 Regulatory Discussion

As with wetlands, present USACE guidance and policy determines the jurisdictional status of waterbodies identified during the Project. TNWs and RPWs are jurisdictional. Non-RPWs must be subjected to the SNT by USACE to determine their jurisdictional status. If Non-RPWs exhibit a Significant Nexus, as defined in USACE guidance documents, they are jurisdictional. If not, they do not fall under the jurisdiction of the USACE.

Streams are generally defined as environmental features that have defined beds and banks, an OHWM as defined in RGL 05-05, and contain flowing or standing waters for at least a portion of the year. Streams were classified as perennial, intermittent, or ephemeral based upon presence of flow, estimated duration of flow, stream bed characteristics, and presence of aquatic biota. The USACE *Jurisdictional Determination Form Instructional Guidebook* (USACE, 2007) was used to determine stream classification and flow status.

As regulated by OAC Chapter 3745-1 and Section 401 Water Quality Certification, streams were also assessed according to OEPA guidance using either the HHEI for watersheds less than one square mile in size, or the Qualitative Habitat Evaluation Index (QHEI) for watersheds between one and 20 square miles in size.

3.3 Rare, Threatened, and Endangered Species

3.3.1 Preliminary Data Gathering

Desktop review of ODNR, Division of Wildlife's Ohio's Listed Species revealed 321 Endangered, Threatened, Species of Concern, and Species of Interest located in OH (ODNR, 2016). Seventeen of the state-listed species are considered federally Endangered, and four are federally Threatened.

A review of the USFWS *County Distribution of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species for Ohio* as well as the Information for Planning and Conservation (IPaC) website revealed seven federally Endangered or Threatened species that may occur within the Project study area (USFWS, 2017). The list of species includes the following:

- Clubshell (*Pleurobema clava*) - Endangered;
- Indiana bat (*Myotis sodalis*) - Endangered;
- Northern long-eared bat (*Myotis septentrionalis*) - Threatened.
- Northern riffleshell (*Epioblasma torulosa rangiana*) - Endangered;
- Rayed bean (*Villosa fabalis*) - Endangered;
- Running buffalo clover (*Trifolium stoloniferum*) - Endangered; and,
- Snuffbox mussel (*Epioblasma triquetra*) - Endangered.

In addition to the species listed above, there are 24 species of migratory birds that may occur within the Project study area.

3.3.2 Onsite Inspection

Potential habitat for RTE species was evaluated within the study area. In general, the habitat encountered within the study area consisted of open agricultural fields (fallow fields, livestock pastures, and cornfields), early successional scrub-shrub habitat, PEM wetlands, and successional mixed deciduous forest. Representative photographs of the identified habitat types are included in Appendix A.

3.3.3 Regulatory Discussion

State-listed RTE species fall under the jurisdiction of the ODNR, Division of Wildlife, while federally-listed species are covered under Section 7 of the Endangered Species Act (ESA). The Bald and Golden Eagle Protection Act and Migratory Bird Act aim to extend protection to certain bird species that fall under the jurisdiction of the USFWS. Based on the desktop review and on-site inspection, informal consultation with the ODNR and USFWS has been initiated to determine if any activities associated with the proposed Project may affect state- and/or federally-listed RTE species. The ODNR and USFWS consultation letters were submitted on May 11, 2017, and are provided in Appendix E. A response from the USFWS was received on June 2, 2017, and the ODNR response was received on August 22, 2017. Both response letters are also provided in Appendix E.

4.0 Conclusions

Ecological surveys were conducted within the Project study area on May 18 and 23, 2017, June 19, 2017, and July 31, 2017. Three PEM wetlands were identified within the Project study area. In addition, one ephemeral stream and one proposed jurisdictional ditch were identified within the Project study area. Summaries of the delineated aquatic features are provided in Tables 1 and 2, and a map of their locations is depicted on Figure 2. Photographs of the wetland, stream, and proposed jurisdictional

ditch features, as well as current site conditions, are included in Appendix A. Wetland Determination Data Forms documenting the investigation are provided in Appendix B, with HHEI and ORAM Data Forms provided in Appendix C and D, respectively.

The jurisdictional status of these features should be confirmed with the USACE and state agencies through the JD process.

5.0 References

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United States Geological Survey. 1985. Chillicothe East, Ohio 7.5-Minute Topographic Quadrangle (1:24,000).

TABLES

Table 1
Wetlands Identified Within the Project Study Area

Wetland I.D.[1]	Latitude[2]	Longitude[2]	Proximal Waterbody	USACE Classification[3]	Cowardin Classification[4]	Size (acres)	ORAM v. 5.0 Score[5]	ORAM Category[6]	Figure 2 (sheet)
W001-PEM-CAT1	39.312845	-82.874361	UNT to Walnut Creek	Jurisdictional; Adjacent	PEM	0.161	21	1	3,4
W002-PEM-CAT1	39.313466	-82.875732	UNT to Walnut Creek	Jurisdictional; Adjacent	PEM	0.013	27	1	3,4
W003-PEM-CAT1	39.311001	-82.871572	UNT to Walnut Creek	Jurisdictional; Abutting	PEM	0.150	15	1	2

Notes:

1 GAI map designation.

2 North American Datum, 1983.

3 Jurisdictional status is the opinion of GAI and must be confirmed by USACE and state agencies through the JD process.

4 PEM - Palustrine Emergent.

5 Interim scoring breakpoints for wetland regulatory categories for ORAM v 5.0 Score: Category 1 score 0 - 29.9; Category 1 or 2 gray zone ORAM score 30 - 34.9; Category modified 2 ORAM score 35 - 44.9; Category 2 ORAM score 45 - 59.9; Category 2 or 3 ORAM score 60 - 64.9; Category 3 ORAM score 65 - 100. OEPA Ecology Unit Division of Surface Water. *ORAM v. 5.0 Qualitative Score Calibration.* Dated August 15, 2000. http://www.epa.ohio.gov/portals/35/401/oram50sc_s.pdf.

6 OAC Rule 3745-1-54(C)(2) defines Category 1 wetlands as wetlands which "…support minimal wildlife habitat, and minimal hydrological and recreation functions," and as wetlands which have "..hydrologic isolation, low species diversity, a predominance of non-native species, no significant habitat or wildlife use, and limited potential to achieve beneficial wetland functions." Category 2 wetlands are defined as wetlands which "...support moderate wildlife habitat, or hydrological or recreational functions," and as wetlands which are "...dominated by native species but generally without the presence of, or habitat for, rare, threatened or endangered species; and wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions." Degraded but Restorable Category 2 Wetlands are according to OAC Rule 3745-1-54(C) states that wetlands that are assigned to Category 2 constitute the broad middle category that "...support moderate wildlife habitat, or hydrological or recreational functions," but also include "...wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions." OAC Rule 3745-1-54(C)(2) defines Category 3 wetlands as wetlands which "…support superior habitat, or hydrological or recreational functions," and as wetlands which have "…high levels of diversity, a high proportion of native species, or high functional values."

Table 2
Waterbodies Identified Within the Project Study Area

Stream I.D.[1]	Waterbody Name	OEPA WQ Designation[2]	OEPA Stream Eligibility[3]	Stream Type	USACE Classification[4]	HHEI Score[5]	PHWH Class[5]	QHEI Score[6]	Bank Width[7] (feet)	OHWM Width (feet)	OHWM Depth (inches)	Stream Length[8] (feet)	Latitude[9]	Longitude[9]	Figure 2 (sheet)
Ditch 001	Proposed Jurisdictional Ditch (Flows into UNT to Walnut Creek)	-	-	-	-	-	-	-	-	-	-	537	39.311950	-82.872542	2,3
S001	UNT to Walnut Creek	N/A	Ineligible	Ephemeral	NRPW	29	Class I	N/A	2	1.5	1	251	39.309014	-82.865003	1

Notes:

1 GAI map designation.

2 As defined by OAC Chapter 3745-1 Water Quality Standards, Water use designations and statewide criteria (OAC 3745-1-07). http://www.epa.ohio.gov/dsw/rules/3745_1.aspx.

3 As defined by the 401 WQC conditions for stream eligibility coverage under the 2017 NWP program. Streams located in Possibly Eligible areas are eligible for coverage if the pH is <6.5 or stream flow is ephemeral. Streams located in Possibly Eligible areas are also eligible for coverage if the HHEI score is <50, or if the HHEI score is between 50-69 and substrate composition is ≤10% coarse types (includes cumulative percentage of bedrock, boulders, boulder slabs, and cobble). Eligibility for streams located within Possibly Eligible areas must be confirmed by OEPA.

4 Jurisdictional status is the opinion of GAI and must be confirmed by USACE and state agencies through the JD process. RPW - Relatively Permanent Waters; NRPW - Non-Relatively Permanent Waters.

5 Scoring for OEPA Headwater Habitat Evaluation Index (HHEI) Primary Headwater Habitats (PHWH). Class I = 0 - 29.9 and include "normally dry channels with little or no aquatic life present"; Class II = 30 - 69.9 and are equivalent to "warm water habitat"; Class III = 70 – 100 and typically have perennial flow with cool-cold water adapted native fauna.

6 Narrative rating for headwater streams using the OEPA Qualitative Habitat Evaluation Index (QHEI). Excellent = ≥70; Good = 55 - 60; Fair = 43 - 54; Poor = 30 - 42; Very Poor = <30.

7 Width in feet from tops of stream bank.

8 Total stream length (in feet) located within the Project study area.

9 North American Datum, 1983.

Table 3
ODNR and USFWS RTE Species and Critical Habitat Review Results

Common Name	Scientific Name	Habitat Type	Listing Status[2]	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Amphibians						
Eastern hellbender[1]	*Cryptobranchus alleganiensis alleganiensis*	Found in unglaciated (south and east) Ohio in large, swift flowing streams under large rocks	E, FSC	No	No; Known habitat types are not present within the Project area	-
Midland mud salamander[1]	*Pseudotriton montanus diastictus*	Springs, seeps and creeks under large, flat stones	T	No	No; Known habitat types are not present within the Project area	-
Bats						
Indiana bat[1,2]	*Myotis sodalis*	Trees >3" dbh	E, FE	Yes	No; Avoided with winter tree clearing	April 1 to September 30
Northern long-eared bat[2]	*Myotis septentrionalis*	Roost in cavities or in crevices of both live trees and snags; Hibernate in caves and mines with constant temperatures, high humidity, and no air currents	FT	Yes	No; Avoided with winter tree clearing	April 1 to September 30
Birds						
Barn owl	*Tyto alba*	Old buildings, barns, silos, chimneys, or hollow trees; Hunt over open grassland	T	Yes	No; Impacts are not anticipated within the known habitat types.	-
Fish						
Spotted darter[1]	*Etheostoma maculatum*	Medium sized rivers and streams; Typically found in areas of swift current at the top or bottom end of a riffle, near very large boulders or flat slabs of rock	E	No	No; Known habitat types are not present within the Project area	April 15 – June 30
Goldeye	*Hiodon alosoides*	Large rivers and turbid waters from clay silts; Found in areas with swift currents, often below dams	E	No	No; Known habitat types are not present within the Project area	-

Common Name	Scientific Name	Habitat Type	Listing Status[2]	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Fish (Cont.)						
Shortnose gar[1]	*Lepisosteus platostomus*	Large rivers and associated overflow ponds and backwaters	E	No	No; Known habitat types are not present within the Project area	April 15 – June 30
Northern madtom[1]	*Noturus stigmosus*	Deep swift riffles of large rivers; Usually found around cobbles and boulders	E	No	No; Known habitat types are not present within the Project area	April 15 – June 30
Shovelnose sturgeon[1]	*Scaphirhynchus platorynchus*	Large rivers; Prefers sand and gravel substrates with fast current	E	No	No; Known habitat types are not present within the Project area	April 15 – June 30
American eel[1]	*Anguilla rostrate*	May be found in any stream in Ohio and Lake Erie; Appears most often in moderate or large rivers with continuous flow and moderately clear water	T	No	No; Known habitat types are not present within the Project area	April 15 – June 30
Blue sucker[1]	*Cycleptus elongates*	Deep, swiftly flowing chutes or channels of large rivers; Present in the lower Scioto River and lower portions of the Great and Little Miami, Muskingum, and Hocking Rivers	T	No	No; Known habitat types are not present within the Project area	April 15 – June 30
Tippecanoe darter[1]	*Etheostoma tippecanoe*	Medium to large rivers and rivers in the Ohio River drainage; Found in riffles of moderate current with a gravel and cobble substrate	T	No	No; Known habitat types are not present within the Project area	April 15 – June 30
Channel darter[1]	*Percina copelandi*	Found in large, coarse sand or fine gravel bars in large rivers or along the shore of Lake Erie	T	No	No; Known habitat types are not present within the Project area	April 15 – June 30
River darter[1]	*Percina shumardi*	Found in very large rivers typically in areas of swift current; Found over a gravel or rocky bottom in depths of 3 feet or more	T	No	No; Known habitat types are not present within the Project area	April 15 – June 30

Common Name	Scientific Name	Habitat Type	Listing Status[2]	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Insects						
Buckskin cave pseudoscorpion	*Apochthonius hobbsi*	Decaying logs and leaf-litter, caves, beaches, nests of various birds and animals, and crevices of rocks	E	No	No; Known habitat types are not present within the Project area	-
Plains clubtail	*Gomphus externus*	Prefers moderately flowing rivers and large streams with muddy bottoms	E	No	No; Known habitat types are not present within the Project area	-
Regal fritillary	*Speyeria idalia*	Tall-grass and mixed-grass prairies	E	No	No; Known habitat types are not present within the Project area	-
Cobblestone tiger beetle	*Cicindela marginipennis*	Found on pebble and cobblestones, sometimes mixed with sand on sparsely vegetated islands and edges of small to medium streams to larger rivers	T	No	No; Known habitat types are not present within the Project area	-
Mammals						
Black bear[1]	*Ursus americanus*	Large forested areas	E	No	No; Known habitat types are not present within the Project area	-
Mussels						
Fanshell[1]	*Cyprogenia stegaria*	Found in medium to large rivers with sand or gravel substrates and a moderate current	E, FE	No	No; Known habitat types are not present within the Project area	-
Elephant-ear	*Elliptio crassidens crassidens*	Large rivers in mud, sand or fine gravel	E	No	No; Known habitat types are not present within the Project area	-
Northern riffleshell[1]	*Epioblasma torulosa rangiana*	Large to small streams in packed sand or gravel	E, FE	No	No; Known habitat types are not present within the Project area	-
Snuffbox[1]	*Epioblasma triquetra*	Found in small to medium-sized creeks in areas with swift current; Can also be found in Lake Erie and some larger rivers	E, FE	No	No; Known habitat types are not present within the Project area	-
Ebonyshell	*Fusconaia ebena*	Large rivers in sand or gravel	E	No	No; Known habitat types are not present within the Project area	-

Common Name	Scientific Name	Habitat Type	Listing Status[2]	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Mussels (Cont.)						
Long-solid[1]	*Fusconaia maculata maculata*	Large or small rivers with gravel substrate	E	No	No; Known habitat types are not present within the Project area	-
Sharp-ridged pocketbook[1]	*Lampsilis ovata*	Large rivers in coarse sand or gravel	E	No	No; Known habitat types are not present within the Project area	-
Yellow sandshell	*Lampsilis teres*	Medium to large rivers in sand or gravel	E	No	No; Known habitat types are not present within the Project area	-
Washboard	*Megalonaias nervosa*	Large rivers with moderate current, stable mud substrate	E	No	No; Known habitat types are not present within the Project area	-
Sheepnose[1]	*Plethobasus cyphyus*	Found in shallow areas of larger rivers and streams with moderate to swift currents flowing over coarse sand and gravel	E, FE	No	No; Known habitat types are not present within the Project area	-
Clubshell[1]	*Pleurobema clava*	Prefers clean, loose sand and gravel in medium to small rivers and streams	E, FE	No	No; Known habitat types are not present within the Project area	-
Rabbitsfoot[1]	*Quadrula cylindrical cylindrical*	Clear streams with gravel substrate and moderate, stable currents	E, FT	No	No; Known habitat types are not present within the Project area	-
Monkeyface	*Quadrula metanevra*	Medium-sized rivers with mud, sand, gravel or cobble	E	No	No; Known habitat types are not present within the Project area	-
Rayed bean[1]	*Villosa fabalis*	Streams and rivers with gravel or sand substrates	E, FE	No	No; Known habitat types are not present within the Project area	-
Little spectaclecase[1]	*Villosa lienosa*	Small to medium streams in sand or gravel	E	No	No; Known habitat types are not present within the Project area	-
Black sandshell[1]	*Ligumia recta*	Found in varying sizes of creeks, rivers, and lakes with sand and gravel bottoms and a moderate current	T	No	No; Known habitat types are not present within the Project area	-
Threehorn wartyback[1]	*Obliquaria reflexa*	Found in medium to large rivers with gravel substrates and a moderate current	T	No	No; Known habitat types are not present within the Project area	-

Common Name	Scientific Name	Habitat Type	Listing Status[2]	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Mussels (Cont.)						
Fawnsfoot[1]	*Truncilla donaciformis*	Found in rivers and lakes in mud or sandy mud, More common in the Lake Erie tributaries, but very rare east of the Sandusky River	T	No	No; Known habitat types are not present within the Project area	-
Reptiles						
Timber rattlesnake[1]	*Crotalus horridus*	Wooded areas	E, FSC	Yes	No; Impacts are not anticipated within known habitat types	-
Spotted turtle[1]	*Clemmys guttata*	Shallow waters of ditches, small streams, marshes, bogs, and pond edges	T	No	No; Known habitat types are not present within the Project area	-
Plants						
Chaffweed	*Centunculus minimus*	Vernally wet, sparsely vegetated soil around ponds and along rivers and streams	E	No	No; Known habitat types are not present within the Project area	-
Many-flowered umbrella-sedge	*Cyperus lancastriensis*	A variety of open, dry situations, usually in sandy soil; fields, barrens, clearings, open woods	E	Yes	No; Impacts are not anticipated within known habitat types	-
Round-leaved spurge	*Euphorbia serpens*	In full sun in moist, alluvial or rich soil; frequently in disturbed situations	E	Yes	No; Impacts are not anticipated within known habitat types	-
Flame azalea	*Rhododendron calendulaceum*	Open woods and cleared areas on well-drained, acidic soils	E	Yes	No; Impacts are not anticipated within known habitat types	-
Running buffalo clover	*Trifolium stoloniferum*	Found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails; Requires periodic disturbance and a somewhat open habitat	E, FE	Yes	No; Impacts are not anticipated within known habitat types.	-

Common Name	Scientific Name	Habitat Type	Listing Status[2]	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Plants (Cont.)						
Canada milk-vetch	*Astragalus canadensis*	Moist prairies, sand prairies, thickets and woodland borders, moist meadows near rivers, and abandoned fields	T	No	No; Known habitat types are not present within the Project area	-
Limestone savory	*Calamintha arkansana*	Fields and open areas	T	Yes	No; Impacts are not anticipated within known habitat types	-
Bush's sedge	*Carex bushii*	Meadows, fields, open woods, dry to mesic grasslands, prairies and stream/pond margins	T	Yes	No; Impacts are not anticipated within known habitat types	-
Tansy mustard	*Descurainia pinnata*	Gravelly prairies, areas along roads and railroads, fields. Disturbed areas are preferred	T	No	No; Known habitat types are not present within the Project area	-
Few-flowered spike-rush	*Eleocharis quinqueflora*	Wet sandy, gravelly shores and flats, sometimes in marshy places	T	No	No; Known habitat types are not present within the Project area	-
Godfrey's thoroughwort	*Eupatorium godfreyanum*	Dry, open, disturbed sites and edges of deciduous woods	T	Yes	No; Impacts are not anticipated within known habitat types	-
Leafy blue flag	*Iris brevicaulis*	Marshes	T	No	No; Known habitat types are not present within the Project area	-
Leggett's pinweed	*Lechea pulchella*	Forests, meadows and fields, shores of rivers or lakes, woodlands	T	Yes	No; Impacts are not anticipated within known habitat types	-
Lurking leskea	*Plagiothecium latebricola*	Northern hardwood lowland swamps and other marshy habitats where it occurs on rotten logs, stumps, and humus, and on the bases and in wet knotholes of trees	T	No	No; Known habitat types are not present within the Project area	-

Common Name	Scientific Name	Habitat Type	Listing Status[2]	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Plants (Cont.)						
Walter's violet	*Viola walteri*	Open woods and rocky ledges, usually in calcareous substrates; Dolomite outcrops and promontories	T	Yes	No; Impacts are not anticipated within known habitat types	-

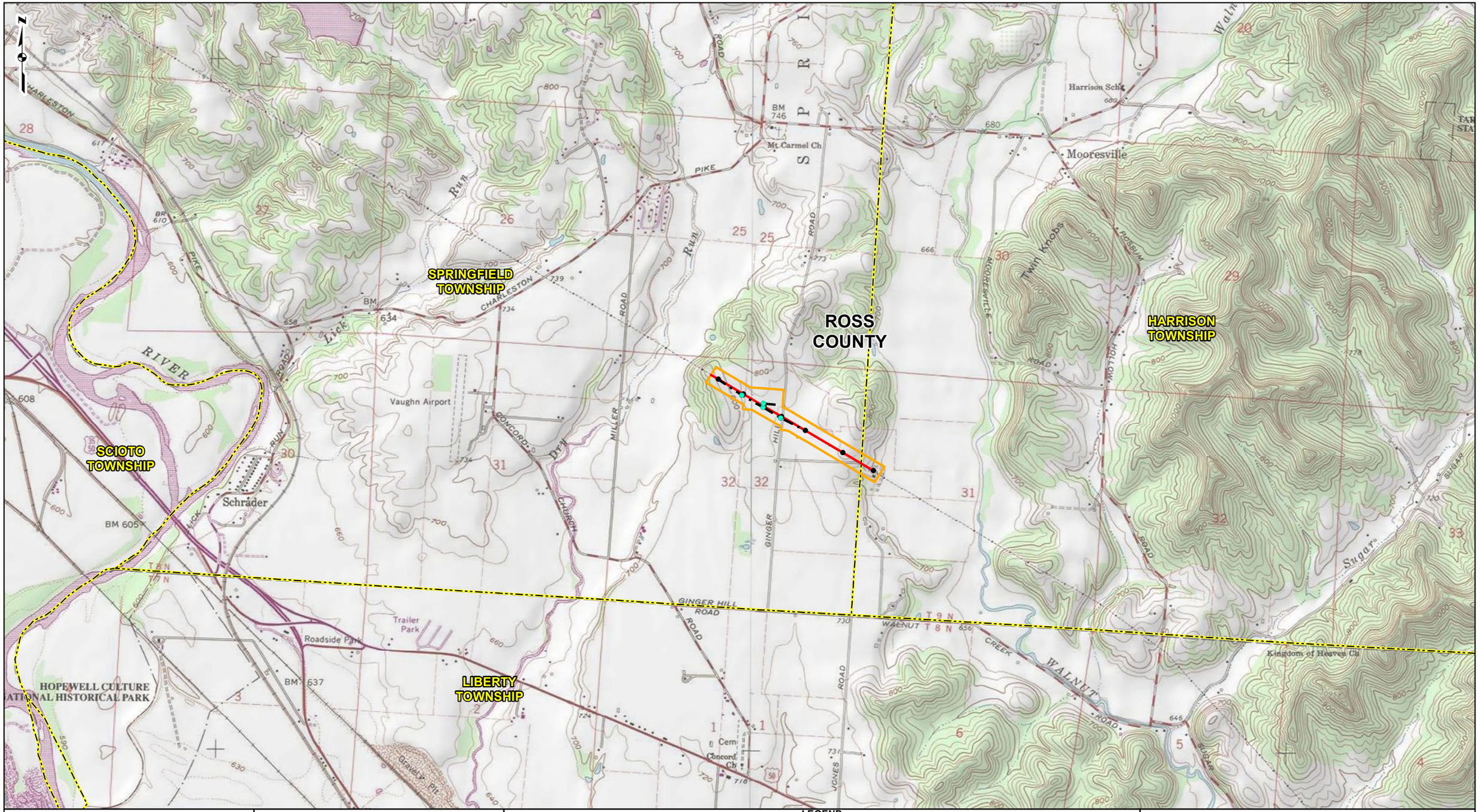
Notes:

1 ODNR, Division of Wildlife (DOW) comments included in the ODNR response, dated August 22, 2017.

2 Federally listed species, migratory bird, or species of concern comments included in the USFWS response, dated June 2, 2017.

3 E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; FE = federal endangered; FT = federal threatened; FSC = federal species of concern; FC = federal candidate.

FIGURES



PROJECT LOCATION

ROSS COUNTY, OHIO

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: CHILLICOTHE EAST (1985), AND LONDONDERRY (1963), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 10/2017.

LEGEND

- EXISTING STRUCTURE TO BE REMOVED OR REPLACED
- PROPOSED STRUCTURE
- EXISTING TRANSMISSION LINE
- PROPOSED TRANSMISSION LINE
- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY
- STUDY AREA

0 1,000 2,000 4,000 Feet

FIGURE 1
PROJECT LOCATION MAP

GINGER SWITCH
REPLACEMENT PROJECT
AMERICAN ELECTRIC POWER

gai consultants

AMERICAN ELECTRIC POWER
BOUNDLESS ENERGY

DRAWN BY: AKW DATE: 10/2/2017
CHECKED: SWW/MDO APPROVED: ARW

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SHEET 2

SHEET 1

SPRINGFIELD TOWNSHIP

ROSS COUNTY

HARRISON TOWNSHIP

LIBERTY TOWNSHIP

PROJECT LOCATION

ROSS COUNTY, OHIO

REFERENCES: USGS 7.5' TOPOGRAPHIC QUADRANGLES: CHILLICOTHE EAST (1985), AND LONDONDERRY (1963), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 10/2017. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 10/2017.

LEGEND

- EXISTING STRUCTURE TO BE REMOVED OR REPLACED
- PROPOSED STRUCTURE
- EXISTING TRANSMISSION LINE
- PROPOSED TRANSMISSION LINE
- STUDY AREA
- TOWNSHIP BOUNDARY
- COUNTY BOUNDARY
- SHEET INDEX

0 500 1,000 2,000 Feet

FIGURE 2
RESOURCE LOCATION MAP
SHEET INDEX

GINGER SWITCH
REPLACEMENT PROJECT
AMERICAN ELECTRIC POWER

gai consultants

DRAWN BY: AKW
CHECKED: SWW/MDO
DATE: 10/2/2017
APPROVED: ARW

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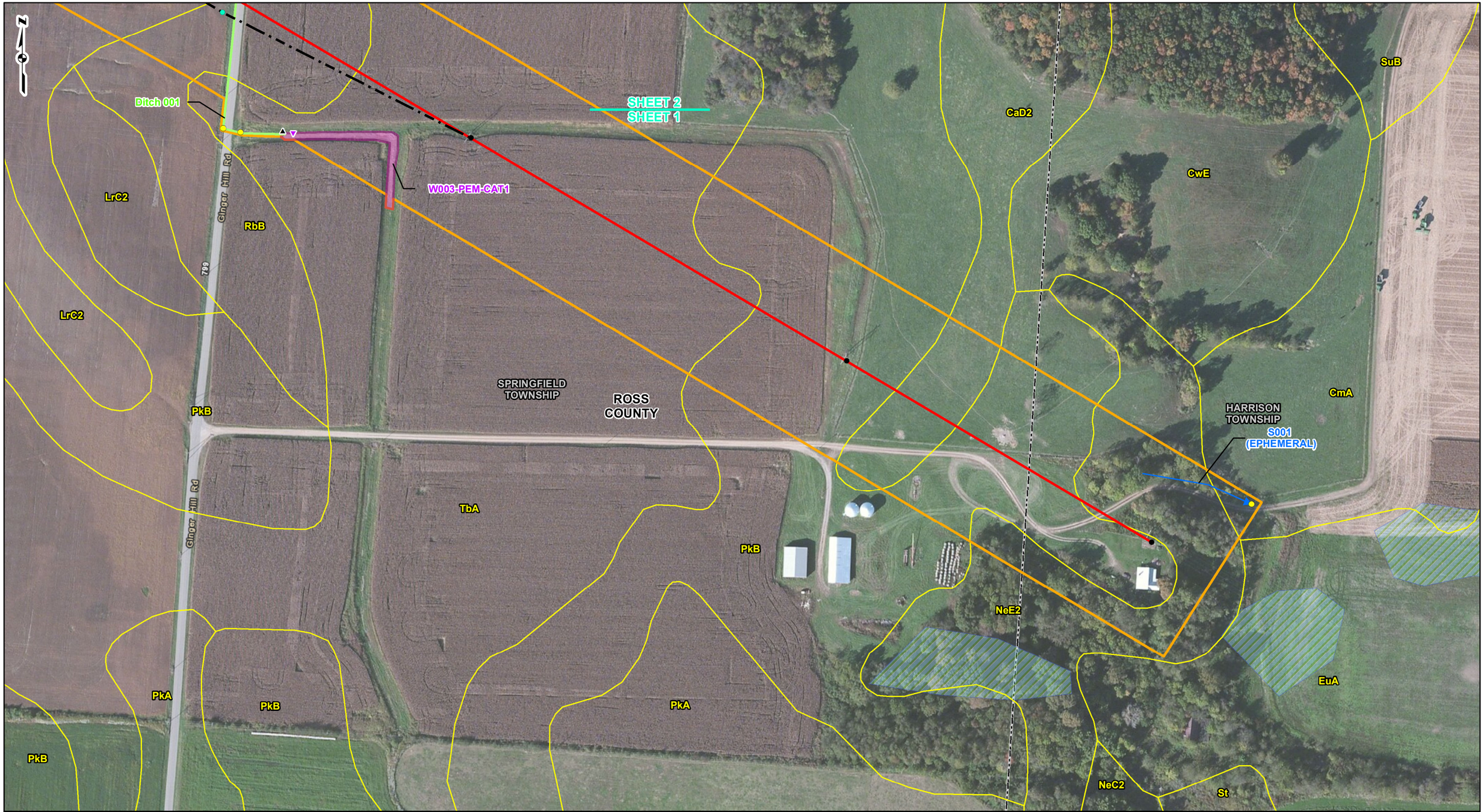

PROJECT LOCATION

ROSS COUNTY, OHIO

REFERENCES: ESRI WORLD IMAGERY, MICROSOFT, UC - G, 2011, ACCESSED 10/2017. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 10/2017. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, USFWS, 2017. NATIONAL FLOOD HAZARD LAYER, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), OHIO, 2015. SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE FOR ROSS COUNTY, OHIO, USDA/NRCS, 2015. ODNR (OHIO DEPARTMENT OF NATURAL RESOURCES) LAND, 2014.

LEGEND

- EXISTING STRUCTURE TO BE REMOVED OR REPLACED
- PROPOSED STRUCTURE
- CULVERT
- UPLAND DATA POINT
- WETLAND DATA POINT
- EXISTING TRANSMISSION LINE
- PROPOSED TRANSMISSION LINE
- STREAM
- PROPOSED JURISDICTIONAL DITCH
- STUDY AREA
- SOIL TYPE BOUNDARY
- ODNR LAND
- **WETLAND TYPE:**
- PEM
- NWI WETLAND
- 100-YEAR FLOODPLAIN
- TOWNSHIP BOUNDARY
- COUNTY BOUNDARY

0 100 200 400 Feet

FIGURE 2
RESOURCE LOCATION MAP
SHEET 1 OF 2

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GINGER SWITCH
REPLACEMENT PROJECT
AMERICAN ELECTRIC POWER

DRAWN BY: AKW DATE: 10/2/2017
CHECKED: SWW/MDO APPROVED: ARW

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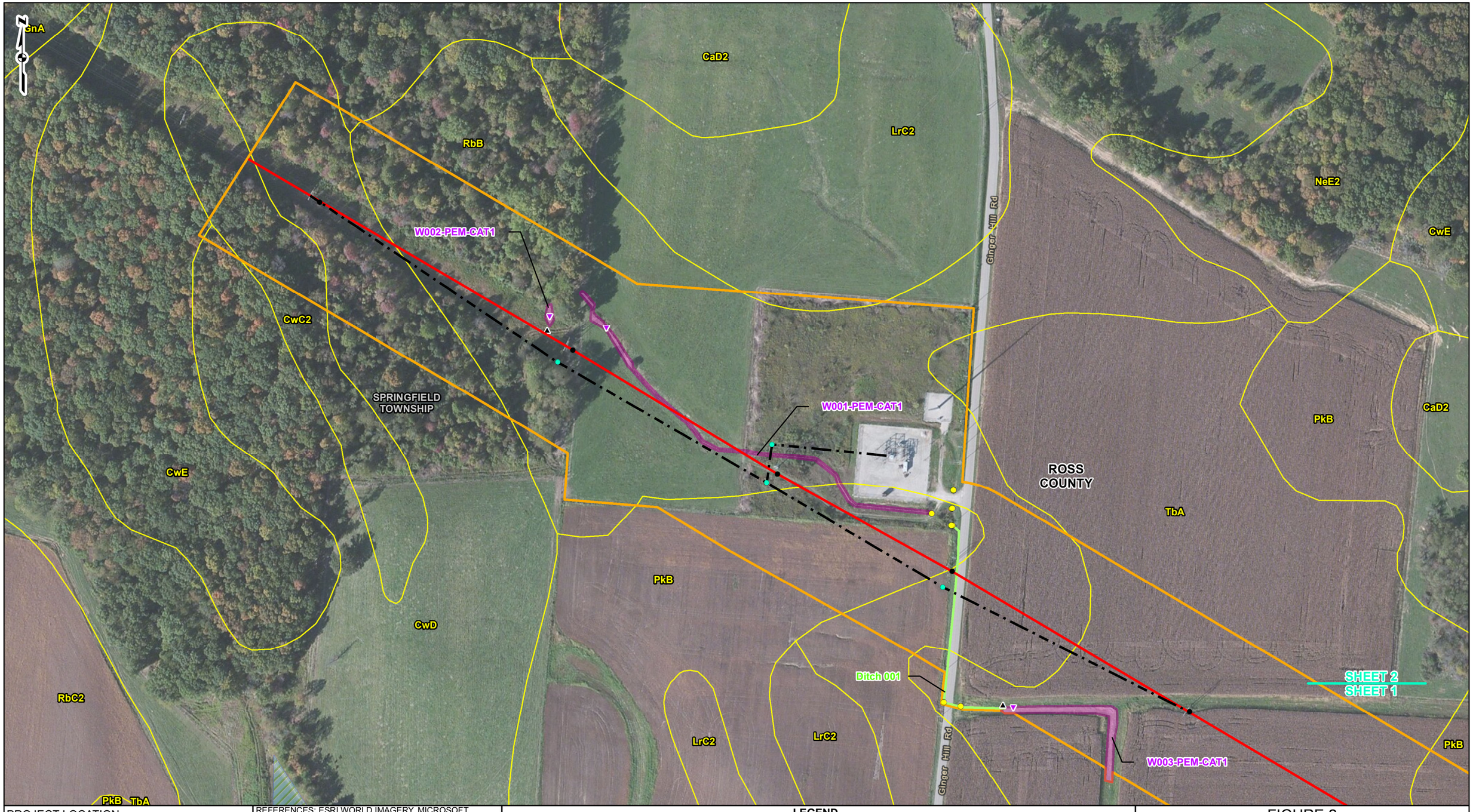

PROJECT LOCATION

ROSS COUNTY, OHIO

REFERENCES: ESRI WORLD IMAGERY, MICROSOFT, UC - G, 2011, ACCESSED 10/2017. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 10/2017. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, USFWS, 2017. NATIONAL FLOOD HAZARD LAYER, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), OHIO, 2015. SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE FOR ROSS COUNTY, OHIO, USDA/NRCS, 2015. ODNR (OHIO DEPARTMENT OF NATURAL RESOURCES) LAND, 2014.

LEGEND

- EXISTING STRUCTURE TO BE REMOVED OR REPLACED
- PROPOSED STRUCTURE
- CULVERT
- UPLAND DATA POINT
- WETLAND DATA POINT
- EXISTING TRANSMISSION LINE
- PROPOSED TRANSMISSION LINE
- STREAM
- PROPOSED JURISDICTIONAL DITCH
- STUDY AREA
- SOIL TYPE BOUNDARY
- ODNR LAND
- **WETLAND TYPE:**
- PEM
- NWI WETLAND
- 100-YEAR FLOODPLAIN
- TOWNSHIP BOUNDARY
- COUNTY BOUNDARY

0 100 200 400 Feet

FIGURE 2
RESOURCE LOCATION MAP
SHEET 2 OF 2

gai consultants

GINGER SWITCH
REPLACEMENT PROJECT
AMERICAN ELECTRIC POWER

AMERICAN ELECTRIC POWER
SOUNDLESS ENERGY

DRAWN BY: AKW DATE: 10/2/2017
CHECKED: SWW/MDO APPROVED: ARW

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PROJECT LOCATION

ROSS COUNTY, OHIO

REFERENCES: ESRI WORLD IMAGERY, NAIP, 2015, ACCESSED 10/2017. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 10/2017. STREAM ELIGIBILITY, OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA), 2017. NHD STREAMS, NATIONAL HYDROGRAPHY DATASET (NHD), USGS, 2015. WQS STREAMS, OHIO WATER QUALITY STANDARDS, 2010.

LEGEND

- EXISTING STRUCTURE TO BE REMOVED OR REPLACED
- PROPOSED STRUCTURE
- EXISTING TRANSMISSION LINE
- PROPOSED TRANSMISSION LINE
- STREAM
- NHD STREAM
- OH WQS STREAM
- STUDY AREA

OHIO EPA STREAM ELIGIBILITY

- INELIGIBLE
- POSSIBLY ELIGIBLE
- ELIGIBLE

0 300 600 1,200 Feet

FIGURE 3
STREAM ELIGIBILITY MAP

gai consultants

GINGER SWITCH
REPLACEMENT PROJECT
AMERICAN ELECTRIC POWER

AMERICAN ELECTRIC POWER
BOUNDLESS ENERGY

DRAWN BY: AKW DATE: 10/2/2017
CHECKED: SWW/MDO APPROVED: ARW

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APPENDIX A
Photographs

Photograph 1. Wetland W001-PEM-CAT1, Facing Northwest

Photograph 2. Wetland W001-PEM-CAT1, Facing Southeast

Photograph 3. Wetland W001-PEM-CAT1, Facing Northwest

Photograph 4. Wetland W001-PEM-CAT1, Facing Southeast

Photograph 5. Wetland W002-PEM-CAT1, Facing South

Photograph 6. Wetland W002-PEM-CAT1, Facing Northwest

Photograph 7. Wetland W003-PEM-CAT1, Facing East

Photograph 8. Wetland W003-PEM-CAT1, Facing North

Photograph 9. Proposed Jurisdictional Ditch 001 at Culvert Outlet, Facing Southwest

Photograph 10. Proposed Jurisdictional Ditch 001, Facing South

Photograph 11. Stream S001, Upstream, Facing Northwest

Photograph 12. Stream S001, Downstream, Facing Southeast

Photograph 13. Representative upland habitat, Facing Southeast

Photograph 14. Representative upland habitat, Facing East

APPENDIX B
Wetland Determination Data Forms

gai consultants
transforming ideas into reality®

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ginger Switch City/County: Ross Co. Sampling Date: 5/23/2017
Applicant/Owner: AEP State: OH Sampling Point: W001 (PEM)
Investigator(s): KLV, RJM Section, Township, Range: Springfield Twp.
Landform (hilslope, terrace, etc.): Dip Local relief (concave, convex, none): concave Slope (%) 0
Subregion (LRR or MLRA): LRR Lat: 39.313390 Long: -82.875293 Datum: NAD 83
Soil Map Unit Name: RbB - Rainsboro Silt Loam, 2 to 6 percent slopes NWI classification: none
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks)
Are Vegetation NO, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil Y, or Hydrology Y naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?**	**Yes** ✓	**No** ____
Hydric Soil Present?	Yes ✓	No ____			
Wetland Hydrology Present?	Yes ✓	No ____			

Remarks:
Wetland Data point for W001-PEM-CAT1
Data point taken in fenced pasture under transmission right-of-way.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ✓ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

				Wetland Hydrology Present?	**Yes** ✓	**No** ____
Surface Water Present?	Yes ____	No ✓	Depth (inches): ____			
Water Table Present?	Yes ____	No ✓	Depth (inches): ____			
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____			

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

Remarks:
Wetland hydrology indicators are C3, D2, and D5.

VEGETATION - Use scientific names of plants.

Sampling Point: W001 (PEM)

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Juncus effusus	5	y	FACW
2. Carex lurida	10	y	OBL
3. Persicaria maculosa	5	y	FACW
4. Onoclea sensibilis	5	y	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1. none			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter.

Sapling/Shrub- Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

Woody Vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

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

Hydrophytic veg. is present. - passes the dominance test.

SOIL

Sampling Point: W001 (PEM)

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR4/3	100					Silt	
4-16	10YR4/1	70	10YR4/4	30	C	PL	Silty Clay	

[1]Type: C=concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Soil Description Remarks:

Meets F3.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: GingerSwitch City/County: Boss Co. Sampling Date: 5/18/2017
Applicant/Owner: AEP State: OH Sampling Point: W002 (PEM)
Investigator(s): KLV, BJM Section, Township, Range: Springfield Twp.
Landform (hilslope, terrace, etc.): Dip Local relief (concave, convex, none): concave Slope (%) 0/.
Subregion (LRR or MLRA): LRR N Lat: 39.313469 Long: -82.875741 Datum: NAD 83
Soil Map Unit Name: RbB - Rainsboro silt loam, 2 to 6 %. Slopes NWI classification: none
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?**	**Yes** ✓	**No** ____
Hydric Soil Present?	Yes ✓	No ____			
Wetland Hydrology Present?	Yes ✓	No ____			

Remarks:
Wetland data point for W002-PEM-CAT1
Data taken at edge of maintained transmission right-of-way.

HYDROLOGY

Wetland Hydrology Indicators:

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

____ Surface Water (A1)	____ True Aquatic Plants (B14)	Secondary Indicators (minimum of two required)	
____ High Water Table (A2)	____ Hydrogen Sulfide Odor (C1)	____ Surface Soil Cracks (B6)	
____ Saturation (A3)	✓ Oxidized Rhizospheres on Living Roots (C3)	____ Sparsely Vegetated Concave Surface (B8)	
____ Water Marks (B1)	____ Presence of Reduced Iron (C4)	____ Drainage Patterns (B10)	
____ Sediment Deposits (B2)	____ Recent Iron Reduction in Tilled Soils (C6)	____ Moss Trim Lines (B16)	
____ Drift Deposits (B3)	____ Thin Muck Surface (C7)	____ Dry-Season Water Table (C2)	
____ Algal Mat or Crust (B4)	____ Other (Explain in Remarks)	____ Crayfish Burrows (C8)	
____ Iron Deposits (B5)		____ Saturation Visible on Aerial Imagery (C9)	
____ Inundation Visible on Aerial Imagery (B7)		____ Stunted or Stressed Plants (D1)	
____ Water-Stained Leaves (B9)		✓ Geomorphic Position (D2)	
____ Aquatic Fauna (B13)		____ Shallow Aquitard (D3)	
		____ Microtopographic Relief (D4)	
		✓ FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____		
Water Table Present?	Yes ____	No ✓	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____	**Wetland Hydrology Present?**	**Yes** ✓ **No** ____

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

Remarks:
Wetland Hydrology Indicators are C3, D2 and D5.

VEGETATION - Use scientific names of plants.

Sampling Point: W002 (PEM)

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Sambucus nigra	10	Y	Fac
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Juncus tenuis	25	Y	Fac
2. Onoclea sensibilis	15	N	FacW
3. Impatiens capensis	15	N	FacW
4. Dichanthelium clandestinum	20	Y	Fac
5. Verbena hastata	5	N	FacW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter.

Sapling/Shrub- Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

Woody Vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

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

Hydrophytic veg. is present - passes the dominance test.

SOIL

Sampling Point: W002 (PEM)

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/1	75	7.5YR 4/6	25	C	PL	Silty Clay	

[1]Type: C=concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Soil Description Remarks: Meets F3.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ginger Switch City/County: Ross Co. Sampling Date: 5/18/2017
Applicant/Owner: AEP State: OH Sampling Point: W001/W002-UPL
Investigator(s): KLV, RJM Section, Township, Range: Springfield Twp.
Landform (hilslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%) 0/.
Subregion (LRR or MLRA): LRR N Lat: 39.313384 Long: -82.875755 Datum: NAD83
Soil Map Unit Name: BbB - Rainsboro silt loam, 2 to 6 % Slopes NWI classification: none
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks)
Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?**	**Yes** ____	**No** ✓
Hydric Soil Present?	Yes ____	No ✓			
Wetland Hydrology Present?	Yes ____	No ✓			

Remarks:
Upland data point for W001 and W002
Data point taken in maintained transmission right-of-way.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____		
Water Table Present?	Yes ____	No ✓	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____	**Wetland Hydrology Present?**	**Yes** ____ **No** ✓

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

Remarks:
Wetland Hydrology Indicators are not present.

VEGETATION - Use scientific names of plants.

Sampling Point: W001/W002-UPL

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Rubus allegheniensis	15	Y	FacU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Oxalis stricta	15	Y	FacU
2. Achillea millefolium	20	Y	FacU
3. Leucanthemum vulgare	15	Y	UPL
4. Epilobium coloratum	10	N	FacW
5. Ohocled sensibilis	5	N	FacW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter.

Sapling/Shrub- Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

Woody Vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

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

Upland veg. is dominant.

SOIL

Sampling Point: W001/W002-UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 4/4	100%					Silt loam	

[1]Type: C=concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Soil Description Remarks:

Hydric Soil Indicators are not present.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ginger Switch City/County: Ross Co Sampling Date: 6/19/2017
Applicant/Owner: AEP State: OH Sampling Point: W003 (PEM)
Investigator(s): KLV, RJM Section, Township, Range: Springfield Twp
Landform (hillslope, terrace, etc.): Dip Local relief (concave, convex, none): concave Slope (%) 0/
Subregion (LRR or MLRA): LRR Lat 39.311104 Long -82.872104 Datum: NAD83
Soil Map Unit Name: TbA - Taggert silt loam, 0-2% slopes NWI classification: N/A
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland?	Yes ✓	No ____
Hydric Soil Present?	Yes ✓	No ____			
Wetland Hydrology Present?	Yes ✓	No ____			

Remarks: Wetland data point for W003, PEM-CAT1. Data point taken between row crop (corn) fields.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____	Wetland Hydrology Present?	Yes ✓ No ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____		

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

Remarks: Wetland Hydrology Indicators are C3, D2 and D5.

VEGETATION - Use scientific names of plants.

Sampling Point: W003(PEM)

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Scirpus atrovirens	15	Y	Obl
2. Scirpus cyperinus	15	Y	Obl
3. Phalaris arundinacae	20	Y	Facw
4. Carex vulpinoided	10	N	Obl
5. Juncus tenuis	10	N	Fac
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	70	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter.

Sapling/Shrub- Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

Woody Vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

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

Hydrophytic veg is dominant. - Passes the dominance test.

SOIL

Sampling Point: W003 (PEM)

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					loamy Sand	
4-16	10YR 4/2	75	10YR 3/6	25	C	PL	Clay loam	

[1]Type: C=concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Soil Description Remarks: Meets F3.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ginger Switch City/County: Ross Co Sampling Date: 6/19/2017
Applicant/Owner: AEP State: OH Sampling Point W003-UPL
Investigator(s): KLV, RJM Section, Township, Range: Springfield twp
Landform (hilslope, terrace, etc.): flat Local relief (concave, convex, none): convex Slope (%) 0/
Subregion (LRR or MLRA): LRR Lat: 39.311120 Long: -82.872184 Datum: NAD 83
Soil Map Unit Name: TbA - Taggart silt loam, 0-2% slopes NWI classification: N/A
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓			
Wetland Hydrology Present?	Yes ____	No ✓			

Remarks: Upland data point for W003-PEM-CAT1
Data point take at edge of cornfield and wetland.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____	Wetland Hydrology Present?	Yes ____ No ✓
Water Table Present?	Yes ____	No ✓	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____		

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

Remarks: Wetland Hydrology is not present.

VEGETATION - Use scientific names of plants.

Sampling Point: WD03 - UPL

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Solidago rugosa	50	Y	FAC
2. Ipomoea pandurata	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. Toxicodendron radicans	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
	30	= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	80	x 3 =	240
FACU species	15	x 4 =	60
UPL species		x 5 =	
Column Totals:	95	(A)	300 (B)

Prevalence Index = B/A = 3.2

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter.

Sapling/Shrub- Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

Woody Vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

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

Veg. passes the dominance test but does not pass the prevalence Index.

SOIL

Sampling Point: W003 - UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	100%					Silt loam	
2-14	10YR 4/3	100%					Silt loam	

[1]Type: C=concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Soil Description Remarks: Hydric Soils are not present

APPENDIX C
Primary Headwater Habitat Evaluation (HHEI) Data Forms

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Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION AEP - Ginger Switch

SITE NUMBER S001 RIVER BASIN Lower Scioto (05060002) DRAINAGE AREA (mi²) 0.00348

LENGTH OF STREAM REACH (ft) 250' LAT. 39.309014 LONG. -82.865075 RIVER CODE _____ RIVER MILE _____

DATE 6/19/2017 SCORER KLV COMMENTS SOH-KLV-001 (ephemeral)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	15
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	15
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☒☐	GRAVEL (2-64 mm) [9 pts]	20	☐☐	MUCK [0 pts]	
☐☒	SAND (<2 mm) [6 pts]	50	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 19

A + B

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]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☒	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 4cm

Pool Depth Max = 30: 5

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

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☒	≤ 1.0 m (≤ 3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]		

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 2'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☒	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☒	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☒	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

June 20, 2008 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☒ EWH Name: Walnut Creek Distance from Evaluated Stream 0.5 mi

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

USGS Quadrangle Name: Londonderry, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Ross Co. Township / City: Harrison Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6/18/2017 Quantity: .25"

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

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

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

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

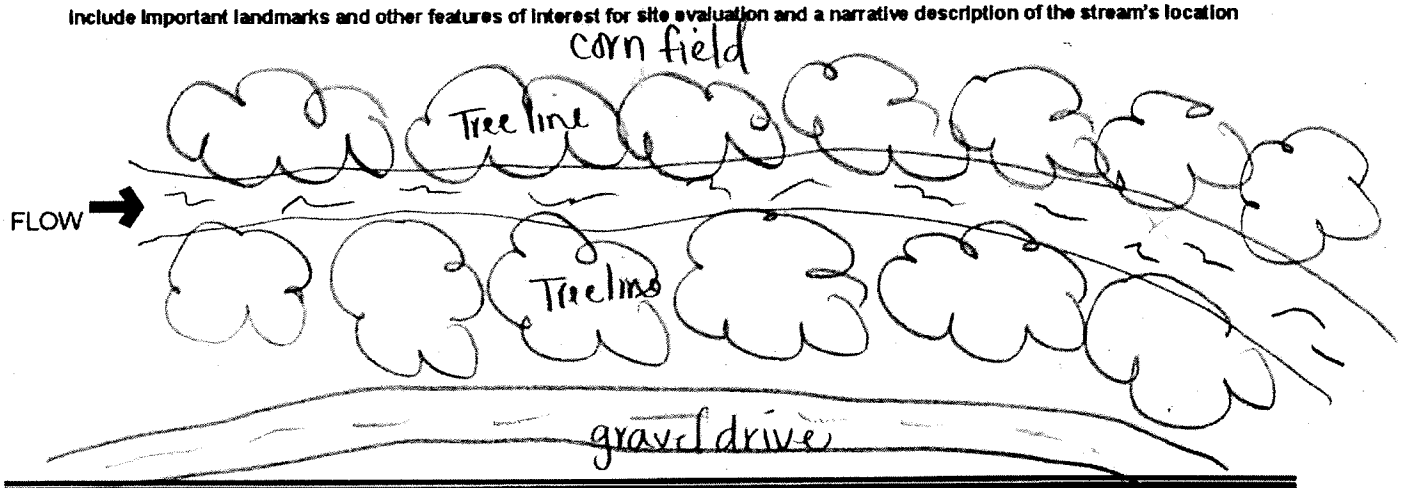
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) 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



APPENDIX D
Ohio Rapid Assessment Method for Wetlands (ORAM) Data Forms

C170352.02, Task 001 / June 2017
Revised July, August, and September 2017

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Site: Ginger Switch	Rater(s): KLV	Date: 5/23/2017

Metric 1. Wetland Area (size).

W001-PEM-CAT1

1 (max 6 pts.) | 1 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [x] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

3 (max 14 pts.) | 4 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] 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.

10 (max 30 pts.) | 14 (subtotal)

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

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

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

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

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

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

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

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

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

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other

Metric 4. Habitat Alteration and Development.

5 (max 20 pts.) | 19 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [ ] Recovering (2)
- [x] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [x] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [x] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

19 (subtotal this page)

last revised 1 February 2001 jjm

Site: ATP - Ginger Switch	Rater(s): KLV	Date: 5/23/2017

19 subtotal first page

W001-PEM-CAT1

Metric 5. Special Wetlands.

0 max 10 pts. | 19 subtotal

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

2 max 20 pts. | 21 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [0] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [X] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [X] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

21

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM v. 5.0 Field Form Quantitative Rating

Site: AEP - Ginger Switch	Rater(s): KLV	Date: 5/18/17

Metric 1. Wetland Area (size).

W002-PEM-CAT1

0	0
max 6 pts.	subtotal

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

3	3
max 14 pts.	subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] 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.

15	18
max 30 pts.	subtotal

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

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

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

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

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

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

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

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

- [x] None or none apparent (12)
- [ ] Recovered (7)
- [ ] Recovering (3)
- [ ] 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

Metric 4. Habitat Alteration and Development.

7	25
max 20 pts.	subtotal

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [x] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

25
subtotal this page

last revised 1 February 2001 jjm

Site: AEP-Ginger Switch	Rater(s): KLV	Date: 5/18/17

25
subtotal first page

0 | 25
max 10 pts. | subtotal

Metric 5. Special Wetlands.

W002-PEM-CAT1

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

2 | 27
max 20 pts. | subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [0] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other _____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [X] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [X] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

27

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM v. 5.0 Field Form Quantitative Rating

Site: ATP- Ginger Switch	Rater(s): KLV	Date: 5/19/2017

Metric 1. Wetland Area (size).

2	2
max 6 pts	subtotal

W003 - PEM - CAT I

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [X] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

1	3
max 14 pts	subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [X] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [X] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

8	11
max 30 pts	subtotal

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

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

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [X] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

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

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

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

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

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

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

Check all disturbances observed

- [X] ditch
- [X] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other

Metric 4. Habitat Alteration and Development.

5	16
max 20 pts.	subtotal

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [X] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [X] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [X] Recovering (3)
- [X] Recent or no recovery (1)

Check all disturbances observed

- [X] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [X] farming
- [ ] nutrient enrichment

16
subtotal this page

last revised 1 February 2001 jjm

ORAM v. 5.0 Field Form Quantitative Rating

Site: AEP - Ginger Switch	Rater(s): KLJ	Date: 6/19/2017

16
subtotal first page

W003 - PEM - CAT1

0	16
max 10 pts	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

-2	14
max 20 pts	subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [2] Shrub
- [2] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [X] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [X] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
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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

Cat. 1

14

End of Quantitative Rating. Complete Categorization Worksheets.

APPENDIX E
ODNR and USFWS Correspondence

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR JAMES ZEHRINGER, DIRECTOR

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

August 22, 2017

Allison Wheaton
GAI Consultants
3720 Dressler Road NW
Canton, Ohio 44718

Re: 17-389; AEP Ginger Switch Replacement Project, Request for Technical Assistance Regarding Threatened and Endangered Species and Critical Habitat

Project: The proposed project involves the replacement of the Ginger Switch and up to five structures along the existing Berlin - Ross 69kV transmission line.

Location: The proposed project is located in Springfield Township, Ross County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has no records at or within a one-mile radius of the project area.

A review of the Ohio Natural Heritage Database indicates there are no records of state endangered or threatened plants or animals within the project area. There are also no records of state potentially threatened plants, special interest or species of concern animals, or any federally listed species. In addition, we are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the project area. The review was performed on the project area you specified in your request as well as an additional one mile radius. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

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

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

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

The project is within the range of the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the sheepnose (*Plethobasus cyphyus*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the fanshell (*Cyprogenia stegaria*), a state endangered and federally endangered mussel, the northern rifffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the long-solid (*Fusconaia maculata maculata*), a state endangered mussel, the sharp-ridged pocketbook (*Lampsilis ovata*), a state endangered mussel, the little spectaclecase (*Villosa lienosa*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel, and the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this project is not likely to impact these species.

The project is within the range of the shovelnose sturgeon (S*caphirhynchus platorynchus*), a state endangered fish, the blue sucker (*Cycleptus elongatus*), a state endangered fish and a Federal species of concern, the spotted darter (*Etheostoma maculatum*), a state endangered fish and a federal species of concern, the shortnose gar (*Lepisosteus platostomus*), a state endangered fish, the northern madtom (*Noturus stigmosus*), a state endangered fish, the Tippecanoe darter (*Etheostoma Tippecanoe*), a state threatened fish, the channel darter (*Percina copelandi*), a state threatened fish, the American eel (*Anguilla rostrata*), a state threatened fish, and the river darter (*Percina shumardi*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. Due to the location,

and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this project is not likely to impact this species.

The project is within the range of the timber rattlesnake (*Crotalus horridus horridus*), a state endangered species, and a federal species of concern. The timber rattlesnake is a woodland species, utilizing dry slopes and rocky outcrops. In addition to using wooded areas, the timber rattlesnake utilizes sunlit gaps in the canopy for basking and deep rock crevices for overwintering. Due to the location, the habitat at the project site, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the spotted turtle (*Clemmys guttata*), a state threatened species. This species prefers fens, bogs and marshes, but also is known to inhabit wet prairies, meadows, pond edges, wet woods, and the shallow sluggish waters of small streams and ditches. Due to the location, the habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the mud salamander (*Pseudotriton montanus*), a state threatened species. Due to the location, the type of habitat present at the project site, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the black bear (*Ursus americanus*), a state endangered species. Due to the mobility of this species, this project is not likely to impact this species.

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

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

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

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

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

gai consultants

Canton Office
3720 Dressler Road Northwest
Canton, Ohio 44718

T 330.433.2680
F 330.433.2694

May 11, 2017

Project C170352.02

Environmental Review Staff
Ohio Department of Natural Resources
Division of Wildlife - Ohio Natural Heritage Program
2045 Morse Road, Building G-3
Columbus, Ohio 43229-6693

American Electric Power
Ginger Switch Replacement Project
Request for Technical Assistance Regarding Threatened and Endangered Species and Critical Habitat
Ross County, Ohio

Dear Staff:

GAI Consultants, Inc. (GAI), on behalf of American Electric Power (AEP), is requesting information regarding state- and federally-listed threatened and endangered species in the vicinity of the Ginger Switch Replacement Project (Project) in Ross County, Ohio. As part of this request, please provide information specific to any threatened and endangered bats. GAI is also requesting the locations of any known golden or bald eagle nests in the area.

The proposed Project involves replacement of the Ginger Switch and up to five structures along the existing Berlin – Ross 69kV transmission line. Approximately 0.5 mile of access roads will be required to complete the Project.

The study area for the Project is shown on the attached map (Figure 1). The habitat within the study area consists of maintained right-of-way and early successional forest. Project shapefiles have been included to aid in your review.

GAI and AEP thank you in advance for your assistance. Please contact me at 330.324.9148 or via email at a.wheaton@gaiconsultants.com if you have any questions or require further information.

Sincerely,

GAI Consultants, Inc.

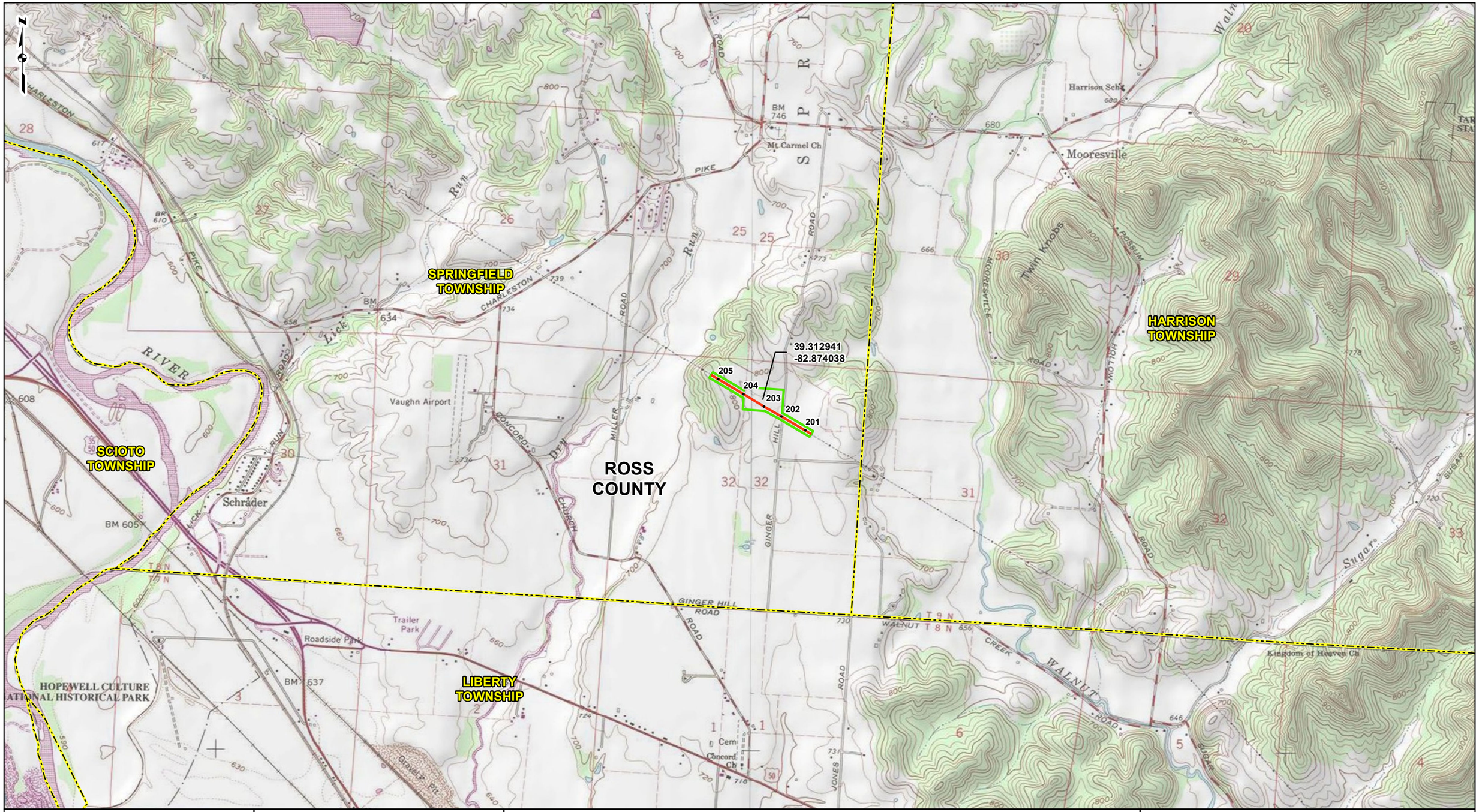
Allison R. Wheaton, WPIT
Senior Project Environmental Specialist

ARW/kea

Attachments: Attachment 1 (Project Location Map)
Project Shapefiles

ATTACHMENT 1

PROJECT LOCATION MAP



PROJECT LOCATION

ROSS COUNTY, OHIO

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: CHILLICOTHE EAST (1985), AND LONDONDERRY (1963), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 05/2017.

LEGEND

- EXISTING STRUCTURE
- EXISTING TRANSMISSION LINE
- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY
- STUDY AREA

0 1,000 2,000 4,000 Feet

PROJECT LOCATION MAP

gai consultants

GINGER SWITCH REPLACEMENT PROJECT
AMERICAN ELECTRIC POWER

AMERICAN ELECTRIC POWER
BOUNDLESS ENERGY

DRAWN BY: AKW DATE: 5/11/2017
CHECKED: EFJ APPROVED:

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From:	susan_zimmermann@fws.gov on behalf of Ohio, FW3
To:	Allison Wheaton
Cc:	kate.parsons@dnr.state.oh.us; nathan.reardon@dnr.state.oh.us
Subject:	Four (4) AEP Projects: Heppner / Rhoads / Ginger / Rhoads-Heppener
Date:	Friday, June 02, 2017 1:39:00 PM
Attachments:	Capture of Dan.PNG

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

03E15000-2017-TA-1329 GAI AEP Ginger Switch Replacement Project, Ross Co.
03E15000-2017-TA-1328 GAI AEP Heppner Substation Project, Jackson Co.
03E15000-2017-TA-1327 GAI AEP Rhodes Substation Project, Jackson Co.
03E15000-2017-TA-1326 GAI AEP Rhoders-Heppner 138kV Line Rebuild, Jackson

Dear Ms. Wheaton,

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,

Dan Everson

Field Supervisor

cc: Nathan Reardon, ODNR-DOW

Kate Parsons, ODNR-DOW

gai consultants

Canton Office
3720 Dressler Road Northwest
Canton, Ohio 44718

T 330.433.2680
F 330.433.2694

May 11, 2017

Project C170352.02

Mr. Dan Everson
United States Fish and Wildlife Service
Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230

American Electric Power
Ginger Switch Replacement Project
Request for Technical Assistance Regarding Threatened and Endangered Species and Critical Habitat
Ross County, Ohio

Dear Mr. Everson:

GAI Consultants, Inc. (GAI), on behalf of American Electric Power (AEP), is requesting information regarding state- and federally-listed threatened and endangered species in the vicinity of the Ginger Switch Replacement Project (Project) in Ross County, Ohio. As part of this request, please provide information specific to any threatened and endangered bats. GAI is also requesting the locations of any known golden or bald eagle nests in the area.

The proposed Project involves replacement of the Ginger Switch and up to five structures along the existing Berlin – Ross 69kV transmission line. Approximately 0.5 mile of access roads will be required to complete the Project.

The study area for the Project is shown on the attached map (Figure 1). The habitat within the study area consists of maintained right-of-way and early successional forest. Project shapefiles have been included to aid in your review.

GAI and AEP thank you in advance for your assistance. Please contact me at 330.324.9148 or via email at a.wheaton@gaiconsultants.com if you have any questions or require further information.

Sincerely,
GAI Consultants, Inc.

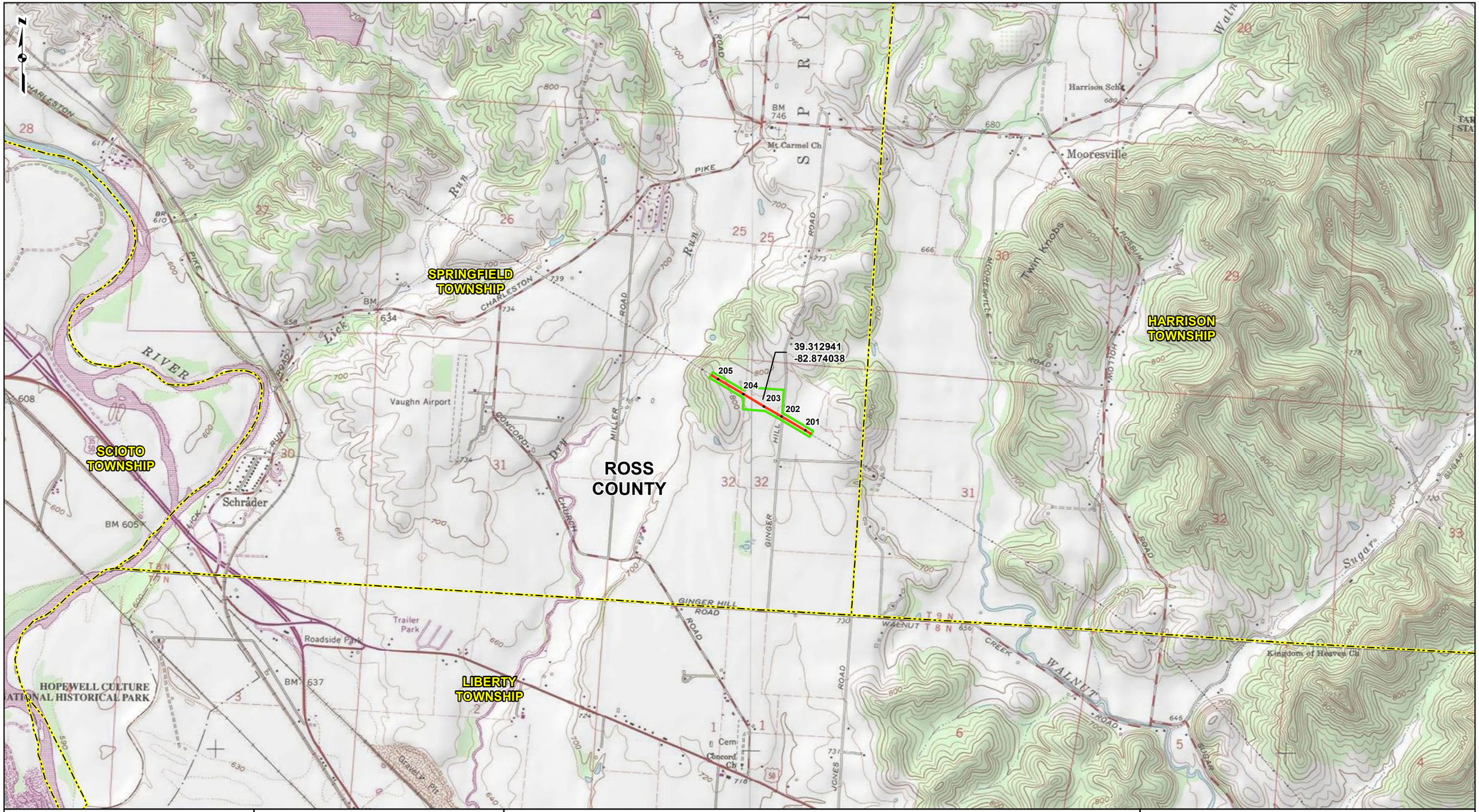
Allison R. Wheaton, WPIT
Senior Project Environmental Specialist

ARW/kea

Attachments: Attachment 1 (Project Location Map)
Project Shapefiles

ATTACHMENT 1

PROJECT LOCATION MAP



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