

CONSTRUCTION NOTICE FOR HARMAR HILL 138- kV SWITCH INSTALL PROJECT



An **AEP** Company

BOUNDLESS ENERGY™

PUCO Case No. 21-0266-EL-BNR

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

Submitted by:
AEP Ohio Transmission Company, Inc.

April 27, 2021

CONSTRUCTION NOTICE
AEP Ohio Transmission Company, Inc. (AEP Ohio Transco)
Harmar Hill 138-kV Switch Install Project

4906-6-05

AEP Ohio Transmission Company, Inc. (the "Company") 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.

4906-6-05(B) General Information

B(1) Project Description

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

The Company proposes to construct the Harmar Hill 138-kilovolt ("kV") Switch Install Project (the "Project") in Warren Township, Washington County, Ohio. The Project consists of replacing the inoperable switch on the Mill Creek-Riverview 138-kV Transmission Line just outside of the Harmar Hill Station. The switch is planned to be rebuilt approximately 180 feet northeast of existing switch location, along the adjusted alignment of the Mill Creek-Riverview 138-kV line, just south of Lancaster Street/State Route 676. The realignment of the Mill Creek-Riverview 138-kV line, an Ohio Power Company asset, is the subject of a separate OPSB filing (PUCO Case No. 21-0267-EL-BLN).

The existing lattice frame switch will be replaced with a steel monopole phase-over-phase switch. The location of the Project is shown on Figure 1 in Appendix A.

The Project meets the requirements for a Construction Notice ("CN") because it is within the types of projects defined by Item (2)(a) of **Appendix A** to OAC 4906-1-01, **Application Requirement Matrix for Electric Power Transmission Lines**:

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

- (a) Two miles or less.**

The Project has been assigned PUCO Case No. 21-0266-EL-BNR.

B(2) Statement of Need

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

The Project is necessary to replace the existing hard tap and one-way switch with a three-way phase-over-phase switch located on the Gorsuch – Mill Creek 138 kV circuit. In addition to replacing the switch, the Project will rebuild the radial line to the existing Harmar Hill Station.

The Harmar Hill Station is served via a radial line that is hard tapped to the Gorsuch-Mill Creek circuit. Hard taps limit AEP's ability to sectionalize during outages (planned or unplanned) and can result in over tripping and/or mis-operations affecting customers served from this line. Failure to address the existing hard tap and inoperable switch arrangement will result in continued reliability issues to customer delivery point and others served from this line. While portions of the Harmar Hill load are transferrable to other sources, under high loading conditions, transferring loads may not be possible.

In addition, the existing one-way switch on the Gorsuch-Mill Creek 138 kV circuit cannot be opened and, as such, is inoperable. Eliminating the inoperable switch will significantly improve reliability to the Harmar Hill Station, allow maintenance to occur without significant interruptions to the 138 kV through path, and help with restoration times in this remote location. The new switch also will eliminate outages to the customers served out of Harmar Hill Station while maintenance is being performed on the 138 kV line between Gorsuch and Mill Creek Stations. The addition of auto sectionalizing equipment will also allow the Company to perform restoration activities remotely rather than having to send someone to the field.

Harmar Hill currently serves 15 MVA of load and over 2,800 customers. Failure to proceed with the Project would continue to subject these customers to outages on the line for any fault conditions as well as any required maintenance on the line.

The need and solution for this project was presented to PJM on 10/28/2018 and 2/20/2019, then subsequently assigned a PJM # of s1858. This Project was included in Ohio Power Company's most recent Long-Term Forecast Report on page 68 of 116.

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.

Figure 1 in Appendix A shows the location of the Project in relation to existing transmission facilities on a United States Geological Survey 1:24,000 topographic quadrangle (Fleming OH, 1975; Marietta OH, 1978). Figure 2 in Appendix A identifies the Project components on 2016 aerial imagery (Esri World Imagery, Maxar).

B(4) Alternatives Considered

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

The Project is unable to be constructed along the existing Mill Creek-Riverview 138-kV Transmission centerline, as the existing line, Harmar Hill Switch, and Harmar Hill Station cannot be taken out-of-service without interrupting service to customers. Therefore, the Project is required to be constructed offset from the existing transmission line. Alternatives to the west of Harmar Hill Station and further east of the existing switch location were not feasible because of adjacent residences. The distance between the existing and proposed location of the switch allows for safe and reliable construction of the new switch while the existing facilities remains in-service.

Additionally, there are no known residences, commercial/industrial buildings, barns, or other above ground structures located within 100 feet of the proposed location of the Harmar Hill Switch. Nominal tree cutting would be required and impacts to aquatic resources are not anticipated. Therefore, the planned location for the rebuilt Harmar Hill Switch was the most appropriate and best suited solution for the Project.

B(5) Public Information Program

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

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

B(6) Construction Schedule

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

The Company anticipates construction of the Project to begin in August 2021 and be in-service October 2021.

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 included in Appendix A identifies the location of the Project area on a United States Geological Survey 1:24,000 quadrangle map (Fleming OH, 1975; Marietta OH, 1978). Figure 2 in Appendix A is an aerial map of the Project area (Esri World Imagery, Maxar 2016).

To visit the Project from Columbus, take I-70 E towards Wheeling, West Virginia. Continue on I-70 for approximately 70 miles. Take exit 180A to merge onto I-77 South toward Marietta and continue for 38 miles. Take exit 6 for OH-821 toward Marietta/Lower Salem and turn right onto OH-821 S/Cambridge Road for 3 miles. Turn left onto OH-60 South for 1.6 miles and then take a slight right onto Front Street and continue for 0.1 mile. Turn left onto 2nd Street and continue for 0.5 mile. Then turn right onto Ohio River Scenic Byway/Washington Street and continue for 0.5 mile. Turn right onto OH-676 W/Lancaster Street and continue for 1.5 mile and reach the Harmar Hill Station on the left and to a point where the Mill Creek-Riverview 138-kV line crosses OH-676 W/Lancaster Street. The coordinates of this location are latitude 39.424380, longitude - 81.481572.

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 table of property parcel numbers and an indication as to whether the easement/option necessary to construct and operate the facility has been obtained is provided below.

Property Parcel Number	Easement Agreement/Option Obtained* (Yes/No)
34-0093042.000	Yes
240017884000	Yes

*The Company may supplement its existing rights under all blanket and defined easements identified above

B(9) Technical Features

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

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

The Harmar Hill 138-KV Switch is planned to include:

Voltage: 138 kV
Conductors: 954kCM ACSR 45/7 RAIL
Static Wire: 7#8 Alumoweld
Insulators: Polymer
ROW Width: 100 feet
Structure Types: (1) steel phase-over-phase GOAB Switch

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

B(9)(b) Electric and Magnetic Fields

Not applicable. There are no occupied residences or institutions located within 100 feet of the Project.

B(9)(c) Project Costs

The estimated capital cost of the project.

The estimated capital cost of the Project, comprised of applicable tangible and capital costs, is approximately \$630,000 using a Class 4 estimate. Pursuant to the PJM OATT, the costs for this Project will be recovered in the AEP Ohio Transmission Company Inc.'s FERC formula rate (Attachment H-20 to the PJM OATT) and allocated to the AEP Zone.

B(10) Social and Economic Impacts

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

B(10)(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 Warren Township, Washington County, Ohio. Land use in the Project area consists residential and open space on broad ridgetops, existing transmission line ROW, and State Route 676. The Project is located near several residences, but none are within 100 feet of the Project.

CONSTRUCTION NOTICE FOR HARMAR HILL 138-KV SWITCH INSTALL PROJECT

According to the Ohio Department of Transportation, Transportation Information Mapping System, there are no known scenic byways or rivers at the Project site or within 0.5 mile. State Route 676, which lies to the immediate north of the Project, is a Statewide Bike Route according to the Ohio Department of Natural Resources (ODNR) Land and Facilities Map Viewer. No impacts to the bike route are anticipated by the Project except for possible congestion during construction and ingress and egress of equipment and material.

Wetlands and streams were identified within the Project area, but no impacts are anticipated as no in-water work is proposed for the Project. The Project is not located within a flood hazard area (FEMA Flood Insurance Rate Map #39167C0261F, map revised April 16, 2014).

There are no known parks or other recreational resources within 1,000 feet of the Project.

The Project will require nominal tree cutting, less than 0.1 acres.

B(10)(b) Agricultural Land Information

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

According to the Washington County Auditor's Office, as of March 29, 2021, the parcels crossed by the Project are not registered as Agricultural District land. Additionally, the Project does not cross active agricultural row crop land (Appendix A, Figure 2).

B(10)(c) Archaeological and Cultural Resources

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

The Company's consultant completed Phase I Archaeological and Phase I History/Architectural surveys, which involved subsurface testing and visual inspections in June 2019 and provided results to the Ohio State Historic Preservation Office ("SHPO"). Correspondence from the SHPO was received in August 2019 (see Appendix D). According to the correspondence received from the SHPO, the Project will have no adverse effects on historic properties and no further cultural resource work is necessary.

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

Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a

list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

A Notice of Intent (“NOI”) will be filed with the Ohio Environmental Protection Agency for authorization of construction storm water discharge under NPDES General Permit for Discharges of Storm Water Associated with Construction Activity OHC000005, and the Company will implement and maintain best management practices as outlined in the Project-specific Storm Water Pollution Prevention Plan to minimize erosion and sediment to Project surface waters during storm events.

The Company’s consultant completed a wetland delineation and stream identification field review for the Project (Appendix D). Four intermittent streams and one palustrine emergent (PEM) wetland were identified within the study area. These streams and wetland will not be impacted by the Project; therefore, Clean Water Act Section 401/404 permits will not be needed.

In addition to easement acquisition, state and municipal road and driveway authorizations are required.

There are no other known local, state, or federal requirements that must be met for the Project.

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

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

A coordination letter was submitted to the United States Fish and Wildlife Service (“USFWS”) Ohio Ecological Services Field Office on June 28, 2019 seeking technical assistance on the Project for potential impacts to threatened or endangered species. In a response email dated July 9, 2019, the USFWS noted the potential for the Indiana bat and northern long-eared bat to occur within the Project area. The USFWS recommended that if tree removal was required for the Project, it be limited to the time between October 1 and March 31 to avoid the potential for take of the Indiana bat and northern long-eared bat. The Company anticipates completing tree cutting during the recommended timeframe but should implementation of the seasonal tree cutting recommendation not be feasible, the USFWS will be contacted for further guidance. The USFWS also stated that due to the Project type, size, and location, no other impacts to federally endangered, threatened, or proposed species or designated critical habitat are anticipated.

A coordination letter was submitted to the ODNR Division of Wildlife (“DOW”) on June 28, 2019 seeking technical assistance for potential impacts to threatened or endangered species in the vicinity of the Project area. In a response received on August 12, 2019, ODNR-DOW noted the

CONSTRUCTION NOTICE FOR HARMAR HILL 138-KV SWITCH INSTALL PROJECT

potential for the Indiana bat (state endangered and federally endangered) to occur within the Project area. ODNR-DOW recommended that if tree removal was required for the Project, it be limited to the time between October 1 and March 31 to avoid potential for take of the Indiana bat. ODNR-DOW also recommended conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH \geq 20 if possible. The Company anticipates completing tree cutting during the recommended timeframe but should implementation of the seasonal tree cutting recommendation not be feasible, proper agency coordination will be conducted.

The ODNR also indicated that the Ohio Natural Heritage Database (ONHD) has records of blunt-leaved milkweed (*Asclepias amplexicaulis*), a state potentially threatened species; butterfly (*Ellipsaria lineolata*), a state endangered mussel species; threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel species; monkeyface (*Theliderma metanevra*), a state endangered mussel species; and fawnsfoot (*Truncilla donaciformis*), a state threatened mussel species with records at or within a one-mile radius of the Project area. No impacts to the identified mussel species are anticipated as no in-water work is proposed for the Project.

The ODNR Division of Natural Areas and Preserves indicated that the blunt-leaved milkweed has been found near the Project and due to the possible disruption of this species and possibly other rare species in the area, it is recommended that a pre-construction survey of the Project be conducted. The survey should be concentrated on the south facing slopes within the construction limits. The Company will complete a pre-construction survey for the species and coordinate the results with ODNR and provide to OPSB once complete.

ODNR-DOW also noted that the Project is within the range of 15 state listed mussel species, 4 of which are also on the federal list, and 10 state listed fish species, 1 of which is also listed on the federal list. However, due to the location of the Project, and that there is no in-water work proposed in a perennial stream, this Project is not likely to impact these species.

The Project is also within the range of the timber rattlesnake (*Crotalus horridus horridus*), a state endangered species and a federal species of concern, but due to the location of the Project 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 also within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern, but due to the location of the Project 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 also within the range of the eastern spadefoot toad (*Scaphiopus holbrookii*), a state endangered species, but 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.

Coordination letters from USFWS and ODNR are provided in Appendix C.

B(10)(f) Areas of Ecological Concern

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

Coordination letters were submitted to the USFWS and ODNR requesting a review of the Project and identification of areas of ecological concern. Agency response letters did not indicate areas of ecological concern in the Project area. A review of the Protected Areas Database of the United States, which is the official inventory of public parks and other protected areas in the United States and territories, did not identify protected areas within 1,000 feet of the Project. Additionally, based a review of the ODNR Lands and Facilities online map there are no natural areas and preserves, wildlife areas, parks, or forests within 1,000 feet of the Project. The ONHD has records of two endangered and two threatened mussel species, and one state potentially threatened plant species within a one-mile radius of the Project area. However, due to the location, and there is no in-water work, the Project is not impact these mussels. For the state potentially threatened plant species, the blunt-leaved milkweed, the Company will complete a pre-construction survey for the species and coordinate the results with ODNR and provided to the OPSB once complete.

A review the National Conservation Easement Database and the USACE Regulatory In-lieu Fee and Bank Information Tracking System did not identify mapped easements or mitigation sites in the Project area.

The Project is not located within a flood hazard area (FEMA Flood Insurance Rate Map #39167C0261F, map revised April 16, 2014). Floodplains and floodways are shown on Figure 2 in Appendix D.

A wetland delineation and stream identification field review were completed for the Project by the Company's consultant in April 2019. The results of the field review are presented in the Ecological Survey Report included in Appendix D. In general, the habitat encountered within the study area consisted of maintained transmission line ROW within open space/residential land and bordered by mixed deciduous forest. Four intermittent streams and one PEM wetland were identified within the study area. These streams and wetland will be avoided and no impacts are anticipated.

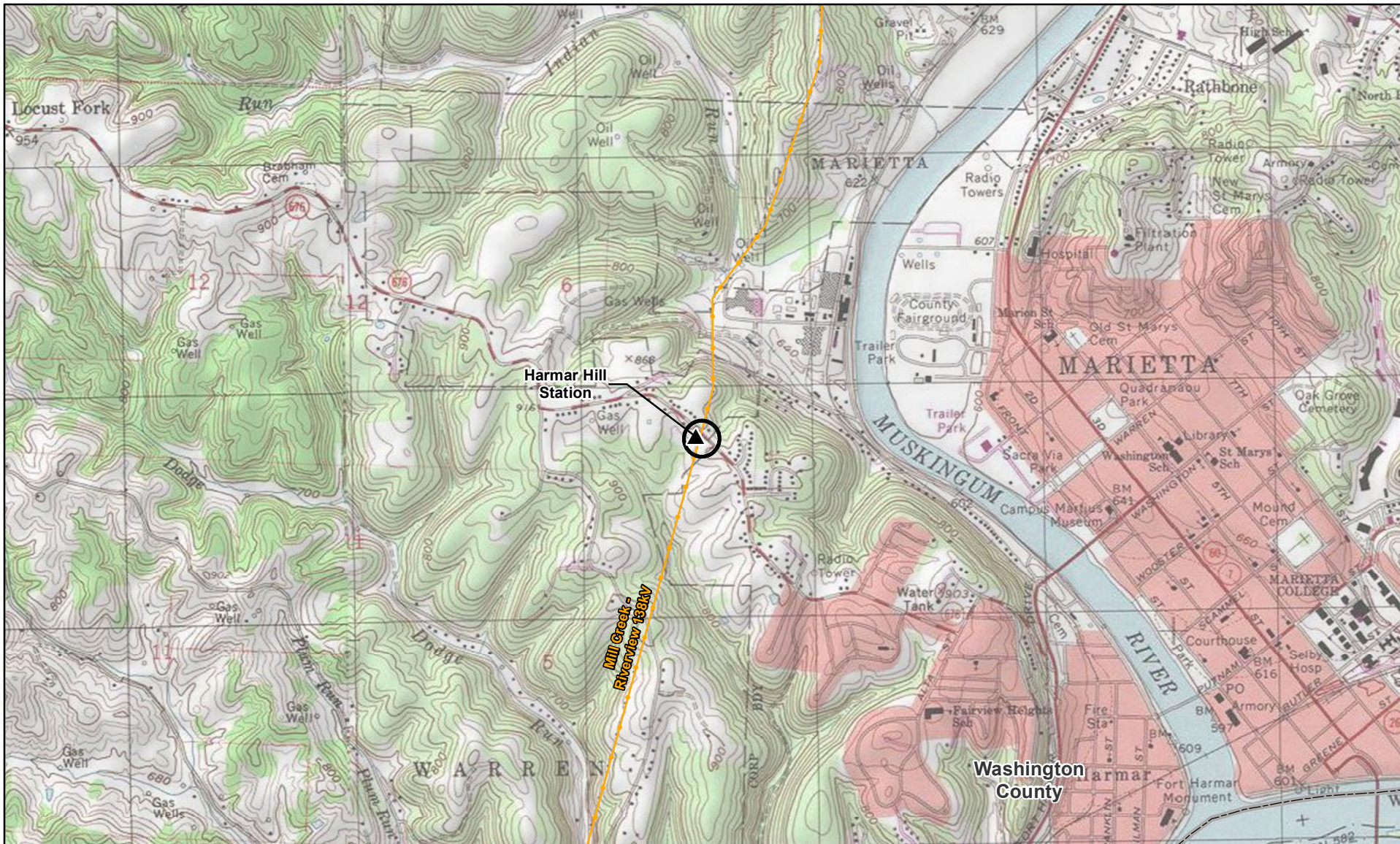
B(10)(g) Unusual Conditions

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





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

APPENDIX A

Project Maps



Legend

-  Existing Station
-  Existing 138-kV Transmission Line
-  Project Area
-  County Boundary

USGS Topographic (Fleming (1975) and Marietta (1978), Ohio), Esri ArcGIS Online, Accessed 04/2021.

NAD 1983 State Plane Ohio South Feet

April 21, 2021





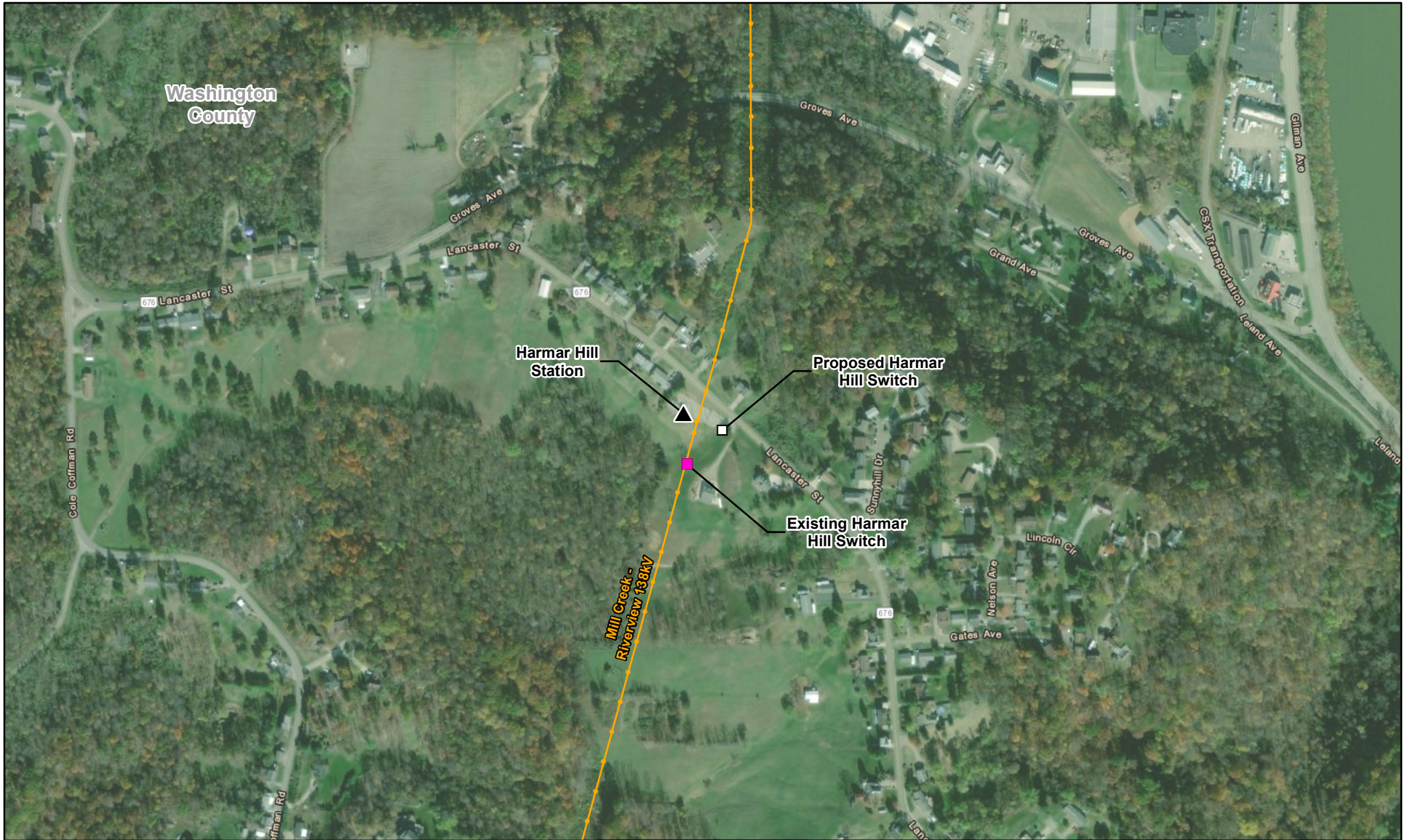

Figure 1
Project Location Map

AEP OHIO TRANSMISSION COMPANY
An AEP Company
SOUNDLESS ENERGY

Harmar Hill 138-kV Switch Install Project

0 2,000
Feet





Legend

- ▲ Existing Station
- Proposed Structure
- Existing Structure
- Existing 138-kV Transmission Line

Esri World Imagery, Maxar, 2016, ArcGIS Online, Accessed 04/2021. Esri World Transportation, ArcGIS Online, Accessed 04/2021.

NAD 1983 State Plane
Ohio South Feet



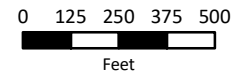
April 21, 2021



**Figure 2
Aerial Map**



Harmar Hill 138-kV
Switch Install Project



APPENDIX B

PJM Interconnection Submittal and Long Term Forecast Report

Company: AEP Ohio
PUCO Form FE-T8
Summary of Existing Substations on Transmission Lines

GENOA	T	138	Genoa - Karl Road - Morse Road	E
GENOA	T	138	Genoa - Maliszewski	E
GENOA	T	138	Genoa - Westar	E
GORSUCH	T	138	Gorsuch - Mill Creek	E
GORSUCH	T	138	Gorsuch - Riverview	E
GREENLAWN	T	138	Greenlawn - Melmore	E
GREENLAWN	T	138	Greenlawn - Tiffin Center	E
GREIF	T	138	Greif - Huntley	E
GREIF	T	138	Greif - Hyatt	E
GRIGGS TERMINAL	T	138	Kenny - Roberts	E
GROVES ROAD	T	138	Astor - Groves - Shannon	E
GROVES ROAD	T	138	Bexley - Groves	E
GROVES ROAD	T	138	Bixby - Groves Road #1	E
GROVES ROAD	T	138	Bixby - Groves Road #2	E
HALL	D	138	Bolton - Hall	E
HALL	D	138	Fisher - Hall - Wilson	E
HANGING ROCK	T	138	Bellefonte - East Wheelersburg	E
HANGING ROCK 765KV	T	765	*DENA (IPP) - Hanging Rock	E
HANGING ROCK 765KV	T	765	Baker - Hanging Rock	E
HANGING ROCK 765KV	T	765	Don Marquis - Hanging Rock	E
HANGING ROCK 765KV	T	765	Hanging Rock - Jefferson	E
HANGING ROCK 765KV	T	765	Hanging Rock - North Proctorville	E
HARDIN SWITCH	T	345	East Lima - Hardin Switch	E
HARDIN SWITCH	T	345	Hardin Switch - Marysville	E
HARGUS	D	138	Hargus (CCA) - Scippo	E
HARMAR HILL	D	138	Gorsuch - Mill Creek	E
HARRISON	T	138	Beatty Road - Harrison (CSP)	E
HARRISON	T	138	Circleville - Harrison #1	E
HARRISON	T	138	Circleville - Harrison #2	E
HARRISON	T	138	Harrison - Lemaster	E
HARRISON	T	138	Harrison (CSP) - Marion Road	E
HARRISON	T	138	Harrison (CSP) - South Central	E
HAVILAND	T	138	East Lima - Haviland	E
HAVILAND	T	138	Haviland - Timber Switch	E
HAVILAND	T	138	Haviland - Trishe Wind	E
HAYDEN	T	345	Cole - Hayden	E
HAYDEN	T	345	Hayden Switch - Hyatt (CSP)	E
HAYDEN	T	345	Hayden Switch - Roberts #1	E
HAYDEN	T	345	Hayden Switch - Roberts #2	E
HEATH	T	138	Heath - North Newark	E
HEATH	T	138	Heath - West Millersport	E
HESS STREET	D	138	Hess Street - OSU	E
HESS STREET	D	138	Hess Street - Vine	E
HESS STREET	D	138	Hess Street - Wilson Road	E
HIGHLAND (CS)	D	138	Highland (CSP) - Hillsboro	E
HIGHLAND (CS)	D	138	Highland (CSP) - Seaman	E
HILLSBORO	T	138	*Hillsboro - Hutchings (DP&L)	E
HILLSBORO	T	138	*Hillsboro - Warren (Duke)	E
HILLSBORO	T	138	Highland (CSP) - Hillsboro	E
HILLSBORO	T	138	Hillsboro - Millbrook Park	E
HILLSBORO	T	138	Hillsboro - Wildcat	E
HILLVIEW DRIVE	D	138	Newcomerstown - West New Philadelphia	E
HOCKING	T	138	Hocking - Lemaster	E
HOCKING	T	138	Hocking - West Lancaster	E
HOWARD	T	138	*Brookside (FE) - Howard	E
HOWARD	T	138	*Howard - Shelby #1	E
HOWARD	T	138	Bucyrus Center - Howard	E
HOWARD	T	138	Howard - Melmore #1	E

Need Number: AEP-2018-OH009

Process Stage: Solution Meeting 2/20/2019

Process Chronology: Needs Meeting 10/28/2018

Supplemental Project Driver: Operational Flexibility and Efficiency, Customer Service.

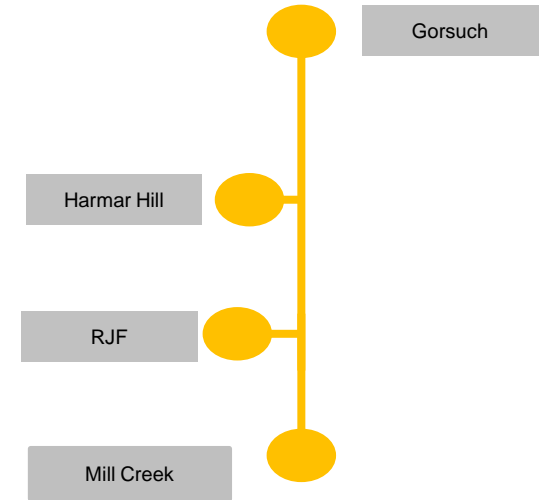
Specific Assumption References:

Equipment Condition, Operational Flexibility

Problem Statement:

RJF is a customer owned substation that is served off a 138kV hard tap. Harmar Hill is served from a tap with a one way switch. Any line work along between Mill Creek and Gorsuch causes considerable outages to both customer loads. There is limited transfer capability at Harmar Hill and no transfer capability for RJF. AEP's internal guidelines justify sectionalizing on this line (FOI: 10.17).

Mill Creek will be replaced by a new substation Devola as part of an unrelated project (S1125).



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	



AEP Transmission Zone: Supplemental West-Marietta, Ohio

Need Number: AEP-2018-009

Meeting Date: 02/20/2019

Process Chronology: Needs Meeting 10/26/2018

Supplemental Project Driver: Operational Flexibility and Efficiency, Customer Service.

Specific Assumption References: Equipment Condition, Operational Flexibility

Proposed Solution:

Install a 3-way, SCADA-controlled phase-over-phase switch at Harmar Hill to replace the one-way line switch on the Gorsuch – Mill Creek 138 kV circuit.

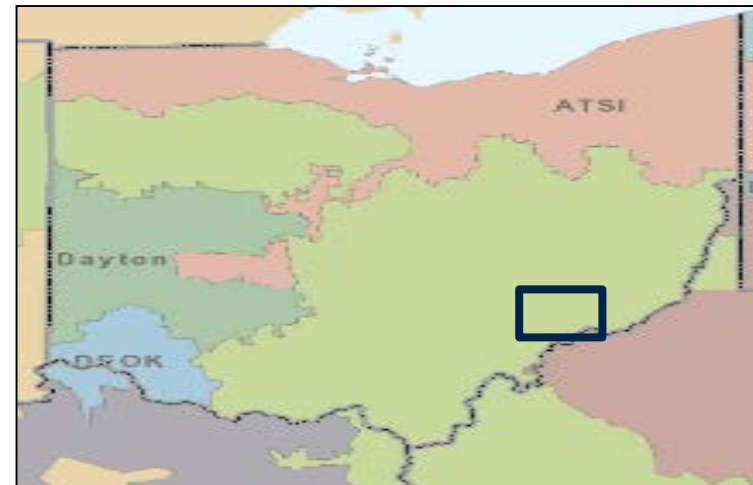
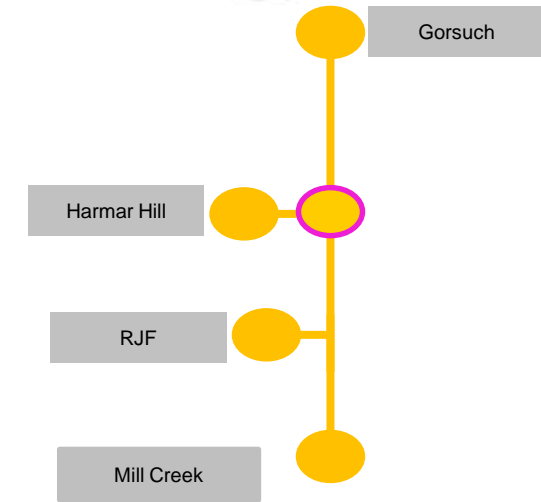
Alternatives:

Alternative Description: Expand Harmar Hill Station to an in and out arrangement with circuit breakers.

Total Estimated Transmission Cost: \$1.35M

Projected IS Date: 06/01/2020

Project Status: Scoping



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

APPENDIX C

Agency Correspondence

Rita Zack

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Tuesday, July 9, 2019 11:38 AM
To: Rita Zack
Cc: nathan.reardon@dnr.state.oh.us; kate.parsons@dnr.state.oh.us
Subject: AEP's Harmar Hill 138kV Switch Project, Washington County

EXTERNAL E-MAIL MESSAGE



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



TAILS# 03E15000-2019-TA-1509

Dear Ms. Zack,

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 in Ohio summer mist net 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,



Patrice M. Ashfield
Field Office Supervisor

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



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

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

August 12, 2019

Rita Zack
GAI Consultants, Inc.
3720 Dressler Road NW
Canton, Ohio 44718

Re: 19-581; AEP -Harmar Hill Switch Project

Project: The proposed Project involves installing a new 138kV switch along the existing Gorsuch-Mill Creek 138kV transmission line.

Location: The proposed project is located in Warren Township, Washington County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has the following records at or within a one-mile radius of the project area:

Blunt-leaved milkweed (*Asclepias amplexicaulis*), P
Butterfly (*Ellipsaria lineolata*), E
Threehorn wartyback (*Obliquaria reflexa*), T
Monkeyface (*Theliderma metanevra*), E
Fawnsfoot (*Truncilla donaciformis*), T

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. This information is provided to inform you of features present within your project area and vicinity.

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.

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added

to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal endangered, FT = federal threatened, FSC = federal species of concern, FC = federal candidate species.

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 to include: 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 sheepnose (*Plethobasus cyphus*), a state endangered and federally endangered mussel, the fanshell (*Cyprogenia stegaria*), a state endangered and federally endangered mussel, the pink mucket (*Lampsilis orbiculata*), a state endangered and federally endangered mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the washboard (*Megaloniais nervosa*), a state endangered mussel, the butterfly (*Ellipsaria lineolata*), a state endangered mussel, the elephant-ear (*Elliptio crassidens*), a state endangered mussel, the long-solid (*Fusconaia maculata maculata*), a state endangered mussel, the sharp-ridged pocketbook (*Lampsilis ovata*), a state endangered mussel, the Ohio pigtoe (*Pleurobema cordatum*), a state endangered mussel, the pyramid pigtoe (*Pleurobema rubrum*), a state endangered mussel, the monkeyface (*Quadrula metanevra*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the blue sucker (*Cycleptus elongatus*), a state endangered fish and a Federal species of concern, the western banded killifish (*Fundulus diaphanus menona*), a state endangered fish, the northern madtom (*Noturus stigmosus*), a state endangered fish, the Ohio lamprey (*Ichthyomyzon bdellium*), a state endangered fish, the paddlefish (*Polyodon spathula*) a state threatened fish, the mountain madtom (*Noturus eleutherus*), a state threatened fish, the river darter (*Percina shumardi*), a state threatened fish, the mountain madtom (*Noturus eleutherus*), a state threatened fish, the channel darter (*Percina copelandi*), a state threatened fish, and the

Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the 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 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 eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. This long-lived, entirely aquatic salamander inhabits perennial streams with large flat rocks. In-water work in hellbender streams can reduce availability of large cover rocks and can destroy hellbender nests and/or kill adults and juveniles. The contribution of additional sediment to hellbender streams can smother large cover rocks and gravel/cobble substrate (used by juveniles), making them unsuitable for refuge and nesting. Projects that contribute to altered flow regimes (e.g., by increasing areas of impervious surfaces or modifying the floodplain) can also adversely affect hellbender habitat. 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 eastern spadefoot toad (*Scaphiopus holbrookii*), a state endangered species. This species is found in areas of sandy soils that are associated with river valleys. Breeding habitats may include flooded agricultural fields or other water holding depressions. 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.

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.

Natural Areas: The Division of Natural Areas and Preserves has the following comment.

One rare plant species, blunt-leaved milkweed (*Asclepias amplexicaulis*), state species of concern, has been found near the proposed AEP-Harmar Hill Switch Project. Due to the possible disruption of this species and possibly other rare species in the area, it is recommended that a pre-construction survey of the proposed project site be conducted to ensure that plants are not impacted. The survey should be concentrated on the south facing slopes within the construction limits. If there are any questions about Ohio flora or if survey assistance is required, please contact the Division of Natural Areas and Preserves' Chief Botanist, Rick Gardner. Mr. Gardner can be contacted directly at rick.gardner@dnr.state.oh.us or (614) 265-6419.

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 Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or Sarah.Tebbe@dnr.state.oh.us if you have questions about these comments or need additional information.

John Kessler
Environmental Services Administrator



In reply, refer to
2019-WAS-45805

August 13, 2019

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

RE: Harmer Hill Switch and T-Line Project, Warren Township, Washington County, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received on July 18, 2019 regarding the proposed Harmer Hill Switch and T-Line Project, Warren Township, Washington 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 (54 U.S.C. 306108 [36 CFR 800]).

The following comments pertain to the *Phase I Archaeological Investigations for the 1,432.5 m (4,700 ft) Harmar Hill Switch and T-Line Project in Warren Township, Washington County, Ohio* by Weller & Associates, Inc. (2019).

A literature review, visual inspection, shovel probe, and shovel test unit excavation was completed as part of the investigations. No previously identified archaeological sites are located within the project area. No archaeological sites were identified during this survey. Based on the information provided, our office agrees with your determination and no further archaeological work is necessary.

The following comments pertain to the *History/Architecture Investigations for the 1,432.5 m (4,700 ft) Harmar Hill Switch and T-Line Project in Warren Township, Washington County, Ohio* by Weller & Associates, Inc. (2019).

A literature review and field survey were completed as part of the investigations. Four properties previously recorded in the Ohio Historic Inventory (OHI), and 27 unrecorded properties fifty years of age or older were identified within the project area and/or 1,000' study area that may have a direct line of sight to the project. Two of the previously recorded properties were identified in the field as being previously demolished. It is Weller's recommendation that none of the identified properties are eligible for inclusion in the National Register of Historic Places due to historical and architectural insignificance. Our office agrees with Weller's recommendations of eligibility.

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, or Joy Williams at jwilliams@ohiohistory.org. Thank you for your cooperation.

Sincerely,

A handwritten signature in blue ink, appearing to read "Krista Horrocks", is written over a blue circular stamp.

Krista Horrocks, Project Reviews Manager
Resource Protection and Review

RPR Serial No: 1080033-1080034

APPENDIX D

Ecological Survey Report

Ecological Survey Report

AEP Ohio Transmission Company
Harmar Hill Switch Project
Washington County, Ohio
GAI Project Number: C170352.71, Task 001

April 2021

Prepared for:
American Electric Power Service Corporation
8600 Smiths Mill Road
New Albany, Ohio 43054

Prepared by:
GAI Consultants, Inc.
Canton Office
3720 Dressler Road Northwest
Canton, Ohio 44718

Report Authors:

Kristen L. Vonderwish
Project Environmental Specialist

Joshua J. Noble, MS
Senior Environmental Manager



BOUNDLESS ENERGYSM

Table of Contents

1.0	Introduction.....	1
2.0	Methods	1
2.1	Wetlands.....	1
2.1.2	Onsite Inspection.....	2
2.2	Waterbodies.....	3
2.2.1	Preliminary Data Gathering	3
2.2.2	Onsite Inspection.....	3
2.3	Rare, Threatened, and Endangered Species	3
2.3.1	Preliminary Data Gathering	3
2.3.2	Onsite Inspection.....	4
3.0	Results.....	4
3.1	Wetlands.....	4
3.1.1	Preliminary Data Gathering	4
3.1.2	Onsite Inspection.....	4
3.1.3	Regulatory Discussion	4
3.2	Waterbodies.....	5
3.2.1	Preliminary Data Gathering	5
3.2.2	Onsite Inspection.....	5
3.2.3	Regulatory Discussion	5
3.3	Rare, Threatened, and Endangered Species	5
3.3.1	Preliminary Data Gathering	5
3.3.2	Onsite Inspection.....	6
4.0	Conclusions.....	6
5.0	References.....	7
Table 1	Wetlands Identified Within the Project Study Area	
Table 2	Waterbodies Identified Within the Project Study Area	
Table 3	ODNR and USFWS RTE Species and Critical Habitat Review Results	
Figure 1	Project Location Map	
Figure 2	Resource Location Map	
Figure 3	Stream Eligibility Map	
Appendix A	Photographs	
Appendix B	Wetland Determination Data Forms	
Appendix C	Ohio Rapid Assessment Method for Wetlands (ORAM) Data Forms	
Appendix D	Primary Headwater Habitat Evaluation (HHEI) Data Forms	
Appendix E	ODNR and USFWS Correspondence	

1.0 Introduction

GAI Consultants, Inc. (GAI), on behalf of American Electric Power Ohio Transmission Company (AEP), completed an ecological survey for the Harmar Hill Switch Project (Project) located in Washington County, Ohio (OH). The proposed Project involves installing a new 138kV switch along the existing Gorsuch-Mill Creek 138kV transmission line. The switch is proposed to be installed to the east of the existing transmission line.

Ecological surveys were conducted on April 24, 2019. The Project study area consisted of a 100-foot-wide corridor centered along the existing transmission line, as shown in Figure 1.

The Project study area is located within the Mile Run – Ohio River (United States Geological Survey [USGS] Hydrologic Unit Code [HUC] #050302020102) and the Devol Run-Muskingum River (USGS HUC #050400041204) 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 Mountain 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 Wetlands Delineation Manual and Regional Supplement, GAI completed preliminary data gathering and onsite inspections.

2.1.1 Preliminary Data Gathering

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

- ▶ USGS 7.5-minute topographic mapping for Fleming (1961) and Marietta (USGS, 1978) OH (Figure 1);
- ▶ United States Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) mapping (USFWS, 2020) (Figure 2).
- ▶ Federal Emergency Management Agency (FEMA), National Flood Hazard Layer (FEMA, 2020) (Figure 2).
- ▶ United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS, 2019) soil mapping (Figure 2).

Topographic mapping is 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 is used to determine locations where probable wetlands are located based on infrared photography. Soil mapping is 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 onsite inspection, GAI staff traversed the Project study area on foot to determine if any indicators of wetlands were present. When indicators of wetlands are observed, an observation point is established, and a Wetland Determination Data Form is completed to determine if all three wetland indicators are present.

The presence of wetland hydrology is determined by examining the observation point for primary and secondary indicators of wetland hydrology. The presence of any primary indicator signifies the presence of wetland hydrology, or the presence of two (2) or more secondary indicators signifies the presence of wetland hydrology.

Vegetation is characterized by four different strata. This includes trees (woody plants, excluding vines, three inches or more [≥ 3.0 "] in diameter at breast height [DBH]), saplings/shrubs (woody plants, excluding vines, less than three inches [< 3.0 "] DBH and greater than or equal to [\geq] 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 are sampled within a thirty foot (30.0') radius, saplings and shrubs are sampled within a fifteen-foot (15.0') radius, and herbs are sampled within a five-foot (5.0') radius.

When evaluating an area for the presence of hydrophytes, classification of the indicator status of vegetation is based on The National Wetland Plant List: 2018 Update of Wetland Ratings (USACE, 2018). The list of possible indicator statuses for plants is as follows:

- ▶ Obligate Wetland (OBL) - OBL plants almost always occur in wetlands;
- ▶ Facultative Wetland (FACW) - FACW plants usually occur in wetlands, but may occur in non-wetlands;
- ▶ Facultative (FAC) – FAC plants occur in wetlands and non-wetlands;
- ▶ Facultative Upland (FACU) – FACU plants usually occur in non-wetlands, but may occur in wetlands; and/or
- ▶ Upland (UPL) – UPL plants almost always occur in non-wetlands.

Presence of hydrophytic vegetation is determined by using a Rapid Test, Dominance Test or Prevalence Index. The Rapid Test finds a vegetation community to be hydrophytic if all dominant species are OBL or FACW. Hydrophytic vegetation is considered present based on the Dominance Test if more than fifty percent (50%) 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 is considered present when the Prevalence Index is less than or equal to (\leq) 3.0 (USACE, 2012).

To determine the presence of hydric soils, soil data is collected by digging a minimum sixteen inch (16.0") deep soil pit. The soil profile is studied and described, while possible hydric indicators are examined. Soil indicators described in the Wetlands Delineation Manual and Regional Supplement are used to determine the presence of hydric soils. The presence of any of these indicators signifies a hydric soil.

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

Wetland boundaries are determined by looking for locations in which one of the three wetland indicators would transition into an upland characteristic. When the transition is identified, a Data Form is completed in the Upland Area. Wetland boundaries are then marked in the field using pink flagging labeled "WETLAND DELINEATION." The locations of the flags are

recorded using a Global Positioning System (GPS) unit. Each wetland is codified with a unique identifier indicating the feature type and number (e.g., W001).

Wetlands are then classified using the Classification of Wetlands and Deepwater Habitats of the United States 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, Sections 404 and Section 401 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 is examined for the presence of mapped waterbodies including perennial and intermittent streams. In addition, the topographic mapping identifies areas likely to contain unmapped waterbodies including ephemeral streams (USGS, 1977, 1985) (Figure 1).

The OEPA 401 Water Quality Certification for the 2017 Nationwide Permits Stream Eligibility Web Map (OEPA, 2020) determined eligibility for coverage under the 401 Water Quality Certification (WQC) for the 2017 Nationwide Permits (NWP). Furthermore, the map identifies ineligible areas that may require a CWA Section 401 individual permit from the OEPA should stream impacts occur within the Project area (OEPA, 2020) (Figure 3).

2.2.2 Onsite Inspection

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

When a waterbody is identified, field measurements are collected. The measurements include top of bank width, top of bank depth, pool depth, water depth, OHWM width, and OHWM depth. A detailed description of substrate composition is recorded. Waterbodies are delineated using white flagging marked with the GAI stream code (such as S001). The tops-of-bank for streams wider than 10 feet (>10.0') are delineated, while the centerline of smaller streams is delineated. The locations of the flags are recorded using a sub-meter-capable hand-held GPS unit.

2.3 Rare, Threatened, and Endangered Species

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

2.3.1 Preliminary Data Gathering

A request for review of the Ohio Natural Heritage Database is submitted to the Ohio Department of Natural Resources (ODNR) to determine if state-listed Threatened or Endangered species occur within a one-mile (1.0 mi) radius of the Project area. A request is

submitted to the USFWS Ohio Ecological Services Field Office to determine if federally-listed Threatened or Endangered species occur within the vicinity of the Project area.

2.3.2 Onsite Inspection

During the onsite inspection, GAI staff traverse the study area in conjunction with the wetland and waterbody inspections to determine if suitable habitat for state- and/or federally-listed RTE species is 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 revealed no NWI mapped wetlands within the Project study Area (USFWS, 2017).

According to the USDA-NRCS soil mapping, sixteen (16) soil map units are located within the Project study area (Figure 2). None soil map units are classified as hydric and one (Vandalia silty clay loam [VaE]) is known to contain hydric inclusions.

3.1.2 Onsite Inspection

One (1) PEM wetland was identified and delineated within the Project study. In order to document site conditions, USACE Data Forms were completed for the wetland and upland reference. Information on the delineated wetland can be found in Table 1 and photographs of the wetland is included in Appendix A.

3.1.3 Regulatory Discussion

The USACE guidance classifies waters of the United States (WOTUS) into four categories: territorial seas and traditional navigable waters (TNWs), tributaries, lakes, ponds, and impoundments of jurisdictional waters, and adjacent wetlands. Territorial seas and TNWs include large rivers and lakes and tidally-influenced waterbodies used in interstate or foreign commerce. Tributaries include naturally occurring perennial and intermittent rivers and streams that contribute surface flow to TNWs in a typical year. Tributaries include ditches if they satisfy the flow conditions of the perennial and intermittent tributary definition, were constructed in or relocate a tributary, or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a TNW in a typical year. Lakes and ponds, and impoundments of jurisdictional waters are standing bodies of open water that contribute surface water flow to a TNW or territorial sea in a typical year. Adjacent wetlands are wetlands that physically touch (abut) other jurisdictional waters or are inundated by jurisdictional waters in a typical year. Wetlands physically separated from other jurisdictional waters by an artificial berm, dike, or similar artificial feature must have a direct hydrologic surface connection to the jurisdictional water in a typical year to be considered adjacent (USACE 2019).

The status of wetlands is partially determined 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 WOTUS are jurisdictional.

Wetlands that do not exhibit an association with surface water are categorized as non-jurisdictional under present USACE guidance and policy (USACE 2019). These wetlands are regulated by the OEPA Division of Surface Water and may require an Isolated Wetland Permit.

As regulated by Ohio Administrative Code (OAC) rules 3745-1-50 through 3745-1-54, wetlands were evaluated using the ORAM to determine the appropriate wetland category. A 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.

3.2 Waterbodies

3.2.1 Preliminary Data Gathering

Desktop review of the available USGS topographic mapping revealed one (1) previously mapped stream segment located within the Project study area (Figure 1). Desktop review of OEPA's Stream Eligibility Web Map revealed the Project is located within watersheds categorized as "Possibly Eligible" and "Ineligible" for automatic 401 WQC coverage (Figure 3).

3.2.2 Onsite Inspection

Four (4) stream segments were identified and delineated within the Project study area. All four stream segments were classified as having an intermittent flow regime. Information on the delineated waterbodies and their classifications can be found in Table 2, and photographs of the identified streams 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 tributaries are considered jurisdictional.

Streams are environmental features that have defined beds and banks, an OHWM, and contain flowing or standing waters for at least a portion of the year (USACE 2005). Streams were classified as perennial, intermittent, or ephemeral based on presence of flow, estimated duration of flow, stream bed characteristics, and presence of aquatic biota. The USACE Jurisdictional Determination Form Instructional Guidebook (USACE, 2007) and the revised definition of "Waters of the United States" (USACE 2019) were used to determine stream classification and flow status.

As regulated by OAC Chapter 3745-1-24, streams were assessed according to OEPA guidance using either the HHEI for watersheds less than one square mile (<1.0 mi²) in size, or the Qualitative Habitat Evaluation Index (QHEI) for watersheds between one and 20 square miles (1.0-20.0 mi²) in size.

Although ephemeral streams are no longer regulated by the USACE, the Ohio EPA considers ephemeral streams as "waters of the state," and thus regulated according to the State's 401 Water Quality Standards.

3.3 Rare, Threatened, and Endangered Species

3.3.1 Preliminary Data Gathering

A desktop review of ODNR, Division of Wildlife's Ohio's Listed Species revealed 337 Endangered, Threatened, Species of Concern, and Species of Interest located in OH (ODNR, 2020). Eighteen (18) of the state-listed species are considered federally endangered, and five (5) 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 USFWS Information for Planning and Consultation website revealed six (6) federally Endangered or Threatened species that may occur within the Project study area (USFWS, 2018). The list of species includes the following:

- ▶ Indiana bat (*Myotis sodalis*) - Endangered;

- ▶ Northern long-eared bat (*Myotis septentrionalis*) - Threatened;
- ▶ Fanshell (*Cyprogenia stegaria*) - Endangered;
- ▶ Pink mucket (pearlymussel) (*Lampsilis abrupta*) - Endangered;
- ▶ Sheepnose mussel (*Plethobasus cyphus*) - Endangered; and
- ▶ Snuffbox mussel (*Epioblasma triquetra*) - Endangered

Additionally, there is one (1) migratory bird species that may occur within the Project study area.

The ODNR and USFWS consultation letters were submitted on June 28, 2019. Responses from USFWS were received on July 9, 2019. Responses from the ODNR were received on August 12, 2019. The USFWS and ODNR responses are included in Appendix E.

The USFWS identified that the Indiana bat and northern long-eared bat may be present in the vicinity of both Projects. Potential impacts to these species will be determined by the schedule of Project construction and extent of tree clearing that is needed.

The ODNR identified that the entire state of Ohio is within the range of the Indiana bat, northern long-eared bat (*Myotis septentrionalis*), the little brown bat (*Myotis lucifugus*), and the tricolored bat (*perimyotis subflavus*). Potential impacts to bat species will be determined by the schedule of Project construction and extent of tree clearing that is needed. The ODNR recommended that no in-water work in perennial streams be conducted from April 15 to June 30 to reduce potential impacts to indigenous aquatic species and their habitat. If no in-water work in a perennial stream is anticipated, the Projects are unlikely to impact aquatic species. A list of RTE species identified by the ODNR and USFWS responses is included as Table 3.

3.3.2 Onsite Inspection

Potential habitat for RTE species was evaluated within the Project study area. In general, the habitat encountered within the study area consisted of maintained transmission line right-of-way boarded by mixed deciduous forest, open and fenced pastures and residential areas. Four intermittent streams were identified within the study area. Representative photographs of the identified habitat types are included in Appendix A.

4.0 Conclusions

An ecological survey was conducted within the Project study area on April 24, 2019. Four intermittent streams were identified within the Project study area. One wetland was 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 and stream features are included in Appendix A. Wetland Determination Data Forms documenting the investigation are provided in Appendix B, with HHEI/QHEI and ORAM Data Forms provided in Appendix C and D, respectively.

The jurisdictional status of these features are considered preliminary and should be confirmed with the USACE and state agencies through the Jurisdictional Determination (JD) process.

5.0 References

- Cowardin, D. M., V. Carter, F. C. Golet, and E. T. La Roe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Department of the Interior, Fish and Wildlife Service. Publication No. FWS/OBS 79/31. Washington, D.C.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. United States Department of the Army, United States Army Engineer Waterways Experiment Station. Technical Report Y-87-1. Vicksburg, Mississippi.
- Federal Emergency Management Agency. 2020. National Flood Hazard Layer Web Map Service (WMS). Available from <https://hazards.fema.gov/femaportal/wps/portal/NFHLWMSkmzdownload>.
- Mack, John J. 2001. Ohio Rapid Assessment Methods for Wetlands Manual for Using Version 5.0. Ohio EPA Technical Bulletin Wetland/2001-1-1. Ohio Environmental Protection Agency, Division of Surface Water, 401 Wetland Ecology Unit, Columbus, Ohio.
- Ohio Administrative Code. 2011. State of Ohio: Water Quality Standards, Chapter 3745-1.
- Ohio Department of Natural Resources, Division of Wildlife. Ohio's Listed Species. <https://wildlife.ohiodnr.gov/portals/wildlife/pdfs/publications/information/pub356.pdf>.
- Ohio Department of Natural Resources, Division of Wildlife. State-Listed Species by County. <http://wildlife.ohiodnr.gov/species-and-habitats/state-listed-species/state-listed-species-by-county>.
- Ohio Environmental Protection Agency. 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Division of Surface Water, Columbus, Ohio.
- Ohio Environmental Protection Agency. 2018. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams. Version 4.0. Ohio EPA Division of Surface Water, Columbus, Ohio. 117 pp.
- Ohio Environmental Protection Agency, Division of Surface Water. 2017. 401 Water Quality Certification for the Nationwide Permits Stream Eligibility Web Map (2017 Reissuance). <http://oepa.maps.arcgis.com/apps/webappviewer/index.html?id=e6b46d29a38f46229c1eb47deefe49b6>.
- Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Washington County, Ohio. Available online at <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
- United States Army Corps of Engineers. 2005. Regulatory Guidance Letter No. 05-05. Ordinary High Water Mark Identification. Available from <http://www.nap.usace.army.mil/Portals/39/docs/regulatory/rgls/rgl05-05.pdf>.
- United States Army Corps of Engineers. 2007. *Jurisdictional Determination Form Instructional Guidebook*. Available from http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf.
- United States Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region Version 2.0*, ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-10-16. Vicksburg, Mississippi: United States Army Engineer Research and Development Center.
- United States Army Corps of Engineers. 2018. National Wetland Plant List, version 3.4. USACE Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. Available from <http://wetland-plants.usace.army.mil/>. Accessed December 2020

United States Army Corps of Engineers. 2019. Definition of “Waters of the United States”—
Recodification of Pre-Existing Rules, Federal Register, Title 33 CFR 328.

United States Fish and Wildlife Service. 2017. National Wetlands Inventory for Ohio. Washington, D.C.:
United States Fish and Wildlife Service, Division of Habitat and Resource Conservation. Available
from <http://www.fws.gov/wetlands/Data/Mapper.html>.

United States Fish and Wildlife Service. 2018. County Distribution of Federally-Listed Endangered,
Threatened, and Proposed Species. United States Fish and Wildlife Service, Endangered Species,
Midwest Region. Available from <https://www.fws.gov/midwest/endangered/lists/ohio-cty.html>.

United States Fish and Wildlife Service, Environmental Conservation Online System. Information for
Planning and Consultation. <https://ecos.fws.gov/ipac/>.

United States Geological Survey. 1961. Fleming, Ohio 7.5-Minute Topographic Quadrangle (1:24,000).

United States Geological Survey. 1978. Marietta, Ohio 7.5-Minute Topographic Quadrangle (1:24,000).

TABLES

Table 1
Wetlands Identified Within the Project Study Area

Wetland ID ¹	Location		Isolated?	Habitat Type ³	Delineated	ORAM		Nearest Structure # (Existing / Proposed)	Existing Structure # in Wetland	Proposed Structure # in Wetland	Structure Installation Method	Proposed Impacts	
	Latitude ²	Longitude ²			Area (acre) ⁴	Score ⁵	Category ⁶					Temporary Matting Area (acre)	Permanent Impact Area (acre)
W001-PEM-CAT1	39.424258	-81.482122	No	PEM	0.049	12	1					N/A	N/A
Total:					0.049	Total:					0	0	

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, PFO – Palustrine Forested; PUB – Palustrine Unconsolidated Bottom.
- ⁵ Total acreage of wetland located within the Project study area.
- ⁶ 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.
- ⁷ 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 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 ID ¹	Location		Stream Type ^e	Stream Name	Delineated Length (feet) ³	Bankfull Width (feet) ⁴	OHWM Width (feet)	Field Evaluation			Ohio EPA 401 Eligibility ⁶	Stream Crossing?	Proposed Impacts	
	Latitude ²	Longitude ²						Method	Score ⁵	Category / Rating / OAC Designation ⁵			Fill Type	Length (LF)
S001	39.422756	-81.482948	Intermittent	UNT to Mile Run	123	4	2	HHEI	35	Modified Small Drainage Warmwater Stream	Possibly Eligible	N/A	N/A	N/A
S002	39.424059	-81.482448	Intermittent	UNT to Mile Run	162	4	2	HHEI	35	Modified Small Drainage Warmwater Stream	Possibly Eligible	N/A	N/A	N/A
S003	39.428531	-81.481423	Intermittent	UNT to Indian Creek	132	5	3	HHEI	51	Modified Small Drainage Warmwater Stream	Possibly Eligible	N/A	N/A	N/A
S004	39.429669	-81.481124	Intermittent	UNT to Indian Creek	230	5	4	HHEI	51	Modified Small Drainage Warmwater Stream	Possibly Eligible	N/A	N/A	N/A
Total:					647							Total:	0	0

Notes:

- ¹ GAI map designation.
- ² North American Datum, 1983.
- ³ Total stream length (in feet) located within the Project study area.
- ⁴ Width in feet from tops of stream bank.
- ⁵ Scoring for OEPA Headwater Habitat Evaluation Index (HHEI) Primary Headwater Habitats (PHWH). Rheocrene; Ephemeral Aquatic Stream (natural channel); Ephemeral Aquatic Stream (modified channel); Small Drainage Warm Water Stream (natural channel); Small Drainage Warm Water Stream (modified channel); Spring Water Stream.
- ⁶ 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).

Table 3
ODNR and USFWS RTE Species and Critical Habitat Review Results¹

Common Name	Scientific Name	Habitat Type	Listing Status ¹	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Amphibians						
Eastern hellbender	<i>Cryptobranchus alleganiensis</i>	Rocky, clear creeks and rivers, usually where there are large rocks for shelter	E, FSC	No	No; Known habitat types are not present within the Project area	-
Eastern spadefoot	<i>Scaphiopus holbrookii</i>	Flooded agricultural fields or other water-holding depressions, underground burrows	E	No	No; Known habitat types are not present within the Project area	-
Bats						
Indiana bat	<i>Myotis sodalis</i>	Trees >3" dbh, caves abandoned mines, wooded areas with loose tree bark or dead or dying trees	E, FE	Yes	No; Avoided with winter tree clearing	April 1 to September 30
Northern long-eared bat	<i>Myotis septentrionalis</i>	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	SC, FT	Yes	No; Avoided with winter tree clearing	April 1 to September 30
Fish						
Blue sucker	<i>Cycleptus elongatus</i>	Deep, swiftly flowing chutes or channels of large rivers	E	No	No; Known habitat types are not present within the Project area	-
Western banded killfish	<i>Fundulus diaphanous menona</i>	Areas with an abundance of rooted aquatic vegetation, clear waters and with substrates of clean sand or organic debris free of silt	E	No	No; Known habitat types are not present within the Project area	-
Ohio lamprey	<i>Ichthyomyzon bdellium</i>	Clear brooks with fast flowing water and either sand or gravel bottoms, slow moving water with soft substrate and large bodies of water	E	No	No; Known habitat types are not present within the Project area	-
Northern madtom	<i>Noturus stigmosus</i>	Deep swift riffles of large rivers	E	No	No; Known habitat types are not present within the Project area	-
Tippecanoe Darter	<i>Etheostoma tippecanoe</i>	Medium to large streams and rivers	T	No	No; Known habitat types are not present within the Project area	-

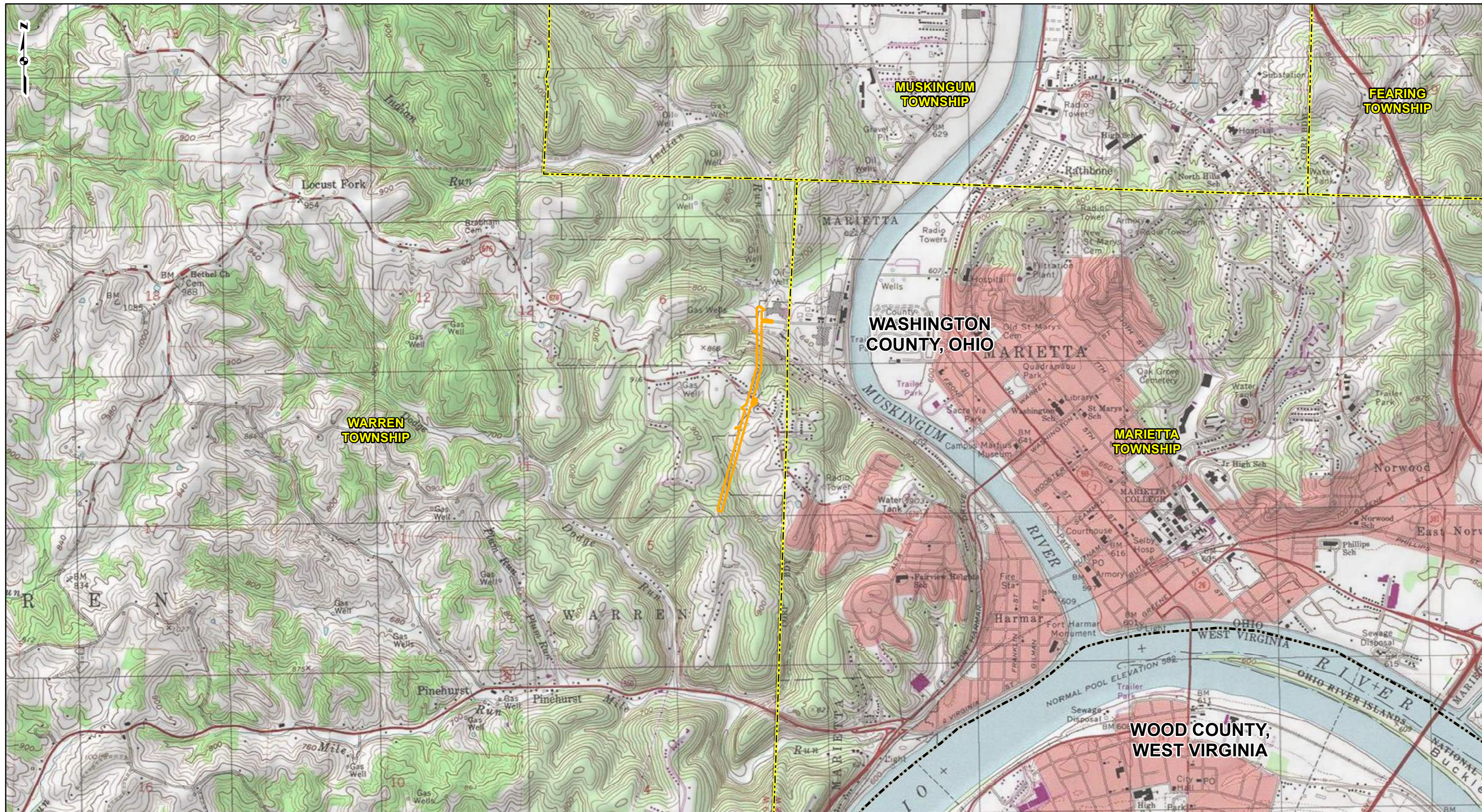
Common Name	Scientific Name	Habitat Type	Listing Status ¹	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Fish (continued)						
Mountain madtom	<i>Noturus eleutherus</i>	Deep swift riffles of large rivers	T	No	No; Known habitat types are not present within the Project area	-
Channel Darter	<i>Percina copelandi</i>	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	-
Paddlefish	<i>Polyodon spathula</i>	Sluggish pools and backwater areas of rivers and streams	T	No	No; Known habitat types are not present within the Project area	-
River Darter	<i>Percina shumardi</i>	Large rivers typically in areas of swift current	T	No	No; Known habitat types are not present within the Project area	-
Mussels						
Fanshell	<i>Cyprogenia stegaria</i>	Found in medium to large rivers with sand or gravel substrates and a moderate current	E, FE	No	No; In water work is not proposed	-
Butterfly	<i>Ellipsaria lineolata</i>	Large rivers with swift currents and gravel or sand substrates	E	No	No; Known habitat types are not present within the Project area	-
Elephant ear	<i>Elliptio crassidens crassidens</i>	Mud, sand or fine gravel of large rivers	E	No	No; Known habitat types are not present within the Project area	-
Snuffbox	<i>Epioblasma triquetra</i>	Small or medium sized creeks, inhabiting areas with a swift current	E, FE	No	No; Known habitat types are not present within the Project area	-
Long-solid	<i>Fusconaia maculata maculate</i>	Large or small rivers with gravel substrate	E	No	No; Known habitat types are not present within the Project area	-
Pink mucket	<i>Lampsilis orbiculate</i>	Found in mud and sand and in shallow riffles and shoals swept free of silt in major rivers and tributaries	E, FE	No	No; Known habitat types are not present within the Project area	-
Sharp-ridged pocketbook	<i>Lampsilis ovate</i>	Large rivers in coarse sand or gravel	E	No	No; Known habitat types are not present within the Project area	-
Washboard	<i>Megaloniais nervosa</i>	Small or larger rivers in a variety of substrate including mud, sand or gravel	E	No	No; Known habitat types are not present within the Project area	-
Sheepnose	<i>Plethobasus cyphus</i>	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	-

Common Name	Scientific Name	Habitat Type	Listing Status ¹	Habitat Type Present Within the Project Area?	Impacts to Habitat/Species Anticipated?	Restricted Construction Dates
Mussels (continued)						
Ohio pigtoe	<i>Pleurobema cordatum</i>	Medium-sized rivers with mud, sand, gravel or cobble	E	No	No; Known habitat types are not present within the Project area	-
Pyramid pigtoe	<i>Pleurobema rubrum</i>	Medium to large rivers in sand or gravel	E	No	No; Known habitat types are not present within the Project area	-
Monkeyface	<i>Quadrula metanevra</i>	Medium to large rivers and streams in areas with mixed sand and/or gravel.	E	No	No; Known habitat types are not present within the Project area	-
Black sandshell	<i>Ligumia recta</i>	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	<i>Obliquaria reflexa</i>	Large rivers with moderately strong current and a substrate composed of gravel, sand and mud	T	No	No; Known habitat types are not present within the Project area	-
Fawnsfoot	<i>Truncilla donaciformis</i>	Freshwater lakes	T	No	No; Known habitat types are not present within the Project area	-
Plants						
Blunt-leaved milkweed	<i>Asclepias amplexicaulis</i>	Open, dry, chiefly sand or gravelly soils in fields, prairies, old sand dunes, meadows and pastures	P	Potentially	Unknown; Per the ODNR response, a pre-construction survey is recommended	-
Reptiles						
Timber Rattlesnake	<i>Crotalus horridus</i>	Wooded areas, sunlit gaps in the canopy and deep rock crevices.	E, FSC	No	No; Known habitat types are not present within the Project area	-

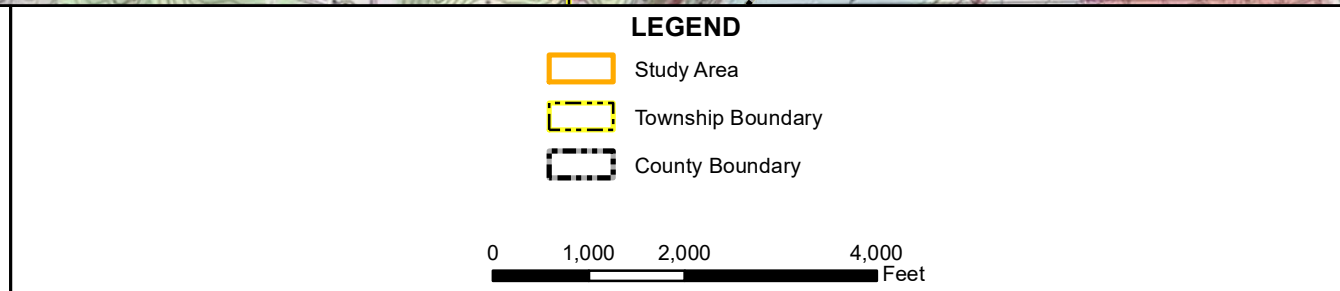
Notes:

- ¹ E = state endangered; T = state threatened; P = state potentially threatened; FE = federal endangered; FT = federal threatened; FSC = federal species of concern.

FIGURES



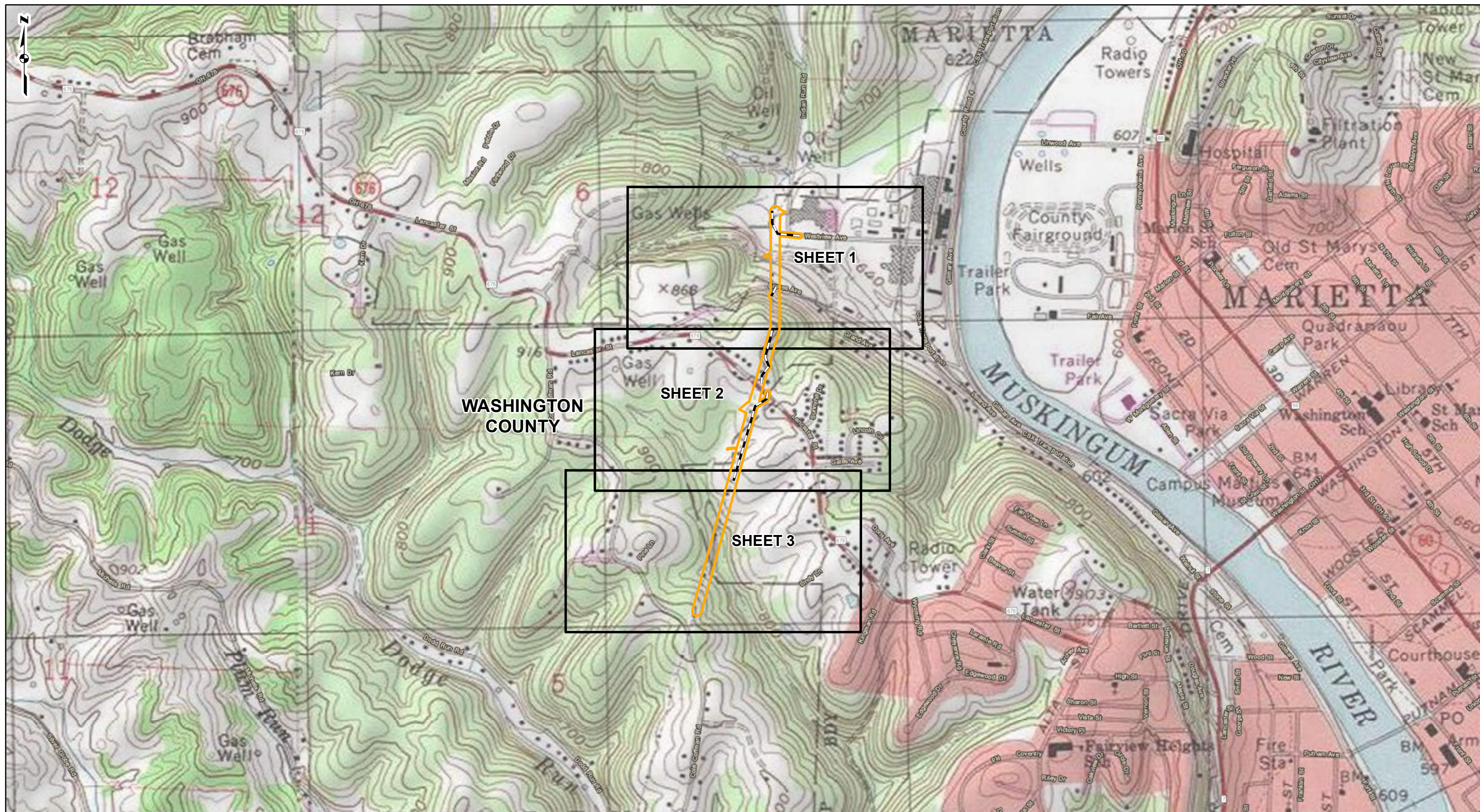
REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: FLEMING (1961) AND MARIETTA (1978), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 09/2019.



**FIGURE 1
PROJECT LOCATION MAP**

HARMAR HILL SWITCH PROJECT
AMERICAN ELECTRIC POWER

DRAWN BY: JTH DATE: 9/26/2019
CHECKED: APPROVED:



PROJECT LOCATION

WASHINGTON COUNTY, OHIO

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: FLEMING (1961) AND MARIETTA (1978), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 09/2019.

LEGEND

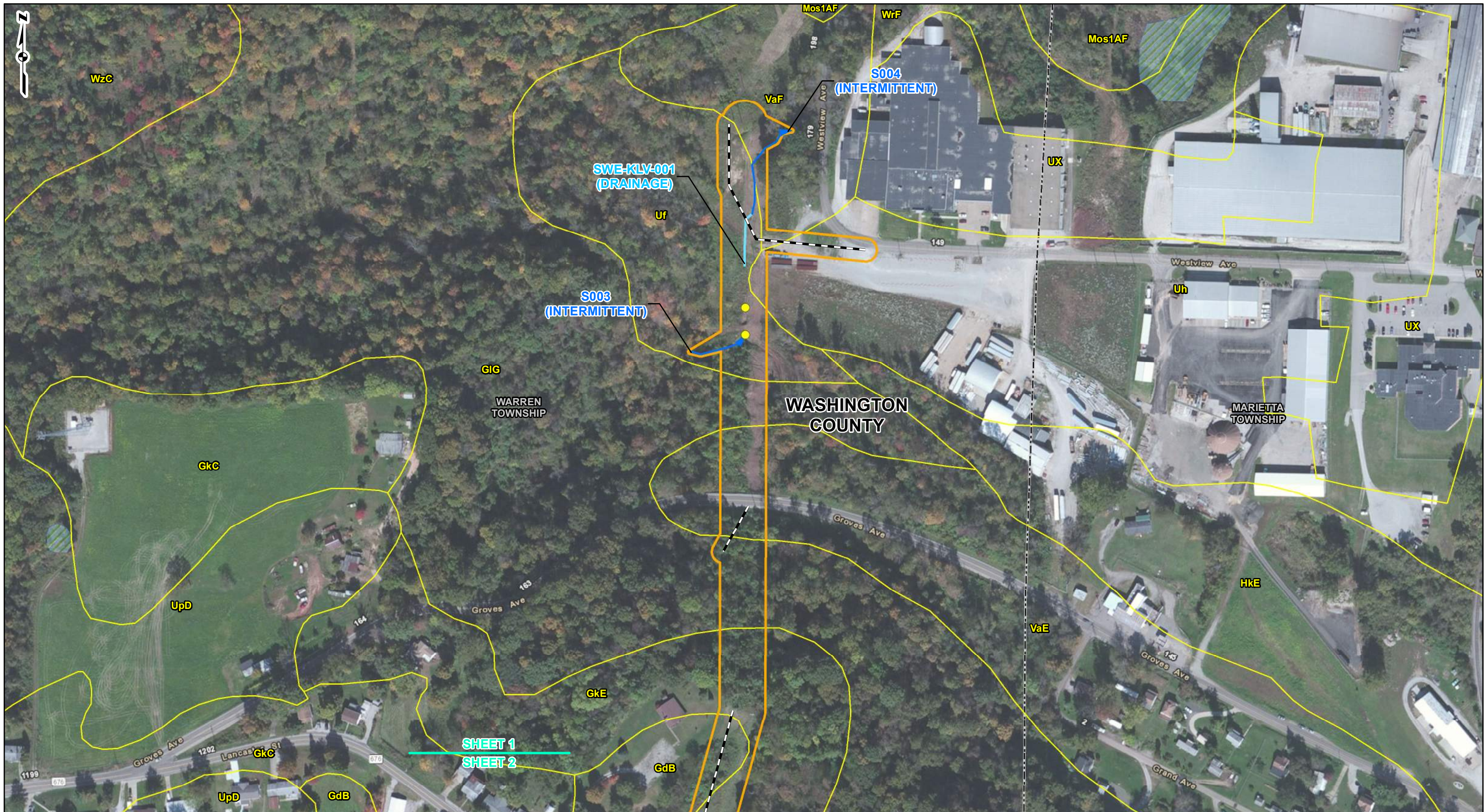
- Access Road
- Study Area
- Township Boundary
- County Boundary
- Sheet Index

0 500 1,000 2,000 Feet

**FIGURE 2
RESOURCE LOCATION MAP
SHEET INDEX**

**HARMER HILL
SWITCH PROJECT
AMERICAN ELECTRIC POWER**

DRAWN BY: JTH DATE: 9/26/2019
 CHECKED: APPROVED:



PROJECT LOCATION

WASHINGTON COUNTY, OHIO

REFERENCES: ESRI WORLD IMAGERY (CLARITY), ARCGIS ONLINE, ACCESSED 09/2019. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 09/2019. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, USFWS, 2018. NATIONAL FLOOD HAZARD LAYER, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), OHIO, 2018. SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE FOR WASHINGTON COUNTY, OHIO, USDA/NRCS, 2018. OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) LAND, 2018.

LEGEND

Access Road	Wetland	NWI Wetland	County Boundary
Culvert	Study Area	100-Year Floodplain	Township Boundary
Stream	Soil Type Boundary	FEMA Floodway	
Stormwater Erosion	ODNR Land		

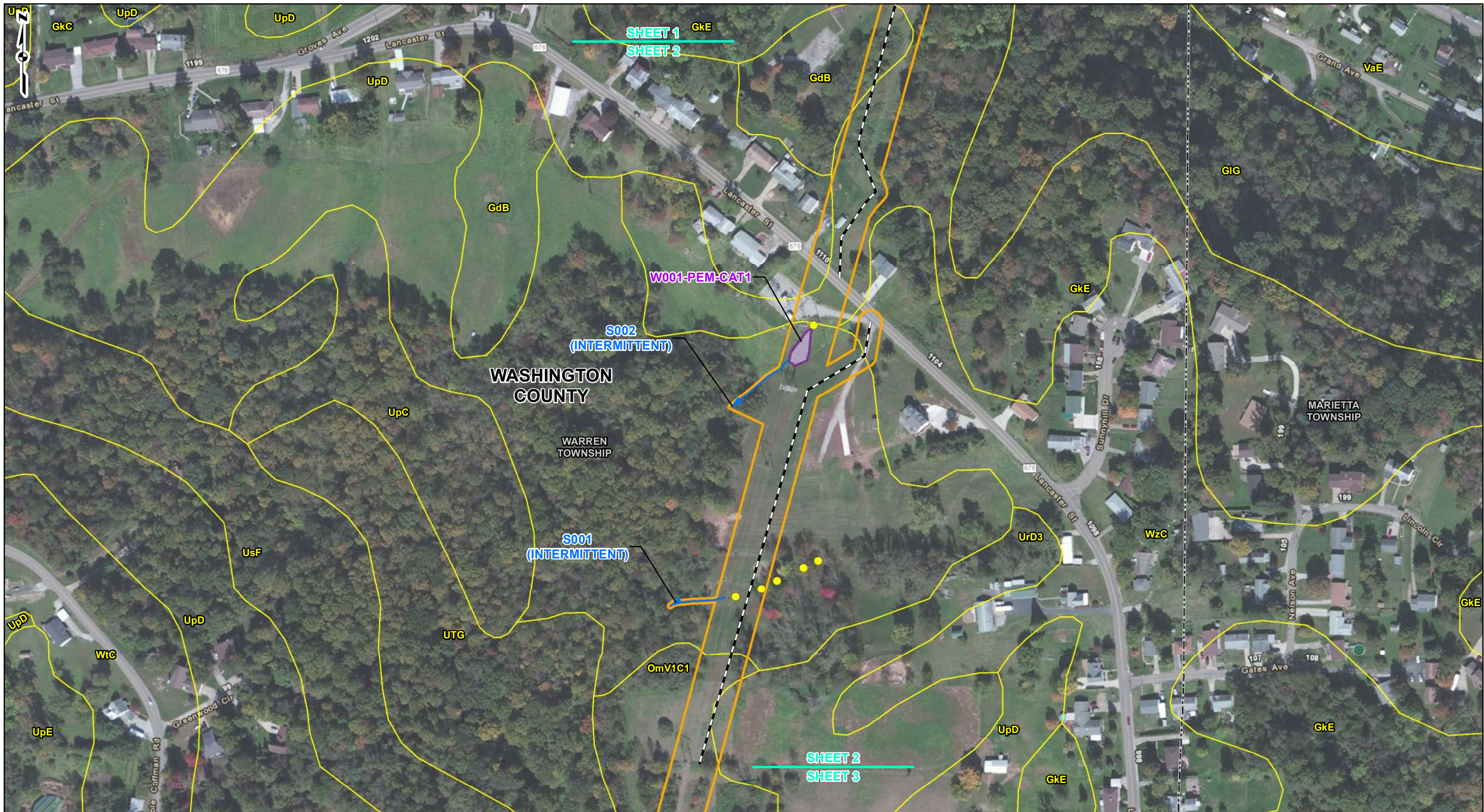
0 100 200 400 Feet

**FIGURE 2
RESOURCE LOCATION MAP
SHEET 1 OF 3**

**HARMER HILL
SWITCH PROJECT
AMERICAN ELECTRIC POWER**

gai consultants

DRAWN BY: JTH DATE: 9/26/2019
CHECKED: APPROVED:



PROJECT LOCATION

WASHINGTON COUNTY, OHIO

REFERENCES: ESRI WORLD IMAGERY (CLARITY), ARCGIS ONLINE, ACCESSED 09/2019. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 09/2019. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, USFWS, 2018. NATIONAL FLOOD HAZARD LAYER, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), OHIO, 2018. SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE FOR WASHINGTON COUNTY, OHIO, USDA/NRCS, 2018. OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) LAND, 2018.

LEGEND

Access Road	Wetland	NWI Wetland	County Boundary
Culvert	Study Area	100-Year Floodplain	
Stream	Soil Type Boundary	FEMA Floodway	
Stormwater Erosion	ODNR Land	Township Boundary	

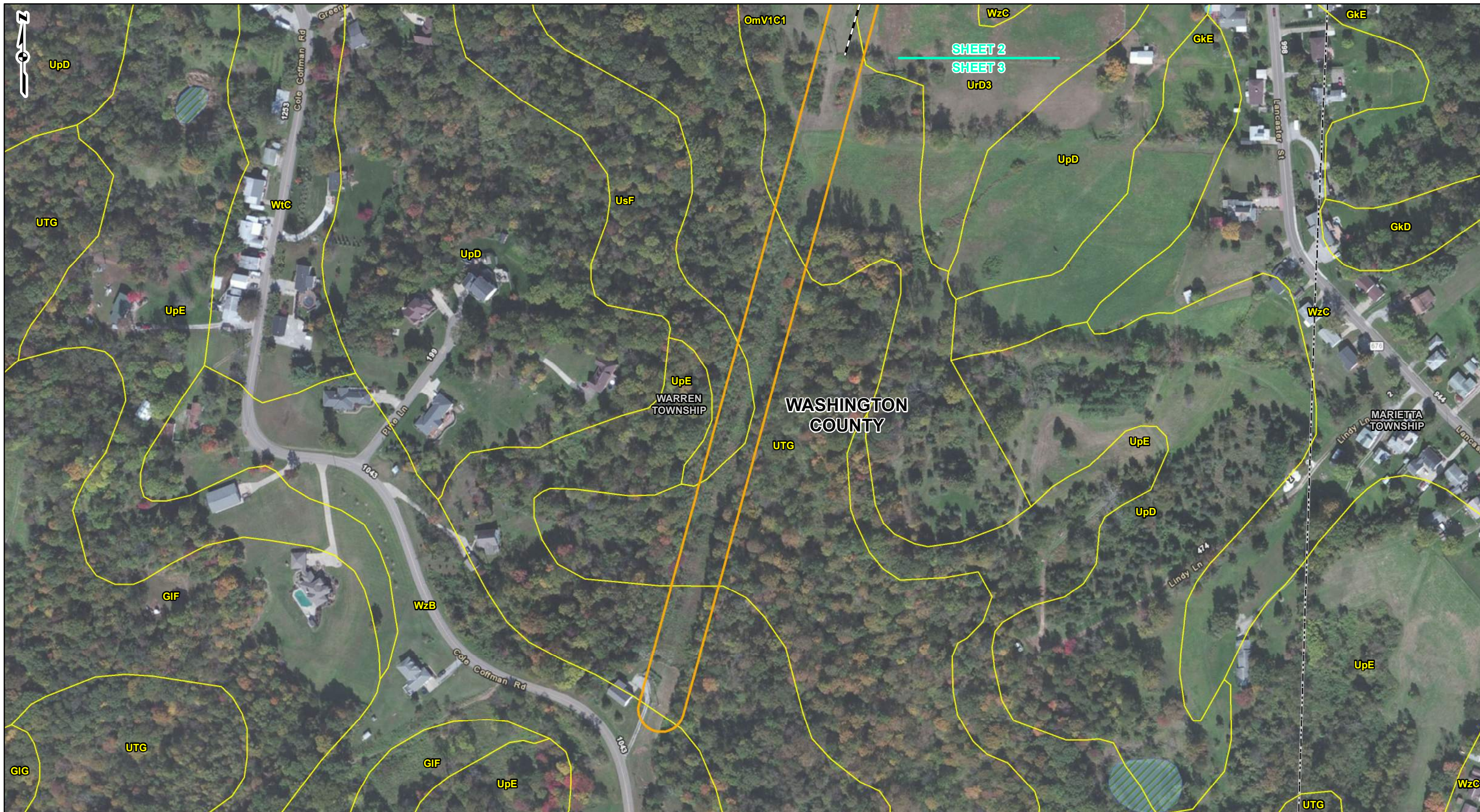
0 100 200 400 Feet

**FIGURE 2
RESOURCE LOCATION MAP
SHEET 2 OF 3**

**HARMER HILL
SWITCH PROJECT
AMERICAN ELECTRIC POWER**

gai consultants

DRAWN BY: JTH DATE: 9/26/2019
CHECKED: APPROVED:



PROJECT LOCATION

WASHINGTON COUNTY, OHIO

REFERENCES: ESRI WORLD IMAGERY (CLARITY), ARCGIS ONLINE, ACCESSED 09/2019. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 09/2019. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, USFWS, 2018. NATIONAL FLOOD HAZARD LAYER, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), OHIO, 2018. SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE FOR WASHINGTON COUNTY, OHIO, USDA/NRCS, 2018. OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) LAND, 2018.

LEGEND

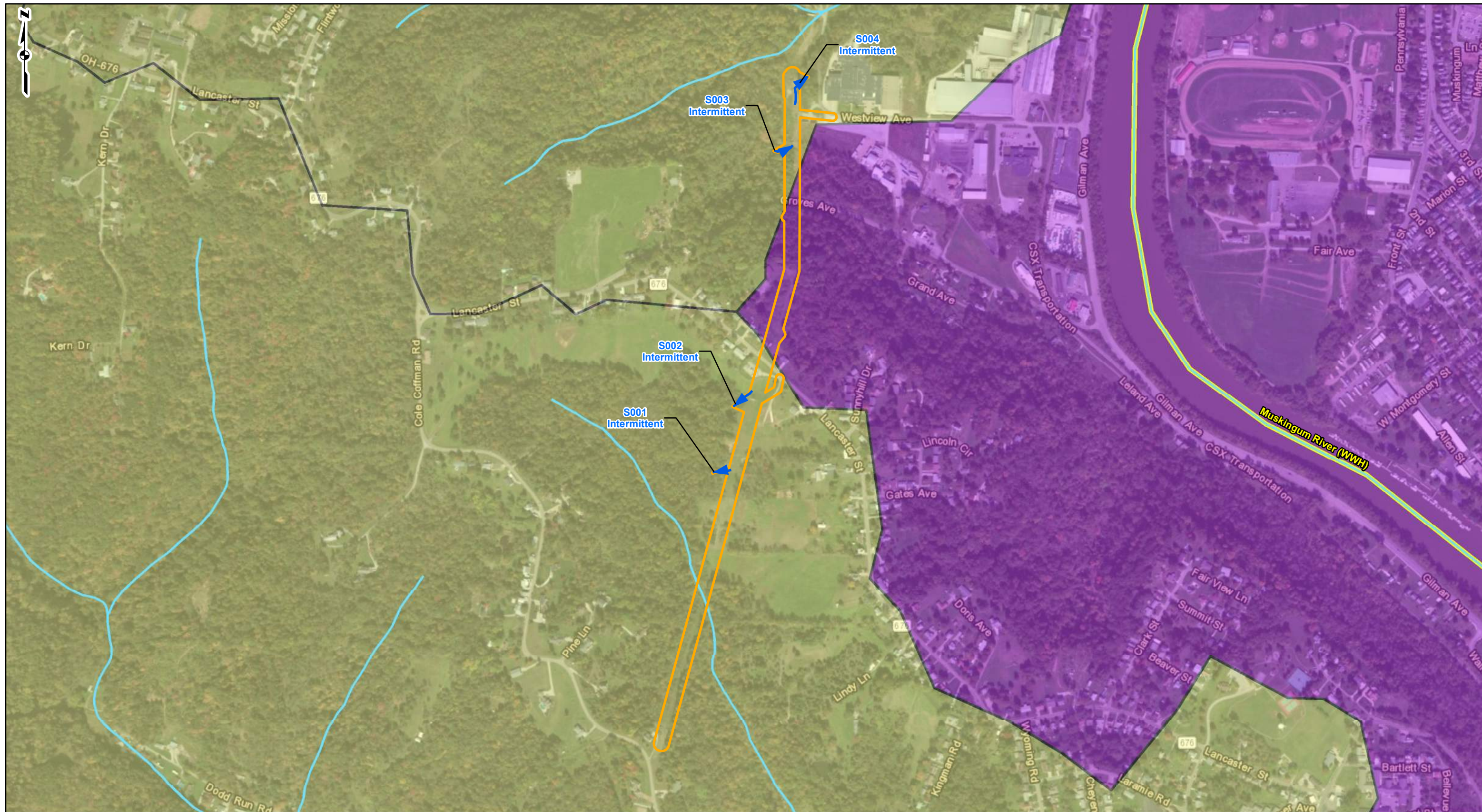
Access Road	Wetland	NWI Wetland	County Boundary
Culvert	Study Area	100-Year Floodplain	
Stream	Soil Type Boundary	FEMA Floodway	
Stormwater Erosion	ODNr Land	Township Boundary	

0 100 200 400 Feet

**FIGURE 2
RESOURCE LOCATION MAP
SHEET 3 OF 3**

**HARMER HILL
SWITCH PROJECT
AMERICAN ELECTRIC POWER**

DRAWN BY: JTH DATE: 9/26/2019
CHECKED: APPROVED:



PROJECT LOCATION

WASHINGTON COUNTY, OHIO

REFERENCES: ESRI WORLD IMAGERY (CLARITY), ARCGIS ONLINE, ACCESSED 09/2019. WORLD TRANSPORTATION, ESRI, DELORME, HERE, MAPMYINDIA, TOMTOM, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, OBTAINED THROUGH ESRI ARCGIS ONLINE, ACCESSED 09/2019. STREAM ELIGIBILITY, OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA), 2017. NHD STREAMS, NATIONAL HYDROGRAPHY DATASET (NHD), USGS, 2015. WQS STREAMS, OHIO WATER QUALITY STANDARDS, 2010.

LEGEND

- Stream
- Study Area
- NHD Stream
- OH WQS Stream
- OEPA Stream Eligibility: Ineligible
- Possibly Eligible
- Eligible

0 300 600 1,200 Feet

**FIGURE 3
STREAM ELIGIBILITY MAP**

**HARMER HILL
SWITCH PROJECT
AMERICAN ELECTRIC POWER**

gai consultants

DRAWN BY: JTH DATE: 9/26/2019
CHECKED: APPROVED:

APPENDIX A Photographs



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



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



Photograph 3. Stream S001, Upstream, Facing East



Photograph 4. Stream S001, Downstream, Facing West



Photograph 5. Stream S002, Upstream, Facing Northeast



Photograph 6. Stream S002, Downstream, Facing Southwest



Photograph 7. Stream S003, Upstream, Facing West



Photograph 8. Stream S003, Downstream, Facing East



Photograph 9. Stream S004, Upstream, Facing South



Photograph 10. Stream S004, Downstream, Facing North



Photograph 11. Representative upland habitat, Facing South



Photograph 12. Representative upland habitat, Facing North



Photograph 13. Representative upland habitat, Facing North



Photograph 14. Representative upland habitat, Facing South

APPENDIX B

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Harmar Hill City/County: Washington Co. Sampling Date: 4/24/2019
 Applicant/Owner: AEP State: OH Sampling Point: W001-PEM
 Investigator(s): KLV Section, Township, Range: Warren Twp
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%) 0.1
 Subregion (LRR or MLRA): LRR N Lat: 39.424224 Long: -81.482184 Datum: NAD83
 Soil Map Unit Name: UpD - Upspur Silty clay loam, 12 to 18% 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Remarks: Wetland data for W001-PEM-CAT1
Data taken within transmission line ROW next to substation

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required, check all that apply)</u></p> <table style="width:100%;"> <tr> <td><input checked="" type="checkbox"/> Surface Water (A1)</td> <td><input type="checkbox"/> True Aquatic Plants (B14)</td> </tr> <tr> <td><input checked="" type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturation (A3)</td> <td><input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Aquatic Fauna (B13)		<p><u>Secondary Indicators (minimum of two required)</u></p> <table style="width:100%;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td><input checked="" type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td><input checked="" type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)																																		
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																																		
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)																																		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)																																		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																																		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)																																		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)																																		
<input type="checkbox"/> Iron Deposits (B5)																																			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)																																			
<input type="checkbox"/> Water-Stained Leaves (B9)																																			
<input type="checkbox"/> Aquatic Fauna (B13)																																			
<input type="checkbox"/> Surface Soil Cracks (B6)																																			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																																			
<input type="checkbox"/> Drainage Patterns (B10)																																			
<input type="checkbox"/> Moss Trim Lines (B16)																																			
<input type="checkbox"/> Dry-Season Water Table (C2)																																			
<input type="checkbox"/> Crayfish Burrows (C8)																																			
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)																																			
<input type="checkbox"/> Stunted or Stressed Plants (D1)																																			
<input checked="" type="checkbox"/> Geomorphic Position (D2)																																			
<input type="checkbox"/> Shallow Aquitard (D3)																																			
<input type="checkbox"/> Microtopographic Relief (D4)																																			
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)																																			

<p>Field Observations:</p> <table style="width:100%;"> <tr> <td>Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> <td>Depth (inches): <u>1"</u></td> </tr> <tr> <td>Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> <td>Depth (inches): <u>3"</u></td> </tr> <tr> <td>Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> <td>Depth (inches): <u>0</u></td> </tr> </table> <p>(includes capillary fringe)</p>	Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>1"</u>	Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>3"</u>	Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>1"</u>						
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>3"</u>						
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>						

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

Remarks: Wetland hydrology indicators are A1, A2, A3, C3, D2 and D5.

VEGETATION - Use scientific names of plants.

Sampling Point: W001-PEM

Tree Stratum	(Plot size: <u>30'r</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>none</u>				
2.				
3.				
4.				
5.				
6.				
7.				
		<u>0</u>	= Total Cover	
Sapling/Shrub Stratum	(Plot size: <u>15'r</u>)			
1. <u>none</u>				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
		<u>0</u>	= Total Cover	
Herb Stratum	(Plot size: <u>5'r</u>)			
1. <u>Phalaris arundinacea</u>		<u>100</u>	<u>Y</u>	<u>Fach</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
			= Total Cover	
Woody Vine Stratum	(Plot size: <u>30'r</u>)			
1. <u>none</u>				
2.				
3.				
4.				
5.				
6.				
		<u>0</u>	= Total Cover	

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by:

OBL species _____ 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 ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (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).

wetland veg is dominant.

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

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-10	10YR4/2	30	5YR4/4	20	C	PL	Clay loam
	10YR4/1	20					Co-matrix color
	10YR4/3	30					Co-matrix color

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

Hydric Soil Indicators: Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)
<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)
<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)
<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|--|---|---|

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
---	--

Soil Description Remarks: Meets F3.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Harmar Hill City/County: Washington Co. Sampling Date: 4/24/2019
 Applicant/Owner: AEP State: OH Sampling Point: W001-UPL
 Investigator(s): KLV Section, Township, Range: Warren Twp.
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%) 0.1
 Subregion (LRR or MLRA): URBN Lat: 39.424417 Long: -81.482128 Datum: NAD 83
 Soil Map Unit Name: UpD-Upshur Silty clay loam 12 to 18% Slopes NWI classification: NA

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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

Remarks: Upland data for W001-PEM-CAT1
Data taken next to substation

HYDROLOGY

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

<p>Field Observations:</p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p>	<p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
--	--

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: W001-UPL

Tree Stratum		(Plot size: <u>30'r</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>none</u>				
2.					
3.					
4.					
5.					
6.					
7.					
			<u>0</u>	= Total Cover	
Sapling/Shrub Stratum		(Plot size: <u>15'r</u>)			
1.	<u>none</u>				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
			<u>0</u>	= Total Cover	
Herb Stratum		(Plot size: <u>5'r</u>)			
1.	<u>Dactylis glomerata</u>		<u>50</u>	<u>Y</u>	<u>FacU</u>
2.	<u>Plantago lanceolata</u>		<u>20</u>	<u>Y</u>	<u>FacU</u>
3.	<u>Achillea millefolium</u>		<u>10</u>	<u>N</u>	<u>FacU</u>
4.	<u>Taraxacum officinale</u>		<u>10</u>	<u>N</u>	<u>FacU</u>
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			<u>90</u>	= Total Cover	
Woody Vine Stratum		(Plot size: <u>30'r</u>)			
1.	<u>none</u>				
2.					
3.					
4.					
5.					
6.					
			<u>0</u>	= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (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 ≤3.0¹
 - _____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - _____ Problematic Hydrophytic Vegetation¹ (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 Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/3	100					Silt loam	

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

²Location: 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 Soils³:

- 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)

³Indicators 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/QHEI) Data Forms



Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3)

35

SITE NAME/LOCATION AFP - Harmar Hill
 SITE NUMBER S001 RIVER BASIN Ohio River RIVER CODE 050302020102 DRAINAGE AREA (mi²) 0.03
 LENGTH OF STREAM REACH (ft) 120' LAT 39.422756 LONG -81.482948 RIVER MILE _____
 DATE 4/24/19 SCORER KLV COMMENTS SOH-KLV-001

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

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

<p>1. SUBSTRATE (Estimate percent of every type present). Check ONLY two predominant substrate TYPE boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B</p> <table border="1"> <thead> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Bldr Slabs [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> SILT [3 pt]</td> <td><u>6.5</u></td> </tr> <tr> <td><input type="checkbox"/> Boulder (>256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> Leaf Pack/Woody Debris [3 pts]</td> <td><u>15</u></td> </tr> <tr> <td><input type="checkbox"/> Bedrock [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> Fine Detritus [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Cobble (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> Clay or Hardpan [0 pt]</td> <td>_____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Gravel (2-64 mm) [9 pts]</td> <td><u>20</u></td> <td><input type="checkbox"/> Muck [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Sand (<2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> Artificial [3 pts]</td> <td>_____</td> </tr> </tbody> </table> <p>Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u> (A) 12 (B) 3</p> <p>SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12 TOTAL NUMBER OF SUBSTRATE TYPES: 3</p>		TYPE	PERCENT	TYPE	PERCENT	<input type="checkbox"/> Bldr Slabs [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>6.5</u>	<input type="checkbox"/> Boulder (>256 mm) [16 pts]	_____	<input type="checkbox"/> Leaf Pack/Woody Debris [3 pts]	<u>15</u>	<input type="checkbox"/> Bedrock [16 pts]	_____	<input type="checkbox"/> Fine Detritus [3 pts]	_____	<input type="checkbox"/> Cobble (65-256 mm) [12 pts]	_____	<input type="checkbox"/> Clay or Hardpan [0 pt]	_____	<input checked="" type="checkbox"/> Gravel (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> Muck [0 pts]	_____	<input type="checkbox"/> Sand (<2 mm) [6 pts]	_____	<input type="checkbox"/> Artificial [3 pts]	_____	<p>HHEI Metric Points Substrate Max = 40 15 A + B</p>
TYPE	PERCENT	TYPE	PERCENT																											
<input type="checkbox"/> Bldr Slabs [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>6.5</u>																											
<input type="checkbox"/> Boulder (>256 mm) [16 pts]	_____	<input type="checkbox"/> Leaf Pack/Woody Debris [3 pts]	<u>15</u>																											
<input type="checkbox"/> Bedrock [16 pts]	_____	<input type="checkbox"/> Fine Detritus [3 pts]	_____																											
<input type="checkbox"/> Cobble (65-256 mm) [12 pts]	_____	<input type="checkbox"/> Clay or Hardpan [0 pt]	_____																											
<input checked="" type="checkbox"/> Gravel (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> Muck [0 pts]	_____																											
<input type="checkbox"/> Sand (<2 mm) [6 pts]	_____	<input type="checkbox"/> Artificial [3 pts]	_____																											
<p>2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 foot) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):</p> <table border="1"> <tbody> <tr> <td><input type="checkbox"/> > 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 22.5 - 30 cm [30 pts]</td> <td><input checked="" type="checkbox"/> < 5 cm [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 10 - 22.5 cm [25 pts]</td> <td><input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]</td> </tr> </tbody> </table> <p>COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): <u>5</u></p>		<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]	<p>Pool Depth Max = 30 5</p>																						
<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]																													
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]																													
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]																													
<p>3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check ONLY one box):</p> <table border="1"> <tbody> <tr> <td><input type="checkbox"/> > 4.0 meters (> 13') [30 pts]</td> <td><input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]</td> <td><input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </tbody> </table> <p>COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) <u>4.1</u></p>		<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]		<p>Bankfull Width Max=30 15</p>																						
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]																													
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]																													
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																														

This information must also be completed

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

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS _____

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS _____

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 <= 100 %)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 <= 100 %)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 <= 100 %)
--	---	---	---	--

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)

VWH Name: Mile Run Distance from Evaluated Stream 1.2 miles
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Marietta, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____
County: Washington Co. Township/City: Warren Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: _____ Quantity: _____

Photo-documentation Notes: _____

Elevated Turbidity?(Y/N): N Canopy (% open): 45%

Were samples collected for water chemistry?(Y/N): N Lab Sample # or ID (attach results): _____

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

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

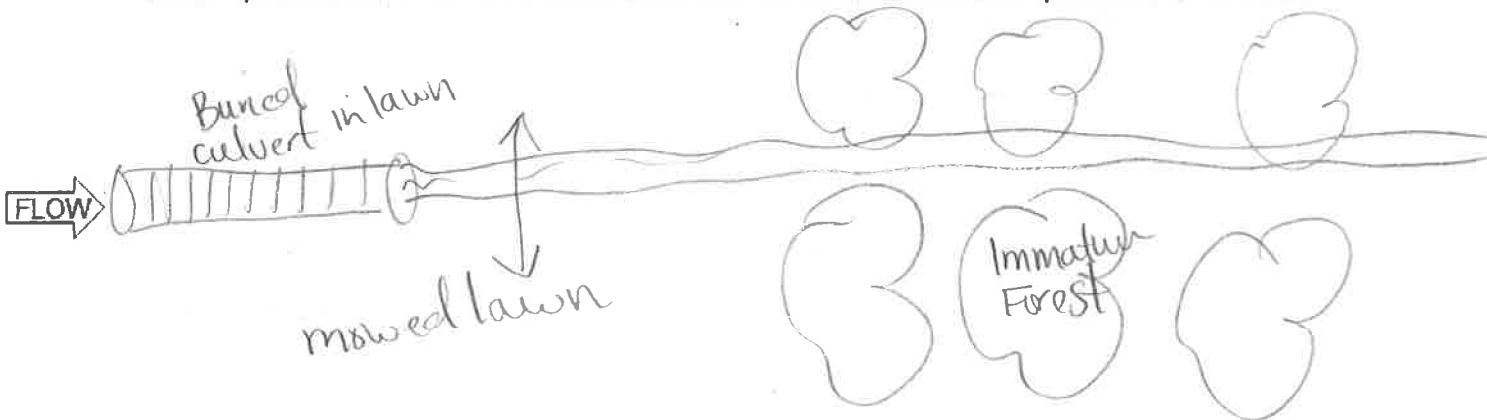
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

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

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





Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3)

35

SITE NAME/LOCATION AEP - Harmar Hill
 SITE NUMBER S002 RIVER BASIN Ohio River RIVER CODE 050302020102 DRAINAGE AREA (m²) 0.05m²
 LENGTH OF STREAM REACH (ft) 165' LAT 39.424059 LONG -81.482448 RIVER MILE _____
 DATE 4/24/19 SCORER KLV COMMENTS SOH-KLV-002

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

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

<p>1. SUBSTRATE (Estimate percent of every type present). Check ONLY two predominant substrate TYPE boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B</p> <table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> BLDR SLABS [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> SLT [3 pt]</td> <td><u>70</u></td> </tr> <tr> <td><input type="checkbox"/> BOULDER (>256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> BEDROCK [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>_____</td> </tr> <tr> <td><input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td><u>20</u></td> <td><input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> SAND (<2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td>_____</td> </tr> </table> <p>Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u> (A) 12 (B) 3</p> <p>SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12 TOTAL NUMBER OF SUBSTRATE TYPES: 3</p>		TYPE	PERCENT	TYPE	PERCENT	<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SLT [3 pt]	<u>70</u>	<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____	<input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____	<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____	<p>HHEI Metric Points Substrate Max = 40 15 A + B</p>
TYPE	PERCENT	TYPE	PERCENT																											
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SLT [3 pt]	<u>70</u>																											
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____																											
<input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____																											
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____																											
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> MUCK [0 pts]	_____																											
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____																											
<p>2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):</p> <table border="0"> <tr> <td><input type="checkbox"/> > 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 22.5 - 30 cm [30 pts]</td> <td><input checked="" type="checkbox"/> < 5 cm [5pts]</td> </tr> <tr> <td><input type="checkbox"/> > 10 - 22.5 cm [25 pts]</td> <td><input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </table> <p>COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 45</p>		<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]	<p>Pool Depth Max = 30 5</p>																						
<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]																													
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5pts]																													
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																													
<p>3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):</p> <table border="0"> <tr> <td><input type="checkbox"/> > 4.0 meters (> 13') [30 pts]</td> <td><input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]</td> <td><input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </table> <p>COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 4</p>		<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]		<p>Bankfull Width Max=30 15</p>																						
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]																													
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]																													
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																														

This information must also be completed

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

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS _____

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS _____

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 #/100 #)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 #/100 #)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 #/100 #)
--	---	---	---	--

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: _____ Mile Run _____ Distance from Evaluated Stream 1.3 miles
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Marietta, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____
County: Washington, Co. Township/City: Warrentwp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: _____ Quantity: _____
Photo-documentation Notes: _____
Elevated Turbidity? (Y/N): N Canopy (% open): 45%
Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____
Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____
Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: _____

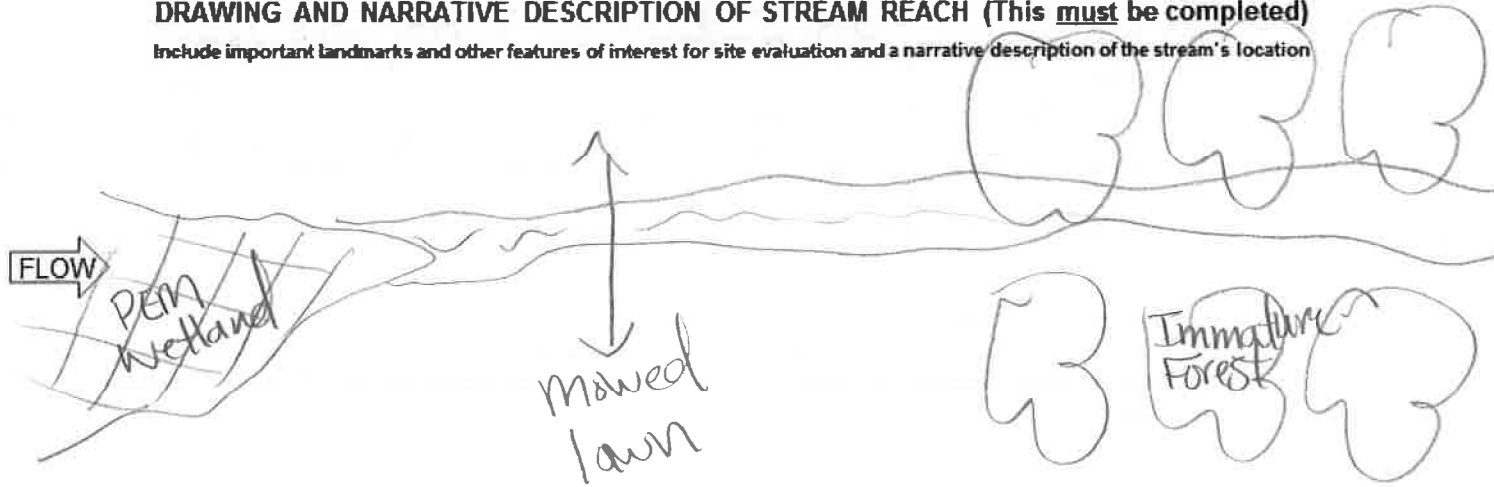
BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____
Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____
Salamanders Observed? (Y/N) N Species observed (if known): _____
Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____
Comments Regarding Biology: _____

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

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





Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3)

51

SITE NAME/LOCATION AEP - Harmar Hill
 SITE NUMBER S003 RIVER BASIN Ohio River RIVER CODE 0503020201 DRAINAGE AREA (mi²) 0.1 mi²
 LENGTH OF STREAM REACH (ft) 130' LAT 39.428531 LONG -81.481423 RIVER MILE _____
 DATE 4/24/19 SCORER KLV COMMENTS SOH-KLV-003

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

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

<p>1. SUBSTRATE (Estimate percent of every type present). Check ONLY two predominant substrate TYPE boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B</p> <table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> BLDR SLABS [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> SLT [3 pt]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> BOULDER (>256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td><u>10</u></td> </tr> <tr> <td><input type="checkbox"/> BEDROCK [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td><u>15</u></td> <td><input type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>_____</td> </tr> <tr> <td><input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td><u>20</u></td> <td><input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> SAND (<2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td>_____</td> </tr> </table> <p>Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>15</u> (A) <u>12</u> (B) <u>4</u></p> <p>SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: <u>12</u> TOTAL NUMBER OF SUBSTRATE TYPES: <u>4</u></p>		TYPE	PERCENT	TYPE	PERCENT	<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SLT [3 pt]	_____	<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>10</u>	<input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>15</u>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____	<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____	<p>HHEI Metric Points Substrate Max = 40</p> <p><u>16</u></p> <p>A + B</p>
TYPE	PERCENT	TYPE	PERCENT																											
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SLT [3 pt]	_____																											
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>10</u>																											
<input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____																											
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>15</u>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____																											
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> MUCK [0 pts]	_____																											
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____																											
<p>2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):</p> <table border="0"> <tr> <td><input type="checkbox"/> > 30 centimeters [20 pts]</td> <td><input checked="" type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 22.5 - 30 cm [30 pts]</td> <td><input type="checkbox"/> < 5 cm [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 10 - 22.5 cm [25 pts]</td> <td><input type="checkbox"/> NO WATER OR MOST CHANNEL [0 pts]</td> </tr> </table> <p>COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): <u>10</u></p>		<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOST CHANNEL [0 pts]	<p>Pool Depth Max = 30</p> <p><u>15</u></p>																						
<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> 5 cm - 10 cm [15 pts]																													
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]																													
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOST CHANNEL [0 pts]																													
<p>3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):</p> <table border="0"> <tr> <td><input type="checkbox"/> > 4.0 meters (> 13') [30 pts]</td> <td><input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input checked="" type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]</td> <td><input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </table> <p>COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) <u>5'</u></p>		<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input checked="" type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]		<p>Bankfull Width Max=30</p> <p><u>20</u></p>																						
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]																													
<input checked="" type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]																													
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																														

This information must also be completed

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

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS _____

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

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 #/100 #) Flat to Moderate Moderate (2 #/100 #) Moderate to Severe Severe (10 #/100 #)

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: Indian Run Distance from Evaluated Stream 0.3 miles
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Marietta, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____
County: Washington, Co. Township/City: Warren Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: _____ Quantity: _____

Photo-documentation Notes: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 40%

Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____

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

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

Additional comments/description of pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____

Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____

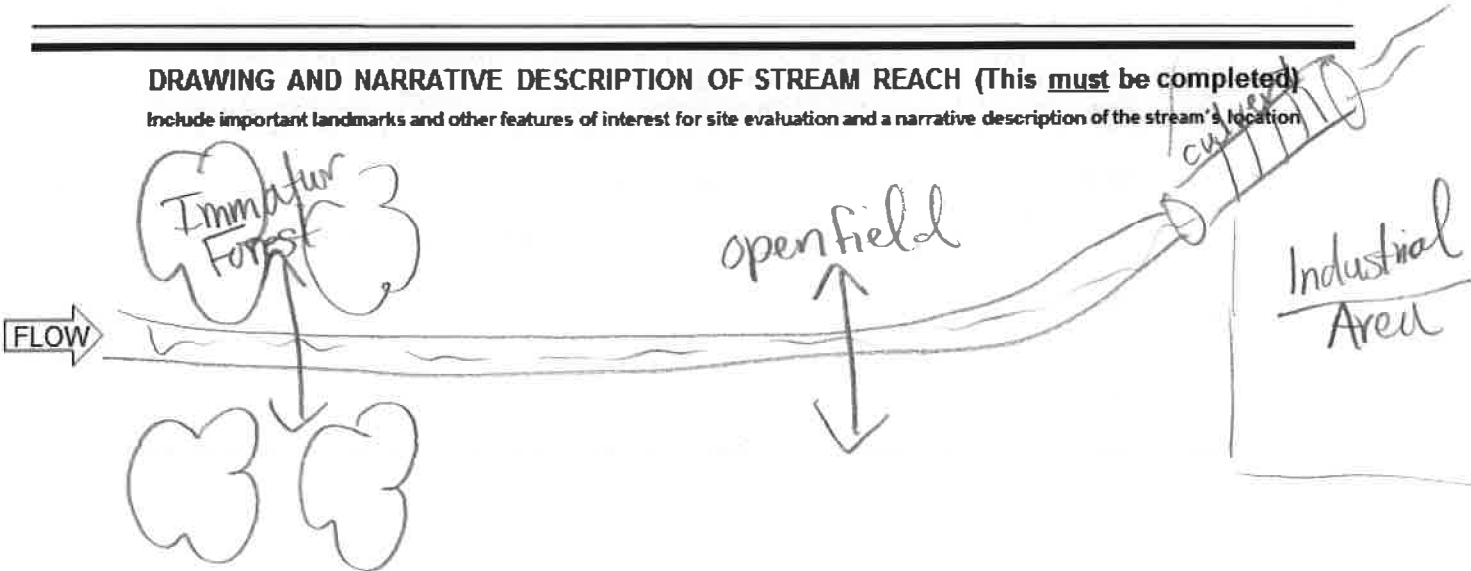
Salamanders Observed? (Y/N) N Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____

Comments Regarding Biology: _____

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

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





Primary Headwater Habitat Field Evaluation Form

HHEI Score (sum of metrics 1+2+3)

51

SITE NAME/LOCATION AP-Harmon Hill
 SITE NUMBER S004 RIVER BASIN Ohio River RIVER CODE 050302020102 DRAINAGE AREA (mi²) 0.1mi²
 LENGTH OF STREAM REACH (ft) 228' LAT 39.429669 LONG -81.481124 RIVER MILE _____
 DATE 4/24/19 SCORER KLV COMMENTS SOH-KLV-004

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

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

<p>1. SUBSTRATE (Estimate percent of every type present). Check ONLY two predominant substrate TYPE boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B</p> <table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> Bldr Slabs [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> SLT [3 pt]</td> <td><u>55</u></td> </tr> <tr> <td><input type="checkbox"/> Boulder (>256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> Leaf Pack/Woody Debris [3 pts]</td> <td><u>10</u></td> </tr> <tr> <td><input type="checkbox"/> Bedrock [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> Fine Detritus [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Cobble (65-256 mm) [12 pts]</td> <td><u>15</u></td> <td><input type="checkbox"/> Clay or Hardpan [0 pt]</td> <td>_____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Gravel (2-64 mm) [9 pts]</td> <td><u>20</u></td> <td><input type="checkbox"/> Muck [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Sand (<2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> Artificial [3 pts]</td> <td>_____</td> </tr> </table> <p>Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>15</u> (A) <u>12</u> TOTAL NUMBER OF SUBSTRATE TYPES: (B) <u>4</u></p> <p>SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: <u>12</u> TOTAL NUMBER OF SUBSTRATE TYPES: <u>4</u></p>		TYPE	PERCENT	TYPE	PERCENT	<input type="checkbox"/> Bldr Slabs [16 pts]	_____	<input checked="" type="checkbox"/> SLT [3 pt]	<u>55</u>	<input type="checkbox"/> Boulder (>256 mm) [16 pts]	_____	<input type="checkbox"/> Leaf Pack/Woody Debris [3 pts]	<u>10</u>	<input type="checkbox"/> Bedrock [16 pts]	_____	<input type="checkbox"/> Fine Detritus [3 pts]	_____	<input type="checkbox"/> Cobble (65-256 mm) [12 pts]	<u>15</u>	<input type="checkbox"/> Clay or Hardpan [0 pt]	_____	<input checked="" type="checkbox"/> Gravel (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> Muck [0 pts]	_____	<input type="checkbox"/> Sand (<2 mm) [6 pts]	_____	<input type="checkbox"/> Artificial [3 pts]	_____	<p>HHEI Metric Points</p> <p>Substrate Max = 40</p> <p><u>16</u></p> <p>A + B</p>
TYPE	PERCENT	TYPE	PERCENT																											
<input type="checkbox"/> Bldr Slabs [16 pts]	_____	<input checked="" type="checkbox"/> SLT [3 pt]	<u>55</u>																											
<input type="checkbox"/> Boulder (>256 mm) [16 pts]	_____	<input type="checkbox"/> Leaf Pack/Woody Debris [3 pts]	<u>10</u>																											
<input type="checkbox"/> Bedrock [16 pts]	_____	<input type="checkbox"/> Fine Detritus [3 pts]	_____																											
<input type="checkbox"/> Cobble (65-256 mm) [12 pts]	<u>15</u>	<input type="checkbox"/> Clay or Hardpan [0 pt]	_____																											
<input checked="" type="checkbox"/> Gravel (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> Muck [0 pts]	_____																											
<input type="checkbox"/> Sand (<2 mm) [6 pts]	_____	<input type="checkbox"/> Artificial [3 pts]	_____																											
<p>2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):</p> <table border="0"> <tr> <td><input type="checkbox"/> > 30 centimeters [20 pts]</td> <td><input checked="" type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 22.5 - 30 cm [30 pts]</td> <td><input type="checkbox"/> < 5 cm [5pts]</td> </tr> <tr> <td><input type="checkbox"/> > 10 - 22.5 cm [25 pts]</td> <td><input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </table> <p>COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): <u>10</u></p>		<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]	<p>Pool Depth Max = 30</p> <p><u>15</u></p>																						
<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> 5 cm - 10 cm [15 pts]																													
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]																													
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																													
<p>3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):</p> <table border="0"> <tr> <td><input type="checkbox"/> > 4.0 meters (> 13') [30 pts]</td> <td><input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]</td> <td><input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </table> <p>COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) <u>5</u></p>		<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]		<p>Bankfull Width Max=30</p> <p><u>20</u></p>																						
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]																													
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]																													
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																														

This information must also be completed

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

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS _____

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS _____

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 #/100 #)	<input type="checkbox"/> Flat to Moderate	<input checked="" type="checkbox"/> Moderate (2 #/100 #)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 #/100 #)
---	---	--	---	--

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: Indian Run Distance from Evaluated Stream 0.1 miles
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Marrietta, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____
County: Washington Co. Township/City: Warren Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: _____ Quantity: _____
Photo-documentation Notes: _____
Elevated Turbidity? (Y/N): N Canopy (% open): 55%
Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results): _____
Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____
Is the sampling reach representative of the stream (Y/N) Y If not, explain: _____

Additional comments/description of pollution impacts: _____

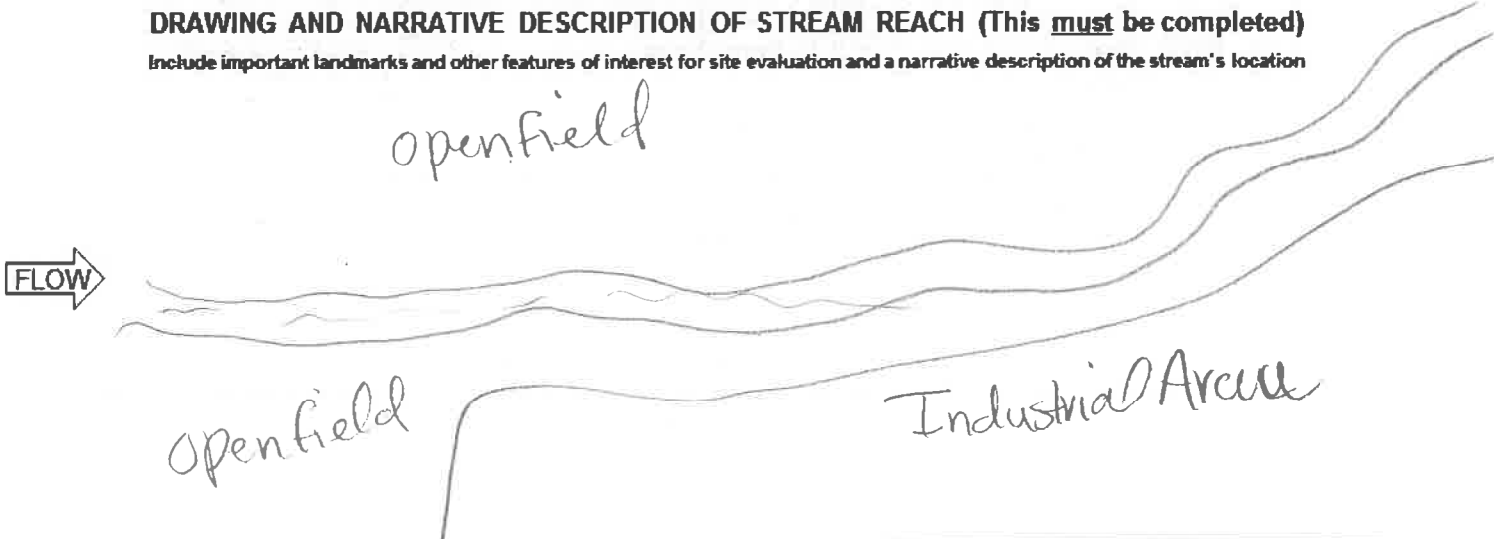
BIOLOGICAL OBSERVATIONS

(Record all observations below)

Fish Observed? (Y/N) N Species observed (if known): _____
Frogs or Tadpoles Observed? (Y/N) N Species observed (if known): _____
Salamanders Observed? (Y/N) N Species observed (if known): _____
Aquatic Macroinvertebrates Observed? (Y/N) N Species observed (if known): _____
Comments Regarding Biology: _____

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

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



APPENDIX D

Ohio Rapid Assessment Method for Wetlands (ORAM) Data Forms

Site: AEP - Hammar Hill Rater(s): KLV Date: 4/24/19

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size). W001-PEM-CAT1

- Select one size class and assign score.
- >50 acres (>20.2ha) (6 pts)
 - 25 to <50 acres (10.1 to <20.2ha) (5 pts)
 - 10 to <25 acres (4 to <10.1ha) (4 pts)
 - 3 to <10 acres (1.2 to <4ha) (3 pts)
 - 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
 - 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
 - <0.1 acres (0.04ha) (0 pts)

4	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

- 2a. Calculate average buffer width. Select only one and assign score. Do not double check.
- WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
 - MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
 - NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
 - VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)
- 2b. Intensity of surrounding land use. Select one or double check and average.
- VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
 - LOW. Old field (>10 years), shrub land, young second growth forest. (5)
 - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
 - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

7	12
max 30 pts.	subtotal

Metric 3. Hydrology.

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
 - Other groundwater (3)
 - Precipitation (1)
 - Seasonal/Intermittent surface water (3)
 - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
 - Between stream/lake and other human use (1)
 - Part of wetland/upland (e.g. forest), complex (1)
 - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >0.7 (27.6in) (3)
 - 0.4 to 0.7m (15.7 to 27.6in) (2)
 - <0.4m (<15.7in) (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- Semi- to permanently inundated/saturated (4)
 - Regularly inundated/saturated (3)
 - Seasonally inundated (2)
 - Seasonally saturated in upper 30cm (12in) (1)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (12) <input type="checkbox"/> Recovered (7) <input checked="" type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input checked="" type="checkbox"/> stormwater input |
| | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> point source (nonstormwater) filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other |

4	16
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

- 4a. Substrate disturbance. Score one or double check and average.
- None or none apparent (4)
 - Recovered (3)
 - Recovering (2)
 - Recent or no recovery (1)
- 4b. Habitat development. Select only one and assign score.
- Excellent (7)
 - Very good (6)
 - Good (5)
 - Moderately good (4)
 - Fair (3)
 - Poor to fair (2)
 - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- | | |
|--|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (9) <input type="checkbox"/> Recovered (6) <input type="checkbox"/> Recovering (3) <input checked="" type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants |
| | <ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment |

16
subtotal this page

Site: AFP - Hammer Hill Rater(s): KLV Date: 4/24/2019

16

subtotal first page

W001-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)

-4	12
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

12

End of Quantitative Rating. Complete Categorization Worksheets.

APPENDIX E

ODNR and USFWS Correspondence



Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR

MARY MERTZ, DIRECTOR

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

August 12, 2019

Rita Zack
GAI Consultants, Inc.
3720 Dressler Road NW
Canton, Ohio 44718

Re: 19-581; AEP -Harmar Hill Switch Project

Project: The proposed Project involves installing a new 138kV switch along the existing Gorsuch-Mill Creek 138kV transmission line.

Location: The proposed project is located in Warren Township, Washington County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has the following records at or within a one-mile radius of the project area:

Blunt-leaved milkweed (*Asclepias amplexicaulis*), P
Butterfly (*Ellipsaria lineolata*), E
Threehorn wartyback (*Obliquaria reflexa*), T
Monkeyface (*Theliderma metanevra*), E
Fawnsfoot (*Truncilla donaciformis*), T

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. This information is provided to inform you of features present within your project area and vicinity.

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.

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added

to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal endangered, FT = federal threatened, FSC = federal species of concern, FC = federal candidate species.

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 to include: 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 sheepnose (*Plethobasus cyphus*), a state endangered and federally endangered mussel, the fanshell (*Cyprogenia stegaria*), a state endangered and federally endangered mussel, the pink mucket (*Lampsilis orbiculata*), a state endangered and federally endangered mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the washboard (*Megaloniais nervosa*), a state endangered mussel, the butterfly (*Ellipsaria lineolata*), a state endangered mussel, the elephant-ear (*Elliptio crassidens*), a state endangered mussel, the long-solid (*Fusconaia maculata maculata*), a state endangered mussel, the sharp-ridged pocketbook (*Lampsilis ovata*), a state endangered mussel, the Ohio pigtoe (*Pleurobema cordatum*), a state endangered mussel, the pyramid pigtoe (*Pleurobema rubrum*), a state endangered mussel, the monkeyface (*Quadrula metanevra*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the blue sucker (*Cycleptus elongatus*), a state endangered fish and a Federal species of concern, the western banded killifish (*Fundulus diaphanus menona*), a state endangered fish, the northern madtom (*Noturus stigmosus*), a state endangered fish, the Ohio lamprey (*Ichthyomyzon bdellium*), a state endangered fish, the paddlefish (*Polyodon spathula*) a state threatened fish, the mountain madtom (*Noturus eleutherus*), a state threatened fish, the river darter (*Percina shumardi*), a state threatened fish, the mountain madtom (*Noturus eleutherus*), a state threatened fish, the channel darter (*Percina copelandi*), a state threatened fish, and the

Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the 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 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 eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. This long-lived, entirely aquatic salamander inhabits perennial streams with large flat rocks. In-water work in hellbender streams can reduce availability of large cover rocks and can destroy hellbender nests and/or kill adults and juveniles. The contribution of additional sediment to hellbender streams can smother large cover rocks and gravel/cobble substrate (used by juveniles), making them unsuitable for refuge and nesting. Projects that contribute to altered flow regimes (e.g., by increasing areas of impervious surfaces or modifying the floodplain) can also adversely affect hellbender habitat. 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 eastern spadefoot toad (*Scaphiopus holbrookii*), a state endangered species. This species is found in areas of sandy soils that are associated with river valleys. Breeding habitats may include flooded agricultural fields or other water holding depressions. 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.

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.

Natural Areas: The Division of Natural Areas and Preserves has the following comment.

One rare plant species, blunt-leaved milkweed (*Asclepias amplexicaulis*), state species of concern, has been found near the proposed AEP-Harmar Hill Switch Project. Due to the possible disruption of this species and possibly other rare species in the area, it is recommended that a pre-construction survey of the proposed project site be conducted to ensure that plants are not impacted. The survey should be concentrated on the south facing slopes within the construction limits. If there are any questions about Ohio flora or if survey assistance is required, please contact the Division of Natural Areas and Preserves' Chief Botanist, Rick Gardner. Mr. Gardner can be contacted directly at rick.gardner@dnr.state.oh.us or (614) 265-6419.

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 Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or Sarah.Tebbe@dnr.state.oh.us if you have questions about these comments or need additional information.

John Kessler
Environmental Services Administrator

Rita Zack

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Tuesday, July 9, 2019 11:38 AM
To: Rita Zack
Cc: nathan.reardon@dnr.state.oh.us; kate.parsons@dnr.state.oh.us
Subject: AEP's Harmar Hill 138kV Switch Project, Washington County

EXTERNAL E-MAIL MESSAGE



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



TAILS# 03E15000-2019-TA-1509

Dear Ms. Zack,

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 in Ohio summer mist net 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,



Patrice M. Ashfield
Field Office Supervisor

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