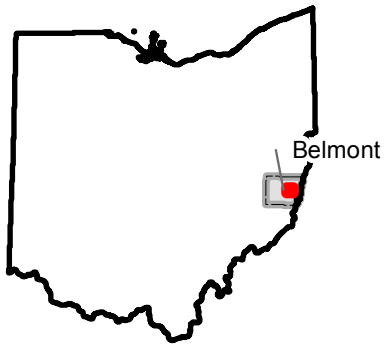
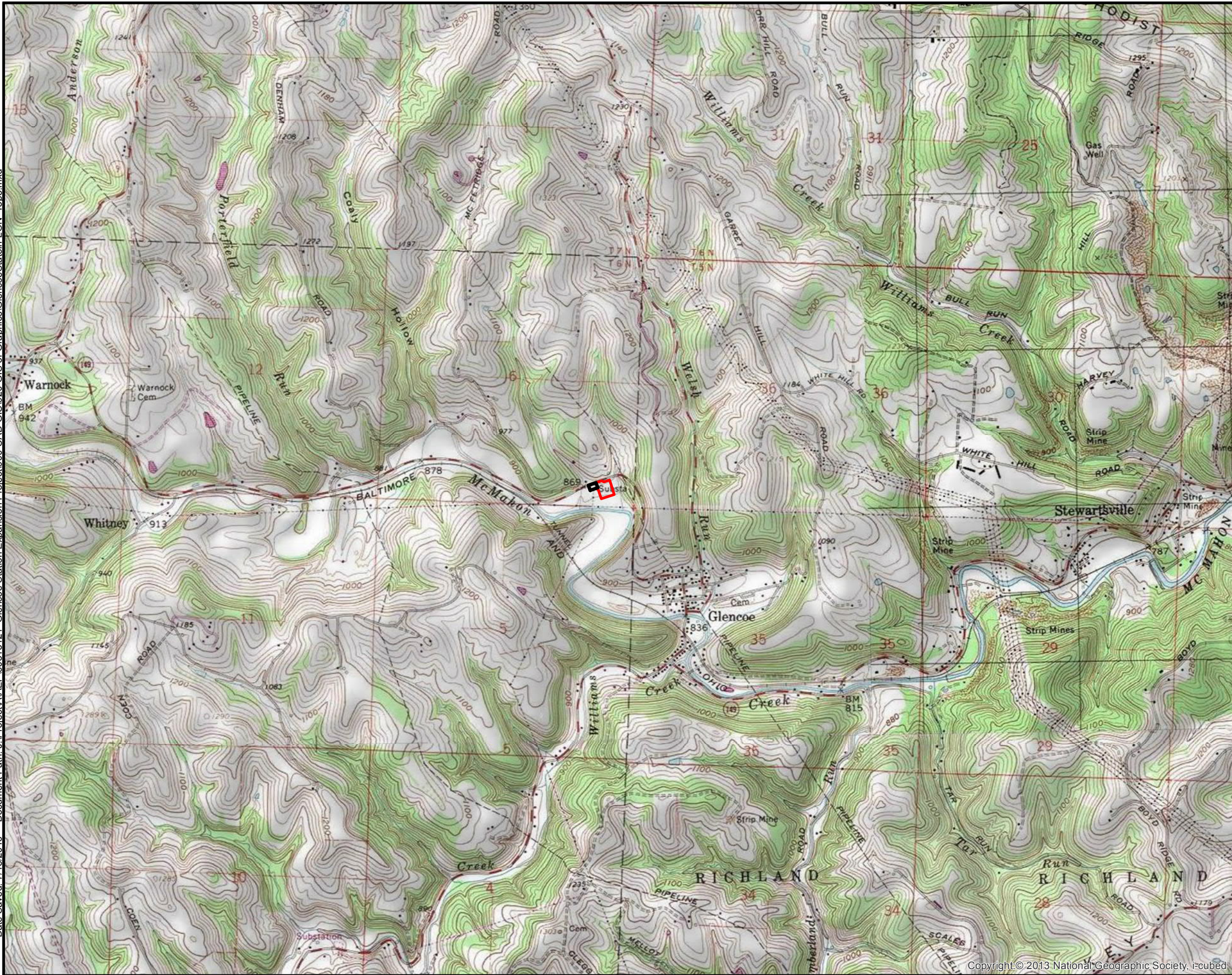
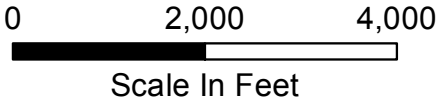


Date Saved: 7/18/2016 Document Path: J:\Project\VAEP\60513121_Glencoe Station Expansion Project\900-CAD-GIS\920-GIS or Graphics\GlencoeStation-LON Topo.mxd



- LEGEND:
- Existing Glencoe Station
 - Proposed Expansion Area

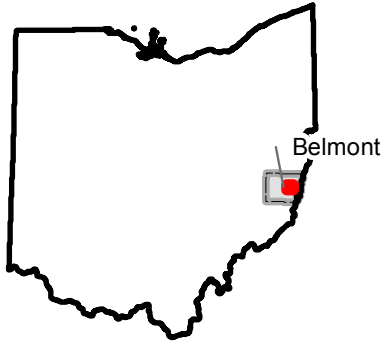


AEP OHIO TRANSMISSION COMPANY Glencoe Station Expansion Project

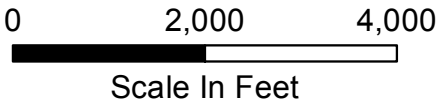
FIGURE 1
PROJECT OVERVIEW

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CREATED BY: SJJ	CHECKED BY: AG
JOB NO. 60513121	AECOM

Date Saved: 7/20/2016 Document Path: I:\Project\NAEP\60513121_Glencoe Station Expansion Project\00-CAD-GIS\920-GIS or Graphics\Glencoe Station-1 ON_Aerial.mxd



- LEGEND:
- Existing Glencoe Station
 - Proposed Expansion Area
 - Existing Transmission Line

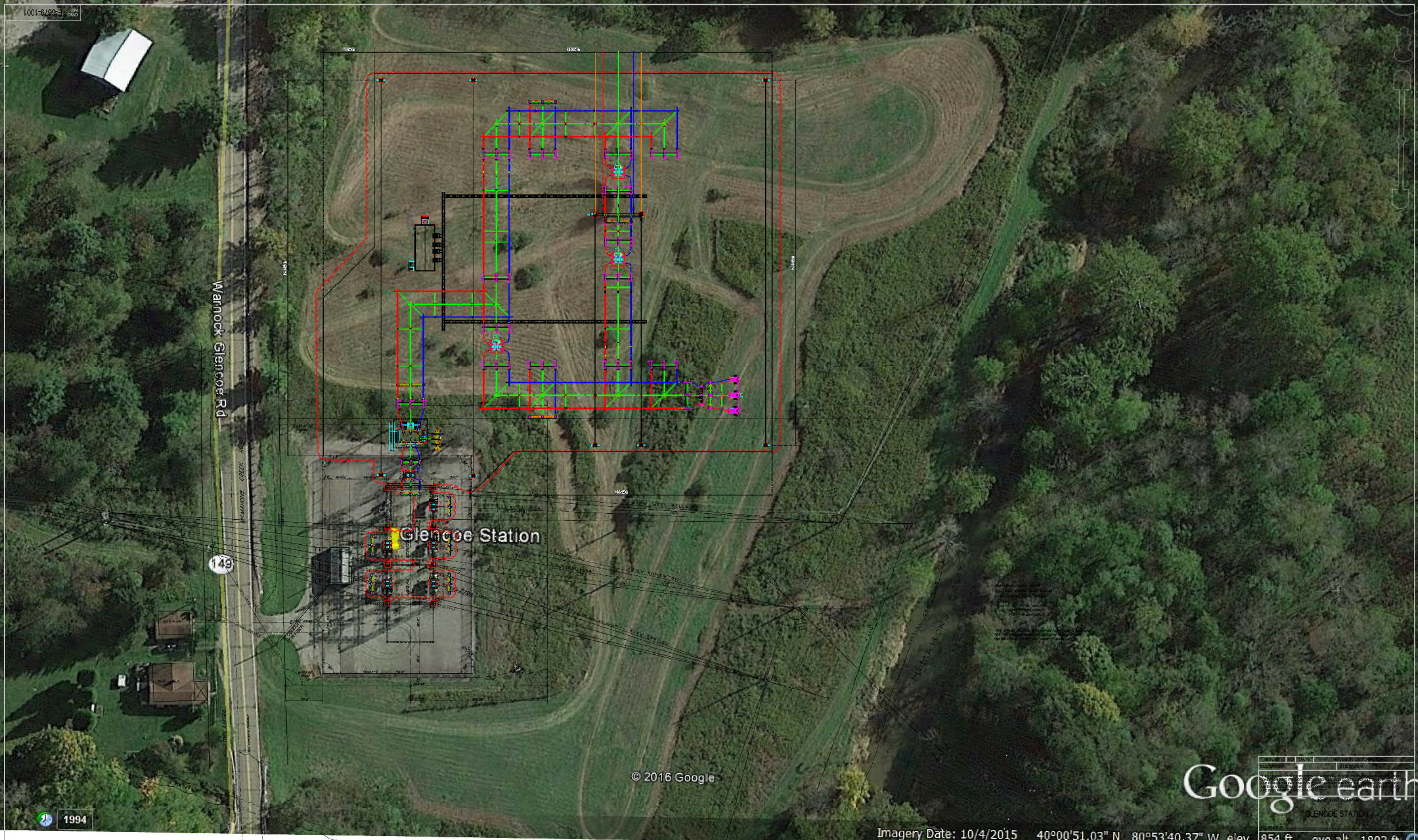


AEP OHIO TRANSMISSION COMPANY *Glencoe Station Expansion Project*

FIGURE 2
AERIAL PHOTOGRAPHY OF
THE PROJECT VICINITY

DATE: 7/20/2016	SCALE: 1:24,000
CREATED BY: SJJ	CHECKED BY: AG
JOB NO. 60513121	AECOM





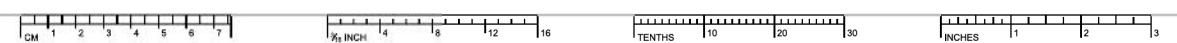
© 2016 Google

Google earth

Imagery Date: 10/4/2015 40°00'51.03" N 80°53'40.37" W elev 854 ft eye alt 1893 ft

5/4/2016
ISSUED FOR
SCOPING

PROJECT NO. E-6679-1001	
LOCATION PLAN	
STATION PROJECTS ENGINEERING	
SCALE: 1" = 25'	
DRAWN BY: AMU	
CHECKED BY: PHILIP	
DATE: 5/4/2016	
APPROVED BY:	
AMERICAN ELECTRIC POWER	
1 RIVERSIDE PLAZA BOLLING, OH 43024	
5	



APPENDIX A

SOCIOECONOMIC, LAND USE, AND AGRICULTURAL DISTRICT REVIEW REPORT

GLENCOE STATION EXPANSION PROJECT, BELMONT COUNTY, OHIO

SOCIOECONOMIC, LAND USE, AND AGRICULTURAL DISTRICT REVIEW REPORT

Prepared for:

American Electric Power Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 43230



Prepared by:



525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60513121

July 2016

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3.0	AGRICULTURAL DISTRICT LAND	2
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FIGURES (follow text)

Number

FIGURE 1 LAND USE MAP

1.0 PROJECT DESCRIPTION

This document presents the socioeconomic, land use, and agricultural district review conducted by AECOM for American Electric Power Ohio Transmission Company's (AEP Ohio Transco) proposed Glencoe Station Expansion Project (Project). AEP Ohio Transco is proposing to expand the existing Glencoe Station from approximately 0.4 acres to approximately 2.0 acres in Smith Township, Belmont County, Ohio.

As part of the Ohio Power Siting Board (OPSB) Letter of Notification (LON) requirements, AEP Ohio Transco is required to assess and report the socioeconomic, land use, and agricultural district characteristics potentially affected by the Project, as stated in Ohio Administrative Code (OAC) Rule 4906-6-05(B)(10)(a) and (b). These rules state:

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

- (a) Provide brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.*
- (b) Provide the acreage and a general description of all agricultural land and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.*

AEP Ohio Transco retained AECOM to conduct a desktop review of socioeconomic, land use, and agricultural district land characteristics. A study area was established within 2,000 feet of the proposed station expansion area. This study area is approximately 104 acres. In conjunction with ecological field surveys for the Project, AECOM noted land uses crossed by the Project. This report will be used to assist AEP Ohio Transco's efforts to avoid or minimize impacts to socioeconomic characteristics and land uses potentially present in the study area during construction activities.

2.0 GENERAL LAND USE DESCRIPTION

Land use within the study area is shown on Figure 1. Current land use characteristics were obtained through review of aerial photography taken in 2013; the United States Geological Survey (USGS) 7.5-minute topographic map of the St. Clairsville, Ohio (1985) quadrangle; and a field reconnaissance conducted in December 2015. The primary land uses within 2,000 feet of the proposed station expansion area include undeveloped woodland, pastures, and residences. Two residences were identified within 2,000 feet, the closest of which is approximately 60 feet to the northwest. Agricultural/pasture land accounts for approximately 24 acres of the 104-acre study area within 2,000 feet, including the entire 2-acre station expansion area (pasture). Transportation corridors are also present within the study area.

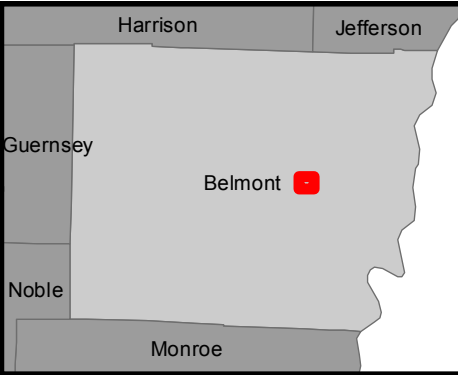
The 104 acre study area crosses into the Richland Township in Belmont County. No city boundaries are within the Project study area. General land use trends in the area suggest minimal change or conversion over the last few decades. The rural nature of the Project area suggest little or minimal growth in the immediate Project vicinity.

3.0 AGRICULTURAL DISTRICT LAND

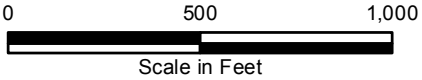
The entire station expansion area and portions of the area within 2,000 feet are used as agricultural/pasture land as shown on Figure 1. AECOM contacted the Belmont County Auditor's office regarding parcels registered in the agricultural district land program. Based on the information provided for parcels in Smith and Richland Townships, there are no properties registered in the agricultural district land program within one mile of the expansion area. No impacts to agricultural district land parcels are anticipated.

4.0 CONCLUSION

The Project is not expected to significantly impact current socioeconomic characteristics, land use, or agricultural district land in the vicinity. The Project is not expected to negatively impact any future land use plans for the area.



- LEGEND:
- Proposed Station Expansion Area
 - Existing Station Fence
 - Residence
 - Agricultural/Pasture Land
 - Existing Electric Transmission Line



Base Map:
<http://www.esri.com/software/arcgis/arcgisonline/bing-maps.html>



Glencoe
Station Expansion

FIGURE 1
LAND USE MAP

DATE: 7/21/2016	SCALE: 1:6,000
CREATED BY: SJJ	CHECKED BY: ARG
JOB NO. 60513121	AECOM

APPENDIX B

RARE, THREATENED, AND ENDANGERED SPECIES SURVEY REPORT

GLENCOE STATION EXPANSION PROJECT, BELMONT COUNTY, OHIO

RARE, THREATENED, AND ENDANGERED SPECIES SURVEY REPORT

Prepared for:

American Electric Power Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 43230



Prepared by:

AECOM
525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60513121

August 2016

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ATTACHMENT

Number

ATTACHMENT A	AGENCY RESPONSES
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1.0 PROJECT DESCRIPTION

This document presents the results of the rare, threatened, and endangered species assessment conducted by AECOM for American Electric Power Ohio Transmission Company's (AEP Ohio Transco) proposed Glencoe Station Expansion Project (Project). AEP Ohio Transco is proposing to expand the existing 0.6 acre Glencoe Station fenced area to approximately 5.6 acres in Smith Township, Belmont County, Ohio.

As part of the Ohio Power Siting Board (OPSB) Letter of Notification (LON) requirements, AEP Ohio Transco is required to assess and report the federal and state designated species potentially affected by the Project, as stated in Ohio Administrative Code (OAC) Rule 4906-6-05(B)(10)(e). This rule states:

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

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

AEP retained AECOM to conduct rare, threatened, and endangered species review and field surveys within areas crossed by the proposed Project. This report will be used to assist AEP Ohio Transco's efforts to avoid impacts to threatened and endangered species potentially present in the survey area during construction activities.

2.0 METHODS

The first phase of the survey involved a review of online lists of federal and state species of concern. In addition to the review of available literature, AECOM submitted a request to Ohio Department of Natural Resources (ODNR) Ohio Natural Heritage Database for Geographical Information System (GIS) records of species of concern that were reported within close proximity to the Project. AECOM also submitted coordination letters to the U.S. Fish and Wildlife Service (USFWS) and ODNR soliciting comments on the Project. Agency-identified species and available species-specific information was reviewed to identify the various habitat types that listed species are known to frequent. This information was used during the field survey to assess the potential for these species of concern in, or near the Project study corridor.

AECOM field ecologists conducted a general habitat survey in conjunction with the stream and wetland field surveys on July 21, 2016. The survey area was observed to be undeveloped old field within and directly surrounding the substation expansion area. The survey boundary extends beyond the actual area of proposed impact and includes a stream complex and small wetland area surrounded by upland forest. The southernmost portion of the survey boundary is shown to be within the 100-Year floodplain of McMahon Creek.

3.0 RESULTS

3.1 State Listed Threatened or Endangered Species

ODNR provided a corresponding letter response to a request for Ohio Natural Heritage Database GIS records dated July 19, 2016. No GIS records of rare or endangered species are within a one mile radius of the Project. A copy of the letter indicating no Ohio Natural Heritage Database GIS records is included in Attachment A.

AECOM submitted a coordination letters to the ODNR on July 18, 2016, soliciting comments on the Project. AECOM has not received a response regarding the Project from the ODNR to date. Should additional information become available from ODNR, which differs significantly from the above listed species, an addendum report will be provided.

To address the Project's potential to impact state protected species, AECOM conducted a web based literature review of the ODNR State Listed Wildlife Species List, *June 2015*, to identify what species potentially occur in Belmont County, Ohio. Table 1 lists the species identified during the ODNR literature review.

**TABLE 1
STATE LISTED SPECIES THAT COULD INHABIT
BELMONT COUNTY, OHIO**

Common Name	Scientific Name	State Status	General Notes
Mammals			
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Seasonal clearing restrictions
Amphibian-Salamander			
Eastern Hellbender	<i>Cryptobranchus alleganiensis alleganiensis</i>	Endangered	No in-stream work planned
Fish			
Western Banded Killfish	<i>Fundulus diaphanus menona</i>	Endangered	No in-stream work planned
Tippecanoe Darter	<i>Etheostoma Tippecanoe</i>	Threatened	No in-stream work planned
Channel Darter	<i>Percina copelandi</i>	Threatened	No in-stream work planned
River Darter	<i>Percina shumardi</i>	Threatened	No in-stream work planned
Paddlefish	<i>Polyodon spathula</i>	Threatened	No in-stream work planned
Insects			
River Jewelwing	<i>Calopteryx aequabilis</i>	Endangered	
Bivalves			
Butterfly	<i>Ellipsaria lineolata</i>	Endangered	No in-stream work planned
Black Sandshell	<i>Ligumia recta</i>	Threatened	No in-stream work

TABLE 1
STATE LISTED SPECIES THAT COULD INHABIT
BELMONT COUNTY, OHIO

Common Name	Scientific Name	State Status	General Notes
			planned
Threehorn Wartyback	<i>Obliquaria reflexa</i>	Threatened	No in-stream work planned

Indiana bat comments: The Indiana bat, a federally and state endangered species, is a potential inhabitant of Belmont County. Due to no tree clearing needed, this Project is not likely to impact this species.

Eastern hellbender comments: The eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federally listed species of concern, is a potential inhabitant of Belmont County. This aquatic salamander inhabits perennial streams with large flat rocks. Due to the location and that no in-water work is proposed, this Project is not likely to impact this species.

Fish comments: The western banded killfish (*Fundulus diaphanus menona*), Tippecanoe darter (*Etheostoma Tippecanoe*), channel darter (*Percina copelandi*), river darter (*Percina shumardi*), and paddlefish (*Polyodon spathula*) are state listed species and potential inhabitants of Belmont County. Due to the location and that no in-water work is proposed, this Project is not likely to impact this species.

Mussel comments: The butterfly (*Ellipsaria lineolate*), black sandshell (*Ligumia recta*), and threehorn wartyback (*Obliquaria reflexa*) are state listed species and potential inhabitants of Belmont County. Due to the location and that no in-water work is proposed, this Project is not likely to impact this species.

No state species of concern or signs of these species, and no unique habitats were observed during the field survey. Based on the lack of tree clearing and no in-stream work required within the Project area and general lack of habitat, no state species of concern are expected to be impacted by the proposed Project.

3.2 Federal Listed Threatened or Endangered Species

To address the Project's potential to impact federally protected species, AECOM conducted a web based literature review of the USFWS Ohio County Distribution List of *Federally Listed Species by Ohio Counties, November 2015*, to identify what species potentially occur in Belmont County, Ohio. Table 2 lists the two species identified during the USFWS literature review.

TABLE 2
FEDERALLY LISTED SPECIES THAT COULD INHABIT
BELMONT COUNTY, OHIO

Common Name	Scientific Name	Federal Status	General Notes
Mammals			
Indiana bat	<i>Myotis sodalis</i>	Endangered	Seasonal clearing restrictions

**TABLE 2
FEDERALLY LISTED SPECIES THAT COULD INHABIT
BELMONT COUNTY, OHIO**

Common Name	Scientific Name	Federal Status	General Notes
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Seasonal clearing restrictions

Federally Listed Species by Ohio Counties, November, 2015.

Accessed July 28, 2016:

<http://www.fws.gov/midwest/Endangered/lists/pdf/OhioSppListNov2015.pdf>

AECOM submitted a coordination letters to the USFWS on July 18, 2016, soliciting comments on the Project. AECOM has not received a response regarding the Project from USFWS to date. Should additional information become available from USFWS, which differs significantly from the above listed species, an addendum report will be provided.

Indiana Bat: The federal government lists the Indiana bat as endangered in Ohio. Winter Indiana bat hibernacula include caves and mines, while summer habitat typically includes tree species exhibiting exfoliating bark or cavities that can be used for roosting. The 8- to 10-inch diameter size classes of several species of hickory (*Carya* spp.), oak (*Quercus* spp.), ash (*Fraxinus* spp.), birch (*Betula* spp.), and elm (*Ulmus* spp.) have been found to be utilized by the Indiana bat. These tree species and many others may be used when dead, if there are adequately sized patches of loosely-adhering bark or open cavities. The structural configuration of forest stands favored for roosting includes a mixture of loose-barked trees with 60 to 80 percent canopy closure and a low density sub-canopy (less than 30 percent between about 6 feet high and the base canopy). The suitability of roosting habitat for foraging or the proximity to suitable foraging habitat is critical to the evaluation of a particular tree stand. An open subcanopy zone, under a moderately dense canopy, is important to allow maneuvering while catching insect prey. Proximity to water is critical, because insect prey density is greater over or near open water. The Project development area is entirely undeveloped old field and therefore not suitable Indiana bat roosting or foraging habitat. The potential to impact this species appears very low to none.

Northern Long-Eared Bat: The federal government lists this species as Threatened in Ohio. As with the Indiana bat, winter northern long-eared bat hibernacula include caves and mines, while summer habitat typically includes tree species exhibiting exfoliating bark or cavities that can be used for roosting. Northern long-eared bat has also been found, albeit rarely, roosting in structures like barns and sheds. Similar to the Indiana bat, characteristics within the Project area suggest it is not likely to inhabit the proposed work areas.

4.0 SUMMARY

AEP retained AECOM to conduct a rare, threatened, and endangered species literature review for areas located within 1,000 feet of the proposed Project, a field survey within the proposed Project 200-foot survey corridor, and conduct coordination with USFWS, ONHD and ODNR. This report will be used to assist AEP's efforts to avoid impacts to rare, threatened, and endangered species potentially present in the study area during construction activities. The field survey was conducted by AECOM field biologists

on July 21, 2016. No species of concern or signs of these species, and no unique habitats were observed. No species of concern are expected to be impacted by the proposed Project.

5.0 CONCLUSION

Based upon the nature of the Project, review of available current literature, review of federal and state records of threatened and endangered species, and the field survey conducted on July 21, 2016, it is not anticipated that federal or state threatened or endangered species will be impacted by the Project as currently planned. At this time, AECOM understands that no tree clearing or in-water work is necessary for the Project as proposed.

AECOM submitted a coordination letters to the USFWS and ODNR on July 18, 2016, soliciting comments on the Project. AECOM has not received a response regarding the Project from either agency to date. Should additional information become available from USFWS or ODNR, which differs significantly from the above listed species, an addendum report will be provided.

ATTACHMENT A

AGENCY RESPONSES



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife

Raymond W. Petering, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

July 19, 2016

Benjamin Otto
AECOM
525 Vine St.
Cincinnati, OH 45202

Dear Mr. Otto,

After reviewing the Natural Heritage Database, I find the Division of Wildlife has no records of rare or endangered species in the Glencoe Station Expansion project area, including a one mile radius, in Smith and Richland Townships, Belmont County, Ohio. We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests or other protected natural areas within a one mile radius of the project area.

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

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

Sincerely,

A handwritten signature in blue ink that reads "Debbie Woischke".

Debbie Woischke
Ohio Natural Heritage Database Program

APPENDIX C

AREAS OF ECOLOGICAL CONCERN, WETLAND DETERMINATION, AND STREAM ASSESSMENT REPORT

GLENCOE STATION EXPANSION PROJECT, BELMONT COUNTY, OHIO

AREAS OF ECOLOGICAL CONCERN, WETLAND DETERMINATION, AND STREAM ASSESSMENT REPORT

Prepared for:

American Electric Power Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 45230



Prepared by:

AECOM
525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60513121

August 2016

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TABLES (follow text)

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TABLE 1	WETLANDS IDENTIFIED WITHIN THE 15.3-ACRE PROJECT SURVEY AREA
TABLE 2	STREAMS IDENTIFIED WITHIN THE 15.3-ACRE PROJECT SURVEY AREA

FIGURES (follow tables)

Number

FIGURE 1	ECOLOGICAL SURVEY RESULTS
----------	---------------------------

ATTACHMENTS (follow figures)

Number

ATTACHMENT A	WETLAND FORMS Attachment A.1: U.S. Army Corps of Engineers (USACE) Forms Attachment A.2: Ohio Rapid Assessment Method (ORAM) Forms
ATTACHMENT B	STREAM FORMS
ATTACHMENT C	REPRESENTATIVE WETLAND and STREAM PHOTOGRAPHS

1.0 PROJECT DESCRIPTION

This document presents the results of the wetland and stream assessment conducted by AECOM for American Electric Power Ohio Transmission Company's (AEP Ohio Transco) proposed Glencoe Station Expansion Project (Project). AEP Ohio Transco is proposing to expand the existing 0.6-acre Glencoe Station fenced area to approximately 5.6 acres in Smith Township, Belmont County, Ohio.

As part of the Ohio Power Siting Board (OPSB) Letter of Notification (LON) requirements, AEP Ohio Transco is required to describe the investigation concerning the presence or absence of areas of ecological concern as stated in Ohio Administrative Code (OAC) Rule 4906-6-05(B)(10)(f). This rule states:

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

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

AEP Ohio Transco retained AECOM to review areas of ecological concern, as defined above, within the proposed Project vicinity and conduct a field survey of waters of the U.S. within the limits of the proposed station expansion. This report will be used to assist AEP Ohio Transco's efforts to avoid impacts to areas of ecological concern present in the survey area during construction.

2.0 METHODS

2.1 Special Status Ecological Areas

AECOM reviewed maps and Geographical Information System (GIS) data in order to identify national and state forests and parks, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries in the Project vicinity. GIS data sources included the Ohio Department of Natural Resources (ODNR) Ohio Natural Heritage Database and federal land and parks layers available from Environmental Systems Research Institute (ESRI). Property ownership within 1,000 feet of the Project was reviewed to identify parcels that may have special status. AECOM also noted land use during the field reconnaissance conducted on July 21, 2016.

Floodplains were evaluated based on the Federal Emergency Management Agency's (FEMA) Flood Map Viewer (<https://hazards.fema.gov/wps/portal/mapviewer>).

2.2 Wetland Assessment

The purpose of the field survey was to assess whether wetlands and other “waters of the U.S.” exist within the Project survey area. Prior to conducting field surveys, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps and U.S. Geological Survey (USGS) 7.5-minute topographic maps were reviewed as an exercise to identify the occurrence and location of potential wetland areas. NWI wetlands are areas of potential wetland that have been identified from USFWS aerial photograph interpretation which have typically not been field verified. Forested and heavy scrub/shrub wetlands are often not shown on NWI maps as foliage effectively hides the visual signature that indicates the presence of standing water and moist soils from an aerial view. The USFWS website states that the NWI maps are not intended or designed for jurisdictional wetland identification or location.

In July 2016, AECOM ecologists walked the approximately 15.3-acre Project survey area to conduct a wetland delineation and stream assessment. During the field survey, the physical boundaries of observed water features were recorded using sub-decimeter accurate Trimble Global Positioning System (GPS) units. The GPS data was imported into ArcMap GIS software, where the data was then reviewed and edited for accuracy.

The Project survey area was evaluated according to the procedures outlined in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual (1987 Manual) (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Regional Supplement) (2012). The Regional Supplement was released in January 2012 by the USACE to address regional wetland characteristics and improve the accuracy and efficiency of wetland delineation procedures. The 1987 Manual and Regional Supplement define wetlands as areas that have positive evidence of three environmental parameters: hydric soils, wetland hydrology, and hydrophytic vegetation. Wetland boundaries are placed where one or more of these parameters give way to upland characteristics.

Since quantitative data were not available for any of the identified wetlands, AECOM utilized the routine delineation method described in the 1987 Manual and Regional Supplement that consisted of a pedestrian site reconnaissance, including identifying the vegetation communities, soils identification, a geomorphologic assessment of hydrology, and notation of disturbance.

Wetland Classifications: Wetlands were classified based on the naming convention found in Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al, 1979). All identified wetlands within the survey area were classified as freshwater, Palustrine systems, which include non-tidal wetlands dominated by trees, shrubs, emergents, mosses, or lichens. Two Palustrine wetland classes were identified within the Project survey area and are as follows:

- **PEM** – Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.

- **PSS** – Scrub/shrub wetlands are characterized by woody vegetation that is less than three inches diameter at breast height (DBH), and greater than 3.28 feet tall. The woody angiosperms (i.e. small trees or shrubs) in this broad leaved deciduous community have relatively wide, flat leaves that are shed annually during the cold or dry season.

Ohio Rapid Assessment Method v. 5.0: The Ohio Environmental Protection Agency's (OEPA) Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 was developed to determine the relative ecological quality and level of disturbance of a particular wetland in order to meet requirements under Section 401 of the Clean Water Act (CWA). Wetlands are scored on the basis of hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1," 30 to 59.9 are "Category 2," and 60 to 100 are "Category 3." Transitional zones exist between "Categories 1 and 2" from 30 to 34.9 and between "Categories 2 and 3" from 60 to 64.9. However, according to the OEPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower Category (Mack, 2001).

2.3 Stream and River Crossings

Regulatory activities under the Clean Water Act provide authority for states to issue water quality standards and "designated uses" to all waters of the U.S. upstream to the highest reaches of the tributary streams. In addition, the Federal Water Pollution Control Act of 1972 and its 1977 and 1987 amendments require knowledge of the potential fish or biological communities that can be supported in a stream or river, including upstream headwaters. Streams were identified by the presence of a defined bed and bank, and evidence of an ordinary high water mark (OHWM). The USACE defines OHWM as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE, 2005).

Stream assessments were conducted using the methods described in the Ohio EPA's Methods for Assessing Habitat in Flowing Waters: Using Ohio EPA's Qualitative Habitat Evaluation Index (Rankin, 2006) and Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams, Version 3 (Davic, 2012).

OEPA Qualitative Habitat Evaluation Index: The qualitative habitat evaluation index (QHEI) is designed to provide a rapid determination of habitat features that correspond to those physical factors that most affect fish communities and which are generally important to other aquatic life (e.g., macroinvertebrates). The quantitative measure of habitat used to calibrate the QHEI score are Indices (or Index) of Biotic Integrity (IBI) for fish. In most instances the QHEI is sufficient to give an indication of habitat quality, and the intensive quantitative analysis used to measure the IBI is not necessary. It is the IBI, rather than the QHEI, that is directly correlated with the aquatic life use designation for a particular surface water.

The QHEI method is generally considered appropriate for waterbodies with drainage basins greater than one square mile, if natural pools are greater than 40 cm, or if the water feature is shown as blue-line waterways on USGS 7.5-minute topographic quadrangle maps. In order to convey general stream habitat quality to the regulated public, the Ohio EPA has assigned narrative ratings to QHEI scores. The ranges vary slightly for headwater streams (H are those with a watershed area less than or equal to 20 square miles) versus larger streams (L are those with a watershed area greater than 20 square miles). The Narrative Rating System includes: Very Poor (<30 H and L), Poor (30 to 42 H, 30 to 44 L), Fair (43 to 54 H, 45 to 59 L), Good (55 to 69 H, 60 to 74 L) and Excellent (70+ H, 75+ L).

OEPA Primary Headwater Habitat Evaluation Index: Headwater streams are typically considered to be first-order and second-order streams, meaning streams that have no upstream tributaries (or “branches”) and those that have only first-order tributaries, respectively. The stream order concept can be problematic when used to define headwater streams because stream-order designations vary depending upon the accuracy and resolution of the stream delineation. Headwater streams are generally not shown on USGS 7.5-minute topographic quadrangles and are sometimes difficult to distinguish on aerial photographs. Nevertheless, headwater streams are now recognized as useful monitoring units due to their abundance, widespread spatial scale and landscape position (Fritz, et al. 2006). Impacts to headwater streams can have a cascading effect on the downstream water quality and habitat value. The headwater habitat evaluation index (HHEI) is a rapid field assessment method for physical habitat that can be used to appraise the biological potential of most Primary Headwater Habitat (PHWH) streams. The HHEI was developed using many of the same techniques as used for QHEI, but has criteria specifically designed for headwater habitats. To use HHEI, the stream must have a “defined bed and bank, with either continuous or periodically flowing water, with watershed area less than or equal to 1.0 mi² (259 ha), and a maximum depth of water pools equal to or less than 15.75 inches (40 cm)” (Davic, 2012).

Headwater streams are scored on the basis of channel substrate composition, bankfull width, and maximum pool depth. Assessments result in a score (0 to 100) that is converted to a specific PHWH stream class. Streams that are scored from 0 to 29.9 are typically grouped into “Class 1 PHWH Streams”, 30 to 69.9 are “Class 2 PHWH Streams”, and 70 to 100 are “Class 3 PHWH Streams”. Technically, a stream can score relatively high, but actually belong in a lower class, and vice-versa. According to the OEPA, if the stream score falls into a class and the scorer feels that based on site observations that score does not reflect the actual stream class, a decision-making flow chart can be used to determine appropriate PHWH stream class using the HHEI protocol (Davic, 2012). Evidence of anthropogenic alterations to the natural channel will result in a “Modified” qualifier for the stream.

3.0 RESULTS

3.1 Special Status Ecological Areas

AECOM conducted a review of published resources and consulted with agencies to identify national or state forests and parks, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, wildlife sanctuaries and floodplains

crossed by and in the immediate vicinity of the Project. There are no known special status ecological areas within one mile of the Project.

According to the FEMA National Flood Hazard Layer (NFHL) (GIS shapefile), approximately 15 percent of the Project survey area is located within Flood Zone A, an area inundated by a percent annual chance of flooding for which no base flood elevations have been determined. The remaining 85 percent of the Project survey area, including the entire Project station expansion area, is located outside of the 100-year floodplain. No changes in flood elevations are anticipated as a result of the Project.

3.2 Wetland Assessment

National Wetland Inventory Map Review: According to the NWI map of the St. Clairsville, Ohio quadrangle, one mapped NWI wetland is located within the Project survey area. The mapped NWI wetland corresponds with one of the wetlands (Wetland 2) identified during AECOM's field survey. The mapped NWI wetland is classified as R5UBH; Riverine, unknown perennial, unconsolidated bottom, permanently flooded.

Wetland Delineation: Two wetlands, totaling approximately 0.1 acre, were delineated within the approximately 15.3-acre Project survey area as shown in Table 1. Some wetland boundaries extend beyond the Project survey area, but only portions of those wetlands identified within the study area were assessed. Additionally, AECOM commonly splits wetlands where there is an obvious break between Cowardin wetland types. This split results in each wetland section being assessed independently; however, AECOM recognizes that split wetland sections are a component of a larger wetland complex.

The two wetlands identified within the Project survey area are of two different wetland habitat types. Wetland 1 was identified as a PEM/PSS wetland, while Wetland 2 was identified as a PEM wetland.

ORAM scores for Wetland 1 and Wetland 2 are 36 and 30.5, respectively. Both of the assessed wetlands were classified as Category 2 wetlands. No Category 1 or 3 wetlands were identified in the Project survey area.

The location and approximate extents of the wetlands, as delineated within the Project survey area are shown on Figure 1. Completed USACE and ORAM forms are provided in Attachment A. Representative color photographs taken of the wetlands are provided in Attachment C.

3.3 Stream and River Crossings

AECOM identified four streams, totaling 1,419 linear feet, within the approximately 15.3-acre Project survey area as shown in Table 2. One perennial stream totaling 697 linear feet was found within the survey area. Additionally, two intermittent streams totaling 573 linear feet and one ephemeral stream totaling 149 linear feet were also observed.

Qualitative Habitat Evaluation Index:

No streams were assessed using the QHEI methodology for streams with drainage areas greater than one square mile.

Primary Headwater Habitat Evaluation Index:

Four streams, totaling 1,419 linear feet, were assessed using the HHEI methodology for streams with drainage areas less than one square mile. All four streams were assessed as Modified Class 2 streams. No Class 1 or 3 streams were identified within the Project survey area.

The locations of identified streams within the survey area are shown on Figure 1. Completed HHEI forms for each stream are provided in Attachment B. Representative color photographs are provided in Attachment C.

AECOM has preliminarily determined that all assessed streams within the survey area appear to be jurisdictional (i.e., waters of the U.S.), as they all appear to be tributaries that flow into or combine with other streams (waters of the U.S.).

3.4 Ponds

No ponds were identified within the Project survey area.

4.0 SUMMARY

No known special status ecological areas were identified within a mile of the Project. Eighty-five percent of the Project survey area is located outside of the FEMA 100-year floodplain, while the remaining 15 percent is located within Flood Zone A. The substation expansion area is located entirely outside of the FEMA 100-year floodplain. No changes in flood elevation are anticipated as a result of the Project.

Two wetlands, totaling approximately 0.1 acre, were identified within the Project survey area. Both of the identified wetlands were classified as Category 2 wetlands. No Category 1 or Category 3 wetlands were identified during the field surveys. Four streams were identified within the Project survey area, totaling 1,419 linear feet. One of these streams was identified as perennial, two as intermittent, and one as ephemeral.

5.0 CONCLUSION

This report will be used to assist AEP Ohio Transco's efforts to avoid special status ecological areas, wetlands, and streams to the extent possible during construction of the Project, thereby minimizing impacts to these features identified within the Project area. Due to the planned use of timber matting for access roads and work pads while working in wetlands and streams, no permanent impacts are anticipated. Erosion control methods including silt fencing are expected to be used where appropriate to minimize runoff-related impacts to stream channels and wetlands. As a result, significant impacts to waters of the U.S. are not anticipated.

The field survey results presented herein apply to the existing and reasonably foreseeable site conditions at the time of our assessment. They cannot apply to site changes of which AECOM is unaware and has not had the opportunity to review. Changes in the condition of a property may occur with time due to natural processes or human impacts at the project site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may become invalidated, wholly or in part, by changes beyond the control of AECOM.

6.0 REFERENCES

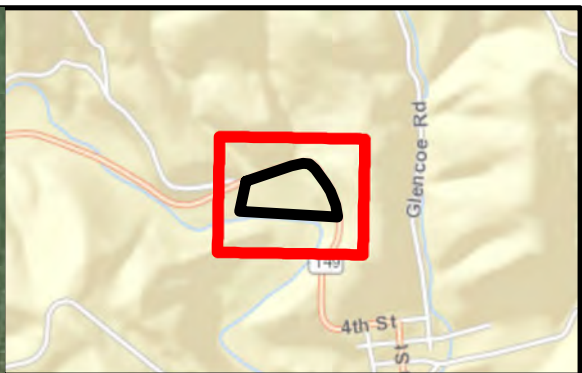
- Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Office of Biological Services, U.S. Fish and Wildlife Service, Washington, D.C.
- Davic, Robert D. 2012. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams. Final Version 3.0. Ohio Environmental Protection Agency, Division of Surface Water, Columbus, Ohio.
- Environmental Laboratory. 1987. U.S. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station: Vicksburg, Mississippi.
- Fritz, K.M., Johnson, B.R., and Walters, D.M. 2006. Field Operations Manual for Assessing the Hydrologic Permanence and Ecological Condition of Headwater Streams. EPA/600/ R-06/126. U.S. Environmental Protection Agency, Office of Research and Development, Washington DC.
- Mack, John J. 2001. Ohio Rapid Assessment Method for Wetlands v. 5.0, User's Manual and Scoring Forms. Ohio EPA Technical Report WET/2001-1. Ohio Environmental Protection Agency, Division of Surface Water, 401/Wetland Ecology Unit, Columbus, Ohio.
- Rankin, Edward T. 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Ecological Assessment Section, Division of Surface Water, Columbus, Ohio.
- U.S. Army Corps of Engineers. 2005. Regulatory Guidance Letter No. 05-05: Guidance on Ordinary High Water Mark Identification.
- U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Fish and Wildlife Service. 2016. National Wetlands Inventory Branch of Resource and Mapping Service. <http://www.fws.gov/wetlands/data/mapper.html>

TABLE 1
WETLANDS IDENTIFIED WITHIN THE PROJECT SURVEY AREA

Report Name	Latitude	Longitude	Cowardin Wetland Type	ORAM Score	ORAM Category	Acreage within Survey Corridor
Wetland 1	40.013547	-80.892716	PEM/PSS	36	2	0.06
Wetland 2	40.014012	-80.893408	PEM	30.5	2	0.03
Total: 2 Wetlands						0.09

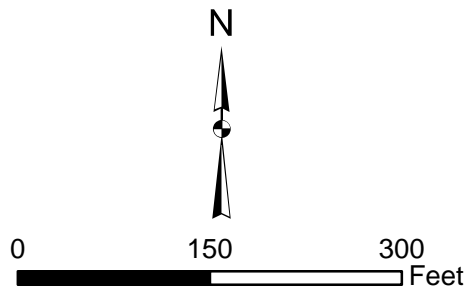
TABLE 2
STREAMS IDENTIFIED WITHIN THE PROJECT SURVEY AREA

Report Name	Latitude	Longitude	Flow Regime	Score	Form	Stream Class	Max Pool Depth (inches)	Bankfull Width (feet)	Length within Survey Corridor (feet)
Stream 1	40.015235	-80.893497	Ephemeral	31	HHEI	Modified Class 2	0	1.5	149
Stream 2	40.014171	-80.892787	Intermittent	35	HHEI	Modified Class 2	1	2	351
Stream 3	40.013704	-80.892282	Intermittent	36	HHEI	Modified Class 2	1	1.5	222
Stream 4	40.014233	-80.893477	Perennial	65	HHEI	Modified Class 2	5	3.5	697
Total: 4 Streams									1,419



LEGEND:

- Existing Station
- Expansion Area
- Ecological Survey Area
- Delineated Ephemeral Stream
- Delineated Intermittent Stream
- Delineated Perennial Stream
- Delineated Wetland
- 100-year Floodplain



Basemap Source: ArcGIS Online:
Bing Maps Hybrid & World Street Map



Glencoe Station
Station Expansion

FIGURE 1
ECOLOGICAL SURVEY RESULTS

ATTACHMENT A

WETLAND FORMS

ATTACHMENT A.1

U.S. ARMY CORPS OF ENGINEERS (USACE) FORMS

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site:	Glencoe Substation	City/County:	Belmont	Sampling Date:	21-Jul-16		
Applicant/Owner:	AEP	State:	OH	Sampling Point:	w-mdt-072116-01		
Investigator(s):	MDT	Section, Township, Range:	S 6 T T6N R R4W				
Landform (hillslope, terrace, etc.):	Bench	Local relief (concave, convex, none):	concave	Slope:	0.0% / 0.0 °		
Subregion (LRR or MLRA):	LRR N	Lat.:	40.013546	Long.:	-80.892716	Datum:	NAD83
Soil Map Unit Name:	LoF	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 ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Remarks: PEM/PSS (90/10) wetland on slope and toe of slope within linear swale. Some garbage dumped in wetland. Wetland continues south.		

Hydrology

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches):	
Water Table Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches):	1
Wetland Hydrology Present?		Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Hydrology comes from small stream coming off hillside and seep at toe of slope.			

VEGETATION (Five/Four Strata)- Use scientific names of plants.Sampling Point: w-mdt-072116-01

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. _____		0	<input type="checkbox"/> 0.0%	
2. _____		0	<input type="checkbox"/> 0.0%	
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
7. _____		0	<input type="checkbox"/> 0.0%	
8. _____		0	<input type="checkbox"/> 0.0%	
		0	= Total Cover	
Sapling-Sapling/Shrub Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <u>Salix nigra</u>		10	<input checked="" type="checkbox"/> 66.7%	OBL
2. <u>Acer nequundo</u>		5	<input checked="" type="checkbox"/> 33.3%	FAC
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
7. _____		0	<input type="checkbox"/> 0.0%	
8. _____		0	<input type="checkbox"/> 0.0%	
9. _____		0	<input type="checkbox"/> 0.0%	
10. _____		0	<input type="checkbox"/> 0.0%	
		15	= Total Cover	
Shrub Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. _____		0	<input type="checkbox"/> 0.0%	
2. _____		0	<input type="checkbox"/> 0.0%	
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
7. _____		0	<input type="checkbox"/> 0.0%	
		0	= Total Cover	
Herb Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <u>Carex lurida</u>		5	<input type="checkbox"/> 4.8%	OBL
2. <u>Leersia oryzoides</u>		5	<input type="checkbox"/> 4.8%	OBL
3. <u>Leersia virginica</u>		10	<input type="checkbox"/> 9.5%	FACW
4. <u>Impatiens capensis</u>		80	<input checked="" type="checkbox"/> 76.2%	FACW
5. _____		0	<input type="checkbox"/> 0.0%	
6. <u>Rosa multiflora</u>		5	<input type="checkbox"/> 4.8%	FACU
7. _____		0	<input type="checkbox"/> 0.0%	
8. _____		0	<input type="checkbox"/> 0.0%	
9. _____		0	<input type="checkbox"/> 0.0%	
10. _____		0	<input type="checkbox"/> 0.0%	
11. _____		0	<input type="checkbox"/> 0.0%	
12. _____		0	<input type="checkbox"/> 0.0%	
		105	= Total Cover	
Woody Vine Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. _____		0	<input type="checkbox"/> 0.0%	
2. _____		0	<input type="checkbox"/> 0.0%	
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
		0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species 20 x **1** = 20

FACW species 90 x **2** = 180

FAC species 5 x **3** = 15

FACU species 5 x **4** = 20

UPL species 0 x **5** = 0

Column Totals: 120 (A) 235 (B)

Prevalence Index = B/A = 1.958

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation

☒ Dominance Test is > 50%

☒ Prevalence Index is ≤ 3.0 ¹

☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation ¹ (Explain)

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

Definition of Vegetation Strata:

Four Vegetation Strata:

Tree stratum – Consists of woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site:	Glencoe Substation	City/County:	Belmont	Sampling Date:	21-Jul-16		
Applicant/Owner:	AEP	State:	OH	Sampling Point:	w-mdt-072116-02		
Investigator(s):	MDT	Section, Township, Range:	S 6 T T6N R R4W				
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	concave	Slope:	0.0% / 0.0 °		
Subregion (LRR or MLRA):	LRR N	Lat.:	-80.893262 40.01390	Long.:	-80.893262	Datum:	NAD83
Soil Map Unit Name:	Cg	NWI classification:	R5UBH				

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Remarks: PEM wetland along perennial stream.		

Hydrology

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches):	
Water Table Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches):	1
Wetland Hydrology Present?		Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: hydrology comes from perennial stream			

VEGETATION (Five/Four Strata)- Use scientific names of plants.Sampling Point: w-mdt-072116-02

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. _____		0	<input type="checkbox"/> 0.0%	
2. _____		0	<input type="checkbox"/> 0.0%	
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
7. _____		0	<input type="checkbox"/> 0.0%	
8. _____		0	<input type="checkbox"/> 0.0%	
		0	= Total Cover	
Sapling-Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Salix nigra</u>		5	<input checked="" type="checkbox"/> 50.0%	OBL
2. <u>Acer nequundo</u>		5	<input checked="" type="checkbox"/> 50.0%	FAC
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
7. _____		0	<input type="checkbox"/> 0.0%	
8. _____		0	<input type="checkbox"/> 0.0%	
9. _____		0	<input type="checkbox"/> 0.0%	
10. _____		0	<input type="checkbox"/> 0.0%	
		10	= Total Cover	
Shrub Stratum (Plot size: _____)				
1. _____		0	<input type="checkbox"/> 0.0%	
2. _____		0	<input type="checkbox"/> 0.0%	
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
7. _____		0	<input type="checkbox"/> 0.0%	
		0	= Total Cover	
Herb Stratum (Plot size: _____)				
1. <u>Phalaris arundinacea</u>		95	<input checked="" type="checkbox"/> 95.0%	FACW
2. <u>Impatiens capensis</u>		5	<input type="checkbox"/> 5.0%	FACW
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
7. _____		0	<input type="checkbox"/> 0.0%	
8. _____		0	<input type="checkbox"/> 0.0%	
9. _____		0	<input type="checkbox"/> 0.0%	
10. _____		0	<input type="checkbox"/> 0.0%	
11. _____		0	<input type="checkbox"/> 0.0%	
12. _____		0	<input type="checkbox"/> 0.0%	
		100	= Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. _____		0	<input type="checkbox"/> 0.0%	
2. _____		0	<input type="checkbox"/> 0.0%	
3. _____		0	<input type="checkbox"/> 0.0%	
4. _____		0	<input type="checkbox"/> 0.0%	
5. _____		0	<input type="checkbox"/> 0.0%	
6. _____		0	<input type="checkbox"/> 0.0%	
		0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species 5 x 1 = 5

FACW species 100 x 2 = 200

FAC species 5 x 3 = 15

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 110 (A) 220 (B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation

☒ Dominance Test is > 50%

☒ Prevalence Index is ≤ 3.0 ¹

☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation ¹ (Explain)

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

Definition of Vegetation Strata:

Four Vegetation Strata:

Tree stratum – Consists of woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

ATTACHMENT A.2

OHIO RAPID ASSESSMENT METHOD (ORAM) FORMS

Wetland 1

Site: AEP Glencoe Substation

Rater(s): M.Thomayer;

Date:

7/21/2016

0 0

max 6 pts

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

Field Id:

w-mdt-07/21/2016-01

0.05 acres
extends slightly beyond survey

13 13

max 14 pts.

subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

14.0 27.0

max 30 pts.

subtotal

Metric 3. Hydrology.

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

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

3c. Maximum water depth. Select one.

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile | <input checked="" type="checkbox"/> filling/grading |
| <input type="checkbox"/> dike | <input type="checkbox"/> road bed/RR track |
| <input type="checkbox"/> weir | <input checked="" type="checkbox"/> dredging |
| <input type="checkbox"/> stormwater input | <input type="checkbox"/> Other: |

7 34

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

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

- ☐ None or none apparent (9)
☐ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

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

34

subtotal this page ORAM v. 5.0 Field Form Quantitative Rating

Wetland 1

Site: AEP Glencoe Substation	Rater(s): M.Thomayer;	Date: 7/21/2016
------------------------------	-----------------------	-----------------

Field Id:

w-mdt-07/21/2016-01

34

subtotal this page

0

34

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 5 Qualitative Rating (-10)

2

36

max 20pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 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

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.

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

Vegetation Community Cover Scale

- | | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's 1 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 2 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 3 vegetation and is of high quality |

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species

Native spp are dominant component of the vegetation, mod 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 to

A predominance of native species, with nonnative spp high 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 |

Category 2

36

GRAND TOTAL(max 100 pts)

Wetland 2

Site: AEP Glencoe Substation

Rater(s): M.Thomayer;

Date:

7/21/2016

Field Id:

w-mdt-07/21/2016-02

0 **0**

max 6 pts

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

 acres**10** **10**

max 14 pts.

subtotal

Metric 2. Upland buffers and surrounding land use.

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

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☒ 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), shrubland, young second growth forest. (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

17.5 **27.5**

max 30 pts.

subtotal

Metric 3. Hydrology.

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

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

3c. Maximum water depth. Select one.

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile | <input type="checkbox"/> filling/grading |
| <input type="checkbox"/> dike | <input checked="" type="checkbox"/> road bed/RR track |
| <input type="checkbox"/> weir | <input checked="" type="checkbox"/> dredging |
| <input type="checkbox"/> stormwater input | <input type="checkbox"/> Other: |

6 **33.5**

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
☐ Recovered (3)
☒ Recovering (2)
☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

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

- ☐ None or none apparent (9)
☐ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

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

33.5

subtotal this page ORAM v. 5.0 Field Form Quantitative Rating

Wetland 2

Site: AEP Glencoe Substation	Rater(s): M.Thomayer;	Date: 7/21/2016
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Field Id:

w-mdt-07/21/2016-02

33.5

subtotal this page

0 33.5

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3 30.5

max 20pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 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

Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

- | | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's 1 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 2 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 3 vegetation and is of high quality |

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod 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 to
A predominance of native species, with nonnative spp high 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 |

Category 2

30.5 GRAND TOTAL(max 100 pts)

ATTACHMENT B

STREAM FORMS



Primary Headwater Habitat Evaluation Form

31

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

SITE NAME/LOCATION **Glencoe Station Expansion**SITE NUMBER **3**

RIVER BASIN

DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft)

LAT.

LONG.

RIVER CODE

RIVER MILE

DATE **07/21/16**SCORER **MDT**COMMENTS **ephemeral flow regime****NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

STREAM CHANNEL

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

MODIFICATIONS:

some artificial substrate from road

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input type="checkbox"/> 10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> BEDROCK [16 pt]	<input type="checkbox"/> 0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/> 20%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/> 45%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="checkbox"/> 10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 15%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **20.00%**

(A)

Substrate Percentage Check

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **21**TOTAL NUMBER OF SUBSTRATE TYPES: **5**

HHEI Metric Points

Substrate Max = 40

26

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

(Inches): **0.00**

Pool Depth Max = 30

0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH

(Feet): **1.50**

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

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

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

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

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

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

STREAM GRADIENT ESTIMATE

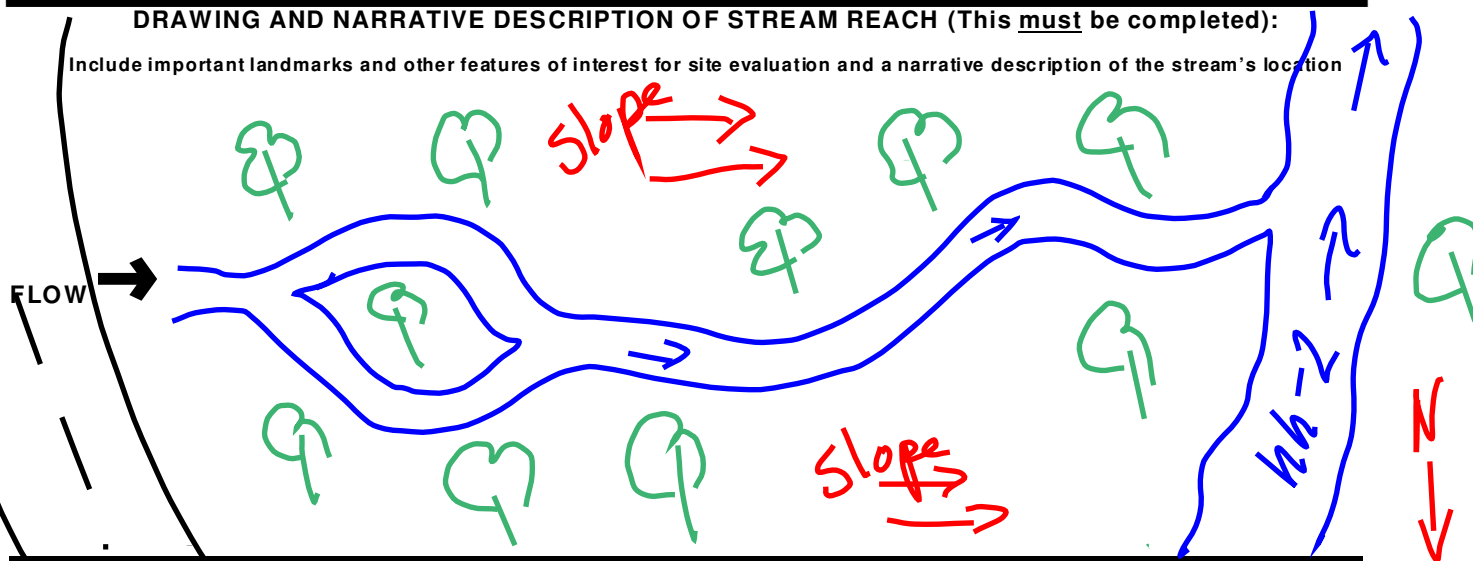
☐ Flat (0.5 ft/100 ft)
 ☐ Flat to Moderate
 ☐ Moderate (2 ft/100 ft)
 ☒ Moderate to Severe
 ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name: <input type="text"/>	Distance from Evaluated Stream <input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream <input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream <input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): ☒ N Canopy (% open): Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ NComments 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 Evaluation Form

35

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

SITE NAME/LOCATION **Glencoe Station Expansion**SITE NUMBER **4**

RIVER BASIN

DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft)

LAT.

LONG.

RIVER CODE

RIVER MILE

DATE **07/21/16**SCORER **MDT**

COMMENTS

intermittent flow high gradient stream**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions****STREAM CHANNEL**☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY**MODIFICATIONS:**

appears to be channelized due to lack of bends and proximity to road

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE
☐
☐
☐
☒
☐
☒
☐

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

TYPE
☐
☐
☐
☐
☐
☐
☐

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock

40.00%

(A)

Substrate Percentage
Check

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES:

4

**HHEI
Metric
Points**Substrate
Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

☐
☐
☐

> 30 centimeters [20 pts]

> 22.5 - 30 cm [30 pts]

> 10 - 22.5 cm [25 pts]

☐
☒
☐

> 5 cm - 10 cm [15 pts]

< 5 cm [5 pts]

NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

(Inches): 1.00

Pool Depth
Max = 30

5

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

☐
☐
☐

> 4.0 meters (> 13') [30 pts]

> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]

> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]

☐
☒
☐

> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]

≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS

AVERAGE BANKFULL WIDTH

(Feet): 2.00

Bankfull
Width
Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

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

RIPARIAN WIDTH
☒ L ☒ R

(Per Bank)

Wide >10m

☐ L ☐ R

Moderate 5-10m

☐ L ☐ R

Narrow <5m

☐ L ☐ R

None

COMMENTS

FLOODPLAIN QUALITY
☐ L ☐ R

(Most Predominant per Bank)

Mature Forest, Wetland

☒ L ☒ R

Immature Forest, Shrub or Old Field

☐ L ☐ R

Residential, Park, New Field

☐ L ☐ R

Fenced Pasture

☐ L ☐ R

Conservation Tillage

☐ L ☐ R

Urban or Industrial

☐ L ☐ R

Open Pasture, Row Crop

☐ L ☐ R

Mining or Construction

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

Stream Flowing

Subsurface flow with isolated pools (Interstitial)

☐

Moist Channel, isolated pools, no flow (Intermittent)

Dry channel, no water (Ephemeral)

COMMENTS intermittent**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):
☐
☒
None
0.5
☐
☐
1.0
1.5
☐
☐
2.0
2.5
☐
☐
3.0
>3**STREAM GRADIENT ESTIMATE**
☐

Flat (0.5 ft/100 ft)

☐

Flat to Moderate

☐

Moderate (2 ft/100 ft)

☐

Moderate to Severe

☒

Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

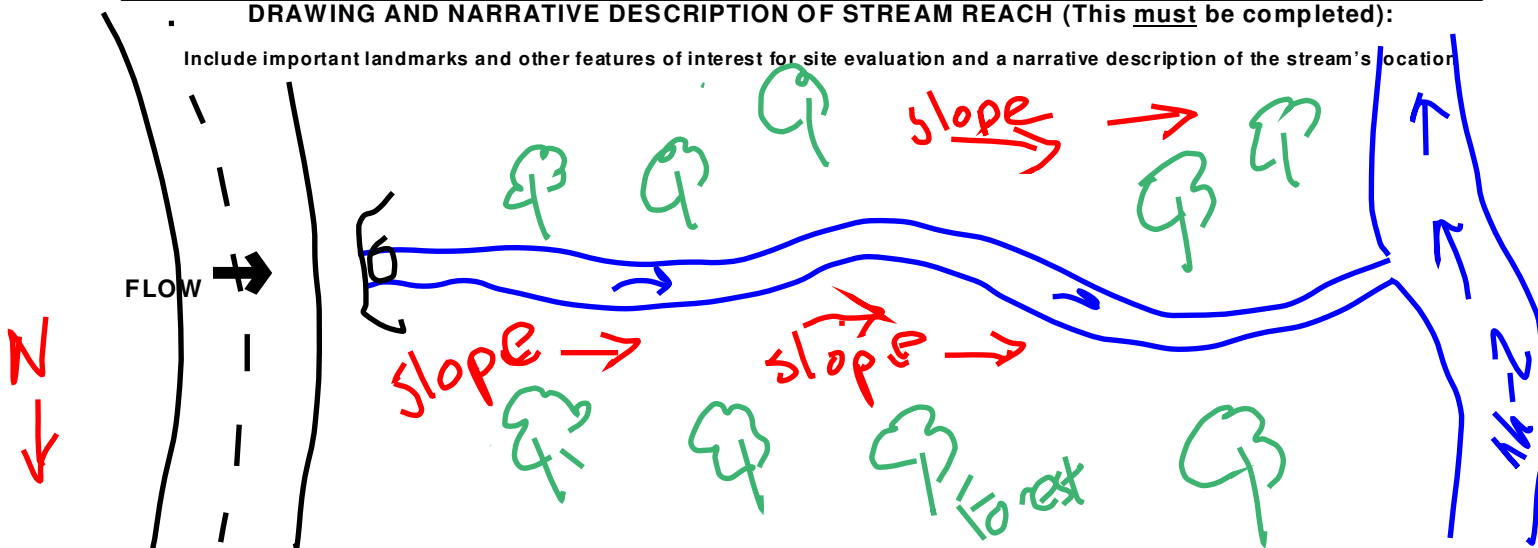
<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): ☒ N Canopy (% open): Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N	Salamanders Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N
Frogs or Tadpoles Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N	Aquatic Macroinvertebrates Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N

Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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





Primary Headwater Habitat Evaluation Form

36

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

SITE NAME/LOCATION **Glencoe Station Expansion**SITE NUMBER **1**

RIVER BASIN

DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft)

LAT.

LONG.

RIVER CODE

RIVER MILE

DATE **07/21/16**SCORER **MDT**

COMMENTS

intermittent flow high gradient stream**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

STREAM CHANNEL

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

MODIFICATIONS:

appears to be channelized due to lack of bends and proximity to road and ROW

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE

☐
☐
☐
☒
☐
☒
☐

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

 0%
 5%
 0%
 60%
 20%
 10%

TYPE

☐
☐
☐
☐
☐
☐
☐

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

 5%
 0%
 0%
 0%
 0%
 0%
Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock

65.00%

(A)

Substrate Percentage
Check

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES:

5

HHEI
Metric
PointsSubstrate
Max = 40

26

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

☐
☐
☐

> 30 centimeters [20 pts]

> 22.5 - 30 cm [30 pts]

> 10 - 22.5 cm [25 pts]

☐
☒
☐

> 5 cm - 10 cm [15 pts]

< 5 cm [5 pts]

NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

(Inches):

1.00

Pool Depth
Max = 30

5

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

☐
☐
☐

> 4.0 meters (> 13') [30 pts]

> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]

> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]

☐
☒
☐

> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]

≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS

AVERAGE BANKFULL WIDTH

(Feet):

1.50

Bankfull
Width
Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

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

RIPARIAN WIDTH

L R

(Per Bank)

☐ ☒

Wide >10m

☐ ☐

Moderate 5-10m

☒ ☐

Narrow <5m

☐ ☐

None

☐ ☐

COMMENTS

FLOODPLAIN QUALITY

L R

(Most Predominant per Bank)

☐ ☐

Mature Forest, Wetland

☒ ☒

Immature Forest, Shrub or Old Field

☐ ☐

Residential, Park, New Field

☐ ☐

Fenced Pasture

L R

☐ ☐

Conservation Tillage

☐ ☐

Urban or Industrial

☐ ☐

Open Pasture, Row Crop

☐ ☐

Mining or Construction

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

Stream Flowing

Subsurface flow with isolated pools (Interstitial)

☐
☐

Moist Channel, isolated pools, no flow (Intermittent)

Dry channel, no water (Ephemeral)

COMMENTS **intermittent**SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):
☐
☒
None
0.5
☐
☐
1.0
1.5
☐
☐
2.0
2.5
☐
☐
3.0
>3

STREAM GRADIENT ESTIMATE

☐

Flat (0.5 ft/100 ft)

☐

Flat to Moderate

☐

Moderate (2 ft/100 ft)

☐

Moderate to Severe

☒

Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

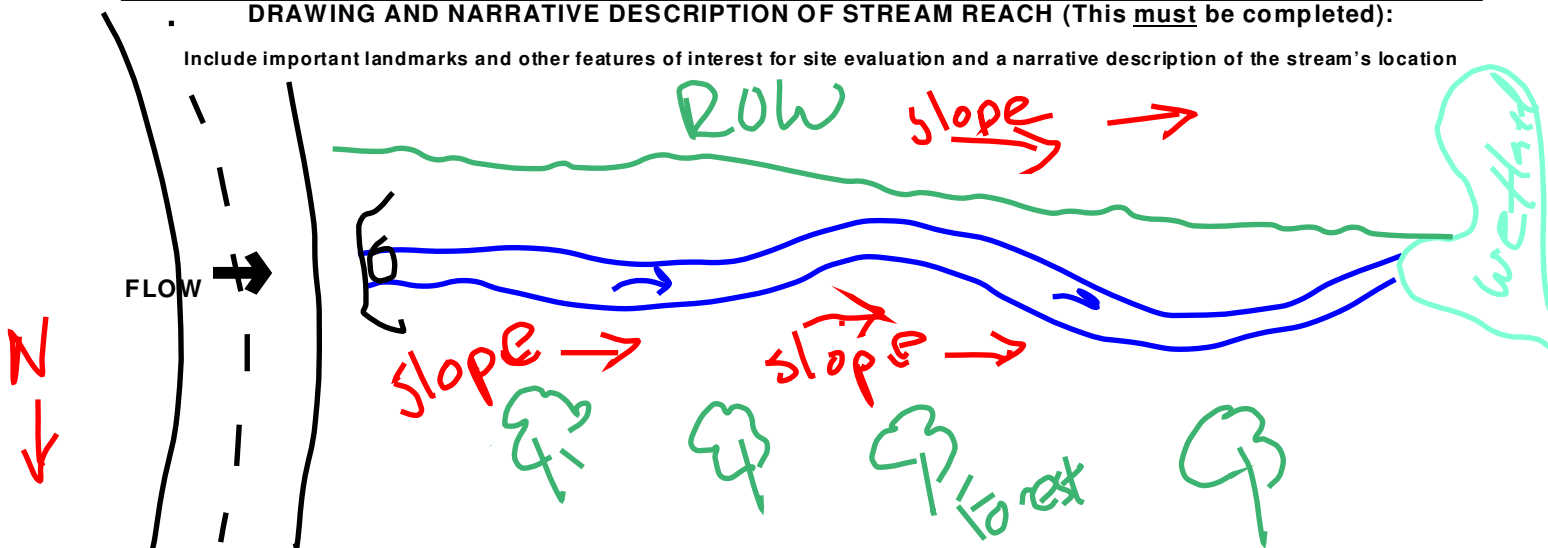
<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): ☒ N Canopy (% open): Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N	Salamanders Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N
Frogs or Tadpoles Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N	Aquatic Macroinvertebrates Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N

Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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





Primary Headwater Habitat Evaluation Form

65

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

SITE NAME/LOCATION **Glencoe Station Expansion**SITE NUMBER **2**

RIVER BASIN

DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft)

LAT.

LONG.

RIVER CODE

RIVER MILE

DATE **07/21/16**SCORER **MDT**COMMENTS **perennial flow regime****NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

STREAM CHANNEL

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

MODIFICATIONS:

appears to be channelized due to lack of bends and presence of spoil piles

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE

☐
☐
☐
☒
☒
☐

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

TYPE

☐
☐
☐
☐
☐
☐

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock

30.00%

(A)

Substrate Percentage
Check

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI
Metric
PointsSubstrate
Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

☐
☐
☒

> 30 centimeters [20 pts]

> 22.5 - 30 cm [30 pts]

> 10 - 22.5 cm [25 pts]

☐
☐
☐

> 5 cm - 10 cm [15 pts]

< 5 cm [5 pts]

NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

(Inches): 5.00

Pool Depth
Max = 30

25

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

☐
☐
☐

> 4.0 meters (> 13') [30 pts]

> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]

> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]

☒
☐
☐

> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]

≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS

AVERAGE BANKFULL WIDTH

(Feet): 3.50

Bankfull
Width
Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

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

RIPARIAN WIDTH

☒ L ☐ R

(Per Bank)

Wide >10m

☐ L ☒ R

Moderate 5-10m

☐ L ☐ R

Narrow <5m

☐ L ☐ R

None

COMMENTS

FLOODPLAIN QUALITY

☒ L ☐ R

(Most Predominant per Bank)

Mature Forest, Wetland

☐ L ☒ R

Immature Forest, Shrub or Old Field

☐ L ☐ R

Residential, Park, New Field

☐ L ☐ R

Fenced Pasture

☐ L ☐ R

Conservation Tillage

☐ L ☐ R

Urban or Industrial

☐ L ☐ R

Open Pasture, Row Crop

☐ L ☐ R

Mining or Construction

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

Stream Flowing

Subsurface flow with isolated pools (Interstitial)

☐

Moist Channel, isolated pools, no flow (Intermittent)

Dry channel, no water (Ephemeral)

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

None

0.5

☐

1.0

1.5

☐

2.0

2.5

☐

3.0

>3

STREAM GRADIENT ESTIMATE

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

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

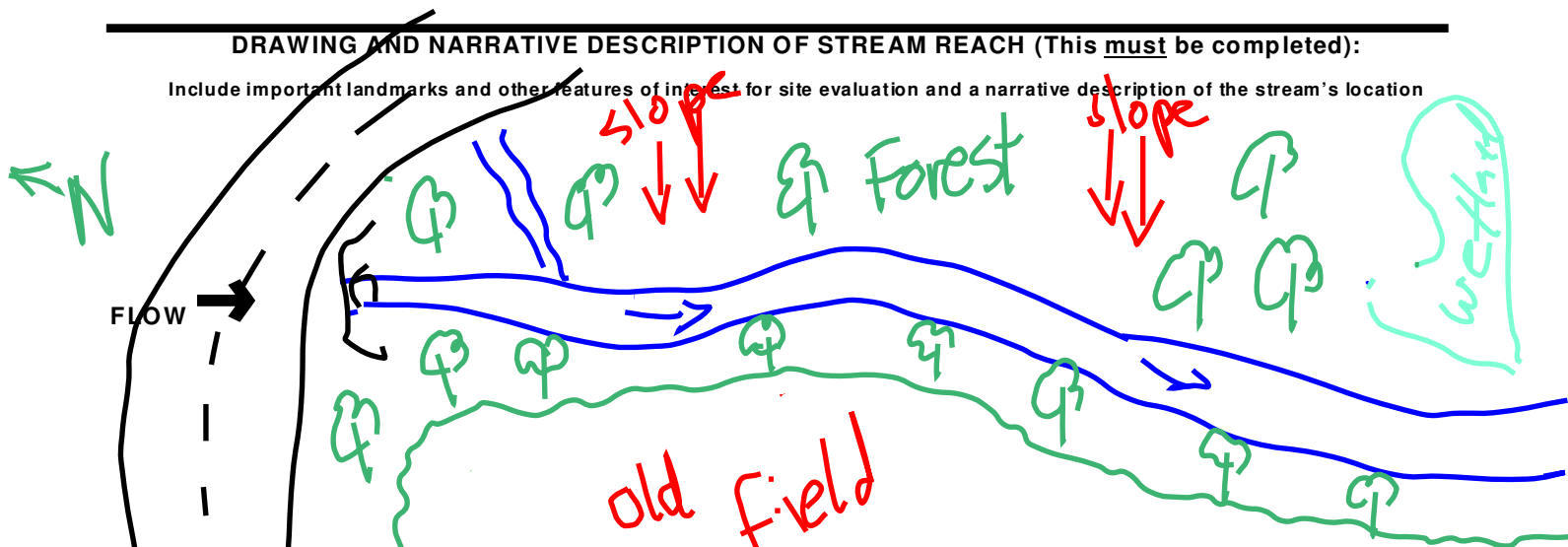
<input type="checkbox"/> WWH Name: <input type="text"/>	Distance from Evaluated Stream <input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream <input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream <input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): ☒ N Canopy (% open): Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N	Salamanders Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N
Frogs or Tadpoles Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N	Aquatic Macroinvertebrates Observed? (Y/N)	<input checked="" type="checkbox"/> N	Voucher? (Y/N)	<input checked="" type="checkbox"/> N

Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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



ATTACHMENT C

REPRESENTATIVE WETLAND AND STREAM PHOTOGRAPHS

Client Name: AEP Ohio Transco	Site Location: Glencoe Station Expansion Project	Project No. 60513121
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Photo No. 1	
Date: July 21, 2016	
Description: Facing south Wetland 2 PEM Wetland Wetland is southeast of the station expansion footprint within riparian of perennial stream (Stream 4).	

Photo No. 2	
Date: July 21, 2016	
Description: Facing downstream Stream 1 Ephemeral High gradient stream on eastern edge of survey area.	

Client Name: AEP Ohio Transco	Site Location: Glencoe Station Expansion Project	Project No. 60513121
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Photo No. 3	
Date: July 21, 2016	
Description: Facing downstream Stream 2 Intermittent Intermittent stream on eastern edge of survey area.	

Photo No. 4	
Date: July 21, 2016	
Description: Facing downstream Stream 4 Perennial Perennial stream running north to south east of the substation expansion area.	

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

9/1/2016 4:01:53 PM

in

Case No(s). 16-1609-EL-BLN

Summary: Letter of Notification - part 2 of 2 electronically filed by Mrs. Erin C Miller on behalf of AEP Ohio Transmission Company