

**AMERICAN TRANSMISSION SYSTEMS,
INCORPORATED
A FIRSTENERGY COMPANY**

LETTER OF NOTIFICATION

**KNOX-NOTTINGHAM 138 kV TRANSMISSION LINE
REBUILD PROJECT
KILGORE (POLO ROAD)-NEW STACY BUC SEGMENT**

OPSB CASE NO.: 22-0285-EL-BLN

April 8, 2022

**American Transmission Systems, Incorporated
76 South Main Street
Akron, Ohio 44308**

**LETTER OF NOTIFICATION
KNOX-NOTTINGHAM 138 kV TRANSMISSION LINE
REBUILD PROJECT - KILGORE (POLO ROAD)-NEW STACY BUC SEGMENT**

The following information is being provided in accordance with Ohio Administrative Code (OAC) Chapter 4906-6 for the application and review of Accelerated Certificate Applications. Based upon the requirements found in Appendix A to OAC Rule 4906-1-01, this Project qualifies for submittal to the Ohio Power Siting Board (“Board”) as a Letter of Notification application.

4906-6-05: ACCELERATED APPLICATION REQUIREMENTS

4906-6-05(B)(1): Name and Reference Number

Name of Project: Knox-Nottingham 138 kV Transmission Line Rebuild Project-- Kilgore (Polo Road)-New Stacy BUC Segment (“Project”).

(Reference Number: 2031-2)

4906-6-05 (B)(1): Brief Description of the Project

In this Project, American Transmission Systems, Incorporated (“ATSI”), a FirstEnergy company, proposes to rebuild and reconductor the approximate 9-mile Kilgore (Polo Road) to New Stacy BUC segment of the approximately 44-mile Knox-Nottingham 138 kV Transmission Line (“Kilgore (Polo Road)-New Stacy BUC Segment” or “Project”).

The Kilgore (Polo Road)-New Stacy BUC Segment extends from existing Structure No. 2788 (new Structure No. 332), the point of interconnection with American Electric Power (“AEP”) in Carroll County, to existing Structure No. 2732B (new Structure No. 276), the point of interconnection with Buckeye Power in Harrison County. The Project will traverse Perry Township in Carroll County and Rumley and Archer Townships in Harrison County, Ohio. The Project will be comprised of the following:

1. The Project will rebuild the existing wood pole H-frame structures, along the existing centerline, by using a combination of steel structures on concrete foundations or direct embed steel structures.
2. The existing conductor, 477 kmil 24/7 ACSR, will be replaced with 795 kmil 26/7 ACSR.

The general location of the Project is shown in Exhibit 1, a partial copy of the United States Geologic Survey, Jewett and Scio Quad Maps. Exhibit 2 is a partial copy of ESRI aerial imagery. A general layout of the project is shown in Exhibit 3.

In April 2021, representatives of ATSI met with technical and legal Staff of the Ohio Power Siting Board (“OPSB Staff”) to discuss ATSI’s 64-mile Holloway-Knox Project, which is divided into two sections: the 44-mile Knox-Nottingham and the 20-mile Holloway-Nottingham #1 and #2. The two sections are in turn divided into the multiple segments. As noted below in section 4906-6-05(B)(2), there were several logistical aspects of the rebuild project that contributed to a joint decision between ATSI and OPSB Staff that the Project would be framed in accordance with each segment. Due to restrictions on construction, outage schedules, and the need to minimize service disruptions, the improvements required to fix deteriorating facility conditions cannot be completed in a single project and must be broken into segments. As such, there will be four segments in addition to this Project, as follows:

- Knox to Washington Segment (Approved and certificated by the OPSB in Case No. 21-0667-EL-BLN)
- Washington to Kilgore (Polo Road) Segment
- New Stacy BUC to Nottingham Segment
- Holloway-Nottingham #1 and #2 Segment

4906-6-05 (B)(1): Letter of Notification Requirement

The Project meets the requirements for a Letter of Notification because the Project is within the types of projects defined by Item (2)(b) of the Application Requirement Matrix

for Electric Power Transmission Lines, Appendix A of OAC Rule 4906-1-01. This item states:

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

(b) More than two miles.

The proposed Project is within the requirements of Item (2)(b) as it involves replacing structures and conductor for a distance greater than two miles.

4906-6-05 (B)(2): Need for the Project

ATSI needs to rebuild all 64 miles of the Holloway to Knox 138 kV Transmission Line in light of deteriorating facility conditions and the growing amount of maintenance required to maintain the line as-is. The primary benefit of the Project is to enhance system reliability through protection from unplanned outages, and to augment ATSI's operating flexibility as well as system resiliency by replacing deteriorating wood poles and by updating the existing conductor and shield wires. In turn, replacement of these facilities supports future load growth in the area for new and existing customers. Routine line inspections have shown an ever-increasing number of active conditions that require repair, leading to an overall worsened line condition. The most recent transmission line inspection conducted by a third-party contractor in April 2020, found that 39 of 57 structures (approximately 68%) of the Kilgore (Polo Road) – New Stacy BUC Segment were defective and were rejected. Table 1 summarizes the results of that inspection.¹

¹ Similar structural problems are present along the entire Holloway-Knox 138 kV Transmission Line. However, the improvements required to fix these deteriorating facility conditions cannot be completed in a single project and must be broken into segments, designed to accommodate construction sequencing, outage schedules, and the need to minimize service disruptions.

Table 1– Pole Inspection Summary

Defect Type	Defect Count
Woodpecker Holes	29
Repaired Woodpecker Holes	8
Decay	1
Failed Sound Test	1

Wood poles are considered rejected when defects render a pole unsafe, unreliable, or non-compliant with current code, including the rejection of wood poles when the pole strength has been reduced to 2/3rd of the original design strength. This is in line with the National Electrical Safety Code (“NESC”) Table 261-1, note 2, which states: “wood and reinforced structures shall be replaced or rehabilitated when deterioration reduces the structure strength to 2/3 of that required when installed...”

The primary reasons for structure rejection on this Project is damage caused by woodpeckers, which is a major concern for all wood poles. The damage results in varying amounts of structural degradation depending where on the structure the damage takes place. The standard maintenance procedures include filling the holes and wrapping the pole in a metal mesh to prevent further damage; however, woodpeckers typically return to either a different location on the same pole or go to a different pole and the problem continues. If woodpecker damage occurs near a critical point on the structure such as the x-brace or crossarm attachment points, the pole must be replaced. Ultimately, woodpeckers may return to cause the same type of damage. The proposed upgrade to steel structures eliminates this maintenance problem.

As part of this Project, ATSI proposes to upgrade the conductor to its standard of 795 kcmil 26/7 ACSR, which will allow for future load growth and generator connections, if any occur, while adding sufficient margins to the transmission system. The new proposed

conductors meet FirstEnergy's current standard. Upgrading to the current standard will improve reliability and performance.

Lastly, the shield wires will be replaced with one 7#8 Alumoweld shield wire and OPGW in the second position. Since 2016, it has been a FirstEnergy practice to include OPGW in one of the static wire positions for any transmission line rebuild project. This enables the modernization of grid protection and control communication between substations.

The need for the entire Holloway-Knox project was first presented at the August 31, 2018 Subregional Regional Transmission Expansion Plan (SRRTEP) Committee Western meeting. A month later, on September 28, 2018, the proposed solution was presented and was assigned PJM supplemental RTEP number s1718. Since that time, the scope of the overall project changed and was re-presented at the September 11, 2020 SRRTEP Committee Western meeting and assigned RTEP number s2389. The PJM SSRTEP-Western presentation slide from the 2020 meeting is included as Exhibit 4 and provides additional details of the project drivers.

4906-6-05 (B)(3): Location of the Project Relative to Existing or Proposed Lines

The location of the Project relative to existing or proposed lines is shown in the ATSI Transmission Network Map, included as part of the confidential portion of the FirstEnergy Corp. 2021 Long-Term Forecast Report. This map was submitted to the PUCO in Case No. 21-0504-EL-FOR under Rule 4901:5-5:04 (C)(2)(b) of the Ohio Administrative Code. The map is incorporated by reference only. This map shows ATSI's 345 kV and 138 kV transmission lines and transmission substations including the Knox-Nottingham 138 kV Transmission Line. The Project is included on page 39 of the Long-Term Forecast Report and is a part of the larger Holloway-Nottingham-Knox 138 kV Line Rebuild Project. The general location and layout of the project area is shown in Exhibits 1 and 2.

4906-6-05 (B)(4): Alternatives Considered

Due to the physical condition of the existing transmission line and nature of the Project, there were only two alternatives considered; replace only the identified failed structures or full rebuild.

Alternative 1:

Replace 39 failed wood H-frame structures with wood H-frame structures and re-use the existing conductor and shield wire. Includes construction of approximately 6.39 miles of access roads and restoration after replacement.

Alternative 2

Rebuild 9.0 miles of the transmission line consisting of replacing all existing wood pole structures with steel monopoles, replacing conductor with 795 kcmil 26/7 ACSR and replacing the shield wire with 7/8# Alumoweld shield wire and OPGW. Includes construction of approximately 6.82 miles of access roads and restoration after project completion.

Several factors were considered by ATSI in opting to rebuild the entire line rather than continuing to maintain the deteriorating facilities. These factors include:

Existing Wood Pole Condition

As described in Section 4906-6-05 (B)(2), approximately 68% of the wood poles have physical damage and/or signs of deterioration. This percentage will only increase over time, resulting in multiple returns, increased impact and greater costs. Replacing all the poles with steel eliminates damage caused by woodpeckers, reduces maintenance and extends the life of the facilities.

Conductor Replacement and Upgrade

ATSI proposes to replace and upgrade the conductor to its current standard of 795 kcmil 26/7 ACSR as part of the proposed Project. As stated above, this would not be completed under the Alternative 1 scenario. Not only does it upgrade the conductor to current standards, it increases the line rating to 275 MVA (Summer Normal). The upgrade will

improve reliability and performance as well as support future load growth in the area. Lastly, by replacing the conductor as part of this Project, it eliminates the need for a complete reconductor project in the coming years as the conductor is aging along with the rest of the facilities.

Communications

Although outside the scope of this application, this Project will also facilitate ATSI's replacing the existing shield wire with one 7#8 Alumoweld shield wire and one Optical Ground Wire ("OPGW"). With the addition of OPGW in the proposed Project, ATSI is able to modernize grid protection and control communications between substations. Since the installation method is identical to traditional shield wire, the cost per mile of adding OPGW is negligible compared to the return on the investment from a reliability and communication perspective. If pole replacement is done under a maintenance approach, OPGW would not be installed, and a separate alternative fiber route may be required to meet communication enhancement needs.

Land Use and Sensitive Areas

As referenced in Section 4906-6-05 (B)(10), the land use in the area of the Project is primarily rural residential, agricultural, and mining. Disruption to landowners and/or operators are minimized in the proposed Project as opposed to the multiple number of access times that would be necessary under the maintenance alternative. In cases where crops are planted, multiple access increases the potential for crop damage and payment for the loss.

The United States Fish and Wildlife Service ("USFWS") and the Ohio Department of Natural Resources ("ODNR") identified the state and federally listed species that may potentially be affected by the Project. Seasonal restrictions along with avoidance and minimization measures were identified to reduce impacts to these species.

Overall, land use impacts, including but not limited to crop and other environmental features, increase with multiple mobilizations as compared to a single construction project as proposed. These impacts along with the installation of barriers or matting and

adhering to seasonal restrictions lead to increase costs and complicate construction sequencing and outage coordination.

Safe and Reliable Service

ATSI has a duty to provide safe and reliable service to its customers and the condition of the Kilgore (Polo Road) – New Stacy BUC Segment presents a significant risk to ATSI's ability to meet this obligation. The Knox-Nottingham 138 kV Transmission Line serves multiple delivery points, including Buckeye Power's New Stacy Substation and AEP's Kilgore (Polo Road) Substation. Should the Knox-Nottingham Transmission 138 kV Line fail, customers served from the New Stacy and Kilgore (Polo Road) Substations would be out of service.

The best approach is to completely rebuild the Kilgore (Polo Road) – New Stacy BUC Segment of the Knox-Nottingham 138 kV Transmission Line. ATSI believes that the rebuild project is the most cost effective, least impactful, and effective approach to ensure its ability to continue to provide safe and reliable service to its customers.

4906-6-05 (B)(5): Public Information Program

ATSI's manager of External Affairs will advise local officials of features and the status of the proposed Project as necessary. ATSI will maintain a copy of this Letter of Notification, along with other Project information, on FirstEnergy's website:

https://www.firstenergycorp.com/about/transmission_projects/ohio.html.

ATSI will publish notice of the Project in the Carroll County Messenger and the Harrison News Herald within 7 days of filing this Letter of Notification application. The notice will comply with OAC 4906-6-08(A)(1)-(6). In addition to the public notice, ATSI will mail letters in accordance with OAC 4906-6-08(B) explaining the Project to affected landowners and tenants and informing them of the Project's anticipated construction and restoration activities sequencing, including the start date and overall time frame.

During all phases of this Project, the public may contact ATSI through the transmission projects hotline at 1-888-311-4737 or via email at:
transmissionprojects@firstenergycorp.com.

4906-6-05 (B)(6): Construction Schedule

The construction schedule for this Project is expected to begin as early as September 2022 and is proposed to be completed/in-service by April 2023.

4906-6-05 (B)(7): Area Map

Exhibit 1 depicts the general location of the Project on a partial copy of the United States Geological Survey, Jewett and Scio Quad Maps. Exhibit 2 provides a partial copy of Bing aerial imagery of the Project area.

4906-6-05 (B)(8): Property Owner List

The Project is located on existing right-of-way. New temporary access rights may be required as part of the Project. Exhibit 5 contains a list of properties affected by the Project, specifying whether ATSI either has obtained or has not yet acquired the necessary easement/right-of-way/land rights.

4906-6-05 (B)(9): TECHNICAL FEATURES OF THE PROJECT

4906-6-05 (B)(9)(a): Operating Characteristics

The transmission line construction will have the following characteristics:

Voltage:	138 kV
Conductors:	795 kcmil 26/7 ACSR
Static Wire:	OPGW and 7#8 Alumoweld
Insulators:	Polymer and/or Porcelain
ROW Width:	150 feet (100-foot cleared corridor)
Land Requirements:	Access Rights
Structure Types:	Exhibit 6: 138 kV Single Circuit Steel Pole, Suspension (approximately 37 Structures)

Exhibit 7: 138 kV Single Circuit Steel Pole, Deadend (approximately 7 Structures)

Exhibit 8: 138 kV Single Circuit Steel Pole, Strain (approximately 5 Structures)

Exhibit 9: 138 kV Single Circuit Steel Pole, Angle (approximately 4 Structures)

Exhibit 10: 138 kV Single Circuit Steel Pole, Switch (approximately 2 Structures)

Exhibit 11: 138 kV Single Circuit Steel Pole, Tap (approximately 2 Structures)

4906-6-05 (B)(9)(b): Electric and Magnetic Fields

As there are occupied residences or institutions within 100 feet from the existing transmission line centerline, Electric and Magnetic Field (“EMF”) calculations are required by this code provision.

4906-6-05 (B)(9)(b)(i): Calculated Electric and Magnetic Fields Strength Levels

The Project is a 9.0 mile single circuit transmission line located on a 150-foot right-of-way that does not share the right-of-way with any other transmission lines.

Table 2 itemizes the line loading of the Project. The normal line loading represents FirstEnergy’s peak system load for the transmission lines. The emergency line loading represents the maximum line loading under contingency operation. The winter rating is based on the continuous maximum conductor rating (“MCR”) of the circuit for the single conductors per phase and an ambient temperature of zero degrees centigrade (32 °F), wind speed of 1.3 miles per hour, and a circuit design operating temperature of 100 °C (212 °F).

Table 2: Transmission Line Loading

Line Name	Normal Loading Amps	Emergency Loading Amps	Winter Rating Amps
Kilgore (Polo Road) – New Stacy BUC Segment of the Knox-Nottingham 138 kV Transmission Line	291	355	1320

Table 3 provides an approximation of the magnetic and electric fields strengths of the Project. The calculations provide an approximation of the electric and magnetic fields levels based on specific assumptions utilizing the EPRI EMF Workstation 2015 program software. This program software assumes the input transmission line configuration is located on flat terrain. Also, a balanced, three-phase circuit loading is assumed for the transmission circuit. The model utilizes the normal, emergency, and winter rating of the transmission line.

Table 3: EMF Calculations for Knox-Washington 138 kV Transmission Line

Kilgore (Polo Road) – New Stacy BUC Segment, 150-foot ROW		Electric Field kV/m	Magnetic Field mG
Normal Loading	Under Lowest Conductors	1.059	33.41
	At Right-of-Way Edges	0.188 / 0.235	6.54 / 7.25
Emergency Loading	Under Lowest Conductors	1.059	40.27
	At Right-of-Way Edges	0.188 / 0.235	8.39 / 9.1
Winter Rating	Under Lowest Conductors	1.059	149.73
	At Right-of-Way Edges	0.188 / 0.235	31.21 / 32.1

4906-6-05 (B)(9)(b)(ii): Alternative Design Consideration for Electric and Magnetic Fields

The strength of EMFs can potentially be reduced by installing the transmission line conductors in a compact configuration by selecting conductor phasing that reduces the field strengths. ATSI designs its facilities according to the requirements of the NESC.

The pole heights and configuration were chosen based on NESC specifications, engineering parameters, and cost. ATSI's typical practice, as proposed in this the new construction portions of this Project, is to install 138 kV transmission lines primarily on single circuit steel pole tangent structures supported on suspension insulators – this is a compact design that reduces EMF field strengths in comparison to other installations.

4906-6-05 (B)(9)(c): Estimated Cost

The estimated capital cost for the proposed Project is approximately \$21,457,000.

4906-6-05 (B)(10): SOCIAL AND ECOLOGICAL IMPACTS

4906-6-05 (B)(10)(a): Land Uses

The Project is located in Perry Township, Carroll County, and Rumley and Archer Townships, Harrison County, Ohio. The main land use around the Project is rural residential, agricultural, and mining land.

4906-6-05 (B)(10)(b): Agricultural Land

A list of all agricultural land and acreage including agricultural district land is provided in Exhibit 5.

4906-6-05 (B)(10)(c): Archaeological or Cultural Resources

On behalf of ATSI, Jacobs Engineering Group, Inc. (“Jacobs”) submitted a Section 106 Review (“Review”) for the entire Holloway-Knox 138kV Transmission Line in August 2020. The Review examined the records available through the Ohio Historic Preservation Office’s (“OHPO”) online mapping database within 1 mile of the transmission line. As currently designed, all the preliminary off ROW access roads are within the 1-mile study area. The results of the search are shown in Exhibit 12. The results are summarized below.

A review of the records available through the OHPO online mapping system identified 10 OHI-listed resources, 5 cemeteries, and 24 OAI-listed archaeological sites have been

inventoried within one mile of the Project area. Additionally, 9 previous archaeological investigations have been documented within one mile of the Project. There are no National Register of Historic Places (NRHP) resources within one mile of the Project. No OAI-listed archaeological sites are within the Project ROW. In addition, no cemeteries are in the Project ROW.

Four previous archaeological surveys intersect the Project ROW. All four previous archaeological investigations intersecting the Project ROW are associated with pipeline construction projects.

Based upon this review, the Project will not impact historic properties. Since the Project will rebuild an existing line, no increases to the line's visibility are anticipated. The results of the review are shown in Exhibit 13. Consequently, Jacobs recommends that no further archaeological investigations are necessary.

4906-6-05 (B)(10)(d): Local, State and Federal Government Requirements

Table 4 shows the list of government agency requirements and the application status at the time of filing.

Table 4. List of Government Agency Requirements to be Secured Prior to Construction

Agency	Permit Requirement	Status
Ohio Environmental Protection Agency (OEPA)	General NPDES Construction Storm Water Permit OHC000005	To be filed
Carroll and Harrison County Soil and Water Conservation District	Storm Water Pollution Prevention Plan (SWP3) – Review Application	To be filed
Carroll and Harrison Counties	Floodplain Development Review	To be filed
Ohio Department of Transportation; Carroll and Harrison County; Perry, Rumley, and Archer Townships	Driveway Entrance Permits (MR 505, Driveway Permit for Construction within the County Right-of-Way Limits)	To be filed
Ohio Department of Transportation; Carroll and	Roadway Occupancy Permits and Reviews (MR 505, Use of County	To be filed

Harrison County; Perry, Rumley, North, and Archer Townships	Right of Way Permit, Permit for User of County Highway ROW)	
Carroll and Harrison County; Perry, Rumley, North, and Archer Townships	Special Hauling Permit and Road Use Maintenance Agreement (RUMA)	To be filed
Columbus & Ohio River Railroad	Railroad Crossings Permits	To be filed

4906-6-05 (B)(10)(e): Endangered, Threatened, and Rare Species Investigation

Jacobs, on behalf of ATSI, submitted a request to the ODNR to conduct an Environmental Review of the entire Holloway-Knox 138kV Transmission Line. As part of the Environmental Review, the ODNR conducted a search of the ODNR Division of Wildlife's Natural Heritage Database to research the presence of any endangered, threatened, or rare species within one (1) mile of the Project area. The ODNR's response on June 1, 2020 stated that the Natural Heritage Database had two (2) state endangered species, two (2) state threatened species, one (1) state species of concern, and a mussel bed, within a one (1) mile radius of the Project area. The Division of Wildlife found that within range of the Project area, there is one (1) state and federally endangered species, one (1) state endangered and federal species of concern, three (3) state endangered species, and four (4) state threatened species. A copy of ODNR's response is included as Exhibit 14.

Jacobs also submitted a request to the USFWS for an Ecological Review on March 31, 2020 to research the presence of any endangered, threatened, or rare species within one (1) mile of the entire Holloway-Knox 138kV Transmission Line. A copy of USFWS's Ecological Review response is included as Exhibit 15. The USFW's response on April 13, 2020 indicated the federal and state endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*) are within the range of the Project. A list of all endangered, threatened, and rare species, as identified by ODNR and USFWS, is provided in Table 5.

Table 5. List of Endangered, Threatened, and Rare Species

Common Name	Scientific Name	Federal Listed Status	State Listed Status	Affected Habitat
Mammals				
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	Trees and forests
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Threatened	Trees and forests
Birds				
American bittern	<i>Botaurus lentiginosus</i>	NA	Endangered	Bogs, meadows, and swamps
Least bittern	<i>Ixobrychus exilis</i>	NA	Threatened	Dense emergent marshlands or wetlands
Upland sandpiper	<i>Bartramia longicauda</i>	NA	Endangered	Grasslands
Northern harrier	<i>Circus cyaneus</i>	NA	Endangered	Marshes and grasslands
Sharp-shinned hawk	<i>Accipiter striatus</i>	NA	Species of Concern	Forests and agricultural
Barn owl	<i>Tyto alba</i>	NA	Threatened	Forests and agricultural
Amphibians				
Eastern hellbender	<i>Cryptobranchus alleganiensis</i>	Species of Concern	Endangered	Streams
Mussels				
Threehorn wartyback	<i>Obliquaria reflexa</i>	NA	Threatened	Rivers
Fish				
Tippecanoe darter	<i>Etheostoma tippecanoe</i>	NA	Threatened	Rivers and streams
Channel darter	<i>Percina copelandi</i>	NA	Threatened	Lakes and rivers
Plants				
Drummond's aster	<i>Symphyotrichum drummondii</i>	NA	Threatened	Forest openings

The response from ODNR and USFWS indicated that the Project is within range of the federal and state endangered Indiana bat and the federal and state threatened Northern long-eared bat. Within the Project disturbance area, tree clearing will be conducted between October 1st and March 31st to avoid impacts to these species. Therefore, no adverse effects to these species are anticipated.

The response from ODNR indicated the Project is within the range of numerous aquatic species as referenced in Table 5. No impact to these species is expected because no in-stream work is proposed.

The response from ODNR indicated the Project is within range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Impacts to dry grasslands, including native grasslands, seeded grasslands, hayfields, and grazed and un-grazed pastures, should be avoided during the nesting period of April 15th to July 31st.

The response from ODNR indicated the Project is within range of the northern harrier (*Circus cyaneus*), a state endangered bird. Impacts to large marshes and grasslands should be avoided during the nesting period of May 15th to August 1st.

The response from ODNR indicated the Project is within range of the American bittern (*Botaurus lentiginosus*), a state endangered bird. Impacts to bogs and large wet meadows should be avoided during the nesting period of May 1st to July 31st.

The response from ODNR indicated the Project is within range of the Least bittern (*Ixobrychus exilis*), a state threatened bird. Impacts to inland marshes and dense emergent wetlands should be avoided during the nesting period of May 1st to July 31st.

The response from ODNR Ohio Natural Heritage Database indicated the Sharp-shinned hawk (*Accipiter striatus*), a state species of concern bird, and the barn owl (*Tyto alba*), a state threatened bird, have been observed within one-mile of the project area. No sightings or nests of these species were observed during the environmental surveys of the Project.

The response from ODNR Ohio Natural Heritage Database indicated the Drummond's aster (*Symphyotrichum drummondii*), a state threatened plant, has a recorded observation

in a wooded area located 0.5-mile to the east of this section of line in Harrison County. No general observations of this species were recorded during the environmental surveys of the Project.

Jacobs is presently mapping the various habitats within the Project's disturbance area to identify any areas of concern relating to the above-listed species. Coordination with ODNR will continue to evaluate appropriate avoidance and minimization measures, including by not limited to sequencing construction activities to address seasonal restrictions to reduce potential impact.

4906-6-05 (B)(10)(f): Areas of Ecological Concern

As part of the investigation, the ODNR and the USFWS provided responses regarding the presence of unique ecological sites, geological features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forest, national wildlife refuges, or other protected natural areas within one (1) mile of the project area. A copy of ODNR's response is included as Exhibit 14. The USFW's response on April 13, 2020 indicated that there are no federal wilderness areas, wildlife refuges, or designated critical habitat within the vicinity of the Project area. A copy of USFWS's Ecological Review response is included as Exhibit 15.

Jacobs conducted a wetland and stream delineation of the Project. Jacobs' assessment focused on the approximately 9-miles of existing 100-foot cleared corridor that starts in Carroll County, near the intersection of Pomona Road and Amsterdam Road SE, and extends south to Harrison County, near the intersection of Keyser Road and Lower Clearfork Road, as shown on the Overview Maps (Exhibits 1 and 2).

Jacobs conducted the environmental survey of the Project May through October 2018. A total of 25 wetlands, 34 streams, and two ponds were delineated within the Project environmental survey corridor (ESC) and are depicted on Figures 3-A to 3-AH of Exhibit 16,, a copy of the wetland and waterbody delineation report . The 25 wetlands totaling 2.19 acres within the ESC were all categorized as PEM. Of the 25 wetlands, 18 wetlands were identified as Category 1 wetlands and seven wetlands were identified as Category 2 wetlands. No Category 3 wetlands were identified within the ESC. Categories were based

on the Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method (ORAM) scores, which were scored on a variety of factors such as size, surrounding land use, disturbance, invasive species, and vegetation growth. The 34 streams, totaling 6,198 linear feet within the ESC, included 17 ephemeral streams, 13 intermittent streams, and four perennial streams. Three streams were assessed using the OEPA's Qualitative Habitat Evaluation Index (QHEI) methodology and 31 streams were assessed using the OEPA's Headwater Habitat Evaluation Index (HHEI) methodology. Additionally, two ponds were identified within the ESC that total 0.07 acres.

All streams will be crossed above the ordinary high-water mark to avoid impacts and no in-stream work is proposed for the Project. Additionally, ATSI will utilize best management practices to avoid any indirect impact to streams and wetlands through its use of erosion and sediment controls. Streams will either be avoided or bridged (no work below the ordinary high-water mark), and wetlands will be traversed using low ground pressure equipment and/or matting. Jacobs has made preliminary determinations concerning the likely jurisdiction of all assessed features; however, the United States Army Corps of Engineers ("USACE") will make the final determination. Further coordination with the USACE will occur, if necessary, prior to the submittal of any permit or commencing construction activities.

The results of the environmental resource survey described in this report conducted by Jacobs are limited to what was identified within the ESC and depicted in Figures 3-A to 3-AH of Exhibit 16. The information contained in this wetland and waterbody delineation summary is for a study area that may be larger than the actual Project limits-of-disturbance for construction; therefore, lengths and acreages listed above may likely not constitute the actual impacts of the Project at the time of construction. If permits are necessary, actual impacted lengths and/or acreages will be submitted in subsequent permit applications.

Additionally, a review of the online FEMA Flood Insurance Rate Mapping was performed. FEMA floodplain mapping can be found within the wetland and waterbody delineation report in Exhibit 16. Consultation with Carroll and Harrison counties is required for floodplain development review.

4906-6-05(B)(10)(g): Other Information

Construction and operation of the proposed Project will be in accordance with the requirements specified in the latest revision of the NESC as adopted by the PUCO and will meet all applicable safety standards established by the Occupational Safety and Health Administration.

No other or unusual conditions are expected that will result in significant environmental, social, health or safety impacts.

4906-6-07: Documentation of Letter of Notification Transmittal and Availability for Public Review

This Letter of Notification is being provided concurrently with its docketing with the Board to the following officials:

Carroll County

Board of County Commissioners
Mr. Jeffery Ohler
119 South Lisbon Street, Suite 201
Carrollton, OH 44615

Carroll County Engineer's Office
Mr. Brian Wise
200 Kensington Road Northeast
Carrollton, OH 44615

Board of County Commissioners
Mr. Robert Wirkner
119 South Lisbon Street, Suite 201
Carrollton, OH 44615

Carroll County Regional Planning
Commission
Mr. Tom Konst, Director
119 South Lisbon Street, Suite 201
Carrollton, OH 44615

Board of County Commissioners
Mr. Christopher Modranski
119 South Lisbon Street, Suite 201
Carrollton, OH 44615

Carroll County Soil & Water District
Ms. Amanda Tubaugh, District Admin.
613 High Street Northwest #2
Carrollton, Ohio 44615

Perry Township

Mr. Eric Horn
Perry Township Trustee
154 Amsterdam Road SW
Scio, OH 43988

Mr. Don Leggett, II
Perry Township Trustee
154 Amsterdam Road SW
Scio, OH 43988

Mr. Gary Staten
Perry Township Trustee
154 Amsterdam Road SW
Scio, OH 43988

Ms. Marcia Trushel
Perry Township Fiscal Officer
154 Amsterdam Road SW
Scio, OH 43988

Harrison County

Mr. Isaac Paul Coffland
Harrison County Commissioner
19 Country Club Mnr
Cadiz, OH 43907

Mr. Douglas Nelson Bachman, P.E., P.S.
Harrison County Engineer
86407 North Bay Rd
Scio, OH 43988

Mr. Dale Ray Norris
Harrison County Commissioner
700 Deersville Ave
Cadiz, OH 43907

Ms. Keila Ferguson, District Program
Administrator
Harrison County Soil & Water Conservation
District
538 North Main St
Cadiz, OH 43907

Mr. Don R. Bethel
Harrison County Commissioner
688 Kerr Ave
Cadiz, OH 43907

Mr. Nick Homrighausen
Executive Director, Harrison County
Community Improvement Corporation
538 N Main St
Cadiz Oh 43907

Rumley Township

Mr. Damian Nathan Kovarik
Rumley Township Trustee
88375 Fairview Rd
Jewett, OH 43986

Mr. Andrew Lee
Rumley Township Trustee
206 W High St, P.O. Box 239
Jewett, OH 43986

Mr. Kevin Larbaugh
Rumley Township Trustee
89170 Hauber Rd
Jewett, OH 43986

Ms. Barbara J. Birney
Rumley Township Fiscal Officer
41771 Rumley Rd East
Jewett, OH 43986

Archer Township

Mr. Matthew Scott Dulkoski
Archer Township Trustee
44690 Jewett Hopedale Rd
Fewett, OH 43986

Mr. Troy Blackburn
Archer Township Trustee
87329 Brair Rd
Jewett, OH 43986

Mr. Aaron L. Dodds
Archer Township Trustee
83510 Bakers Ridge Rd
Cadiz, OH 43907

Mr. Robert J. Positano
Archer Township Fiscal Officer
84624 Cadiz Fewett Rd
Cadiz, OH 43907

Libraries

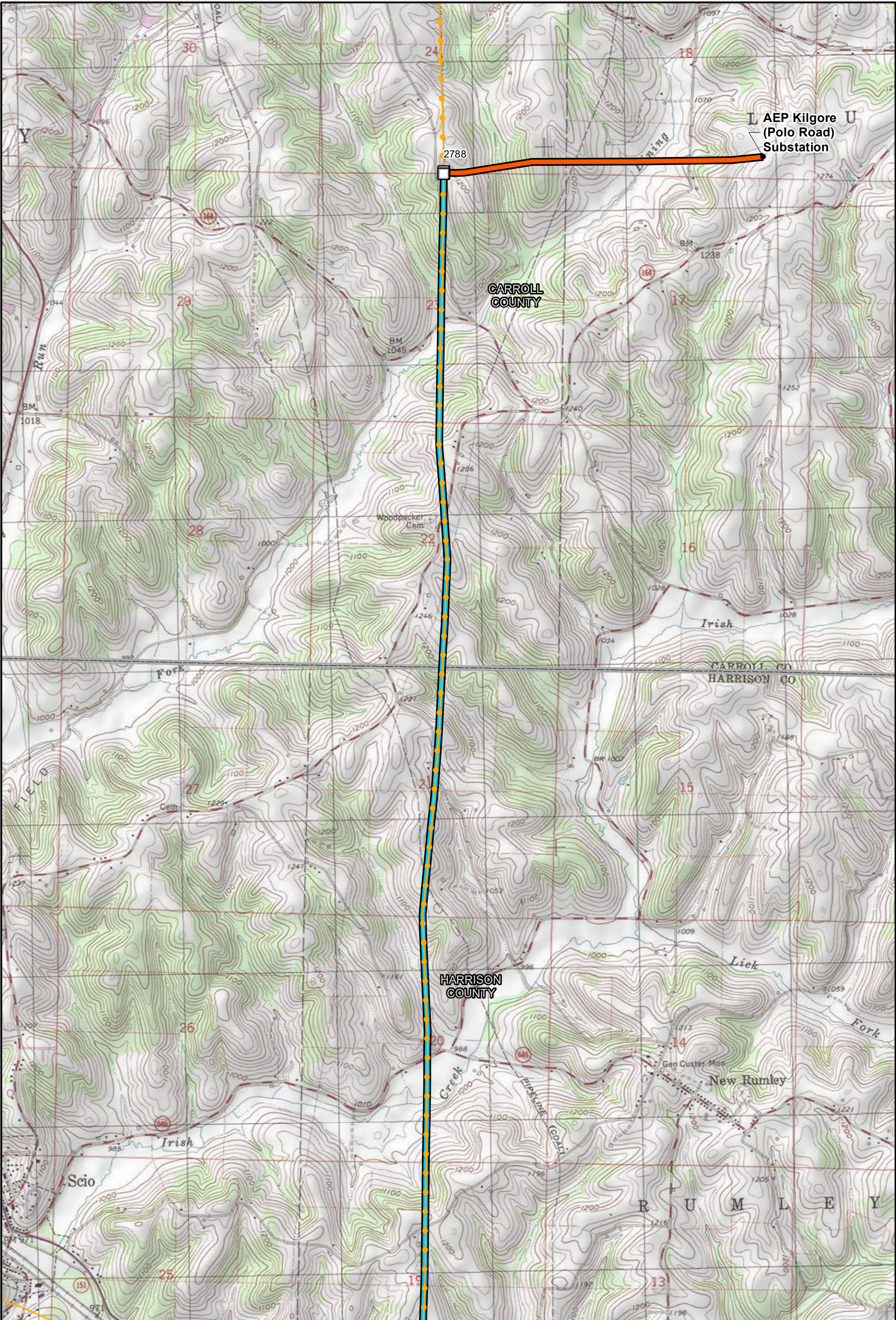
Carroll County District Library
Ellen Finnicum, Director
70 2nd Street Northeast
Carrollton, OH 44615

Scio Branch Library
Ms. Sandy Thompson, Director
331 W. Main St
Scio, OH 43988

Copies of the transmittal letters to these officials have been included with this application as proof of compliance under OAC Rule 4906-6-07 (B) to provide the Board with proof of notice to local officials as required by OAC Rule 4906-6-07 (A)(1) and to libraries per OAC Rule 4906-6-07 (A)(2).

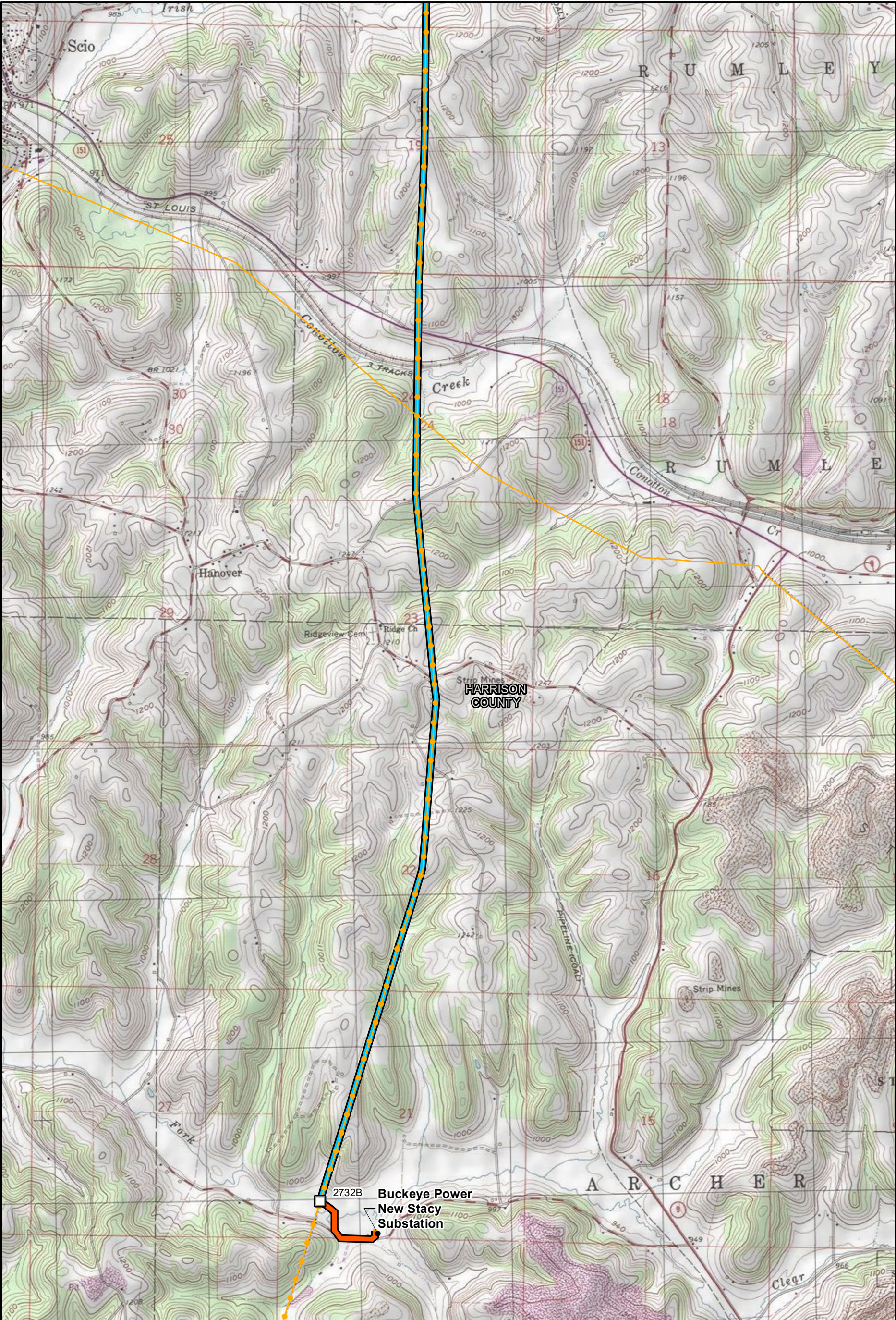
Information is posted at:

www.firstenergycorp.com/about/transmission_project/ohio.html on how to request an electronic or paper copy of this Letter of Notification application. The link to this website is being provided to meet the requirements of OAC Rule 4906-6-07 (B) and to provide the Board with proof of compliance with the notice requirements in OAC Rule 4906-6-07 (A)(3).



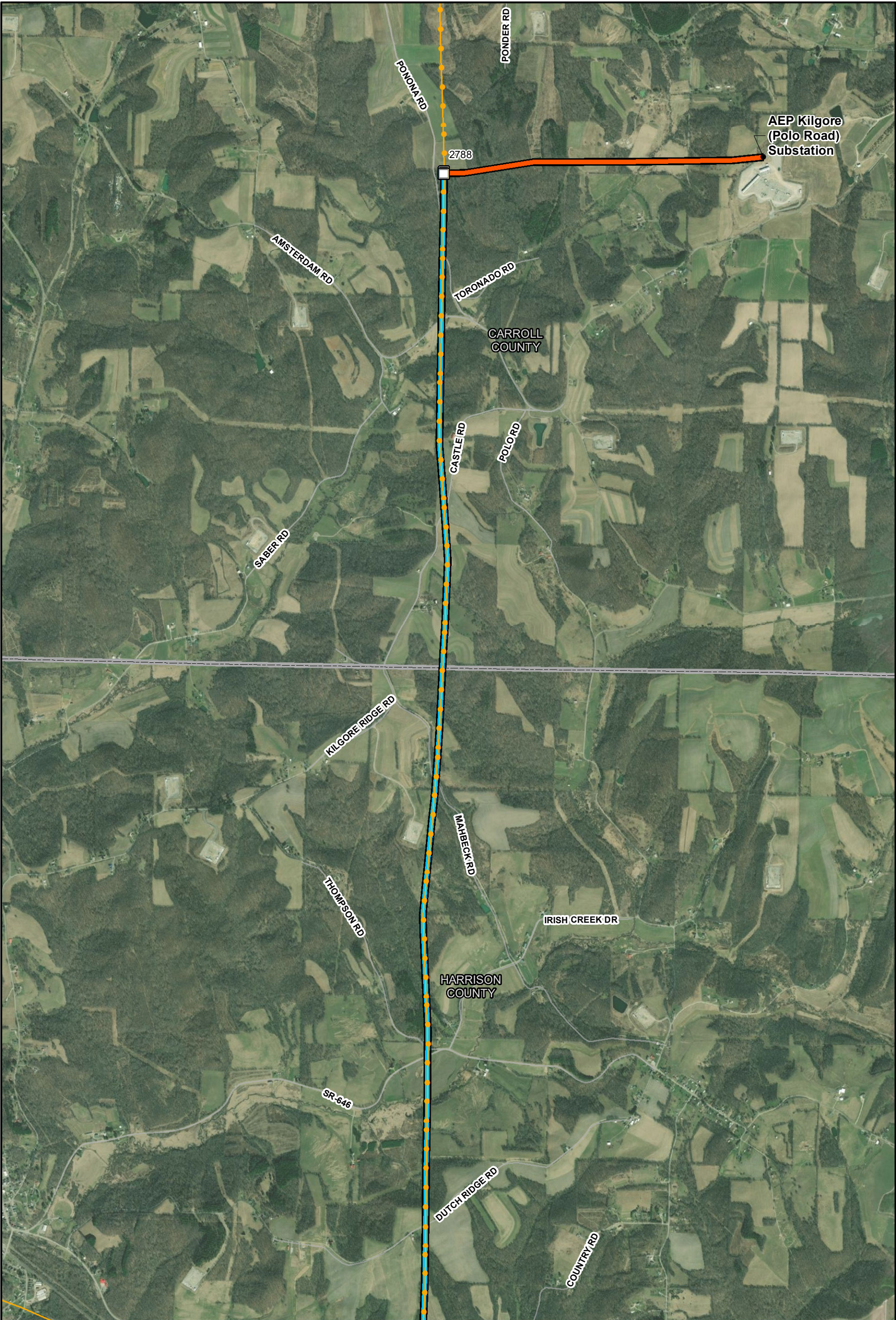
LEGEND: <ul style="list-style-type: none">SubstationExisting StructureKilgore (Polo Road) - New Stacy BUC SegmentExisting Transmission Line<ul style="list-style-type: none">Below 138kV138kVExisting Transmission Line Owned By OthersCounty Boundary	Locator Map	BASE MAP SOURCE: ESRI USA Topo Map Jewett and Scio Quadrangles 0 0.25 0.5 MILES	 ATSI American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp. EXHIBIT 1 - 1 TOPOGRAPHIC OVERVIEW MAP PN: D3449600 CREATED BY: TCC REVIEWED BY: BAO	AEP Kilgore U (Polo Road) Substation Knox-Nottingham 138 kV Transmission Line Rebuild Project Kilgore (Polo Road) - New Stacy BUC Segment Date: 4/7/2022 Jacobs
---	--------------------	--	---	---

\\drive01\GIS\Proj\FirstEnergy\Holloway_Knox\Maps\Report\LOI\Phase 3_Polo_Road_Buckeye_Power\Exhibit1_Phase3.mxd C:\BOWT 4/7/2022 8:57:45 AM



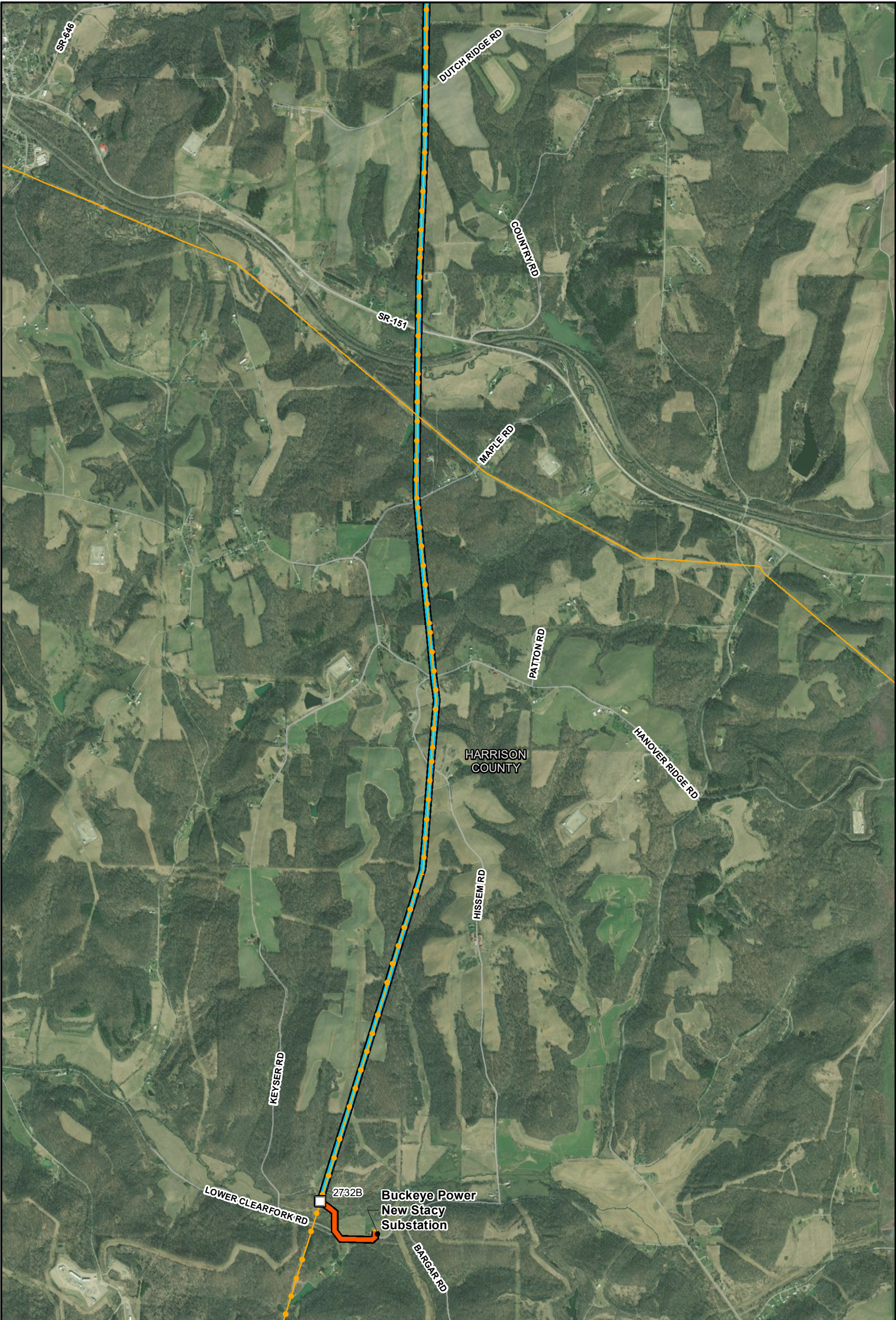
<p>LEGEND:</p> <ul style="list-style-type: none">● Substation□ Existing Structure█ Kilgore (Polo Road) - New Stacy BUC Segment <p>Existing Transmission Line</p> <ul style="list-style-type: none">Below 138kV138kVExisting Transmission Line Owned By OthersCounty Boundary	<p>Locator Map</p>	<p>BASE MAP SOURCE: ESRI USA Topo Map Jewett and Scio Quadrangles</p> <p>0 0.25 0.5 MILES</p>	<p>ATSI American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</p>	<p>Knox-Nottingham 138 kV Transmission Line Rebuild Project Kilgore (Polo Road) - New Stacy BUC Segment</p>
<p>EXHIBIT 1 - 2 TOPOGRAPHIC OVERVIEW MAP</p>				
<p>PN: D3449600</p>		<p>Date: 4/7/2022</p>		
<p>CREATED BY: TCC</p>		<p>REVIEWED BY: BAO</p>		
		<p>Jacobs</p>		

\\drive01\GIS\Proj\FirstEnergy\Holloway_Knox\Maps\Report\LOI\Phase 3_Polo_Road_Buckeye_Power\Exhibit1_Phase3.mxd C:\BCKO\WT 4/7/2022 8:57:45 AM



LEGEND: <ul style="list-style-type: none">● Substation□ Existing Structure■ Kilgore (Polo Road) - New Stacy BUC SegmentExisting Transmission Line<ul style="list-style-type: none">Below 138kV138kVExisting Transmission Line Owned By OthersCounty Boundary	Locator Map	BASE MAP SOURCE: ESRI World Imagery			Knox-Nottingham 138 kV Transmission Line Rebuild Project Kilgore (Polo Road) - New Stacy BUC Segment	
				EXHIBIT 2 - 1 AERIAL OVERVIEW MAP		
				PN: D3449600	Date: 4/7/2022	
				CREATED BY: TCC		
REVIEWED BY: BAO						

\\drive01\GISProj\FirstEnergy\Holloway_KnoxMaps\Report\LOI\Phase 3_Polo_Road_Buckeye_Power\Exhibit2_Phase3.mxd C:\KOWT 4/7/2022 8:57:50 AM



LEGEND: <ul style="list-style-type: none">● Substation□ Existing Structure■ Kilgore (Polo Road) - New Stacy BUC SegmentExisting Transmission Line<ul style="list-style-type: none">Below 138kV138kVExisting Transmission Line Owned By OthersCounty Boundary	Locator Map	BASE MAP SOURCE: ESRI World Imagery			Knox-Nottingham 138 kV Transmission Line Rebuild Project Kilgore (Polo Road) - New Stacy BUC Segment	
				EXHIBIT 2 - 2 AERIAL OVERVIEW MAP		
				PN: D3449600	Date: 4/7/2022	
				CREATED BY: TCC		
REVIEWED BY: BAO						

\\drive01\GISProj\FirstEnergy\Holloway_KnoxMaps\Report\LOI\Phase 3_Polo_Road_Buckeye_Power\Exhibit2_Phase3.mxd C:\BOWT 4/7/2022 8:57:50 AM








CARROLL & HARRISON
COUNTIES
STATE OF OHIO

AEP
KILGORE (POLO ROAD)
SUB

NEW STACY
BUCKEYE
SUB

CARROLL COUNTY
HARRISON COUNTY

LEGEND

-  - AEP SUBSTATION
-  - BUCKEYE POWER SUBSTATION
-  - KILGORE (POLO ROAD)-NEW STACY BUC SEGMENT
138 KV TRANSMISSION LINE REBUILD
-  - KNOX-NOTTINGHAM 138 KV TRANSMISSION LINE
-  - COUNTY BOUNDARIES

ATSI

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Kilgore (Polo Road)-New Stacey BUC 138 kV
Transmission Line Rebuild

GENERAL LAYOUT

EXHIBIT 3

SCALE: NTS

PAPER SIZE: 11X8.5

Previously Presented: 8/31/2018 SRTEP

Problem Statement (Scope and Need/Drivers)

Equipment Material Condition, Performance and Risk

- Improve system reliability and performance
- Remove obsolete and deteriorated equipment
 - 53 to 82 year old construction
 - ~~57%-83%~~ inspection rejection rate
 - ~~Approximately 29 repair records over the past 3 years; increasing trend~~
 - 529 active repair conditions; negative increase in maintenance findings
- Upgrade to current standards
- Support shale gas load growth area; multiple (6) transmission service connections

Potential Solution:

Holloway-Nottingham-Knox 138 kV Line Rebuild (\$1718)

- Rebuild the existing Knox-Nottingham 138 kV Line (Approximately 44 miles).
- Rebuild the existing Nottingham-Holloway #1 138 kV Line (Approximately 21 miles)
- Existing Conductor: Mixed conductor 795 ACSR & 477 ACSR
- Future Conductor: 795 ACSR
- Old Rating 158 MVA SN New Rating 275 MVA SN
- Rebuild the existing Nottingham-Holloway #2 138 kV Line (Approximately 21 miles) sharing a structure with the Nottingham-Holloway #1 138 kV Line
- Old Rating 200 MVA SN New Rating 275 MVA SN
- Rebuild a portion of the Nottingham-Yager #1 138 kV Line (Approximately 3.6 miles) sharing a structure with the Knox-Nottingham 138 kV Line
- Old Rating 200 MVA SN New Rating 275 MVA SN

Alternatives Considered: Maintain existing condition

Estimated Project Cost: \$193.8M

Project ISD: 5/31/2025

Status: Engineering

ATSI Transmission Zone Holloway-Nottingham-Knox 138 kV Line

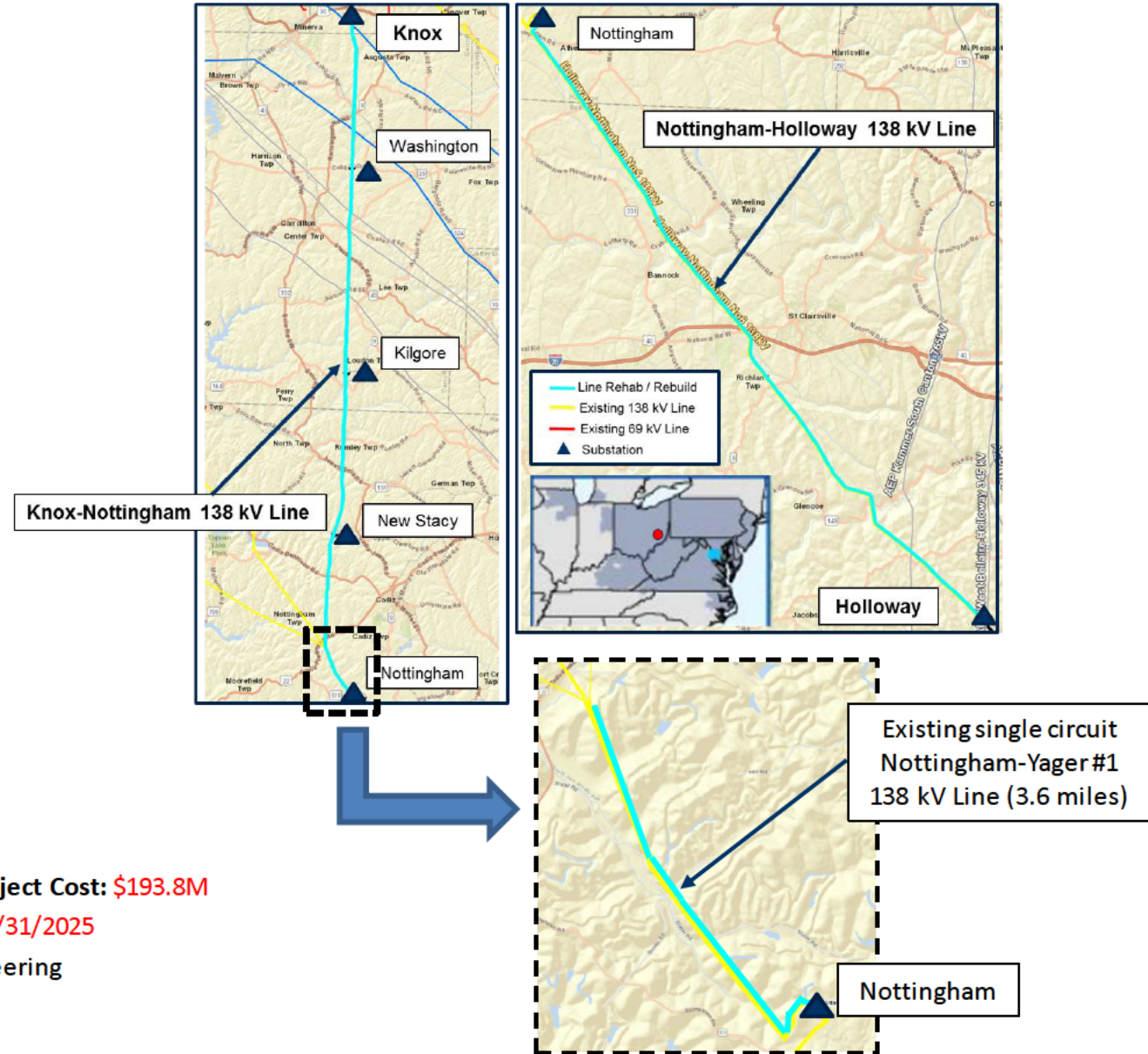
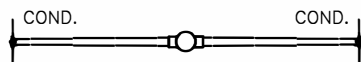


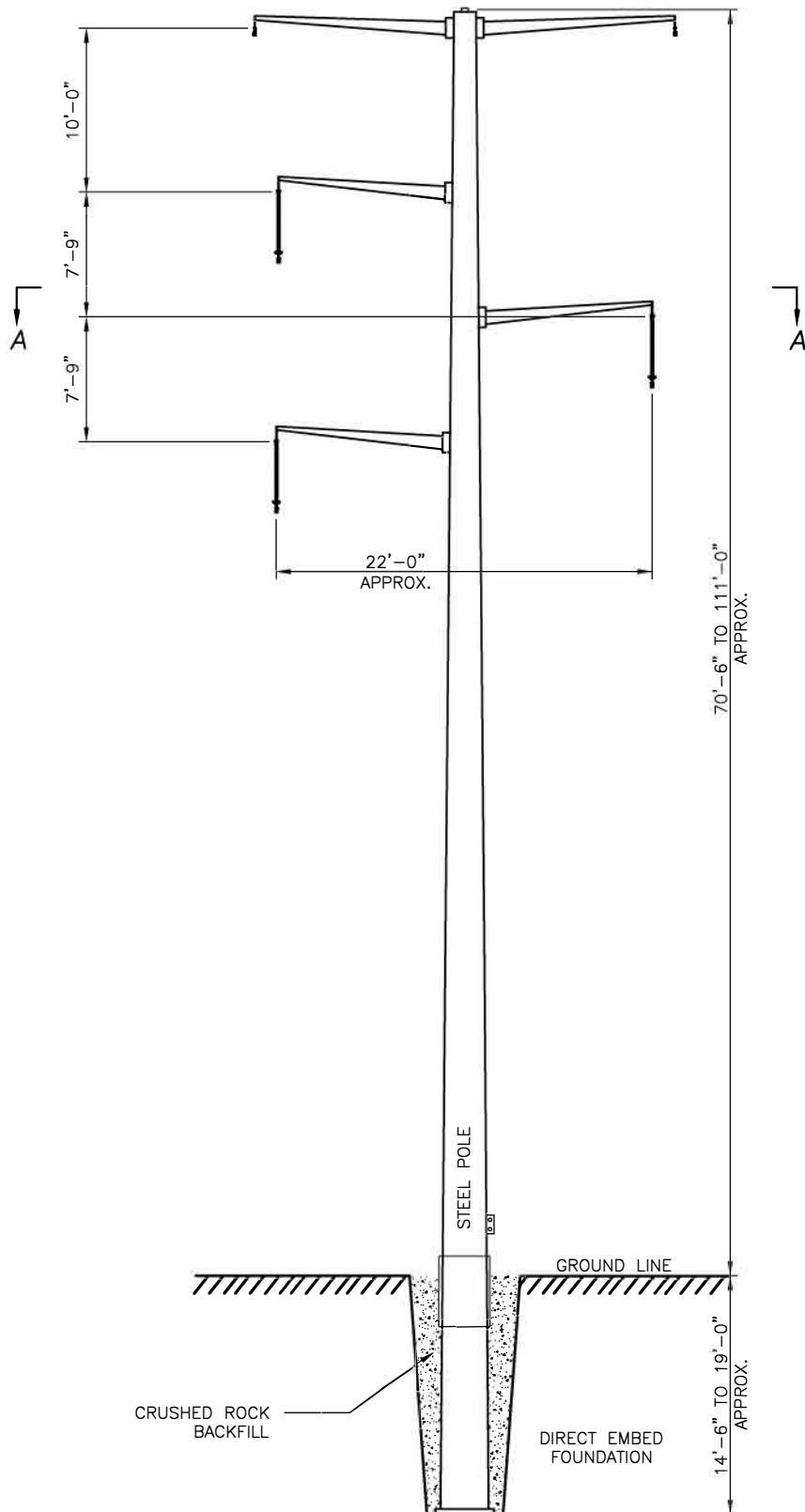
Exhibit 5
Property Owner List and Agricultural Land
Knox-Nottingham 138 kV Transmission Line Rebuild Project - Kilgore (Polo Road)-New
Stacy Buc Segment
Case Number 22-0285-EL-BLN

Parcel Number	Acreage	Easement Status	Agricultural District (Yes/No)	Agricultural District Expiration Year
Notification for Impacted Parcels Only				
230000133001	0.070	Existing	No	N/A
230000131001	9.930	Existing	No	N/A
010000564002	4.05	Existing	No	N/A
010000345000	221.02	Existing	No	N/A
010000161000				
010000471000	326.580	Existing	Yes	2025
	36.470	Existing	Yes	2025
230000290000				
	49.810	Existing	No	N/A
010000579000				
	0.50	Existing	No	N/A
280001144000				
280001145000	42.00	Existing	No	N/A
	168.00	Existing	No	N/A
230000726001				
230000725000	117.39	Existing	No	N/A
	0.600	Existing	No	N/A
230000360000				
	3.36	Existing	No	N/A
230000061000				
	144.00	Existing	No	N/A
230000062000				
	71.79	Existing	No	N/A
230000146000				
	234.96	Existing	No	N/A
230000178000				
230000179000	80.00	Existing	No	N/A
	10.00	Existing	No	N/A
280000382000				
280000383000	8.75	Existing	No	N/A
	73.015	Existing	No	N/A
280000378000				
	79.62	Existing	Yes	2027
010000236000				
	19.29	Existing	No	N/A
230000801000				
230000802000	1.46	Existing	No	N/A
	1.46	Existing	No	N/A
230000798000				
230000799000	1.46	Existing	No	N/A
	1.46	Existing	No	N/A
230000800000				
	4.06	Existing	No	N/A

230000796000 230000797000	1.45	Existing	No	N/A
010000564000 010000565000 010000297000	10.32 1.84 0.49	Existing Existing Existing	No No No	N/A N/A N/A
010000598000	11.574	Existing	No	N/A
230000144002	5.000	Existing	No	N/A
230000131000 230000132000	103.131 3.76	Existing Existing	No No	N/A N/A
230000692000 230000721000	59.88 1.19	Existing Existing	No No	N/A N/A
010000564001	147.58	Existing	No	N/A
230000177000	43.56	Existing	No	N/A
230000726000 230000893000	15.57 60.00	Existing Existing	No No	N/A N/A
280000781000 280001130000 280001128000	118.00 None Provided None Provided	Existing Existing Existing	No No No	N/A N/A N/A
230000784000	3.842	Existing	No	N/A
230000284000 230000283000	25.69 9.10	Existing Existing	No No	N/A N/A
230000232000	107.332	Existing	No	N/A
230000286000	117.76	Existing	No	N/A
230000289002	32.72	Existing	No	N/A
230000272000 230000042000	80.50 125.750	Existing Existing	No No	N/A N/A
280001334000	40.00	Existing	No	N/A
010000007001 010000007000 010000209002	80.00 160.00 160.00	Existing Existing Existing	No No No	N/A N/A N/A



SECTION A - A



NOTE:
DETAILS DEPICTED IN FIGURE CAN BE APPLIED FOR ANY TYPE
OF SINGLE CIRCUIT STEEL POLE SUSPENSION CONFIGURATION.

****NOT TO SCALE**

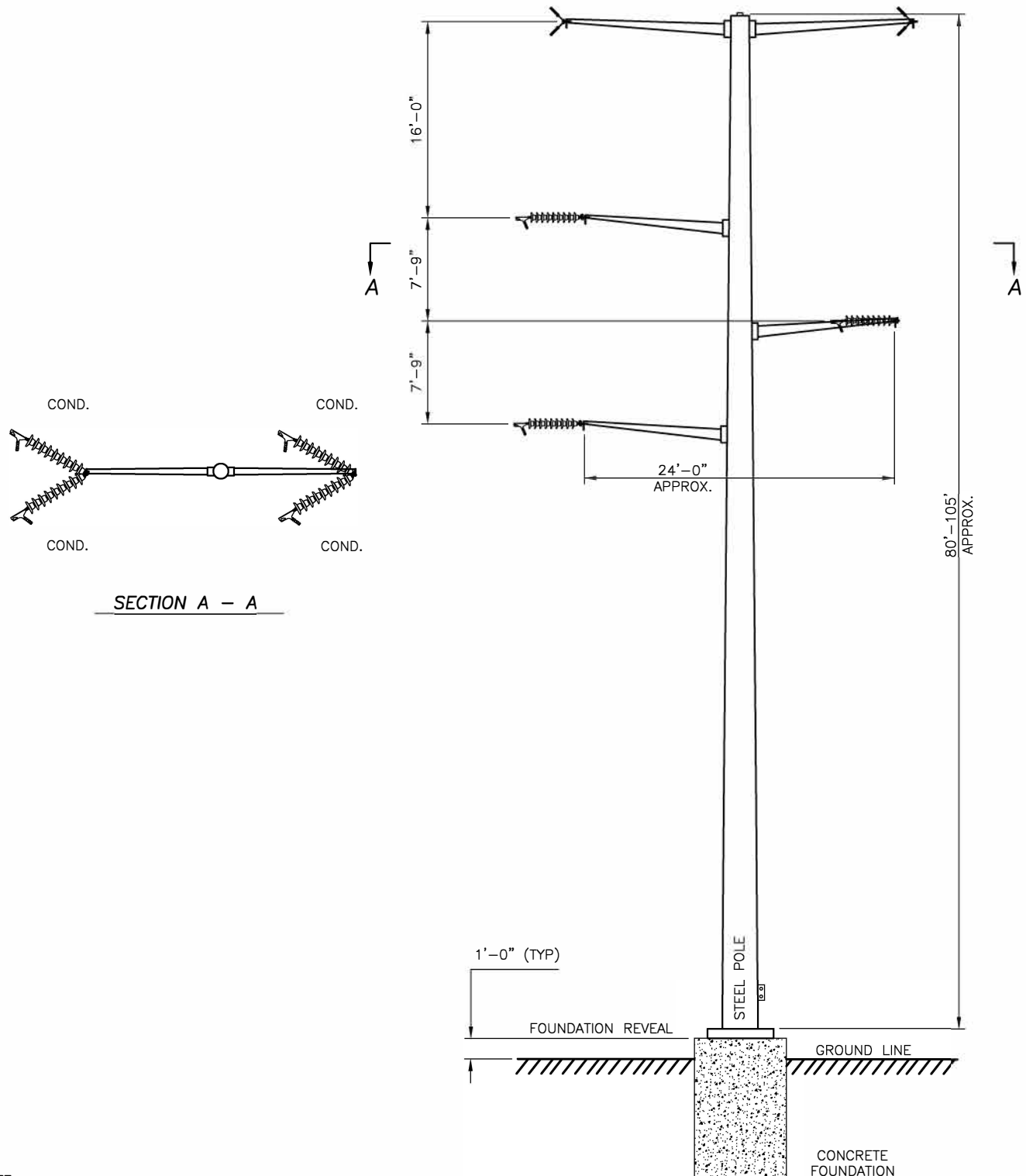
ATSI®

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Kilgore (Polo Road)-New Stacey BUC
138 kV Transmission Line Rebuild

138kV SINGLE CIRCUIT
STEEL POLE, SUSPENSION

EXHIBIT 6



NOTE:
DETAILS DEPICTED IN FIGURE CAN BE APPLIED FOR ANY TYPE
OF SINGLE CIRCUIT STEEL POLE DEADEND CONFIGURATION.

****NOT TO SCALE**

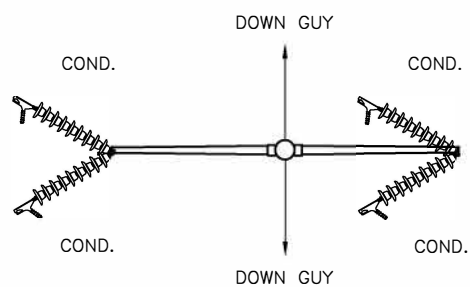
ATSI

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

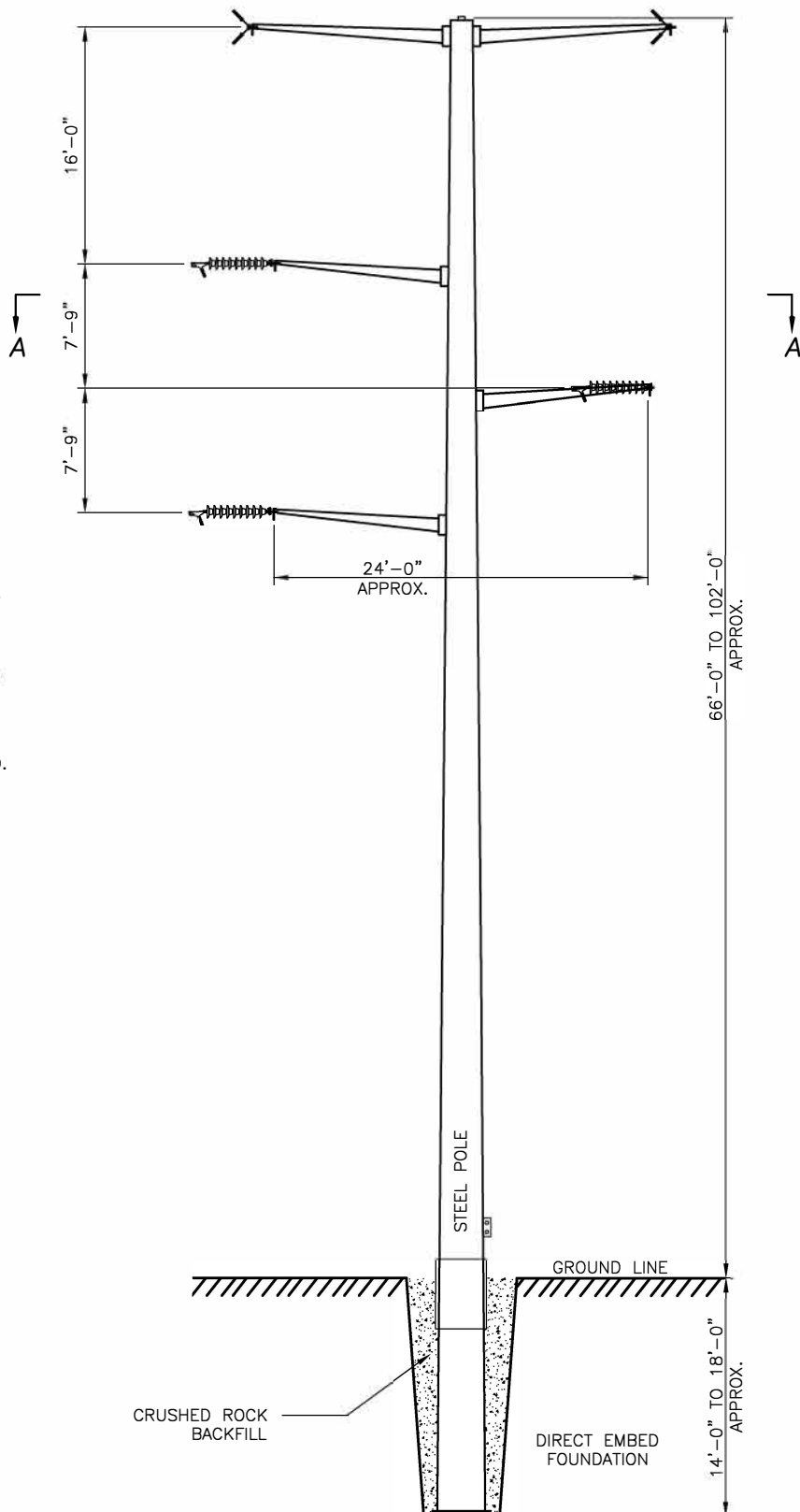
Kilgore (Polo Road)-New Stacey BUC
138 kV Transmission Line Rebuild

138kV SINGLE CIRCUIT
STEEL POLE, DEADEND

EXHIBIT 7



SECTION A - A



NOTE:
DETAILS DEPICTED IN FIGURE CAN BE APPLIED FOR ANY
TYPE OF SINGLE CIRCUIT STEEL POLE STRAIN CONFIGURATION.

**NOT TO SCALE

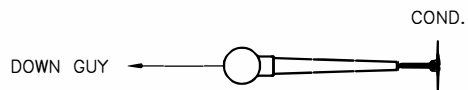
ATSI[®]

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

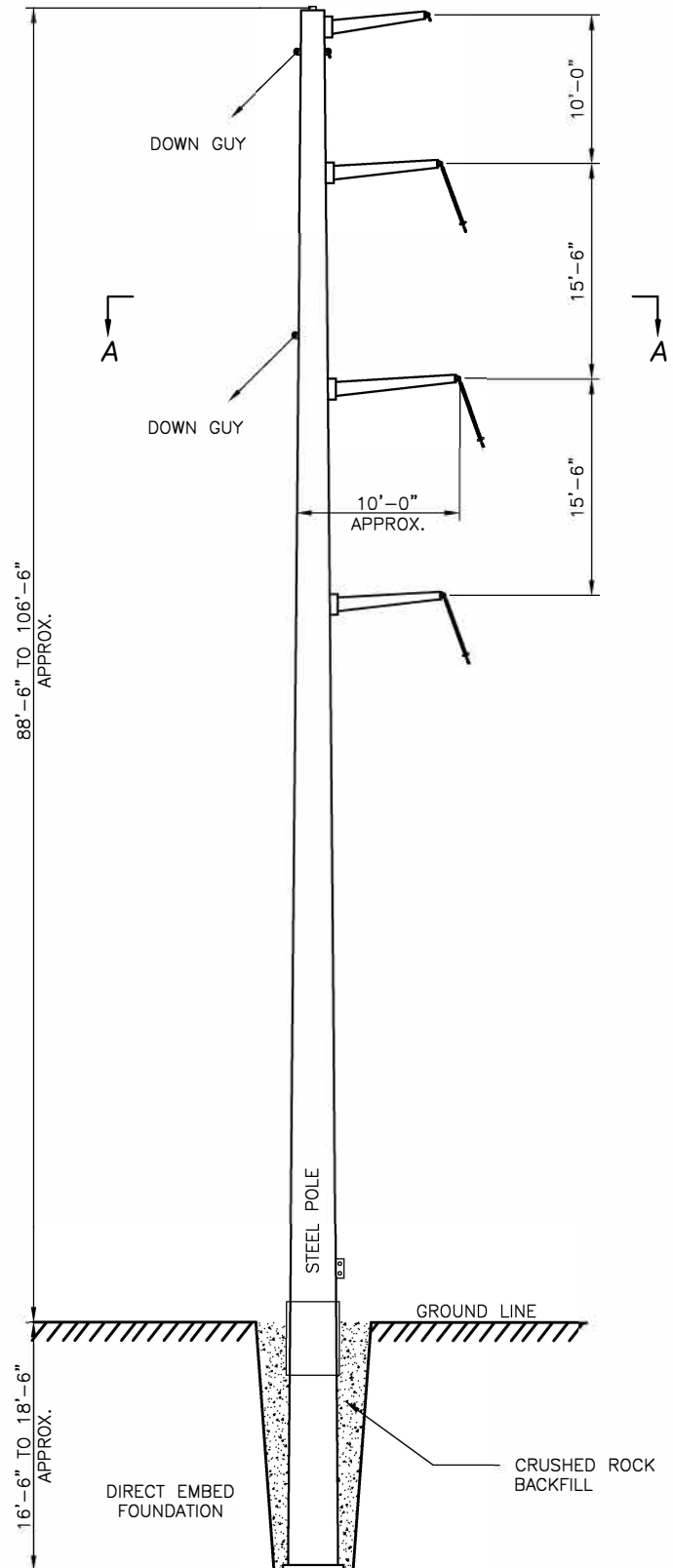
Kilgore (Polo Road)-New Stacey BUC
138 kV Transmission Line Rebuild

138kV SINGLE CIRCUIT
STEEL POLE, STRAIN

EXHIBIT 8



SECTION A - A



NOTE:
DETAILS DEPICTED IN FIGURE CAN BE APPLIED FOR ANY
TYPE OF SINGLE CIRCUIT STEEL POLE ANGLE CONFIGURATION.

****NOT TO SCALE**

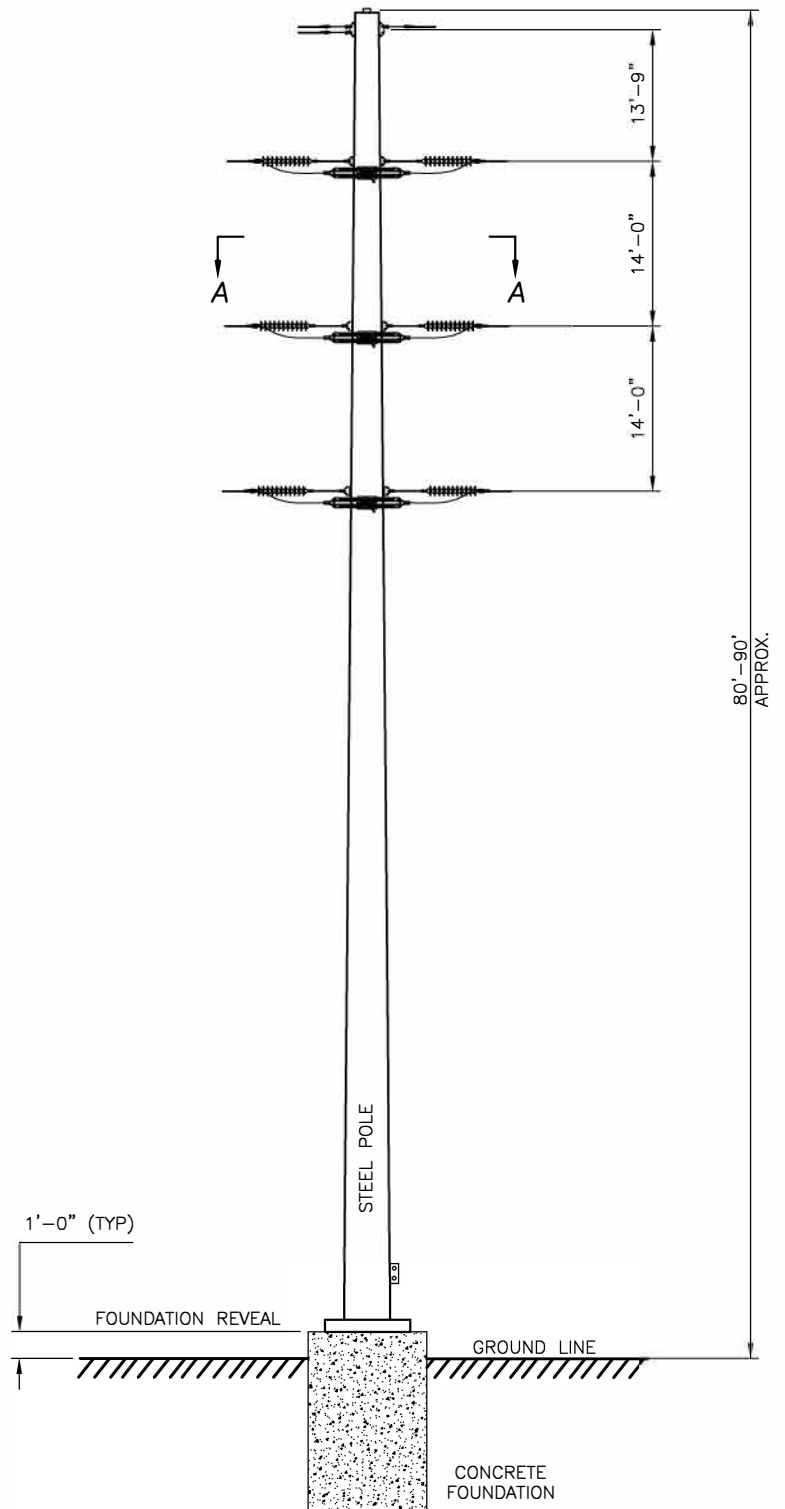
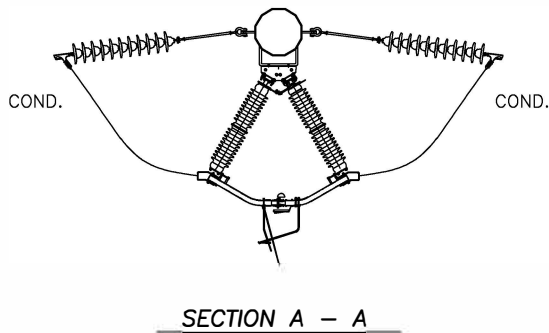
ATSI[®]

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Kilgore (Polo Road)-New Stacey BUC
138 kV Transmission Line Rebuild

138kV SINGLE CIRCUIT
STEEL POLE, ANGLE

EXHIBIT 9



NOTE:
DETAILS DEPICTED IN FIGURE CAN BE APPLIED FOR ANY TYPE
OF SINGLE CIRCUIT STEEL POLE SWITCH CONFIGURATION.

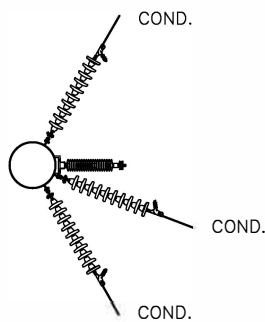
****NOT TO SCALE**

ATSI[®]
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

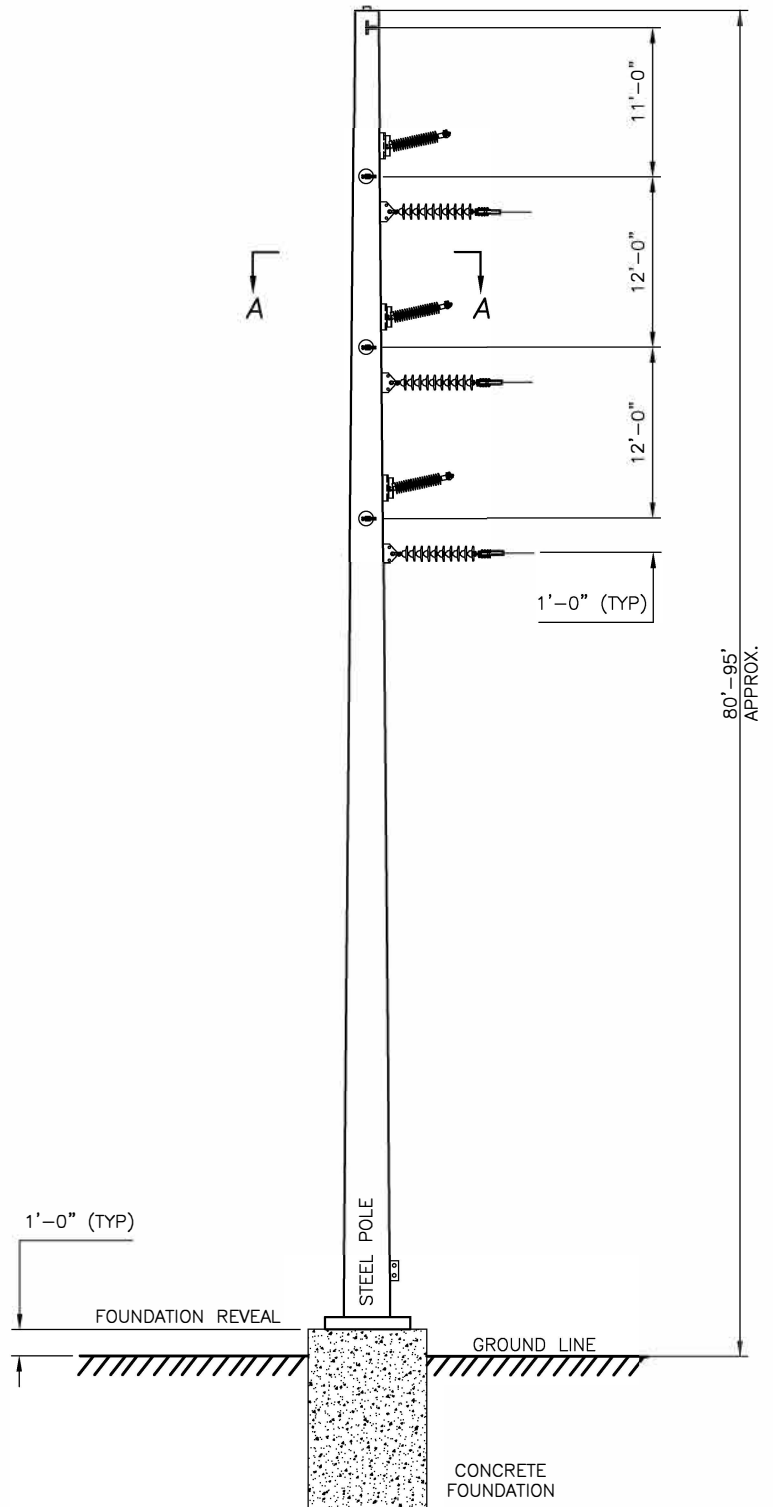
Kilgore (Polo Road)-New Stacey BUC
138 kV Transmission Line Rebuild

138kV SINGLE CIRCUIT
STEEL POLE, SWITCH

EXHIBIT 10



SECTION A - A



NOTE:
DETAILS DEPICTED IN FIGURE CAN BE APPLIED FOR ANY
TYPE OF SINGLE CIRCUIT STEEL POLE TAP CONFIGURATION.

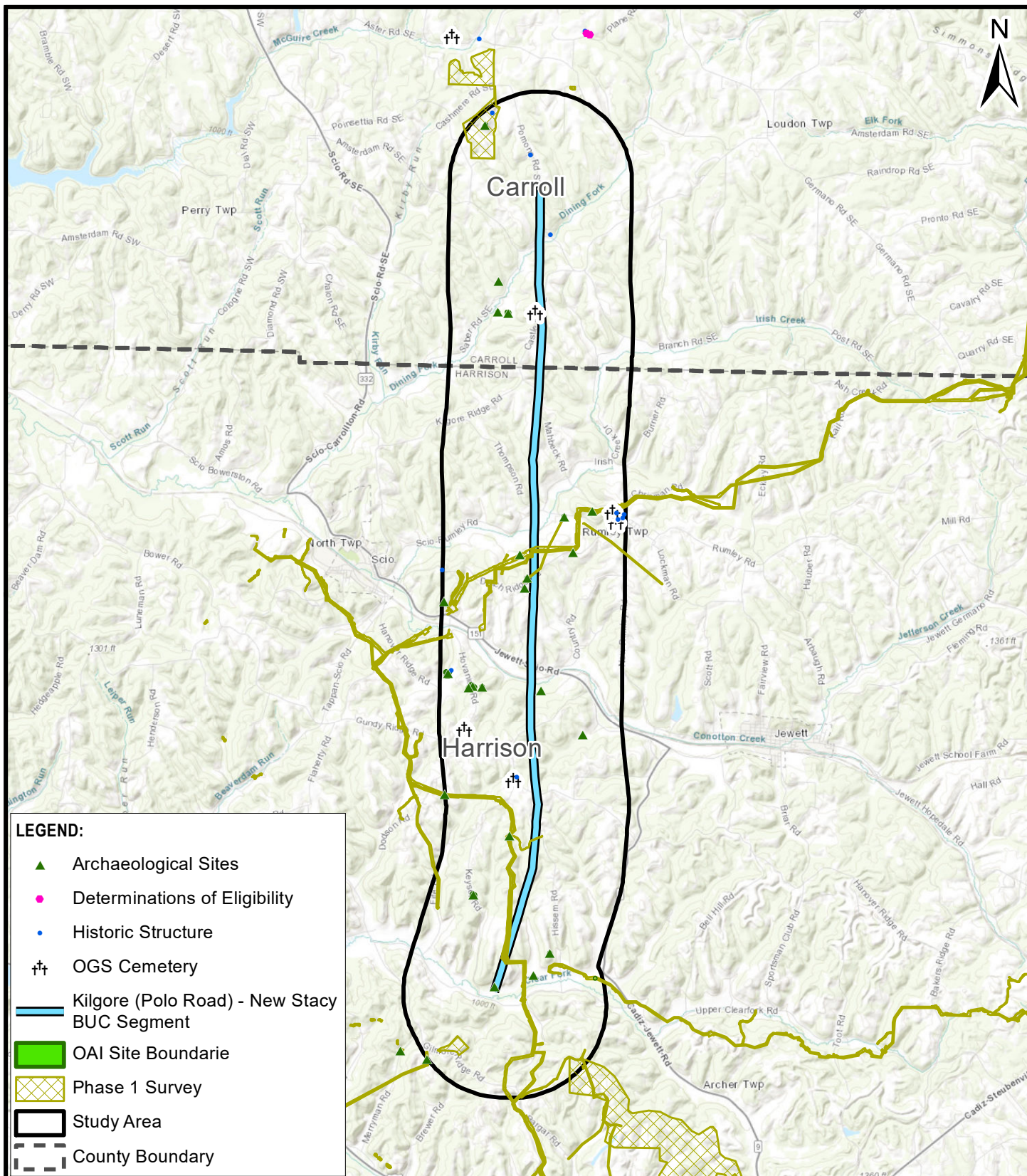
****NOT TO SCALE**

ATSI[®]
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Kilgore (Polo Road)-New Stacey BUC
138 kV Transmission Line Rebuild

138kV SINGLE CIRCUIT
STEEL POLE, TAP

EXHIBIT 11





In reply refer to:
2020-MLT-49294

September 16, 2020

Amy C. Favret, M.A., RPA
Jacobs
2 Crowne Point Court, Suite 100
Cincinnati, Ohio 45241

RE: Section 106 Review-Holloway-Knox 138kV Transmission Line Rebuild Project, Belmont, Carroll, Columbiana, and Harrison Counties, Ohio

Dear Ms. Favret:

This letter is in response to the correspondence received on August 17, 2020 regarding the proposed 64-mile long Holloway-Knox 138kV Transmission Rebuild Project in Belmont, Carroll, Columbiana, and Harrison Counties, Ohio. We appreciate the opportunity to comment on this project. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Section 149.53 of the Ohio Revised Code and the Ohio Power Siting Board rules for siting this project (OAC 4906-5). The comments of the Ohio SHPO are also submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. 306108 [36 CFR 800]).

The proposed project will entail replacing the existing H-frame wood poles with direct embedded steel and drilled shaft H-frame wood poles. The new poles will be installed approximately 10-ft. from the existing poles within the 100-ft. wide right-of-way (ROW). All work will be within the existing ROW except for access roads, which will use existing roads, driveways, or farm lanes. Four pull pads, totaling 0.26-acres, will extend outside of the existing ROW.

A literature review report, *Holloway-Knox 138kV Transmission Line Project, Belmont, Carroll, Columbiana, and Harrison Counties, Ohio* was completed for the entire 64-mile rebuild project. A total of two National Register of Historic Places (NRHP)-listed properties, 165 Ohio Historic Inventory (OHI) properties, two NRHP eligible properties, 43 cemeteries, and 224 Ohio Archaeological Inventory (OAI) sites were identified within the 1.0-mile study area. Of these, one cemetery (Bird/Byrd Cemetery-OGS ID 1381) and two OAI sites (33CO257 and 33CO258) were determined to be within the project ROW. Additionally, one historic architecture survey and 11 Phase I archaeological surveys overlap portions of the ROW.

Sites 33CO257 and 33CO258 are low-density prehistoric lithic scatters previously identified during one of the Phase I surveys. Neither of these sites are near existing poles. Site 33CO257 was recommended for further work, but to date, no additional work has been conducted at the site. As a precautionary measure, a 50-ft. buffer using construction fencing will be placed around site 33CO257 during construction. The Bird/Byrd Cemetery is approximately 151-ft. south of the nearest pole and therefore will not be impacted by the project. Since this cemetery is within the ROW, it is recommended that a 50-ft. buffer using construction fencing also be put up around the cemetery during construction as a precautionary measure.

Due to the nature of the project as a rebuild, it is Jacob's recommendation that no further archaeological or architectural investigations are necessary as the visibility of the existing transmission line should not increase. Our office agrees with this recommendation.

Based on the information provided, we agree that the project, as proposed, will have no effect on historic properties. No further coordination is required for this project unless the scope of work changes or archaeological remains are discovered during the course of construction. In such a situation, this office should be contacted as required by 36 CFR § 800.13. If you have any questions, please contact me by e-mail at sbiehl@ohiohistory.org or Joy Williams at jwilliams@ohiohistory.org. Thank you for your cooperation.

Sincerely,

A handwritten signature in blue ink that reads "Stephen M. Biehl". The signature is fluid and cursive, with the first name "Stephen" being the most prominent.

Stephen M. Biehl, Project Reviews Coordinator (archaeology)
Resource Protection and Review
State Historic Preservation Office

cc: Joy Williams, SHPO

RPR Serial No. 1085225

"Please be advised that this is a Section 106 decision. This review decision may not extend to other SHPO programs."



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate

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

June 1, 2020

Ben Otto
 Jacobs
 400 E. Business Way, Suite 400
 Cincinnati, Ohio 45241

Re: 20-383; Request No. 18-182; Holloway-Knox 138 kV Transmission Line Rebuild Project

Project: The proposed project involves replacing existing wood h-frame structures of the 138-kV electric transmission line with a combination of new direct embedded steel and drilled shaft H-frame wood pole structures within the existing and maintained 100-foot wide right-of-way.

Location: The proposed project is located in Columbiana, Carroll, Harrison, and Belmont Counties, Ohio.

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

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

The Natural Heritage Database has data within the project area, given in the attached shapefiles. The review was based on the project area specified in the request and performed using the shapefile provided to us. Records searched date from 1980. This data is provided to inform you of features present within the project area. Additional comments on some of the features may be found in pertinent sections below.

Records included in the data layer may be for rare plants and animals, geologic features, high quality plant communities, and other ecological features. Fields included are scientific and common names, state and federal statuses (when applicable), date of most recent observation, and whether the record is located within a managed area or conservation site.

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal

endangered, FT = federal threatened, FSC = federal species of concern, and FC = federal candidate species.

There are a few species considered as sensitive for which we do not give out an exact location. They are not within the data layer but are included in the sensitive species data layer which shows a general location.

The managed areas layer shows boundaries for state, federal, county, non-profit, private and sites under other types of ownership that are protected and managed for their natural resources. Please be aware that this layer may not be complete, and we are continually updating it as additional information becomes available to us.

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

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

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

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

The project is within the range of the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel. The DOW understands that there is no in-water work proposed for this project. Therefore, this project is not likely to impact this or other mussel species.

The project is within the range of the Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish, and the channel darter (*Percina copelandi*), a state threatened fish. The DOW understands that there is no in-water work proposed for this project. Therefore, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this project is not likely to impact this species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1. If this habitat will not be impacted, this project is not likely to impact this species.

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

The project is within the range of the least bittern (*Ixobrychus exilis*), a state threatened bird. This secretive marsh species prefers dense emergent wetlands with thick stands of cattails, sedges, sawgrass or other semiaquatic vegetation interspersed with woody vegetation and open water. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

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

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

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

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

ODNR appreciates the opportunity to provide these comments. Please contact Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or Sarah.Tebbe@dnr.state.oh.us if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

From: Ohio, FW3 <ohio@fws.gov>
Sent: Monday, April 13, 2020 12:49 PM
To: Otto, Ben/CIN <Ben.Otto@jacobs.com>
Subject: [EXTERNAL] ATSI Holloway-Knox 138 kV Transmission Line Rebuild Project, Columbiana, Carroll, Harrison, and Belmont Counties, Ohio

EXHIBIT 15



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



TAILS 03E15000-2018-TA-0404

Dear Mr. Otto,

We have received your recent correspondence regarding potential impacts to federally listed species in the vicinity of the above referenced project. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. We recommend that proposed activities minimize water quality impacts, including fill in streams and wetlands. Best management practices should be utilized to minimize erosion and sedimentation.

FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees ≥ 3 inches diameter at breast height between October 1 and March 31) to avoid impacts to the federally listed endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), we do not anticipate adverse effects to any federally endangered, threatened, proposed or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the U.S. Fish and Wildlife Service (Service) should be initiated to assess any potential impacts.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the Endangered Species Act (ESA), between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact Mike

Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

Patrice Ashfield

Ohio Field Office Supervisor

Wetland and Waterbody Delineation Report

**Polo Road-Buckeye Power 138 kV Transmission Line
Rebuild Project**

Harrison and Carroll Counties, Ohio

Prepared for



May 2020

Jacobs

Jacobs Engineering Group, Inc.
2 Crowne Point Court, Suite 100
Cincinnati, OH, 45241

Contents

1	Introduction	1-1
2	Background Information	2-1
2.1	Project Area	2-1
2.1.1	Annual Precipitation	2-1
2.1.2	Drainage Basins.....	2-2
2.1.3	Traditional Navigable Waters	2-2
3	Wetland and Waterbody Delineation	3-1
3.1	Desktop Review	3-1
3.2	Field Survey Methodology	3-2
3.2.1	Wetland Delineation.....	3-2
3.2.2	Stream Assessment.....	3-3
4	Field Survey Results	4-1
4.1	Wetlands	4-1
4.1.1	Wetland ORAM Results.....	4-1
4.2	Streams	4-1
4.2.1	QHEI Results.....	4-2
4.2.2	HHEI Results.....	4-2
4.3	Ponds/Open Water	4-2
5	Conclusion	5-1
6	References.....	6-1

Tables

2-1	Recent Precipitation Data (<i>In text</i>)
2-2	12-Digit Hydrologic Unit Codes Crossed by the Project (<i>In text</i>)
3-1	Mapped Soil Units (<i>Follows text</i>)
3-2	Mapped National Wetland Inventory Features (<i>In text</i>)
4-1	Detailed Delineated Wetland Table (<i>Follows text</i>)
4-2	Detailed Delineated Stream Table (<i>Follows text</i>)
4-3	Detailed Delineated Pond Table (<i>Follows text</i>)
4-4	Wetland Summary Table (<i>In text</i>)
4-5	QHEI Stream Summary Table (<i>In text</i>)
4-6	HHEI Stream Summary Table (<i>In text</i>)

Figures

1	Overview Map
2-A to 2-AH	Soils Map Units, NHD Streams, NWI Wetlands, and FEMA Floodplain Map
3-A to 3-AH	Delineated Features Map

Appendices

A	U.S. Army Corps of Engineers (USACE) Wetland Determination Field Datasheets
B	Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method for Wetlands (ORAM) Datasheets
C	OEPA Qualitative Habitat Evaluation Index (QHEI) Datasheets

D	OEPA Primary Headwater Habitat Evaluation Index (HHEI) Datasheets
E	Jacobs Open Water/Pond Data Forms
F	Representative Photographs

Acronyms and Abbreviations

ATSI	American Transmission Systems Inc.
CWA	Clean Water Act
ESC	Environmental Survey Corridor
°F	Fahrenheit
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	Global Positioning System
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
Jacobs	Jacobs Engineering Group, Inc.
kV	Kilovolt
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
OBL	Obligate wetland
OEPA	Ohio Environmental Protection Agency
OHWM	Ordinary High-Water Mark
ORAM	Ohio Rapid Assessment Method
PEM	Palustrine emergent
PFO	Palustrine forested
Project	Polo Road-Buckeye Power 138 kV Transmission Line Rebuild Project
PSS	Palustrine scrub-shrub
QHEI	Qualitative Habitat Evaluation Index
ROW	Right-of-way
TNW	Traditionally navigable water
UPL	Upland
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1 Introduction

This wetland and waterbody delineation report (Report) summarizes the results of the wetland and waterbody delineation surveys conducted in Carroll and Harrison Counties, Ohio by Jacobs Engineering Group, Inc. (Jacobs), for American Transmission Systems Inc. (ATSI), a subsidiary of FirstEnergy Corporation (FirstEnergy). ATSI is proposing to replace existing wooden h-frame structures with new direct embedded steel and drilled shaft H-frame wood pole structures as part of the Polo Road-Buckeye Power 138 kilovolt (kV) Transmission Line Rebuild Project (Project). The Project (approximately 8.9 miles long) is the middle section of a larger 64-mile project originating at the Knox Substation in Columbiana County, near the intersection of Township Line Road and Knox School Road, north of the City of Chambersburg, and extending south to the Holloway Substation terminus in Belmont County, southeast of the City of St. Clairsville. The larger 64-mile project is broken down into five phases, of which the Project is Phase 3.

The Project starts in Carroll County, near the intersection of Pomona Road and Amsterdam Road SE, and extends south to Harrison County, near the intersection of Keyser Road and Lower Clearfork Road, as shown on Overview Figure (Figure 1). Jacobs conducted environmental surveys in May through October 2018. The environmental survey corridor (ESC) included the existing 100-foot right-of-way (ROW), potential access routes, and pull pads.

This wetland and waterbody delineation report contains the following components:

- Figure 1 provides an overview map of the ESC overlain on ArcGIS Online USA topographic maps.
- Figures 2-A to 2-AH show U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) mapped soil units, the location of National Wetland Inventory (NWI) polygons, national hydrography dataset (NHD) streams, and Federal Emergency Management Agency (FEMA) 100-year floodplain and floodway information. Table 3-1 lists the soils types identified within the ESC and Table 3-2 list the NWI wetland types identified within the ESC.
- Figures 3-A to 3-AH provide the location of all features mapped during the delineation by Jacobs biologists within the ESC. This includes all wetlands, data points, waterbodies, and ponds. Tables 4-1 (wetlands), 4-2 (streams), 4-3 (ponds) follow the text, and provide detailed information for all delineated features within the ESC. Tables 4-4 (wetlands), 4-5 (streams), and 4-6 (ponds) within the text, provide summary information for all delineated features within the ESC.
- U.S. Army Corps of Engineers (USACE) wetland determination field data forms are in Appendix A.
- Ohio Rapid Assessment Method for Wetlands (ORAM) two-page forms are in Appendix B.
- Primary Headwater Habitat Evaluation Index (HHEI) stream data forms for each stream identified with a drainage area less than 1 square mile are in Appendix C.
- Qualitative Habitat Evaluation Index (QHEI) stream data forms for each stream identified with a drainage area of 1 square mile or greater are in Appendix D.
- Jacobs Open Water/Pond data forms for each open water feature identified within the ESC are in Appendix E.
- Representative photographs for all delineated features within the ESC are in Appendix F.

2 Background Information

This section describes the ESC and methodology used during the wetland and waterbody delineation field surveys.

2.1 Project Area

The Project is in Harrison and Carroll Counties, Ohio. The ESC begins at the terminus of Phase 2, just north of the intersection of Pomona Road and Amsterdam Road SE (40.456873 latitude, -81.049261 longitude), and extends south to the beginning of Phase 4, just north of the intersection of Keyser Road and Lower Clearfork Road (40.328104 latitude, -81.064962 longitude), as shown in Figure 1. The ESC is approximately 8.9 miles long, 100 feet wide within the Project ROW, and contains multiple proposed off-ROW access routes and pull pads.

Review of the USGS 7.5-minute topographic maps indicates the ESC crosses two USGS 7.5-minute topographic quadrangles: Scio and Jewett. Additional review of the USGS 7.5-minute topographic maps of the area indicates that multiple ditches, streams, and rivers drain the ESC, including Dining Fork, Irish Creek, Conotton Creek, Clear Fork, and multiple unnamed tributaries of these waterways. Topographic relief is comprised of a landscape of rolling hills, with elevations ranging between 925 and 1,270 feet above sea level throughout the ESC (Figure 1).

Land use and natural communities observed within the ESC includes agricultural land, existing ROW, existing roadway, industrial/substation, residential, old field, upland scrub shrub, and palustrine emergent (PEM) wetland, in addition to the previously identified waterbodies.

2.1.1 Annual Precipitation

Recent rainfall data for Cambridge, Ohio were reviewed prior to completing the environmental survey to determine if climatic conditions were normal at the time of the survey. Cambridge, Ohio was the nearest weather station with both historical and recent precipitation records. Rainfall recorded in Cambridge, Ohio was above normal for three out of four months prior to and during surveys conducted in May and June (Table 2-1; USDA, 2018). These data suggest climatic conditions were generally wetter than normal for 2018 leading up to the ecological survey. This was taken into consideration during delineation.

TABLE 2-1: Recent Precipitation Data

Polo Road-Buckeye Power 138 kV Transmission Line Rebuild Project

2018 Precipitation Data	Mar	Apr	May	Jun	Total
Cambridge Monthly Sum ^{1,3}	3.60	5.82	3.86	5.18	18.46
Cambridge Normal Precip. ^{2,3}	2.30-3.50	2.29-3.91	2.88-4.65	2.50-4.87	9.97-16.93
Monthly climatic condition	Above Normal	Above Normal	Normal	Above Normal	Above Normal

¹Monthly weather summary from weather station CAMBRIDGE, OH (2018)

²USDA WETS Station Climate Data 1971-2000 (Cambridge, OH (USDA 2000))

³Displayed in inches

2.1.2 Drainage Basins

The ESC is within the Tuscarawas (05040001) 8-digit Hydrologic Unit Code (HUC). The ESC crosses four 12-digit HUCs, as outlined in Table 2-2 (USGS, 2018):

TABLE 2-2: 12-Digit HUCs Crossed by the Project

Polo Road-Buckeye Power 138 kV Transmission Line Rebuild Project

HUC 12-Digit Code	HUC 12-Digit Name
05040001-07-03	Dining Fork
05040001-07-02	Irish Creek
05040001-07-04	Headwaters Middle Conotton Creek
05040001-15-01	Clear Fork

Source: USGS 2018

2.1.3 Traditional Navigable Waters

The U.S. Environmental Protection Agency (EPA) and USACE assert jurisdiction over “all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce including all waters which are subject to the ebb and flow of the tide” (USACE and EPA, 2008). These waters are considered traditionally navigable waters (TNW). The ESC does not directly cross a TNW, yet many of the streams will be considered tributaries to the Tuscarawas River (USACE, 2009).

3 Wetland and Waterbody Delineation

3.1 Desktop Review

Prior to conducting the field investigations, Jacobs reviewed the following resources to identify the potential for wetlands within the ESC:

- Aerial photo-based maps (ArcGIS Online, World Imagery Map, 2020)
- Topographic maps (ArcGIS Online, USA Topo Maps, 2020)
- NRCS Web Soil Survey (NRCS, 2020)
- NWI shapefile (USFWS, 2020)
- National Hydrography Dataset (NHD) (USGS, 2020)

According to the NRCS soil survey of Harrison and Carroll Counties (NRCS, 2018), 30 soil map units are crossed by the ESC. Of the 30 soil map units, zero are listed as hydric, one predominantly hydric, four predominantly non-hydric, and the remaining 25 units are listed as not hydric (Figures 2-A to 2-AH).

Generally, hydric soils are those soils that indicate through their color and structure that they have experienced dominantly reducing (i.e. oxygen poor) conditions. Oxygen-poor conditions result from inundation and/or saturation by water. Partially hydric soils have both hydric and non-hydric soil components identified in the mapped soil unit.

NWI data were obtained from the USFWS for review of potential wetlands that may occur within the ESC. The NWI data (USFWS, 2018) identify the type of wetland or open water present at a location using the USFWS classification system (Cowardin et al., 1979). The NWI data indicated that 12 NWI features (approximately 1 acre) are within the ESC (Figure 2-A to 2-AH): two palustrine unconsolidated bottom (PUBGx) features, six riverine streambed class (R4SBC) features, and four riverine unconsolidated bottom (R5UBH) features (USFWS, 2018). The presence of an NWI feature is not a definitive indicator that a wetland or waterbody is present. The information on NWI maps is obtained largely from aerial interpretation, may be outdated, and is only sporadically field-checked. Additional detail regarding the mapped NWI wetlands within the ESC is provided in Table 3-2.

TABLE 3-2: Mapped National Wetland Inventory Features
Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project

Wetland Type ¹	Mapped NWI Features	Acreage within ESC
PUBGx	2	0.08
R4SBC	6	0.63
R5UBH	4	0.36
Overall Total	12	1.07

¹Cowardin et al. 1979.

As shown on the FEMA floodplain panels (Figures 2-A to 2-AH), the ESC crosses the FEMA-mapped 100-year floodplains of three streams (FEMA, 2018):

- Dining Fork (Stream PB-03)
- Irish Creek (Stream PB-12)
- Conotton Creek (Stream PB-16).

3.2 Field Survey Methodology

In May through October 2018, Jacobs biologists surveyed the ESC by walking the corridor and evaluating for wetlands and other waters of the U.S. The boundaries of each wetland and waterbody within the ESC were delineated and recorded using handheld global positioning system (GPS) units. For waterbodies identified within the Project area, the ordinary high-water mark (OHWM) was used as the jurisdictional boundary.

Wetland, stream, and pond data were recorded on USACE Regional Supplement wetland determination data forms, Headwater Habitat Evaluation Index (HHEI) forms and Qualitative Habitat Evaluation Index (QHEI) forms, and Jacobs standard open water/pond data forms, respectively. All other land use, habitat, and other supplemental data were collected in a field notebook during the environmental survey.

3.2.1 Wetland Delineation

Wetland boundaries were field-delineated according to Section 404 of the Clean Water Act (CWA) and the routine onsite methodology described in the Technical Report Y-87-1 *Corps of Engineers' Wetlands Delineation Manual* and subsequent guidance documents (USACE, 1987) and according to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* (USACE, 2012). Wetland delineation data were recorded on the USACE Regional Supplement wetland determination data forms. Representative wetland and upland data points were recorded during the wetland delineation to determine the presence/absence of wetlands and/or document upland conditions within the Project area. Upland data points were determined not to be within wetlands because they did not have positive indicators of one or more of the three wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils.

3.2.1.1 Soils

Jacobs biologists examined soils using a hand auger to extract soil cores, which were examined for hydric soil characteristics. A *Munsell Soil Color Chart* (Kollmorgen Corporation, 1988) was used to identify the hue, value, and chroma of the matrix and mottles of the soils. Generally, mottled soils with a matrix chroma of two or less, or unmottled soils with a matrix chroma of one or less are considered to exhibit hydric soil characteristics (USACE, 1987). In sandy soils, mottled soils with a matrix chroma of three or less, or unmottled soils with a matrix chroma of two or less are considered hydric soils.

3.2.1.2 Hydrology

The *1987 Manual* requires that an area be inundated or saturated to the surface for an absolute minimum of five percent of the growing season. Areas saturated between five percent and 12.5 percent of the growing season may or may not be wetlands, while areas saturated over 12.5 percent of the growing season fulfill the hydrology requirements for wetlands. The *Regional Supplement* states that the growing season dates are determined through onsite observations of the following indicators of biological activity in a given year; (1) above-ground growth and development of vascular plants, and/or (2) soil temperature (12-in. depth is 41 degrees Fahrenheit (°F) or higher) as an indicator of soil microbial activity. Therefore, the beginning of the growing season in a given year is indicated by whichever condition occurs earlier, and the end of the growing season by whichever persists later.

The soils and ground surface were examined by Jacobs biologists for evidence of wetland hydrology in lieu of detailed hydrological data. This is an acceptable approach according to the *1987 Manual* and the *Regional Supplement*. Evidence indicating wetland hydrology typically includes primary indicators such as surface water, saturation, water marks, drift deposits, water-stained leaves, sediment deposits and oxidized rhizospheres on living roots; and secondary indicators such as, drainage patterns, geomorphic position, micro-topographic relief, and a positive Facultative (FAC)-neutral test (USACE, 2011).

3.2.1.3 Vegetation

Dominant vegetation was visually assessed for each stratum (tree, sapling/shrub, herb and woody vine) and an indicator status of obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and/or upland (UPL) was assigned to each plant species based on the 2016 National List of Plant Species that Occur in Wetlands: Region 1 (Region 1 encompasses the state of Ohio). An area is determined to have hydrophytic vegetation when, under normal circumstances, 50 percent or more of the composition of the dominant species are OBL, FACW and/or FAC species. Vegetation of an area was determined to be non-hydrophytic when more than 50 percent of the composition of the dominant species was FACU and/or UPL species. In addition to the dominance test, the FAC-Neutral test and prevalence tests are used to determine if a wetland has a predominance of hydrophytic vegetation.

Wetland quality was evaluated using the Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001). Categorization was conducted in accordance with the latest quantitative score calibration (OEPA, 2000). Wetlands are scored based on hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v5.0 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 a transitional zone, it must be given the higher Category unless scientific data can prove it should be in a lower category (Mack, 2001).

According to recent guidance from the USEPA and USACE, wetlands that are adjacent to or have a significant nexus to TNWs are regulated under Sections 401 and 404 of the CWA (USEPA and USACE, 2008). A significant nexus must meet criteria that indicate the wetland provides biological, physical, or chemical benefits to the TNW. A significant nexus includes consideration of both hydrologic and ecologic factors. All the streams in the ESC are tributaries to the Tuscarawas River.

3.2.2 Stream Assessment

Jurisdictional streams were identified as those waters that possessed a continuously defined bed and bank, OHWM indicators, and lacked a dominance of upland vegetation in the channel. Per USACE guidance, the OHWM is defined as the “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). Channels that parallel a roadway or railroad were identified as upland drainage features and were not considered to be jurisdictional unless they had an identifiable OHWM, were identified on the USGS topographic map, or represented a presumed relocation of a natural channel.

During the field survey, functional stream assessments were conducted using the methods described in the OEPA’s Methods for Assessing Habitat in Flowing Waters: Using OEPA’s *Qualitative Habitat Evaluation Index* (OEPA, 2006) and in the OEPA’s Field Evaluation Manual for Ohio’s Primary Headwater Habitat Streams (OEPA, 2002). The Qualitative Habitat Evaluation Index (QHEI), is used to characterize larger streams (drainage areas greater than 1 square mile), while the Primary Headwater Habitat Evaluation Index (HHEI) is appropriate for first-order and second-order headwater streams (drainage areas less than 1 square mile).

4 Field Survey Results

Jacobs biologists surveyed the ESC in May through October 2018 by walking the 100-foot wide ESC and evaluating for wetlands and other waters of the U.S. A total of 25 wetlands, 34 streams, and two ponds were delineated within the Project ESC (Figures 3-A to 3-AH). The features identified within the Project ESC are displayed and identified on the Wetlands and Waterbodies Delineation Map (Figures 3-A to 3-AH). Detailed information for wetland and waterbody features within the Project ESC is provided in Tables 4-1 (wetlands), 4-2 (streams), and 4-3 (ponds).

4.1 Wetlands

Twenty-five wetlands totaling 2.19 acres, ranging in size from 0.01 to 0.53 acres, were delineated within the ESC and are depicted in Figure 3-A to 3-AH. All 25 wetlands were identified as PEM wetlands. No palustrine scrub-shrub (PSS) or palustrine forested (PFO) wetlands were observed within the ESC.

Detailed information for each delineated wetland within the Project ESC is provided in Table 4-1 (follows text) and a summary of the delineated wetlands is provided in Table 4-4. The reported wetland acreage only corresponds to areas delineated within the ESC as some wetlands extended beyond the survey boundary. Completed USACE wetland and upland determination forms are provided in Appendix A. Representative photographs were taken of each wetland during the field survey and are provided in Appendix F.

TABLE 4-4: Wetland Summary Table

Polo Road-Buckeye Power 138 kV Transmission Line Rebuild Project

Wetland Type	ORAM Category			Number of Wetlands	Acreage within ESC
	Category 1	Category 2	Category 3		
PEM	18	7	0	25	2.19
Totals	18	7	0	25	2.19

4.1.1 Wetland ORAM Results

A total of 18 Category 1 wetlands and seven Category 2 wetlands were identified within the ESC. No Category 3 wetlands were identified within the ESC. Table 4-4 provides additional summary information regarding wetlands identified within the ESC. Completed ORAM forms are included in Appendix B.

The 18 Category 1 wetlands were classified based on the ORAM scores ranging from 20 to 29.5. Generally, these wetlands scored low due to a variety of factors such as small size, intensity of surrounding land use, narrow buffer areas, disturbance to soils and hydrology, the lack of second growth vegetation, and the presence of invasive species.

The seven Category 2 wetlands were classified based on the ORAM scores ranging from 30 to 33.5. Generally, the Category 2 wetlands exhibited medium upland buffers, very low to moderately high intensive surrounding land use (e.g. second growth forest, residential, fenced pasture), sparse to moderate percentage of invasive species, and had habitat and hydrology generally recovered or recovering from previous manipulation due to clearcutting, shrub/sapling removal, and other disturbances, or with no disturbance at all.

No high-quality Category 3 wetlands were identified within the ESC.

4.2 Streams

A total of 34 streams, totaling 6,198 linear feet, were identified within the ESC as shown in Figures 3-A to 3-AH. Of these, 17 streams were identified as ephemeral, 13 were intermittent, and four were perennial. Three streams were assessed using the QHEI methodology (drainage area greater than 1 mi²) and 31 streams were assessed using the HHEI methodology (drainage area less than 1 mi²). Completed QHEI and HHEI forms are

provided in Appendix C and D, respectively. Representative photographs were taken of each stream during the field survey and are provided in Appendix F.

4.2.1 QHEI Results

Three streams, totaling 706 linear feet, within the ESC were evaluated using the QHEI methodology. All three stream habitats assessed were classified as Fair Warmwater streams. Table 4-5 provides QHEI summary results for streams identified within the ESC, and detailed information can be found in Table 4-2. Completed QHEI forms are included in Appendix C.

TABLE 4-5: QHEI Stream Summary Table

Polo Road-Buckeye Power 138 kV Transmission Line Rebuild Project

Flow Regime	QHEI Narrative Category					Number of Streams	Length (feet) within ESA
	Very Poor Warmwater	Poor Warmwater	Fair Warmwater	Good Warmwater	Excellent Warmwater		
Perennial	0	0	3	0	0	3	706
Total	0	0	3	0	0	3	706

4.2.2 HHEI Results

Thirty-one headwater streams totaling 5,492 linear feet within the ESC were evaluated using the HHEI methodology. These streams were classified as ten Ephemeral Aquatic Streams, eight Modified Ephemeral Aquatic Streams, nine Small Drainage Warmwater Streams, and four Modified Small Drainage Warmwater Streams. Table 4-6 provides a summary of the HHEI results for streams identified within the ESC, and detailed information can be found in Table 4-2. Completed HHEI forms are provided in Appendix D. Representative photographs of the streams were taken during the field survey and are provided in Appendix F.

TABLE 4-6: HHEI Stream Summary Table

Polo Road-Buckeye Power 138 kV Transmission Line Rebuild Project

Flow Regime	HHEI Class						Number of Streams	Length (feet) within ESA
	Rheocrene	Ephemeral Aquatic	Modified Ephemeral Aquatic	Small Drainage Warmwater	Modified Small Drainage Warmwater	Spring Water		
Ephemeral	0	8	8	0	1	0	17	2,037
Intermittent	0	2	0	8	3	0	13	3,031
Perennial	0	0	0	1	0	0	1	424
Total	0	10	8	9	4	0	31	5,492

4.3 Ponds/Open Water

Two ponds totaling 0.07 acres were identified within the ESC and can be found on Figures 3-A to 3-AH. Detailed information for each delineated pond within the ESC is provided in Table 4-3. More detailed information on pond conditions can be found in Appendix E. Representative photographs of ponds can be found in Appendix F.

5 Conclusion

Jacobs conducted an environmental survey of the Polo Road-Buckeye Power 138 kV Transmission Line Rebuild Project in May through October 2018. A total of 25 wetlands, 34 streams, and two ponds were delineated within the Project ESC. The 25 wetlands totaling 2.19 acres within the ESC were all categorized as PEM. Of the 25 wetlands, 18 wetlands were identified as Category 1 wetlands and seven wetlands were identified as Category 2 wetlands. No Category 3 wetlands were identified within the ESC.

Thirty-four streams totaling 6,198 linear feet were identified within the Project ESC, comprising 17 ephemeral streams, 13 intermittent streams, and four perennial streams. Three streams were assessed using the QHEI methodology (drainage area greater than 1 mi²) and 31 streams were assessed using the HHEI methodology (drainage area less than 1 mi²). Additionally, the two ponds totaled 0.07 acres within the Project ESC.

The jurisdiction of all assessed features will be determined by the USACE based on hydrologic connectivity. Further coordination with the USACE is recommended prior to the submittal of any permit or construction activities.

The results of the environmental resource survey described in this report conducted by Jacobs are limited to the what was identified within the ESC and depicted in Figures 3-A to 3-AH. The information contained in this wetland delineation report is for a study area that may be much larger than the actual Project limits-of-disturbance for construction; therefore, lengths and acreages listed in this report may likely not constitute the actual impacts of the Project at the time of construction. If permits are determined to be necessary, actual impacted lengths and/or acreages will be submitted in subsequent permit applications.

The wetland and waterbodies field survey results presented within this report apply to the site conditions at the time of our assessment. Changes within the environmental survey area that may occur with time due to natural processes or human impacts at the project site or on adjacent properties, could invalidate the findings of this report, especially if Jacobs is unaware and has not had the opportunity to revisit the Project survey area. Additionally, changes in applicable standards and regulations may also occur due to legislation or the expansion of knowledge over time. Therefore, the findings of this wetland and waterbodies delineation report may be invalidated, wholly or in part, by changes that are beyond the control of Jacobs.

6 References

- Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C.
- Federal Emergency Management Agency (FEMA). 2018. Flood Map Service Center. Accessed January 2018. <https://msc.fema.gov/portal/search#searchresultsanchor>
- Kollmorgen Corporation. 1988. Munsell Soil Color Charts. Baltimore, Maryland.
- Mack, John J. 2001. Ohio Rapid Assessment Method for Wetlands, Manual for Using Version 5.0. Ohio EPA Technical Bulletin Wetland/2001-1-1. Ohio Environmental Protection Agency, Division of Surface Water, 401 Wetland Ecology Unit, Columbus, Ohio.
- Ohio Environmental Protection Agency (OEPA). 2000. *ORAM v. 5.0 Quantitative Score Calibration*. Columbus, Ohio.
- Ohio Environmental Protection Agency (OEPA). 2002. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams. Final Version 1.0. September.
- Ohio Environmental Protection Agency (OEPA). 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). OHIO EPA Technical Bulletin EAS/2006-06-1.
- U.S. Army Corps of Engineers (USACE). 1987. Technical Report Y-87-1, *Corps of Engineers' Wetlands Delineation Manual*.
- U.S. Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification. <http://www.nap.usace.army.mil/Portals/39/docs/regulatory/rgls/rgl05-05.pdf>.
- U.S. Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain Piedmont Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/ED TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Department of Agriculture (USDA). 2018. USDA Field Office Climate Data: CAMBRIDGE, OH WETS Station, 1971-2000. Accessed August 2019 <http://agacis.rcc-acis.org/?fips=39059>
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2018. Soil Survey Geographic (SSURGO) database for Harrison and Carroll Counties, Ohio. <http://SoilDataMart.nrcs.usda.gov/>. Accessed April 2018.
- U.S. Fish and Wildlife Service (USFWS). 2018. National Wetlands Inventory. <http://www.fws.gov/wetlands/Wetlands-Mapper.html>. Accessed April 2018.
- U.S. Geological Survey (USGS). 2018. National Hydrography Dataset, Ohio. <http://nhd.usgs.gov/data.html>. Accessed April 2018.

Tables

TABLE 3-1: Mapped Soil Units***Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project***

AbC2	Aaron silty clay loam, 6 to 15 percent slopes, eroded	Not Hydric
BkE	Berks channery silt loam, 25 to 35 percent slopes	Not Hydric
CnD	Coshocton silt loam, 15 to 25 percent slopes	Not Hydric
CpD	Coshocton silt loam, 15 to 25 percent slopes	Not Hydric
CuB	Culleoka silt loam, 3 to 8 percent slopes	Not Hydric
DkC	Dekalb channery loam, 6 to 15 percent slopes	Not Hydric
FcA	Fitchville silt loam, 0 to 3 percent slopes	Predominately Non-Hydric
GbC	Germano fine sandy loam, 6 to 15 percent slopes	Not Hydric
GeC	Germano fine sandy loam, 6 to 15 percent slopes	Not Hydric
GnC	Gilpin silt loam, 8 to 15 percent slopes	Not Hydric
GnD	Gilpin silt loam, 15 to 25 percent slopes	Not Hydric
GsB	Glenford silt loam, 3 to 8 percent slopes	Predominately Non-Hydric
GuD2	Guernsey silty clay loam, 15 to 25 percent slopes, eroded	Not Hydric
HeF	Hazleton channery sandy loam, 40 to 70 percent slopes	Not Hydric
LnC	Lowell silt loam, 8 to 15 percent slopes	Not Hydric
Me	Melvin silt loam, frequently ponded, 0 to 3 percent slopes	Predominately Hydric
Or	Orrville silt loam, 0 to 3 percent slopes, occasionally flooded	Predominately Non-Hydric
RcB	Richland silt loam, 2 to 6 percent slopes	Not Hydric
ReE	Rigley loam, 25 to 40 percent slopes	Not Hydric
RgC	Rigley sandy loam, 8 to 15 percent slopes	Not Hydric
RgD	Rigley sandy loam, 15 to 25 percent slopes	Not Hydric
RgE	Rigley loam, 25 to 40 percent slopes	Not Hydric
RgE	Rigley sandy loam, 25 to 40 percent slopes	Not Hydric
Tg	Tioga silt loam, occasionally flooded	Predominately Non-Hydric
WkC	Westmoreland silt loam, 8 to 15 percent slopes	Not Hydric
WmC	Westmoreland-Coshocton silt loams, 8 to 15 percent slopes	Not Hydric
WmD	Westmoreland-Coshocton silt loams, 15 to 25 percent slopes	Not Hydric
WmE	Westmoreland-Coshocton complex, 25 to 40 percent slopes	Not Hydric
WnE	Westmoreland-Dekalb complex, 25 to 40 percent slopes	Not Hydric
WnF	Westmoreland-Dekalb complex, 40 to 70 percent slopes	Not Hydric

Table 4-1: Detailed Delineated Wetland Table
Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project

Wetland ID	Location		Wetland Type ¹	Area (ac) ²	ORAM Score, Category
	Latitude	Longitude			
Wetland PB-01	40.45142	-81.04964	PEM	0.06	26, Category 1
Wetland PB-02	40.44844	-81.04957	PEM	0.08	26.5, Category 1
Wetland PB-03	40.44677	-81.04984	PEM	0.30	29.5, Category 1
Wetland PB-04	40.44606	-81.04970	PEM	0.01	26.5, Category 1
Wetland PB-05	40.44302	-81.04987	PEM	0.05	29, Category 1
Wetland PB-06	40.44231	-81.05001	PEM	0.02	22, Category 1
Wetland PB-07	40.42643	-81.05011	PEM	0.18	33.5, Category 2
Wetland PB-08	40.42551	-81.05023	PEM	0.09	25.5, Category 1
Wetland PB-09	40.40846	-81.05182	PEM	0.05	33.5, Category 2
Wetland PB-10	40.40766	-81.05158	PEM	0.02	24, Category 1
Wetland PB-11	40.39968	-81.05181	PEM	0.04	21, Category 1
Wetland PB-12	40.39833	-81.05184	PEM	0.03	20, Category 1
Wetland PB-13	40.39806	-81.05197	PEM	0.03	20, Category 1
Wetland PB-14	40.38383	-81.05280	PEM	0.07	27, Category 1
Wetland PB-15	40.37894	-81.05311	PEM	0.06	27, Category 1
Wetland PB-16	40.37725	-81.05301	PEM	0.53	31, Category 2
Wetland PB-17	40.37537	-81.05297	PEM	0.03	23, Category 1
Wetland PB-18	40.37463	-81.05307	PEM	0.09	23, Category 1
Wetland PB-19	40.36396	-81.05263	PEM	0.04	24.5, Category 1
Wetland PB-20	40.35758	-81.05203	PEM	0.05	29, Category 1
Wetland PB-21	40.35625	-81.05230	PEM	0.02	27, Category 1
Wetland PB-22	40.34425	-81.05474	PEM	0.04	30, Category 2
Wetland PB-23	40.34249	-81.05545	PEM	0.03	30.5, Category 2
Wetland PB-24	40.32996	-81.06108	PEM	0.03	30, Category 2
Wetland PB-25	40.32846	-81.06166	PEM	0.24	31, Category 2
TOTAL: 25	WETLAND ACREAGE SUBTOTAL			2.19	

¹Cowardin et al. 1979.

²This acreage only corresponds to the area delineated within the environmental survey corridor.

TABLE 4-2: Detailed Delineated Stream Table

Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project

Stream ID	Location		Flow Regime ¹	Linear Feet ²	Average OHWM Width (Feet)	Average TOB Width (Feet)	HHEI/QHEI Score	Class/Designation
	Latitude	Longitude						
Stream PB-01	40.45073	-81.04962	Ephemeral	62	0.5	2	19	Modified Ephemeral
Stream PB-02	40.44742	-81.04974	Perennial	424	4	7	58	Small Drainage Warmwater
Stream PB-03	40.44736	-81.04960	Perennial	278	12	15	45	Fair Warmwater
Stream PB-04	40.44341	-81.04988	Ephemeral	120	1	2	23	Ephemeral
Stream PB-05	40.44312	-81.05000	Ephemeral	48	1.5	2	28	Ephemeral
Stream PB-06	40.42673	-81.05012	Ephemeral	218	1	1.5	23	Ephemeral
Stream PB-07	40.42625	-81.05006	Intermittent	190	2	3	35	Small Drainage Warmwater
Stream PB-08	40.42551	-81.05022	Ephemeral	116	1	1.5	25	Modified Ephemeral
Stream PB-09	40.42072	-81.05074	Intermittent	166	2	3	45	Small Drainage Warmwater
Stream PB-10	40.41043	-81.05195	Ephemeral	92	1	2	26	Modified Ephemeral
Stream PB-11	40.40730	-81.05164	Intermittent	687	3	4	43	Small Drainage Warmwater
Stream PB-12	40.40174	-81.05172	Perennial	328	18	22	48	Fair Warmwater
Stream PB-13	40.39726	-81.05197	Ephemeral	105	1.5	2	34	Ephemeral
Stream PB-14	40.39698	-81.05198	Ephemeral	124	1	1.5	34	Ephemeral
Stream PB-15	40.39632	-81.05200	Ephemeral	151	1	1.5	34	Modified Small Drainage Warmwater
Stream PB-16	40.37778	-81.05302	Perennial	100	30	40	44	Fair Warmwater
Stream PB-17	40.37679	-81.05317	Intermittent	188	2	2	36	Modified Small Drainage Warmwater
Stream PB-18	40.37523	-81.05295	Intermittent	11	2	3	36	Modified Small Drainage Warmwater
Stream PB-19	40.37465	-81.05309	Intermittent	89	3	4	36	Modified Small Drainage Warmwater
Stream PB-20	40.36798	-81.05310	Intermittent	111	1.5	3	45	Small Drainage Warmwater
Stream PB-21	40.36397	-81.05269	Intermittent	135	2	4	39	Small Drainage Warmwater
Stream PB-22	40.36090	-81.05223	Ephemeral	32	2	3	17	Modified Ephemeral
Stream PB-23	40.36040	-81.05230	Ephemeral	104	1.5	2	17	Modified Ephemeral
Stream PB-24	40.35998	-81.05213	Ephemeral	98	1	1.5	17	Modified Ephemeral
Stream PB-25	40.35764	-81.05208	Ephemeral	211	1	2	25	Ephemeral
Stream PB-26	40.35629	-81.05225	Ephemeral	111	1	2	26	Ephemeral
Stream PB-27	40.35130	-81.05285	Ephemeral	120	2	5	12	Modified Ephemeral
Stream PB-28	40.34373	-81.05501	Intermittent	338	4	7	61	Small Drainage Warmwater

TABLE 4-2: Detailed Delineated Stream Table

Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project

Stream ID	Location		Flow Regime ¹	Linear Feet ²	Average OHWM Width (Feet)	Average TOB Width (Feet)	HHEI/QHEI Score	Class/Designation
	Latitude	Longitude						
Stream PB-29	40.34355	-81.05500	Ephemeral	17	0.5	1	25	Modified Ephemeral
Stream PB-30	40.34338	-81.05507	Intermittent	17	3	5	34	Small Drainage Warmwater
Stream PB-31	40.34227	-81.05572	Intermittent	123	2	4	29	Ephemeral
Stream PB-32	40.33673	-81.05806	Intermittent	387	2.5	5	30	Small Drainage Warmwater
Stream PB-33	40.33034	-81.06075	Ephemeral	310	1.5	2.5	25	Ephemeral
Stream PB-34	40.32927	-81.06137	Intermittent	589	3	4	26	Ephemeral
TOTAL: 34		CUMULATIVE STREAM LENGTH		6,198				

¹ Flow regime is defined as perennial, intermittent, or ephemeral. This determination was interpreted using field observations and USGS topographic maps as appropriate.

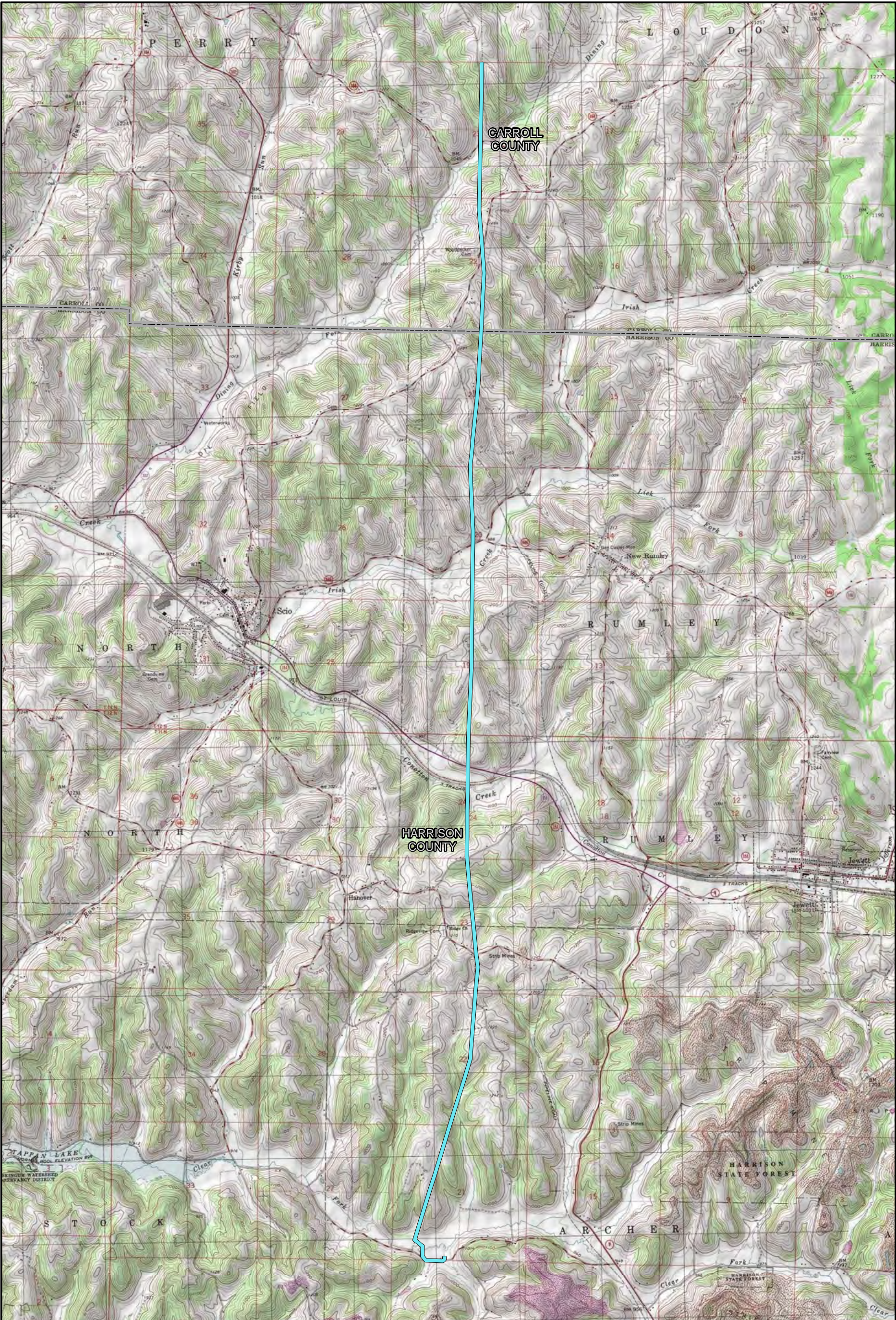
²Stream length within the environmental survey area.

TABLE 4-3: Detailed Delineated Pond Table***Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project***

Pond ID	Location		Area (ac) ¹
	Latitude	Longitude	
Pond PB-01	40.40740	-81.05160	0.04
Pond PB-02	40.37410	-81.05330	0.03
TOTAL: 2		CUMULATIVE POND AREA	0.07

¹This acreage only corresponds to the area delineated within the environmental survey corridor.

Figures



LEGEND: Polo Road (Kilgore) - Buckeye Power (New Stacy) County Boundary	Locator Map 	BASE MAP SOURCE: ESRI USA Topo Map Jewett and Scio Quadrangles		ATSI American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
					FIGURE 1 OVERVIEW MAP	
					PN: 699212	Date: 5/13/2020
CREATED BY: RED				Jacobs		
REVIEWED BY: BAO						

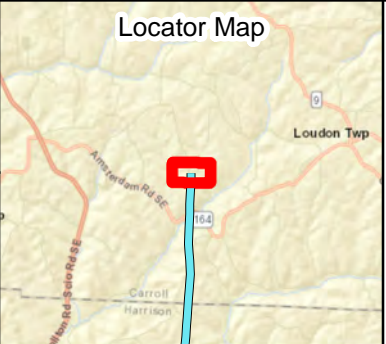
\\brooksdel\\iles\\GIS_SHARE\\ENB000_Proj\\FirstEnergy\\Holloway_Knox\\Maps\\Report\\WDR\\Phase3\\WDR_Figure_1_Overview_Topo_Phase3.mxd RD059809 5/13/2020 1:27:48 PM



\\brooks\delles\GIS_SHARE\ENBG\00_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:



- | | |
|---|-----------------|
| ● Substation | — Stream (NHD) |
| ■ Proposed Structure | □ Soil Unit |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | ■ Wetland (NWI) |
| □ Environmental Survey Corridor | ▨ Floodplain |

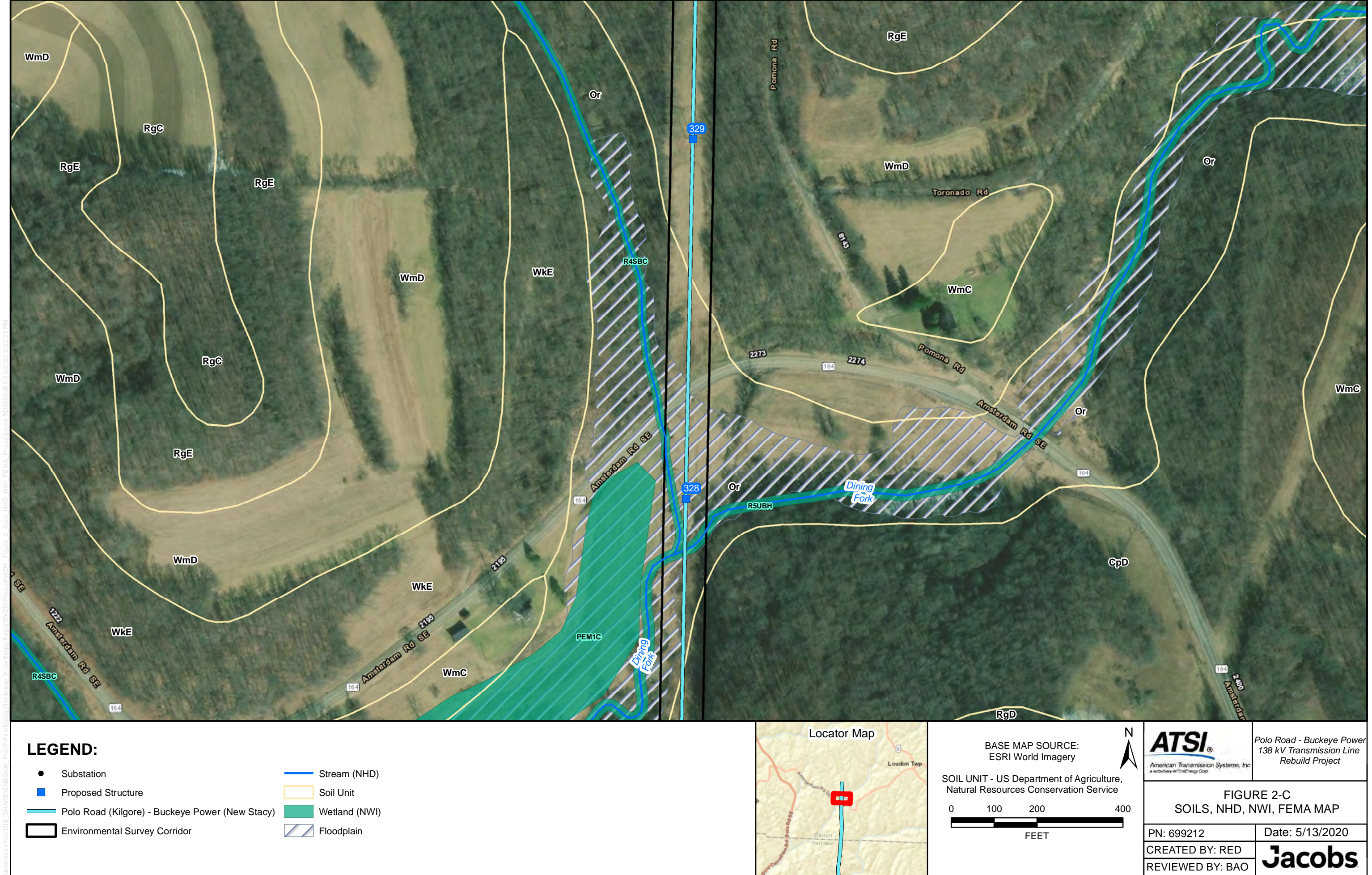


BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET

 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>		<i>Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project</i>	
FIGURE 2-A SOILS, NHD, NWI, FEMA MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			

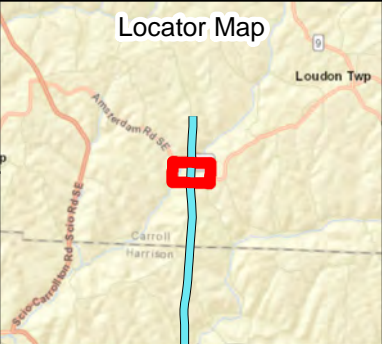




\\brooks\dellies\GIS_SHARE\ENB\0100_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure 2 Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:


- Substation
- Proposed Structure
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- Floodplain
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET


American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project


FIGURE 2-D
SOILS, NHD, NWI, FEMA MAP

PN: 699212

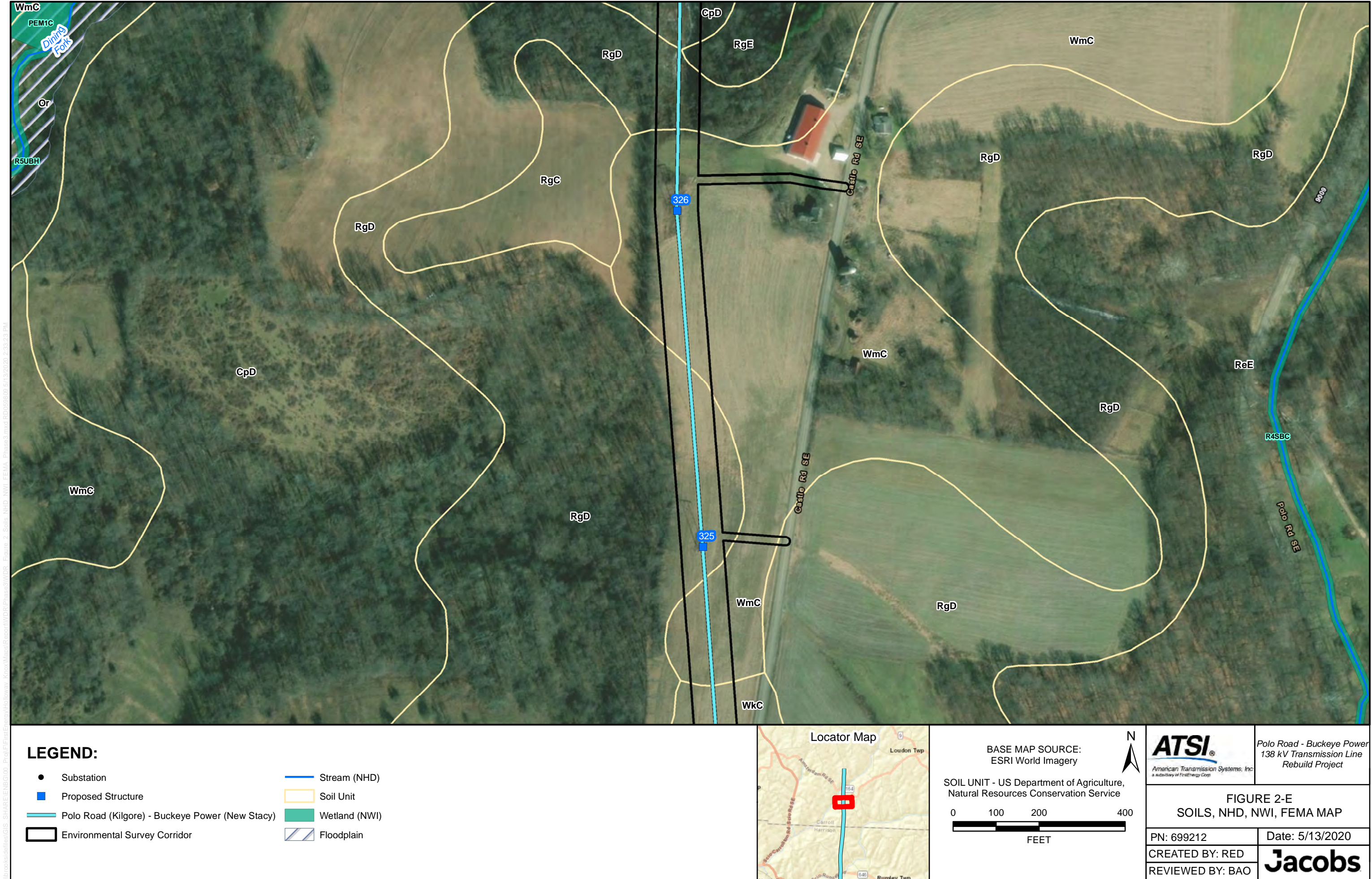
CREATED BY: RED

REVIEWED BY: BAO

Date: 5/13/2020

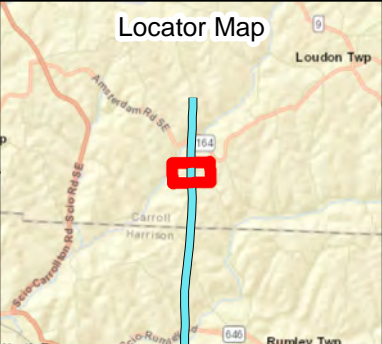


\\brooks\delles\GIS_SHARE\ENB\0100_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM



LEGEND:

- Substation
- Proposed Structure
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- ▨ Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET

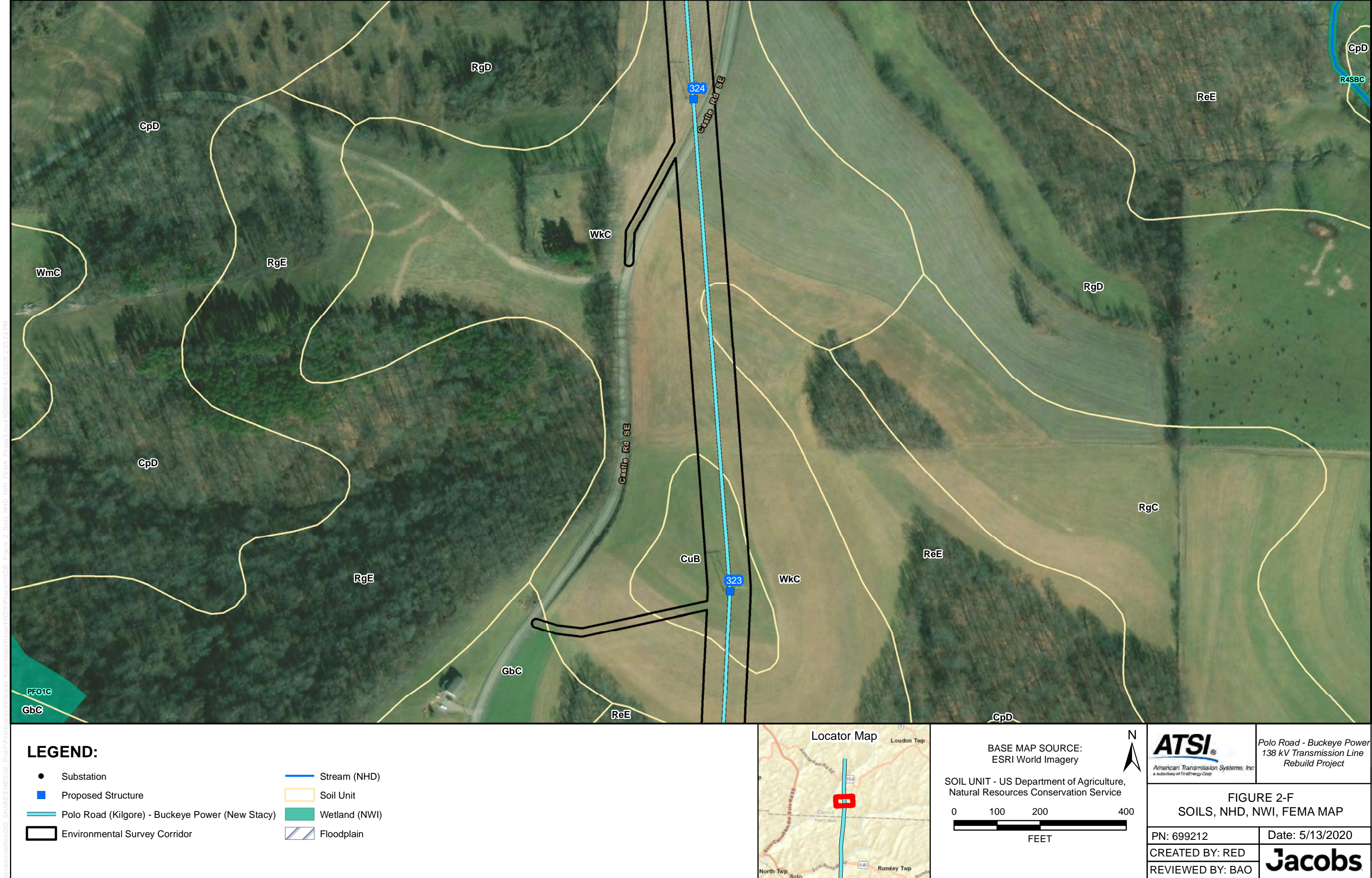
ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

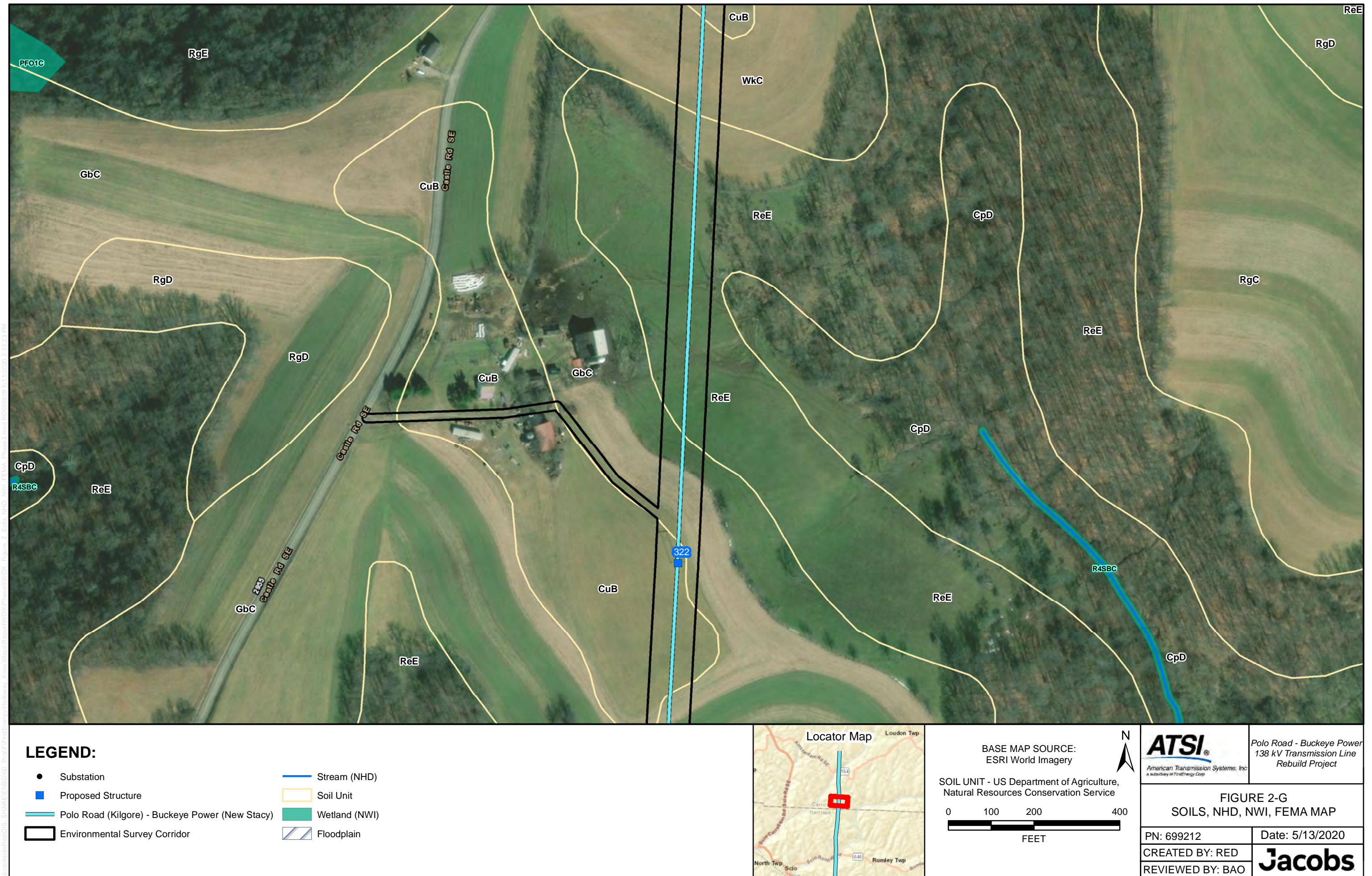
Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-E
SOILS, NHD, NWI, FEMA MAP

PN: 699212
CREATED BY: RED
REVIEWED BY: BAO

Date: 5/13/2020
Jacobs







\\brooks\dellies\GIS_SHARE\ENBG\00_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:

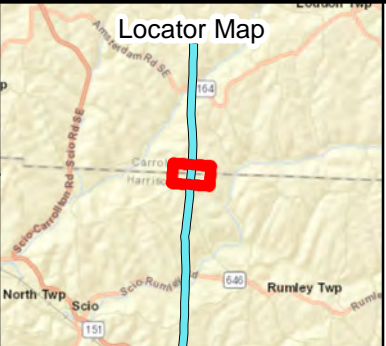
- Substation

■

 Proposed Structure

Polo Road (Kilgore) - Buckeye Power (New Stacy)

Environmental Survey Corridor
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0100200400

FEET

ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-H
SOILS, NHD, NWI, FEMA MAP

PN: 699212

CREATED BY: RED

REVIEWED BY: BAO

Date: 5/13/2020

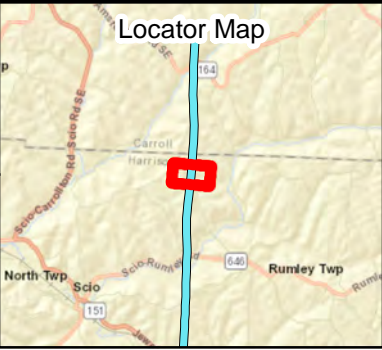
Jacobs



\\brooks\dellies\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:



- | | |
|---|-----------------|
| ● Substation | — Stream (NHD) |
| ■ Proposed Structure | □ Soil Unit |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | ■ Wetland (NWI) |
| □ Environmental Survey Corridor | ▨ Floodplain |

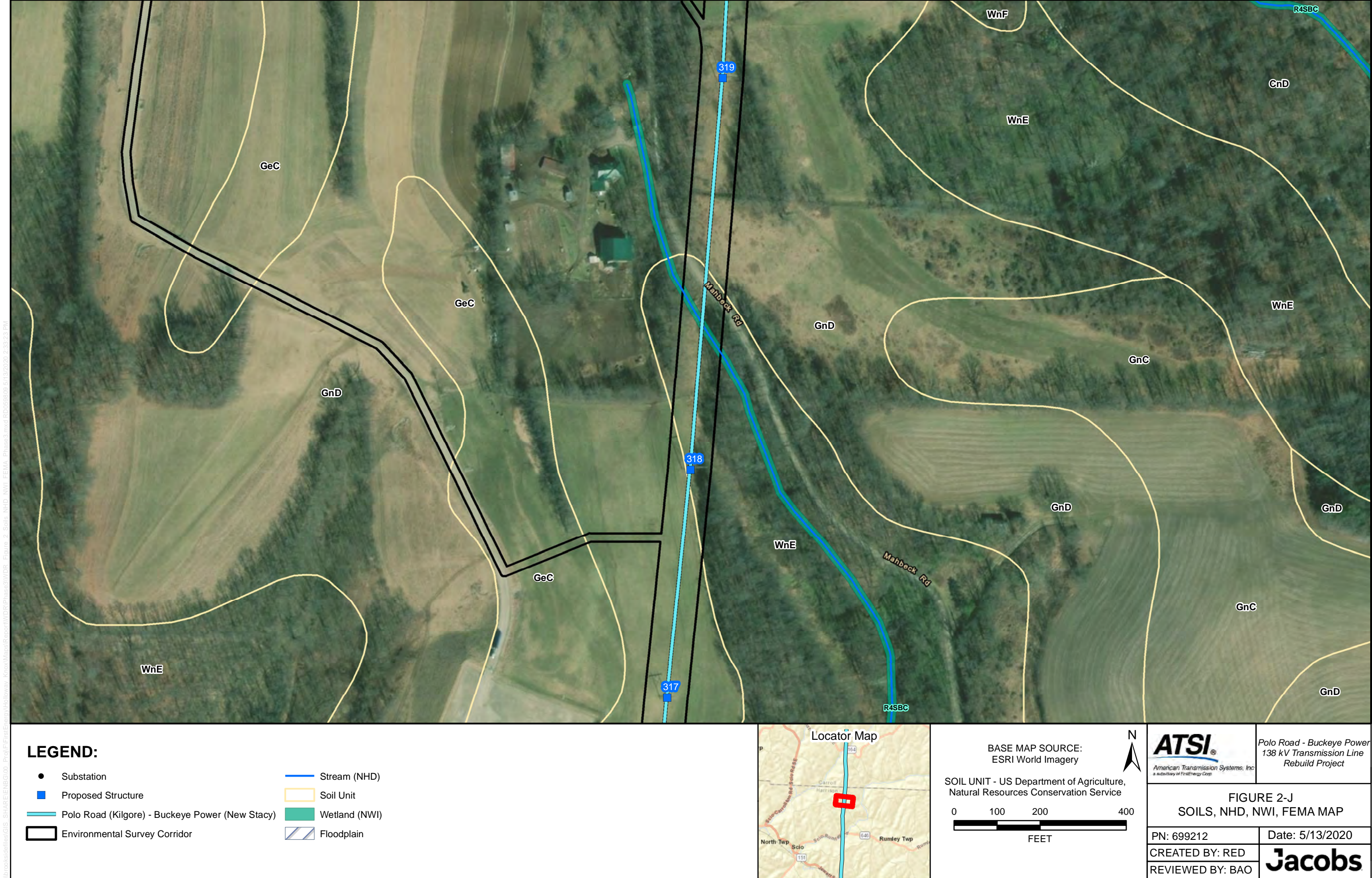


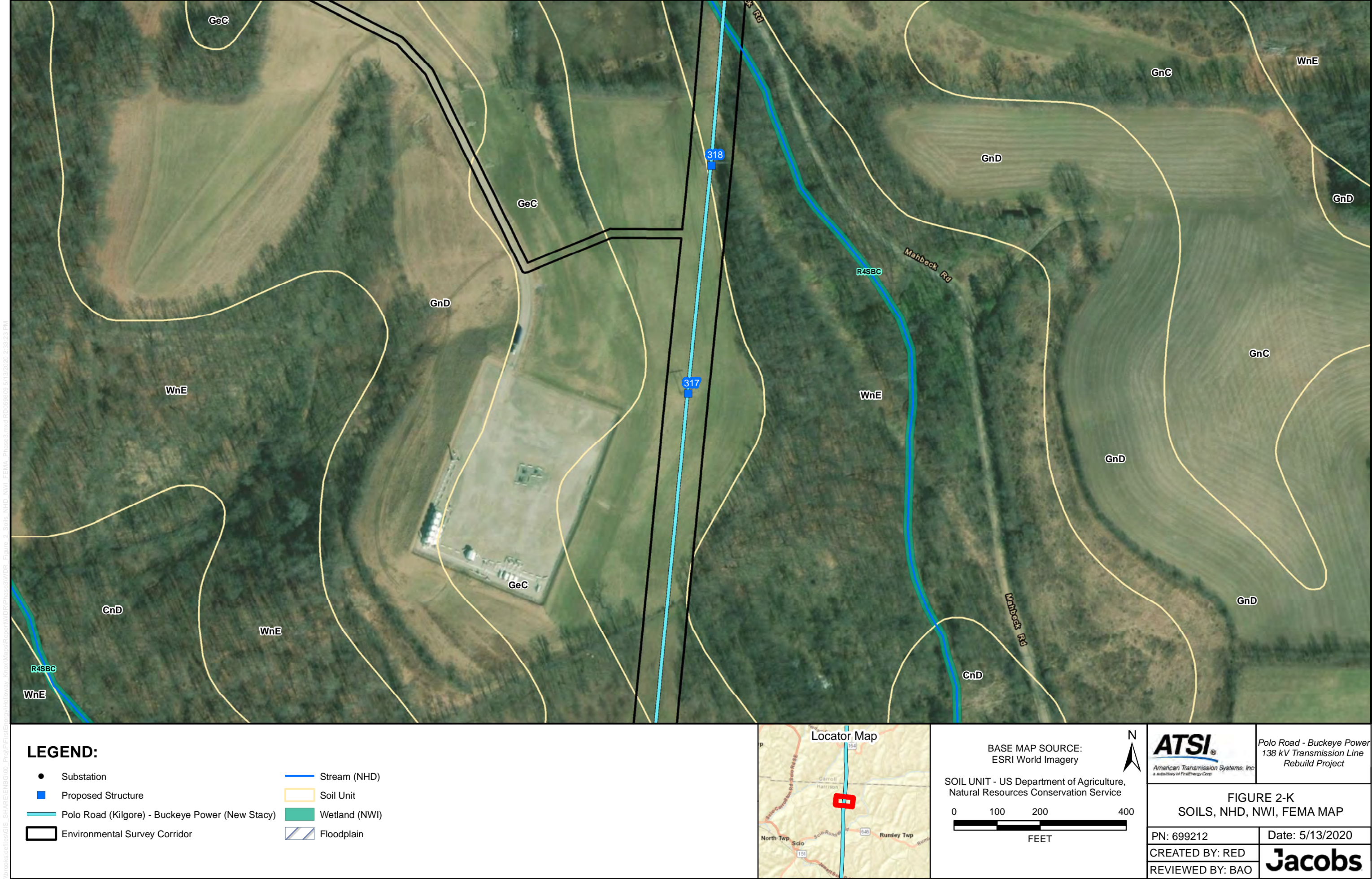
BASE MAP SOURCE:
ESRI World Imagery

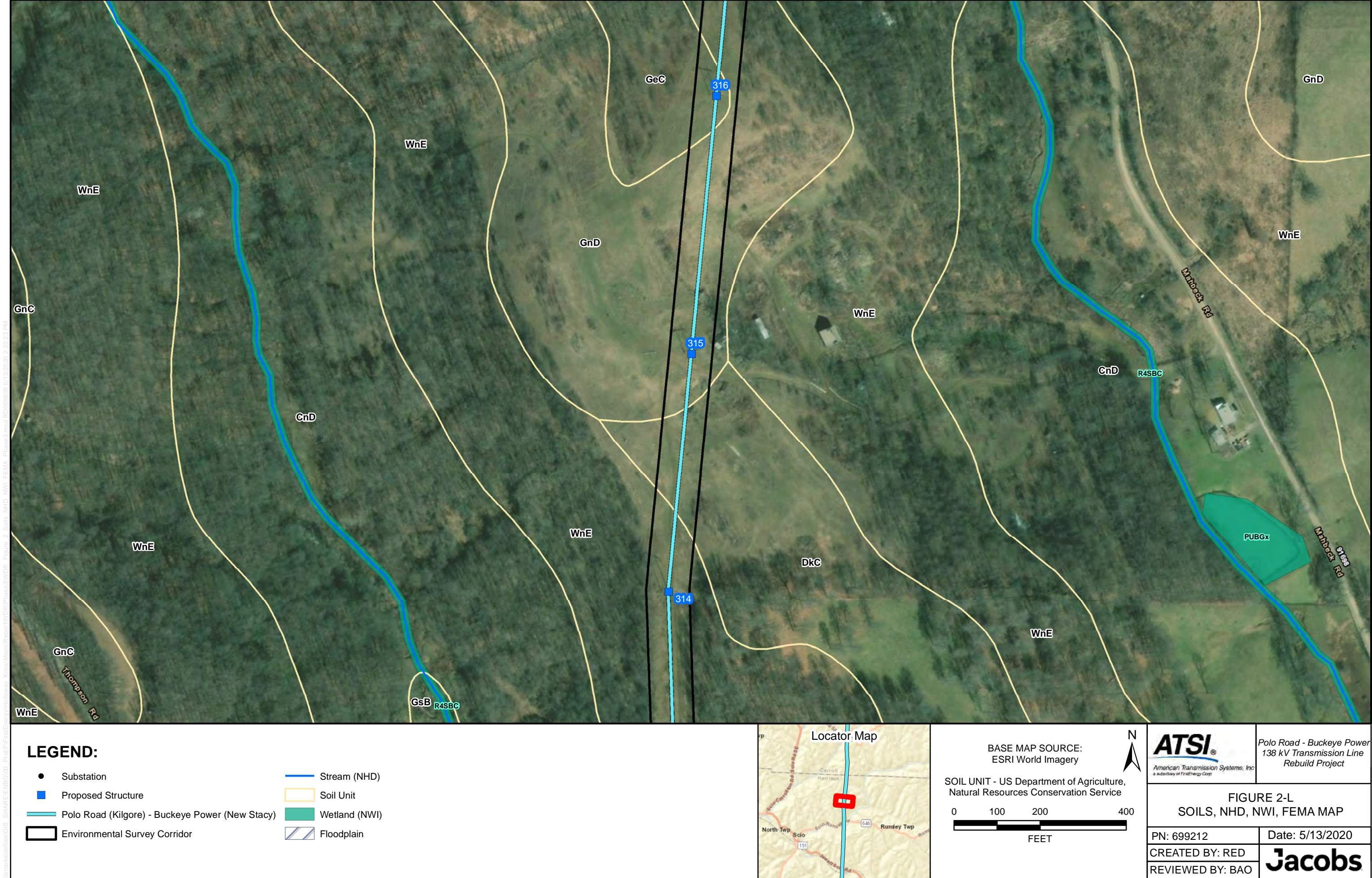
SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

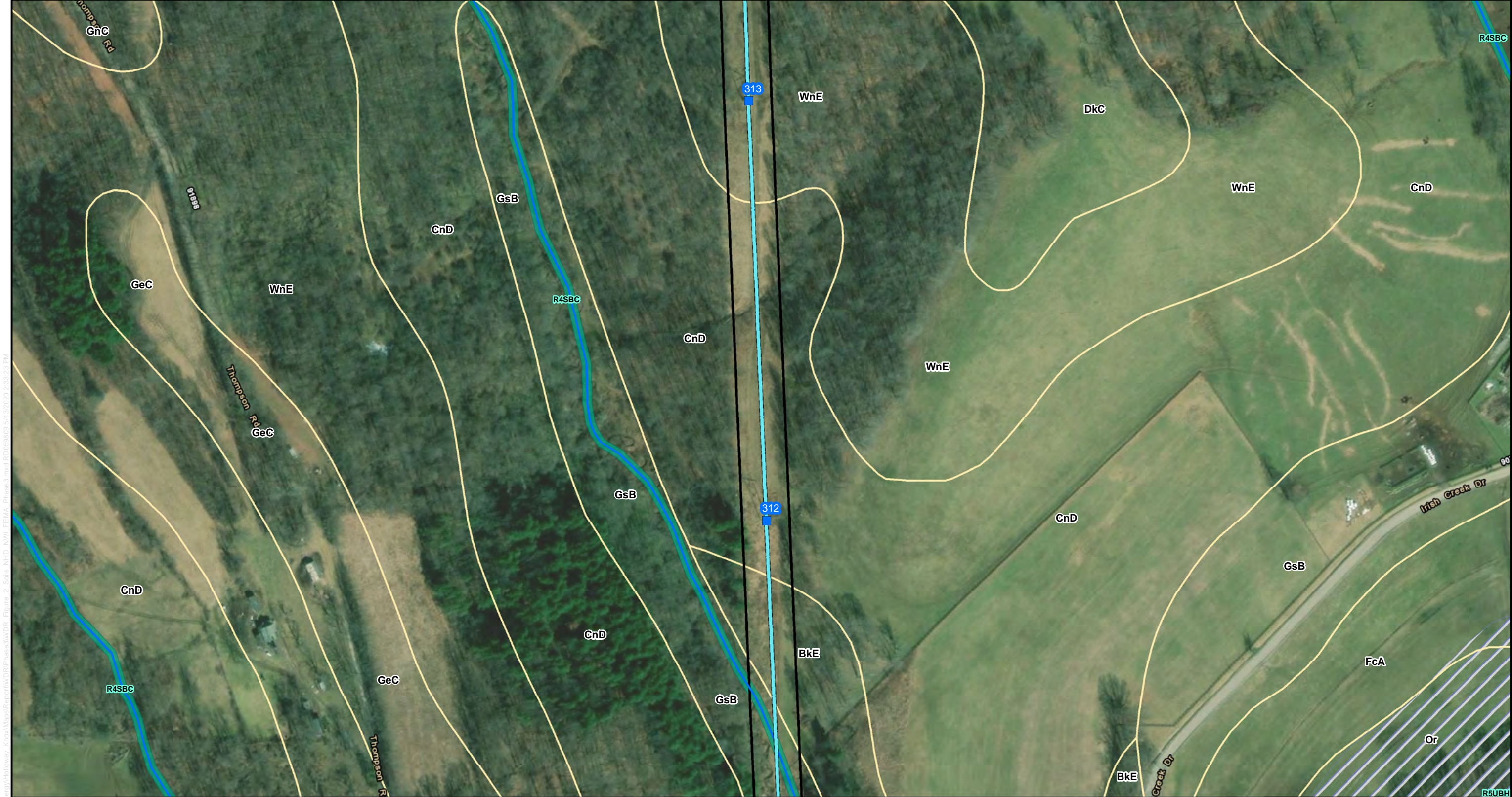
0 100 200 400
FEET

 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>		<i>Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project</i>	
FIGURE 2-I SOILS, NHD, NWI, FEMA MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			





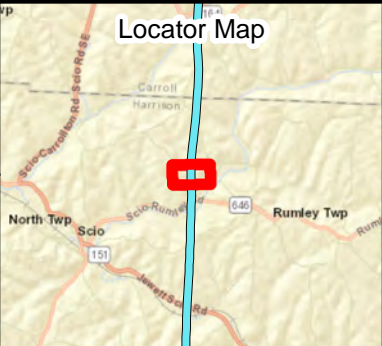




\\brooks\dellies\GIS_SHARE\ENB\000_Proj\FV\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:



- | | |
|---|-----------------|
| ● Substation | — Stream (NHD) |
| ■ Proposed Structure | □ Soil Unit |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | ■ Wetland (NWI) |
| □ Environmental Survey Corridor | ▨ Floodplain |



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

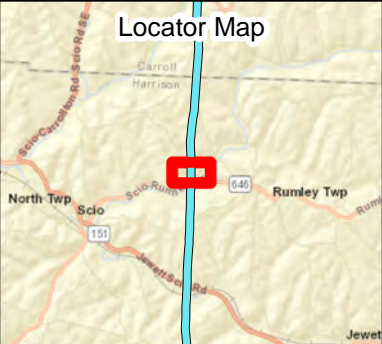
0 100 200 400
FEET

 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 2-M SOILS, NHD, NWI, FEMA MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



LEGEND:


- Substation
- Proposed Structure
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- ▨ Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET



ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-N
SOILS, NHD, NWI, FEMA MAP

PN: 699212
CREATED BY: RED
REVIEWED BY: BAO

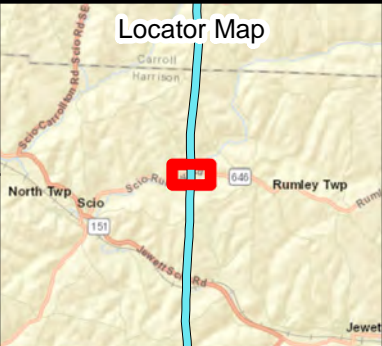
Date: 5/13/2020
Jacobs



\\brooks\dellies\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure 2 Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:



- | | |
|---|-----------------|
| ● Substation | — Stream (NHD) |
| ■ Proposed Structure | □ Soil Unit |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | ■ Wetland (NWI) |
| □ Environmental Survey Corridor | ▨ Floodplain |



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET

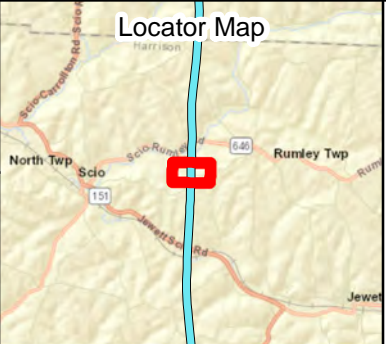
 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 2-O SOILS, NHD, NWI, FEMA MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



\\brooks\dellies\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:


- Substation
- Proposed Structure
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- Floodplain
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET


American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project


FIGURE 2-Q
SOILS, NHD, NWI, FEMA MAP

PN: 699212

CREATED BY: RED

REVIEWED BY: BAO

Date: 5/13/2020

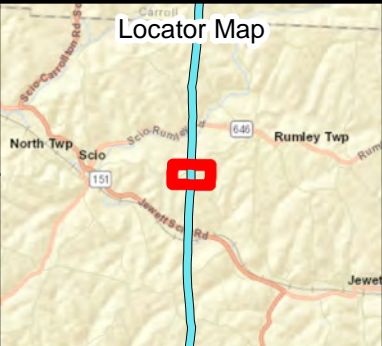




\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure 2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:

- | | |
|---|-----------------|
| ● Substation | — Stream (NHD) |
| ■ Proposed Structure | □ Soil Unit |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | ■ Wetland (NWI) |
| □ Environmental Survey Corridor | ▨ Floodplain |



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET



Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

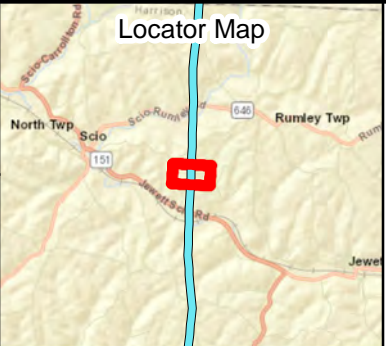
FIGURE 2-R SOILS, NHD, NWI, FEMA MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	



\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:



- | | |
|---|-----------------|
| ● Substation | — Stream (NHD) |
| ■ Proposed Structure | □ Soil Unit |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | ■ Wetland (NWI) |
| □ Environmental Survey Corridor | ▨ Floodplain |



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET

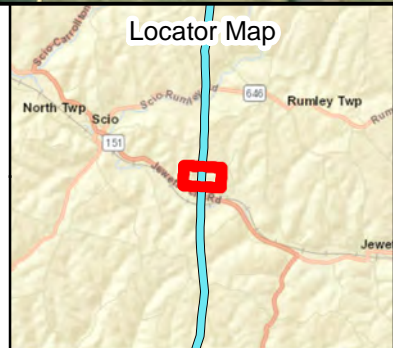
 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 2-S SOILS, NHD, NWI, FEMA MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



\\brooks\dellies\GIS_SHARE\ENB\00_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:

- Substation
- Proposed Structure
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- Floodplain
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor



BASE MAP SOURCE:
ESRI World Imagery

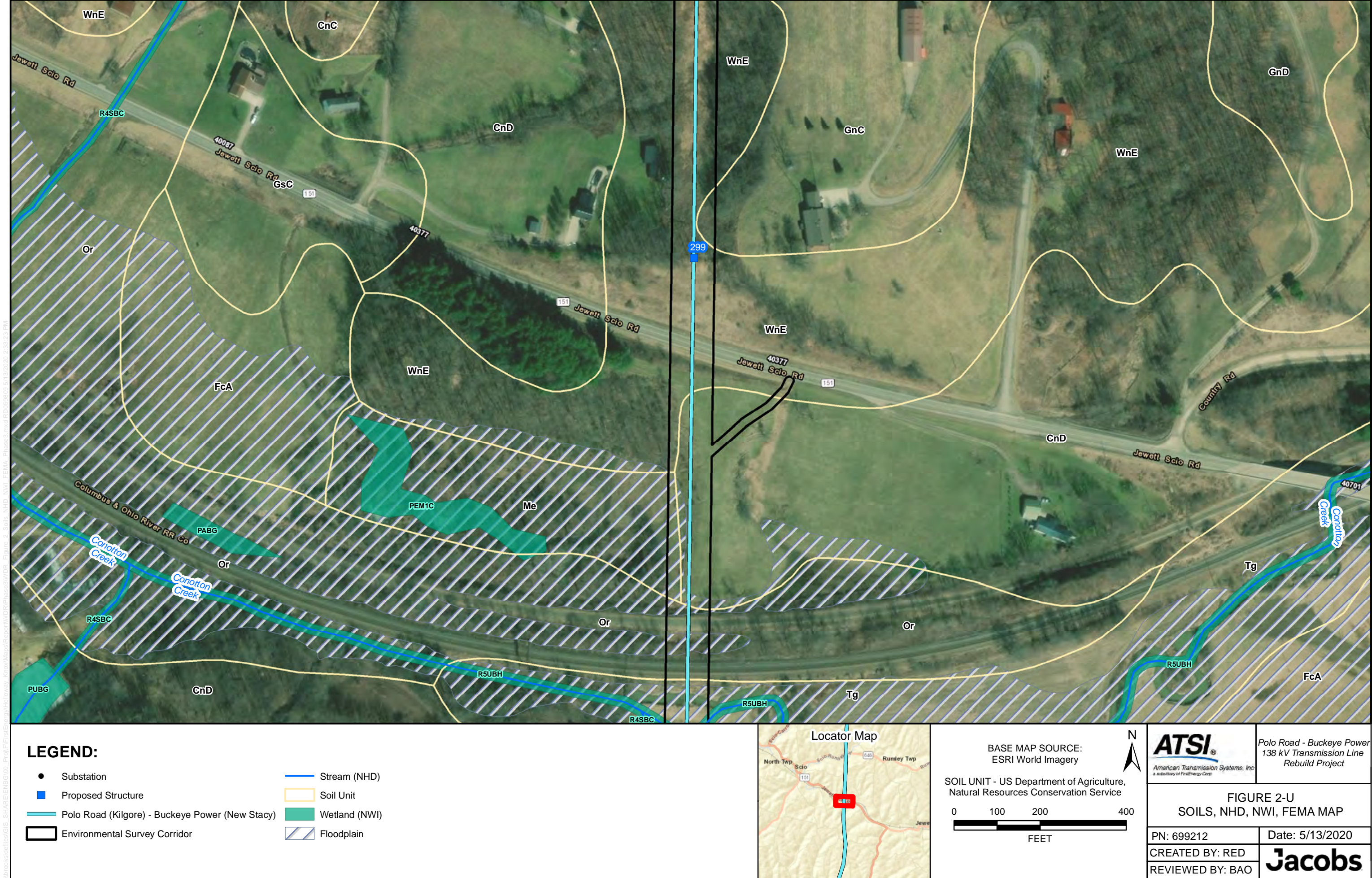
SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET



Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-T SOILS, NHD, NWI, FEMA MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	





\\brooks\delles\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:

- Substation

■

Proposed Structure

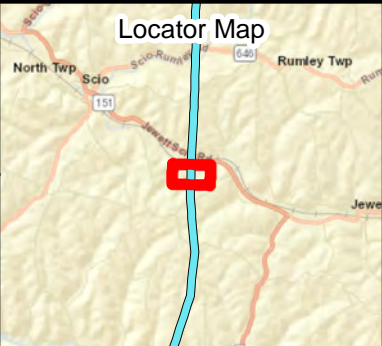
Polo Road (Kilgore) - Buckeye Power (New Stacy)

Environmental Survey Corridor
- Stream (NHD)

Soil Unit

Wetland (NWI)

Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0100200400

FEET

ATSI

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

FIGURE 2-V

SOILS, NHD, NWI, FEMA MAP

PN: 699212

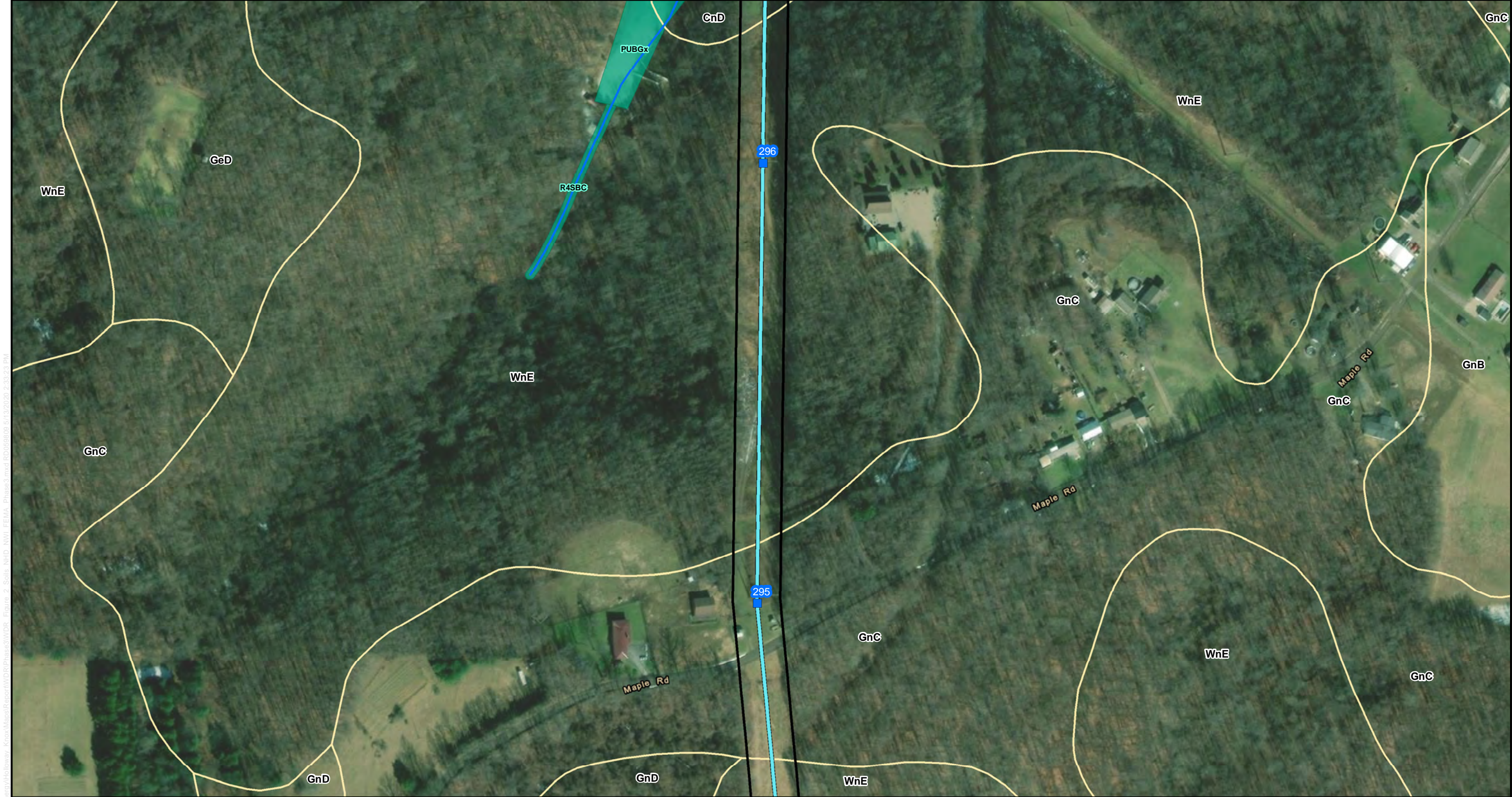
CREATED BY: RED

REVIEWED BY: BAO

Date: 5/13/2020

Jacobs

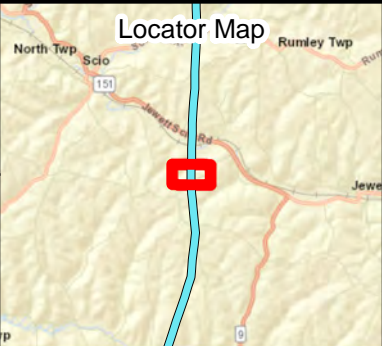
Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project



\\brooks\dellies\GIS_SHARE\ENBG\00_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:


- Substation
- Proposed Structure
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- ▨ Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET



ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-W
SOILS, NHD, NWI, FEMA MAP

PN: 699212

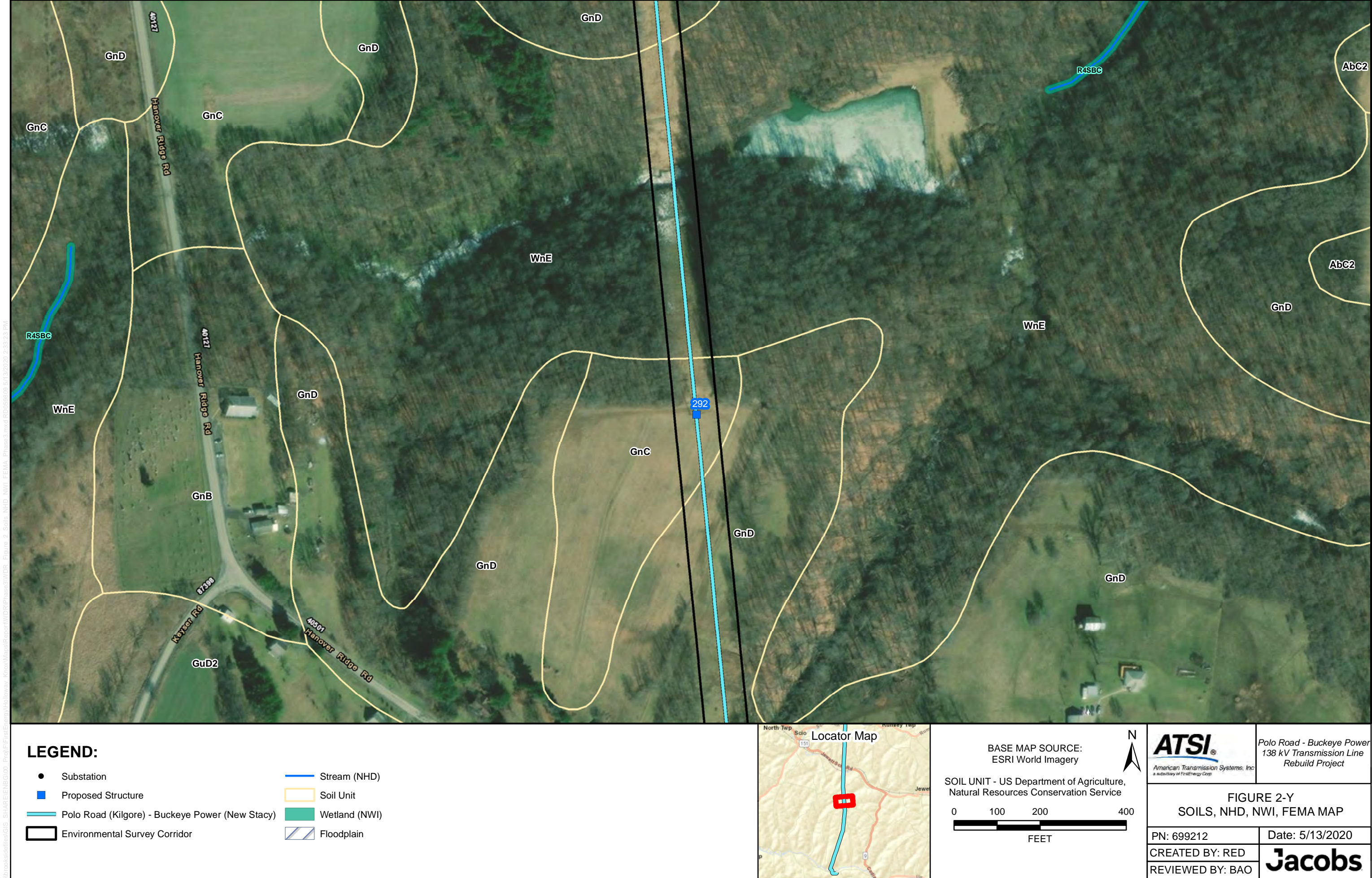
CREATED BY: RED

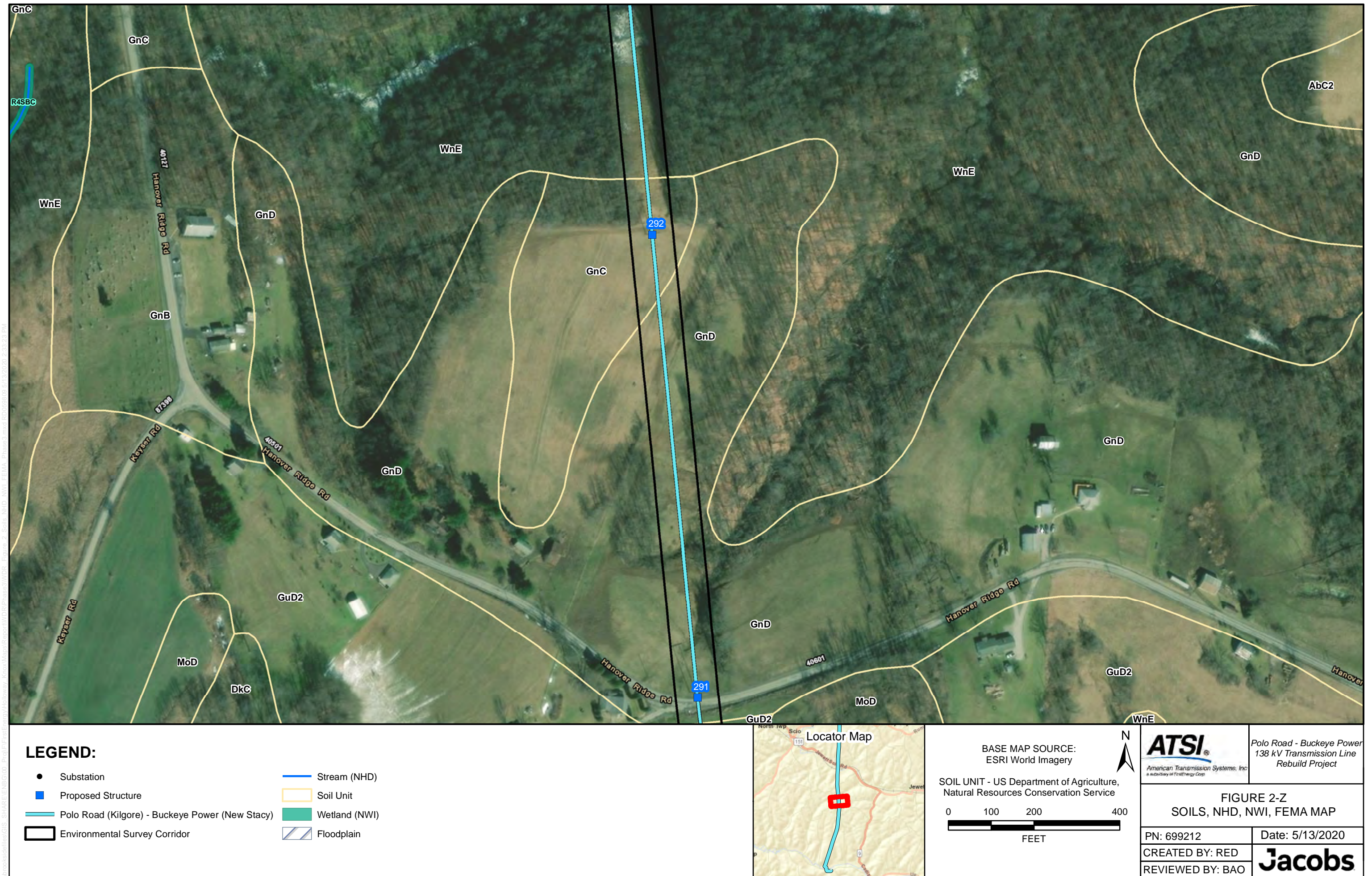
REVIEWED BY: BAO

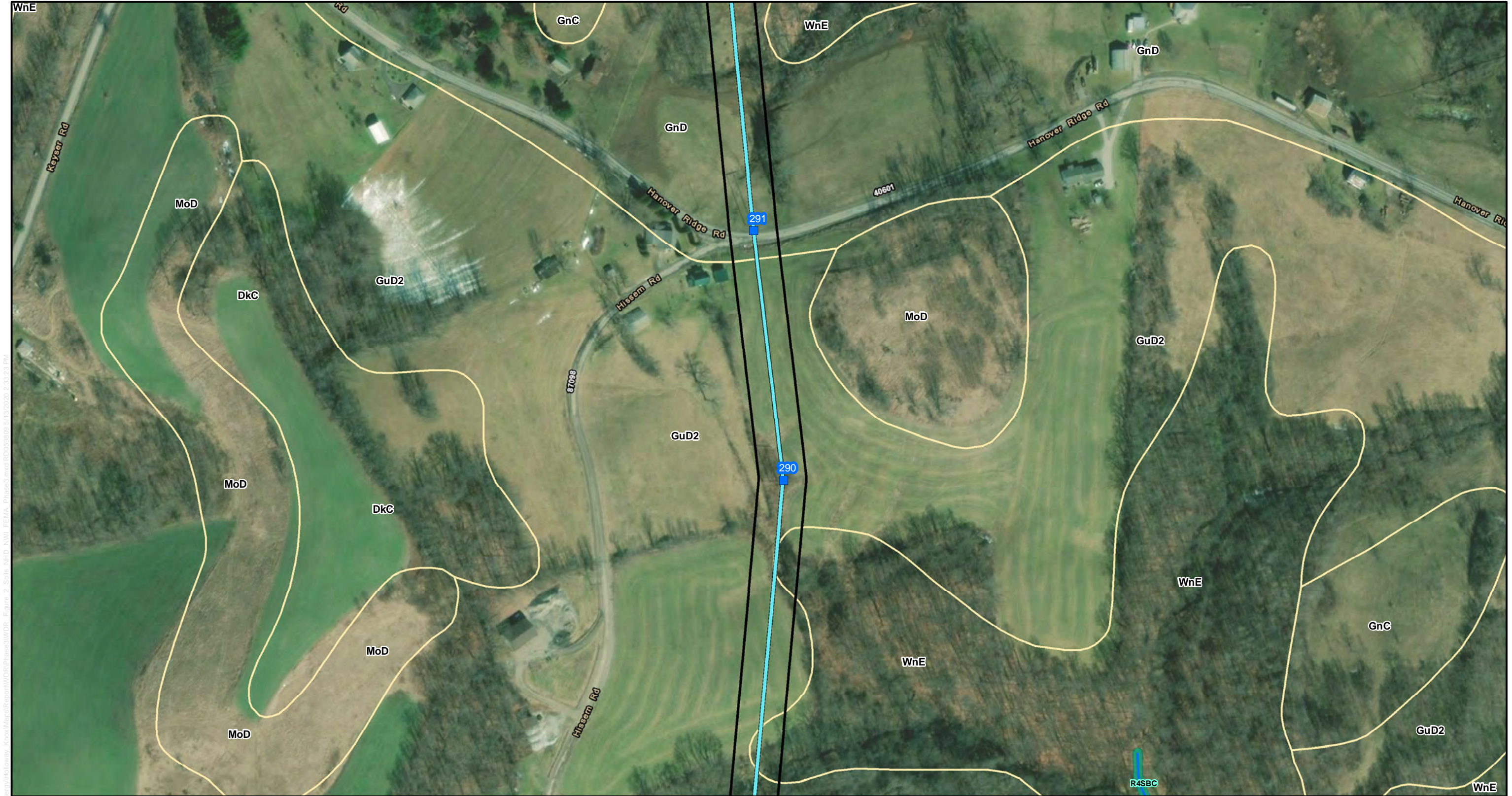
Date: 5/13/2020

Jacobs





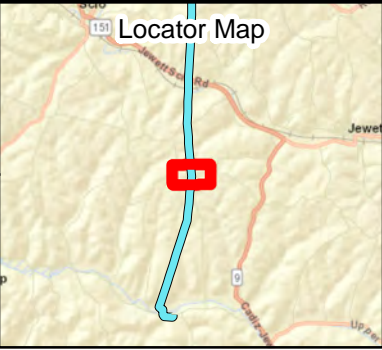




\\brooks\dellies\GIS_SHARE\ENBG\00_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure 2 Soils NHD NWI FEMA Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:

- Substation
- Proposed Structure
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- ▨ Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET

ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-AA
SOILS, NHD, NWI, FEMA MAP

PN: 699212

CREATED BY: RED

REVIEWED BY: BAO

Date: 5/13/2020

Jacobs

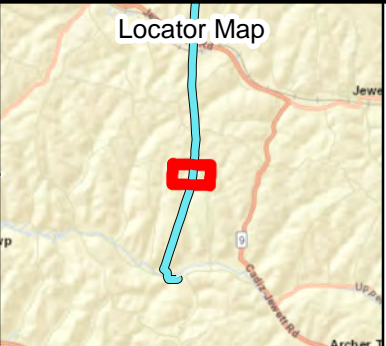




\\brooks\dellies\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:



- Substation
- Proposed Structure
- ▬ Polo Road (Kilgore) - Buckeye Power (New Stacy)
- ▭ Environmental Survey Corridor
- ▬ Stream (NHD)
- ▭ Soil Unit
- ▭ Wetland (NWI)
- ▭ Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET

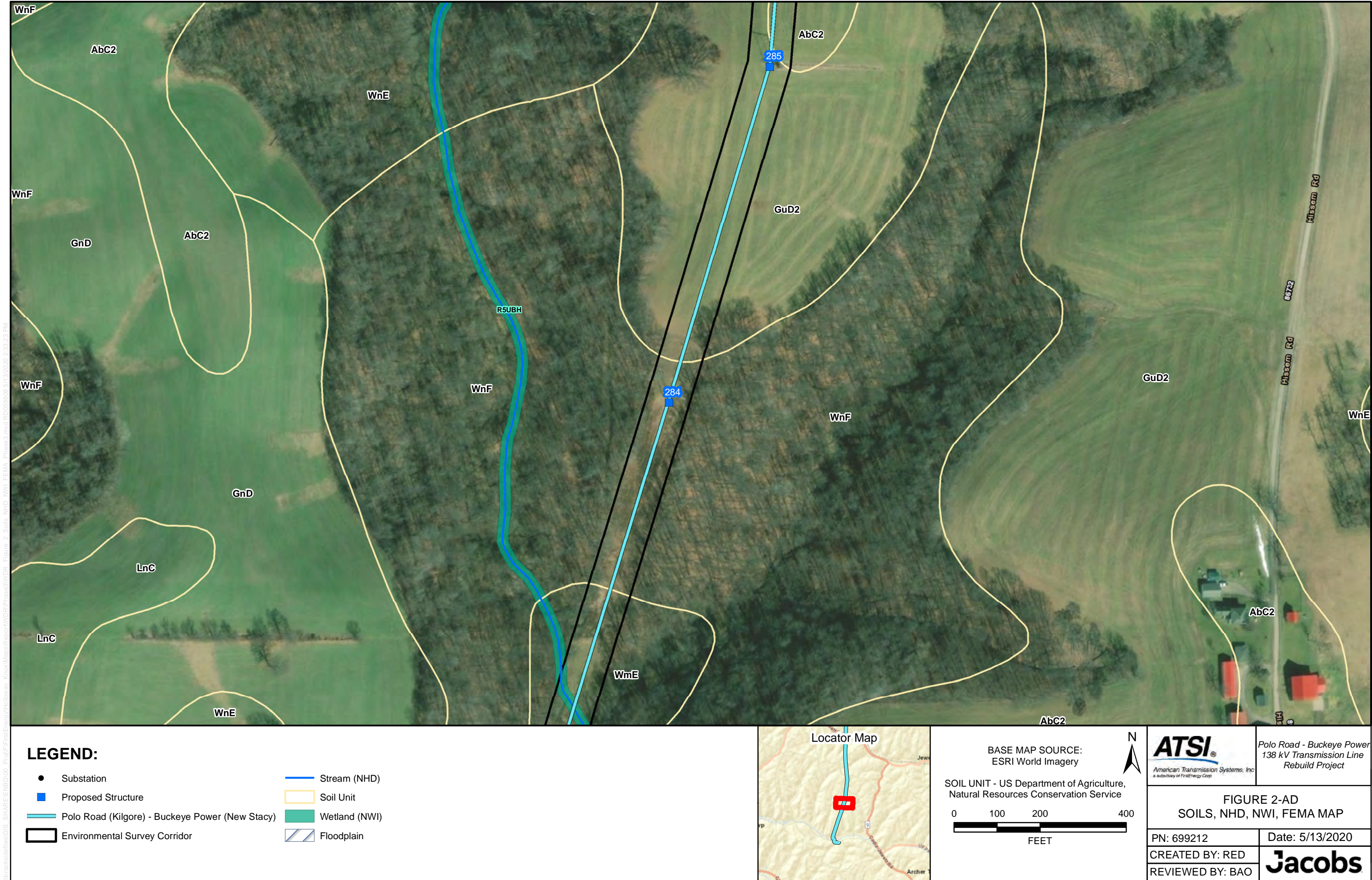


Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-AC
SOILS, NHD, NWI, FEMA MAP

PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	

\\brooks\dellies\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM



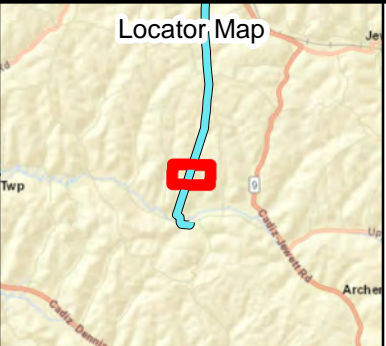




\\brooks\dellies\GIS_SHARE\ENBG\00_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_2_Soils_NHD_NWI_FEMA_Phase3.mxd RD059809 5/13/2020 2:33:23 PM

LEGEND:


- Substation
- Proposed Structure
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- Environmental Survey Corridor
- Stream (NHD)
- Soil Unit
- Wetland (NWI)
- ▨ Floodplain



BASE MAP SOURCE:
ESRI World Imagery

SOIL UNIT - US Department of Agriculture,
Natural Resources Conservation Service

0 100 200 400
FEET



ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 2-AF
SOILS, NHD, NWI, FEMA MAP

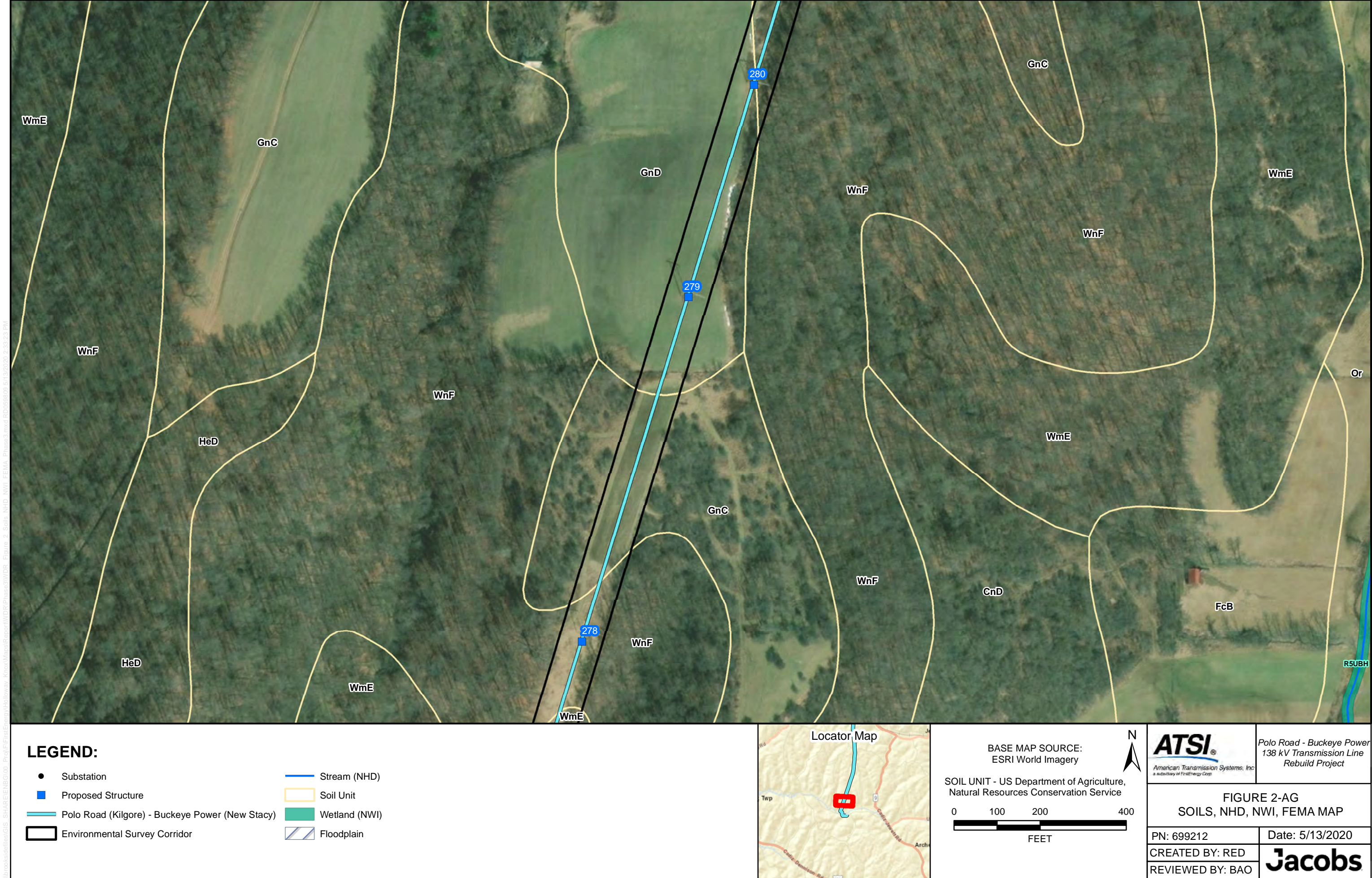
PN: 699212

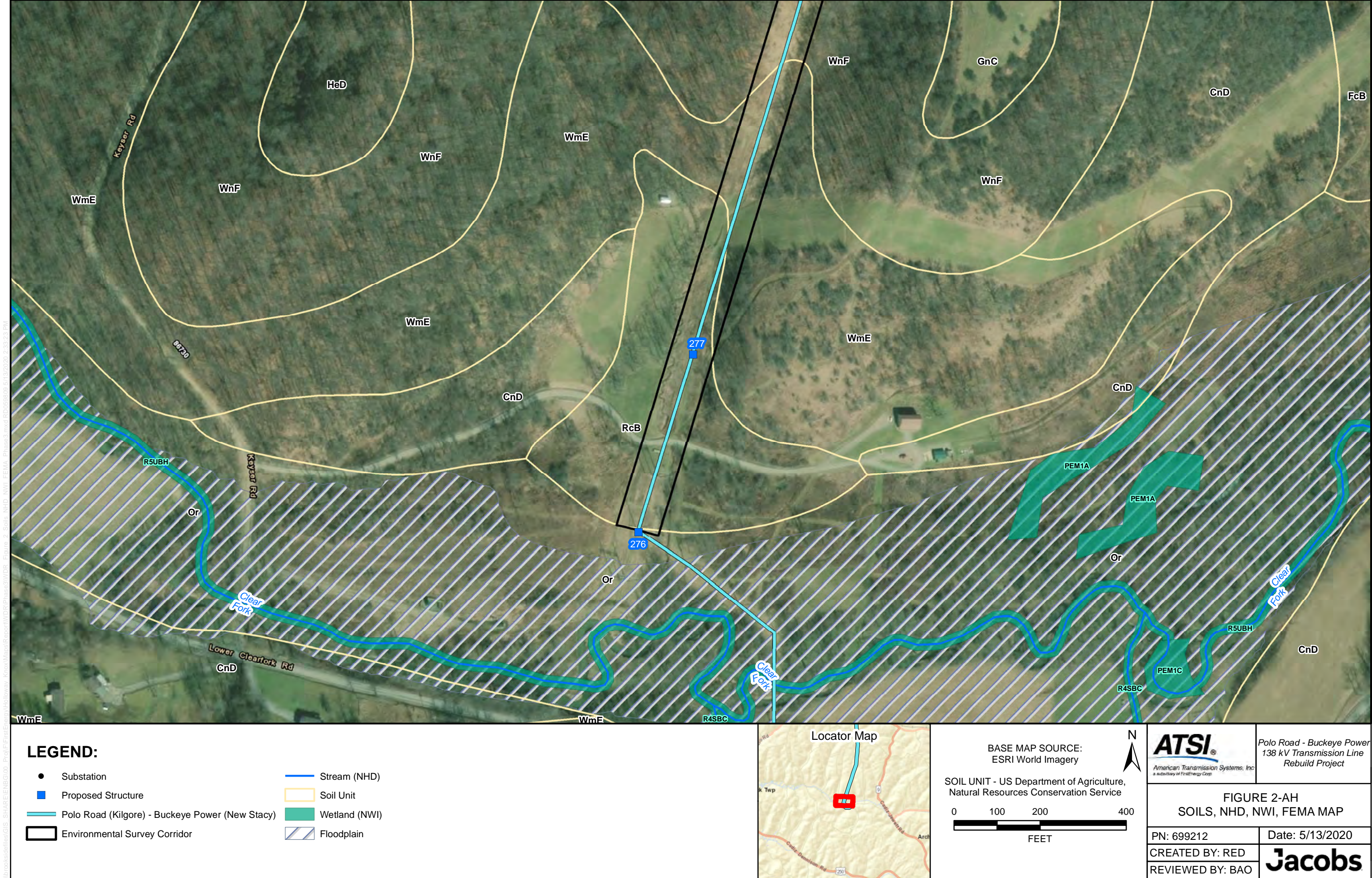
CREATED BY: RED

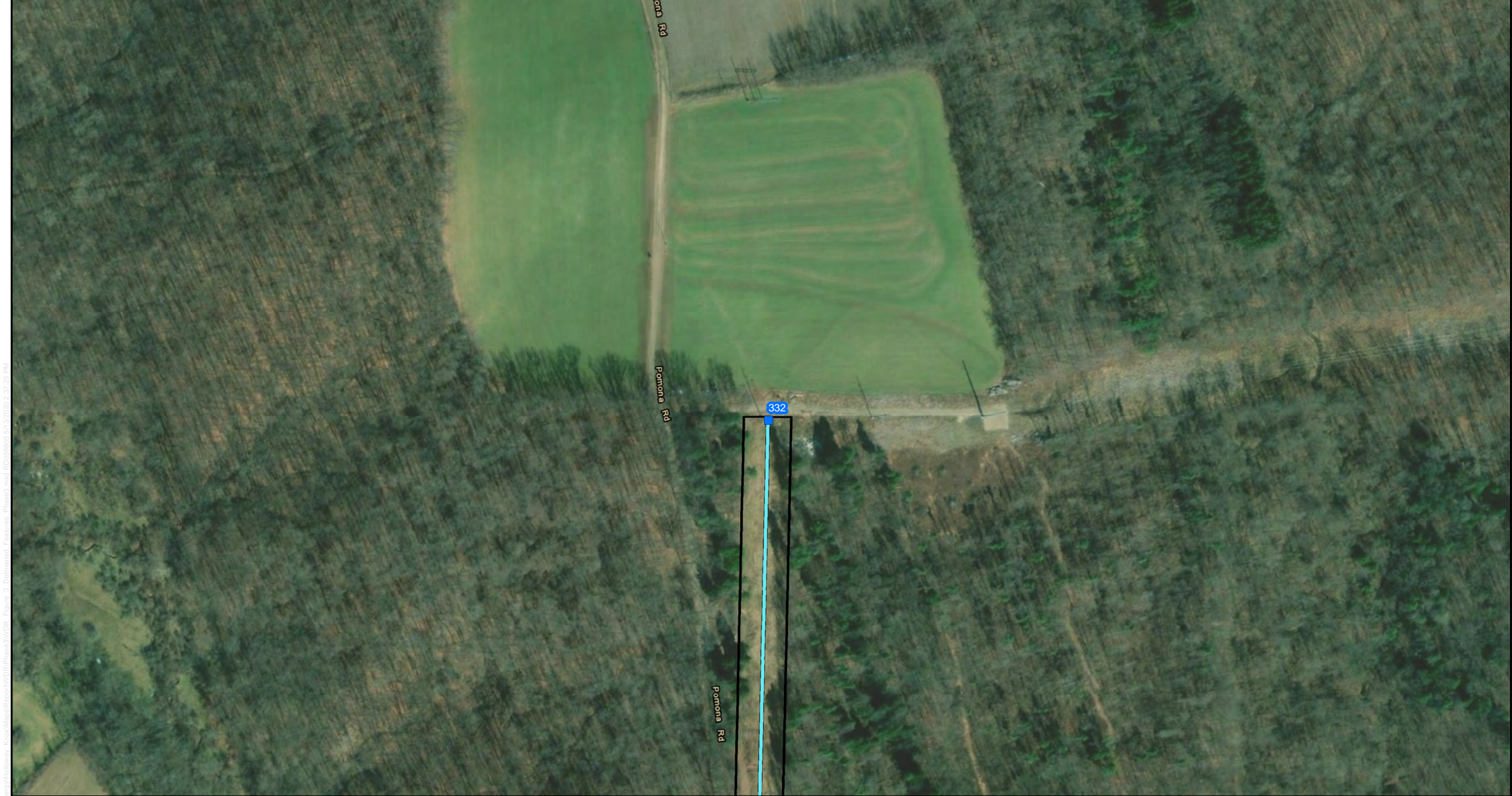
REVIEWED BY: BAO

Date: 5/13/2020

Jacobs














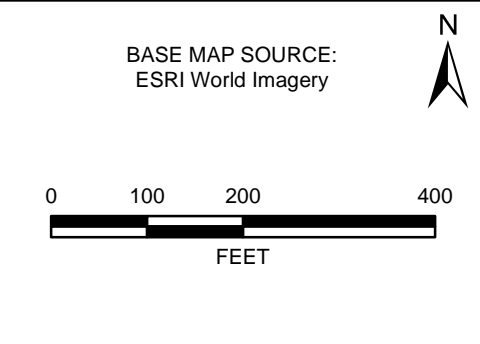
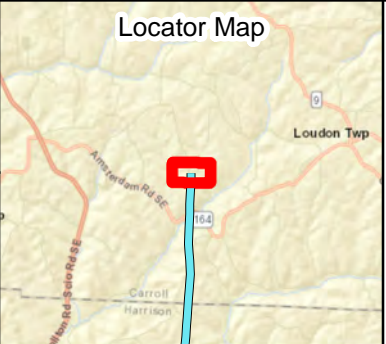






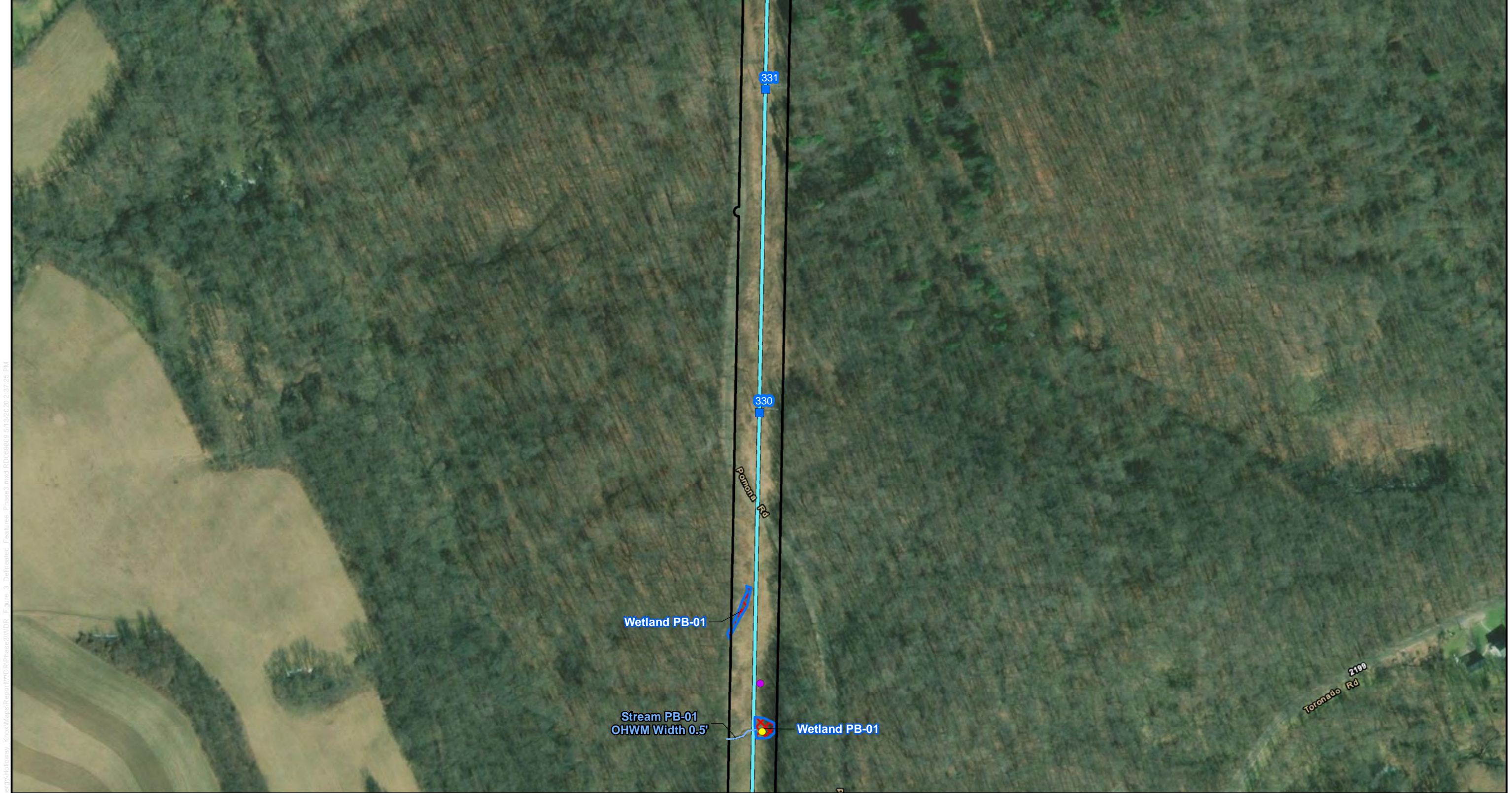
\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |



 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-A DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



LEGEND:

● Substation	■ Delineated Stream
■ Proposed Structure	■ Delineated PEM Wetland
■ Polo Road (Kilgore) - Buckeye Power (New Stacy)	■ Delineated PFO Wetland
■ Environmental Survey Corridor	■ Delineated PSS Wetland
● Upland Data Point	■ Delineated PUB Wetland
● Wetland Data Point	■ Delineated Pond

Locator Map

BASE MAP SOURCE:
ESRI World Imagery

0 100 200 400
FEET

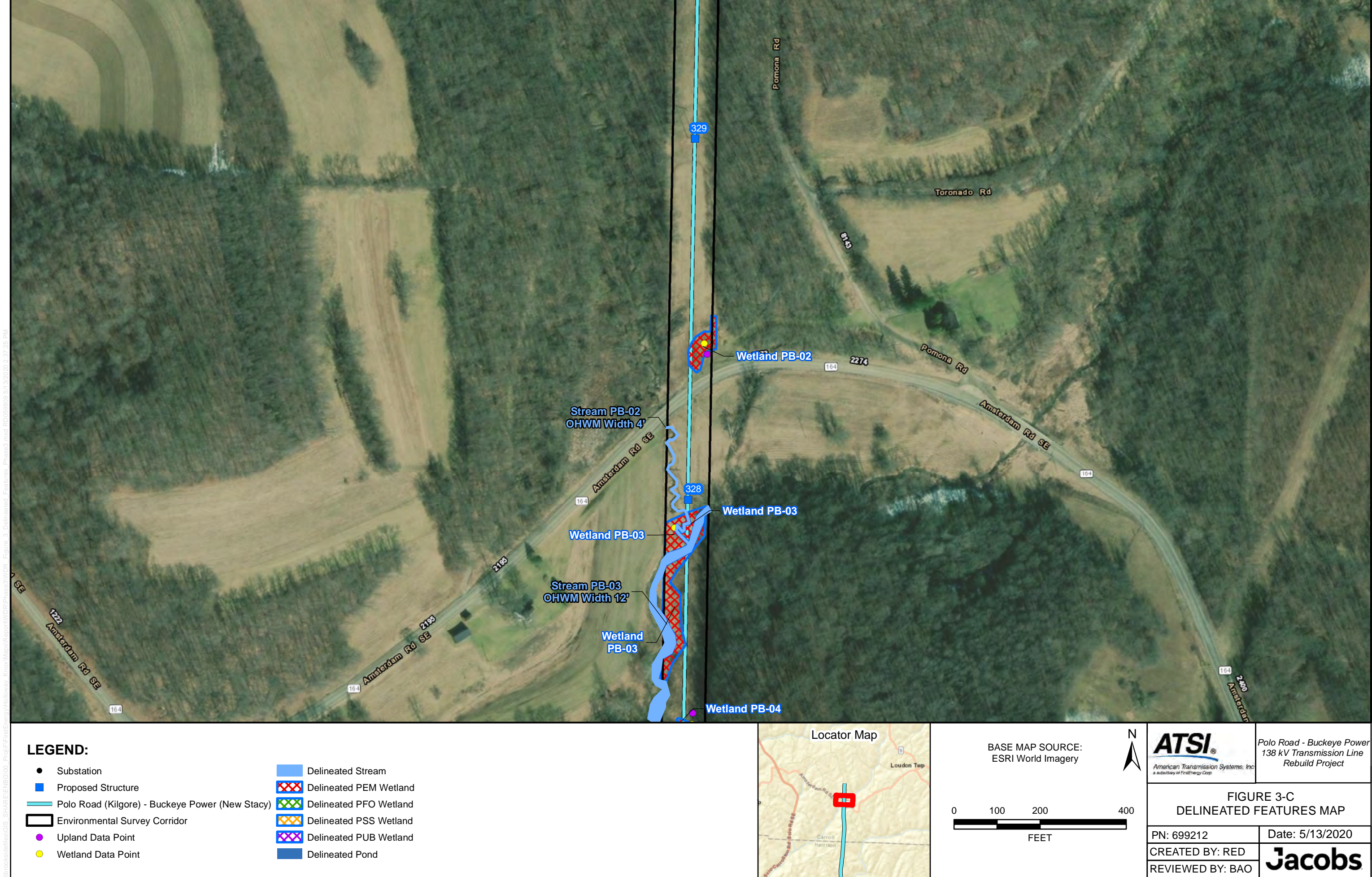
ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

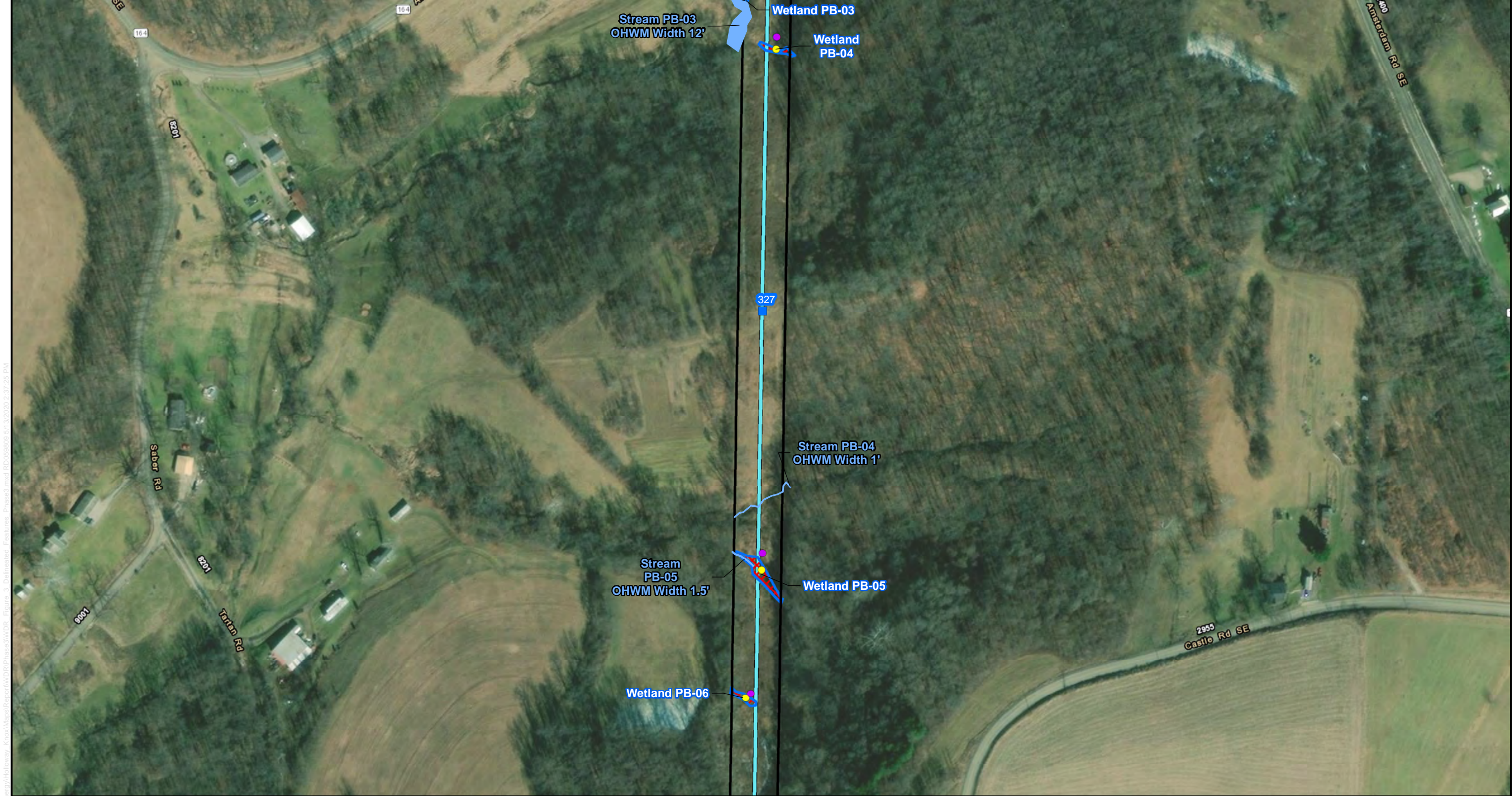
**FIGURE 3-B
DELINEATED FEATURES MAP**

PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	












Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

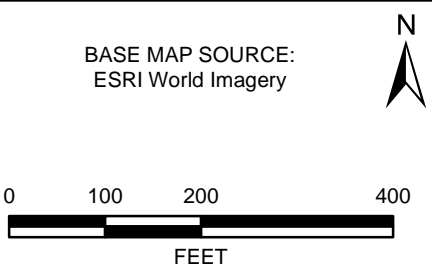
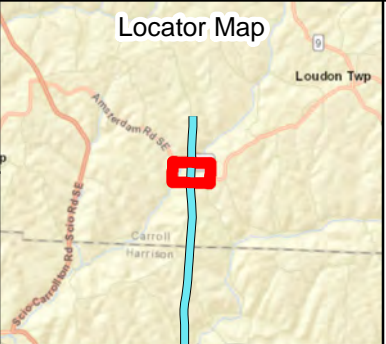
\\brooks\delles\GIS_SHARE\ENB0100_Proj\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM





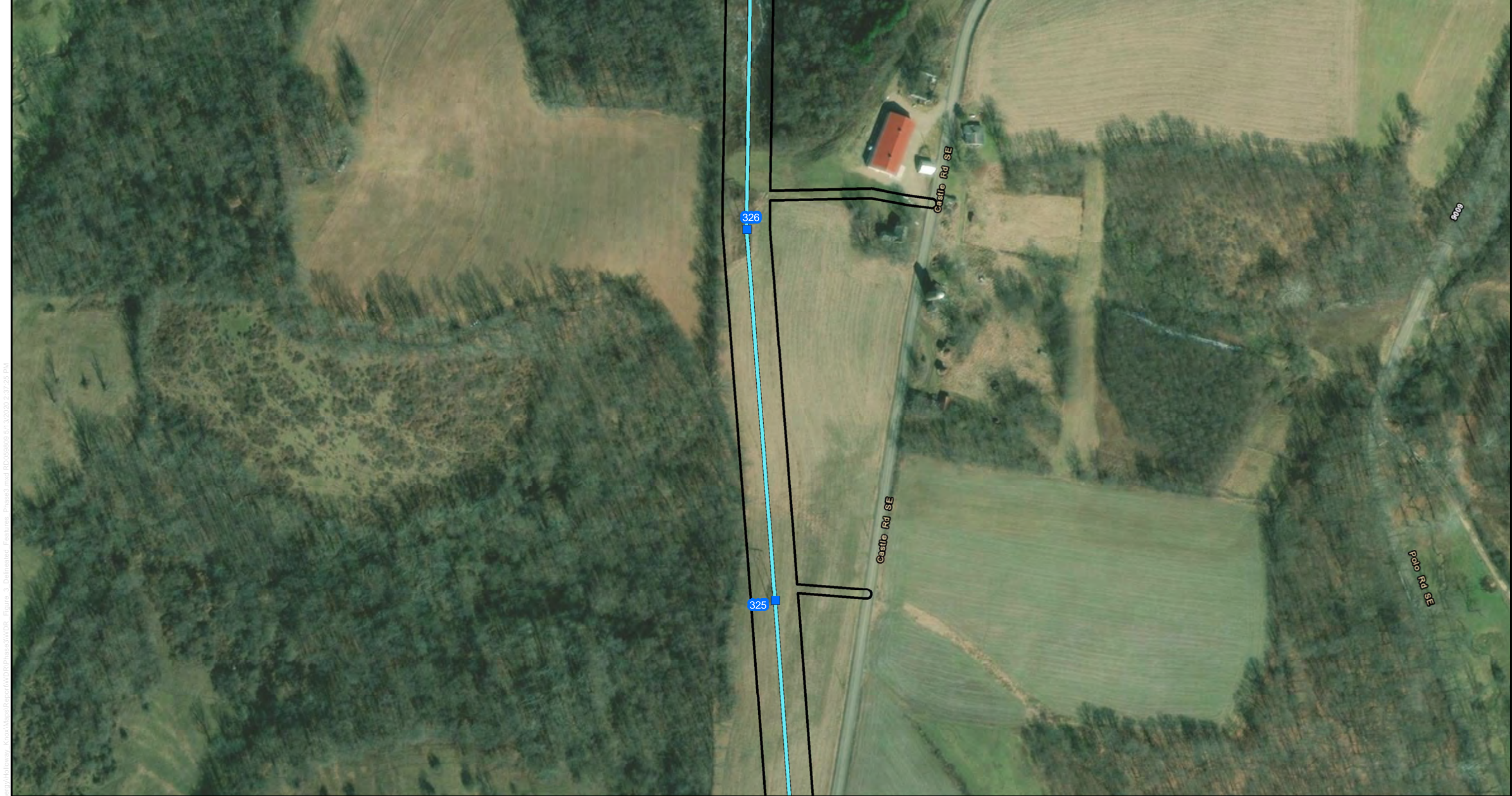


LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |



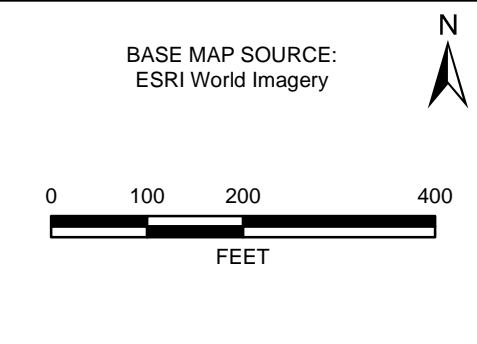
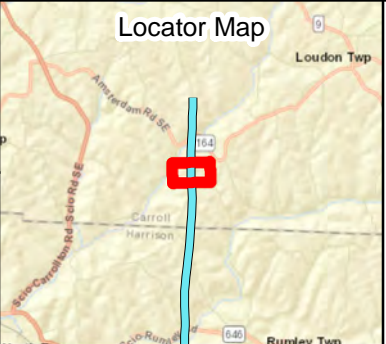
 American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-D DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



\\brooks\delles\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:












- | | |
|---|------------------------|
| ● Substation | Delineated Stream |
| ■ Proposed Structure | Delineated PEM Wetland |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | Delineated PFO Wetland |
| □ Environmental Survey Corridor | Delineated PSS Wetland |
| ● Upland Data Point | Delineated PUB Wetland |
| ● Wetland Data Point | Delineated Pond |

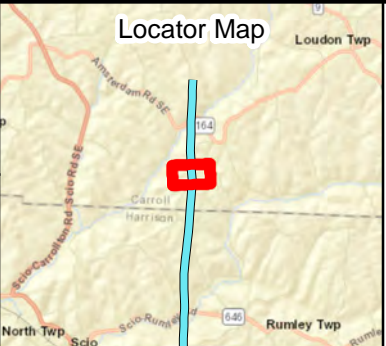


ATSI American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-E DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	

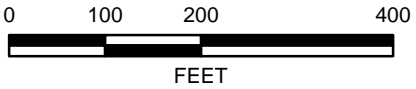


LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |



BASE MAP SOURCE:
ESRI World Imagery



Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

**FIGURE 3-F
DELINEATED FEATURES MAP**

PN: 699212

Date: 5/13/2020

CREATED BY: RED












REVIEWED BY: BAO

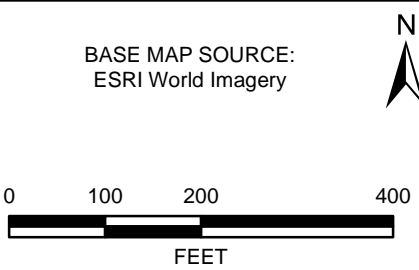
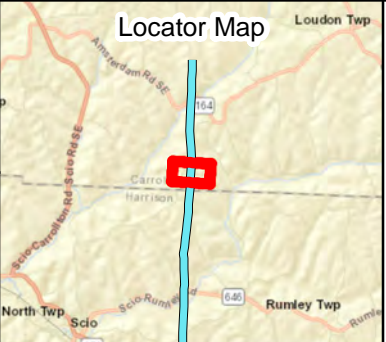
Jacobs





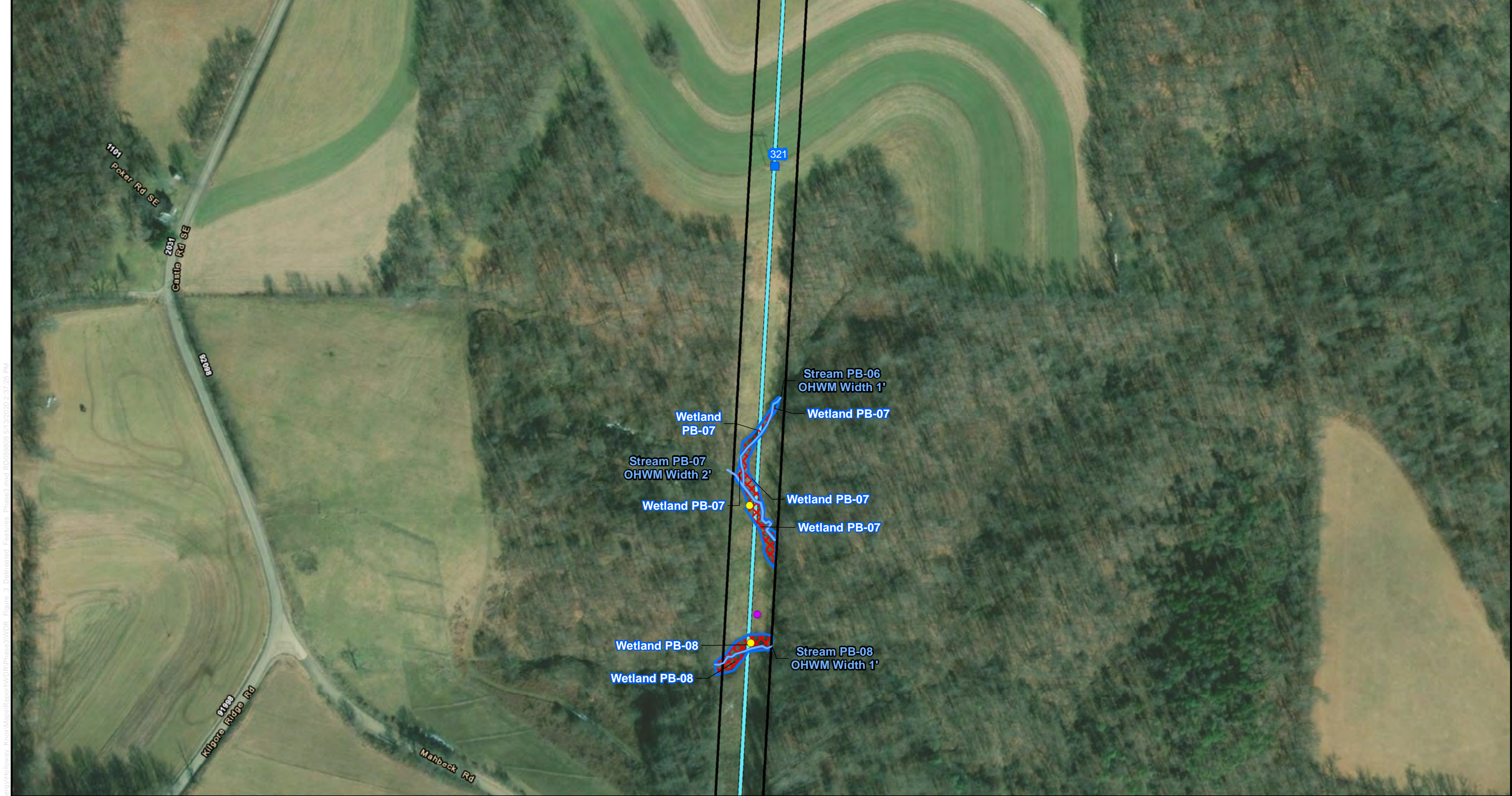
\\brooks\delles\GIS_SHARE\ENB0100_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |

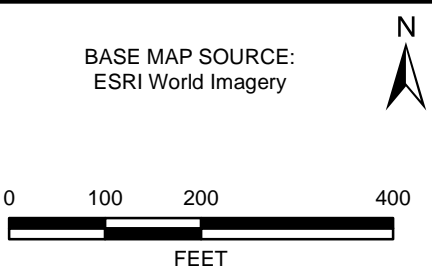
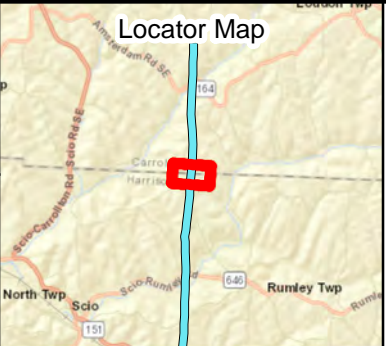


 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-G DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	
REVIEWED BY: BAO	



LEGEND:












- | | |
|---|------------------------|
| ● Substation | Delineated Stream |
| Proposed Structure | Delineated PEM Wetland |
| Polo Road (Kilgore) - Buckeye Power (New Stacy) | Delineated PFO Wetland |
| Environmental Survey Corridor | Delineated PSS Wetland |
| ● Upland Data Point | Delineated PUB Wetland |
| ● Wetland Data Point | Delineated Pond |

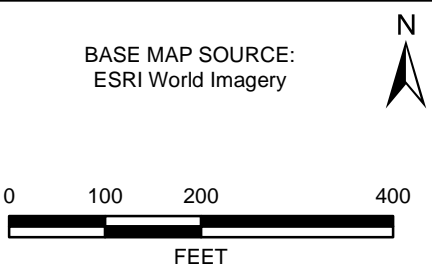
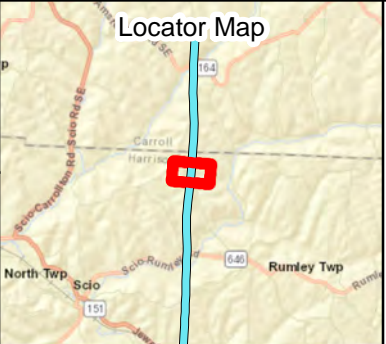




 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-H DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



LEGEND:












- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |

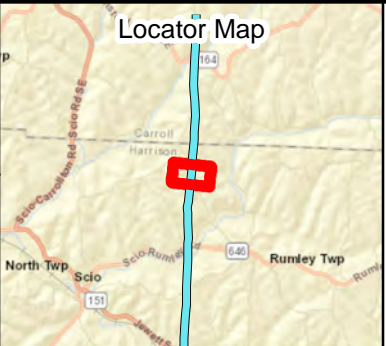


 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-I DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			

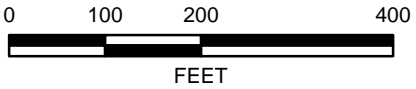


LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |



BASE MAP SOURCE:
ESRI World Imagery



Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

**FIGURE 3-J
DELINEATED FEATURES MAP**

PN: 699212

Date: 5/13/2020

CREATED BY: RED

REVIEWED BY: BAO

Jacobs



Jacobs



LEGEND:

● Substation	Delineated Stream
■ Proposed Structure	Delineated PEM Wetland
— Polo Road (Kilgore) - Buckeye Power (New Stacy)	Delineated PFO Wetland
□ Environmental Survey Corridor	Delineated PSS Wetland
● Upland Data Point	Delineated PUB Wetland
● Wetland Data Point	Delineated Pond

Locator Map

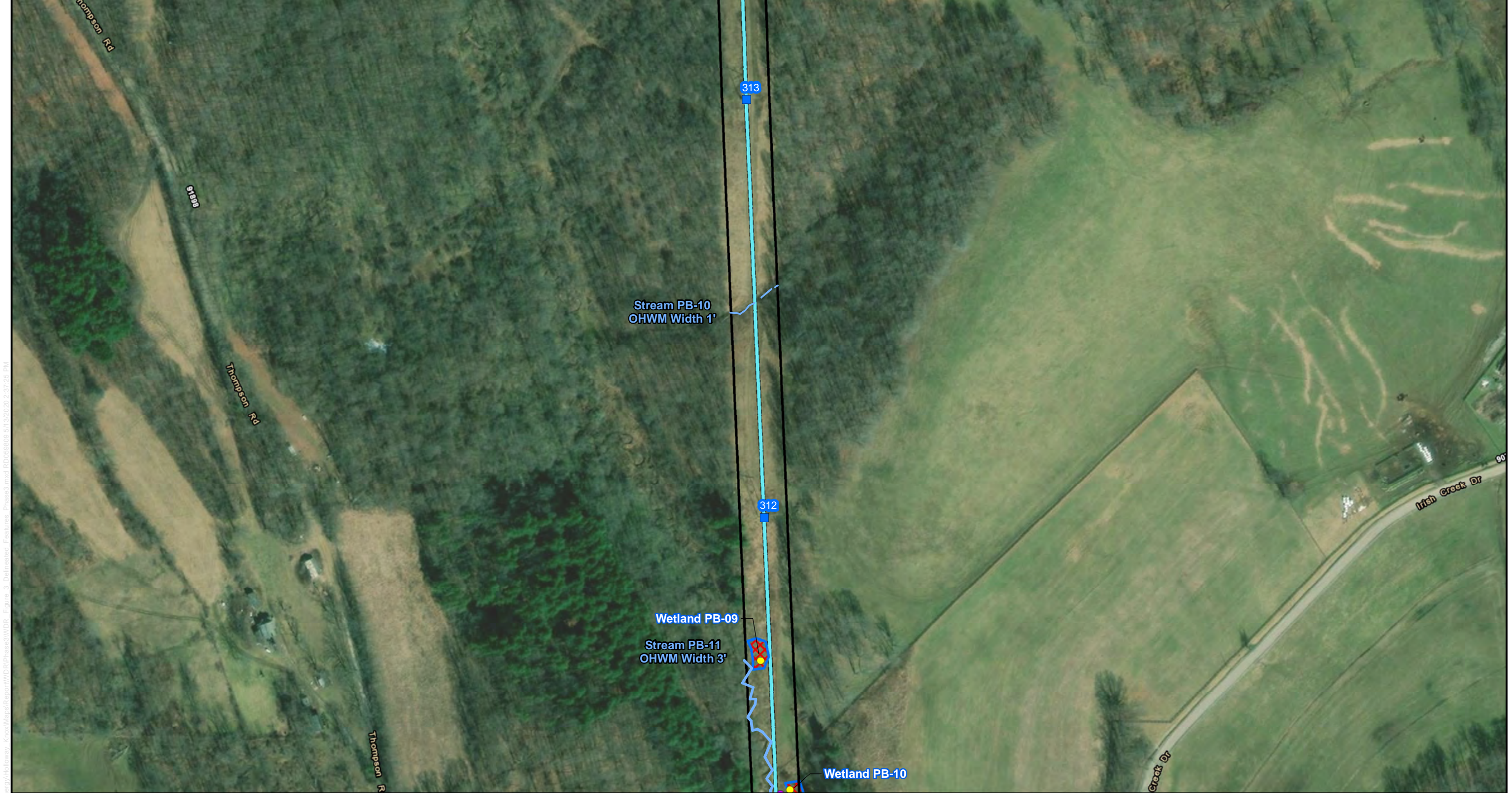
BASE MAP SOURCE:
ESRI World Imagery

0 100 200 400
FEET

N

ATSI American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-L DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED		Jacobs	
REVIEWED BY: BAO			

\\brooks\delles\GIS_SHARE\ENB0100_Proj\FirEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM



\\brooks\dellies\GIS_SHARE\ENB\000_Proj\FirsrEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- Substation

■

 Proposed Structure

—

 Polo Road (Kilgore) - Buckeye Power (New Stacy)

▭

 Environmental Survey Corridor

●

 Upland Data Point

●

 Wetland Data Point
- Delineated Stream

▨

 Delineated PEM Wetland

▨

 Delineated PFO Wetland

▨

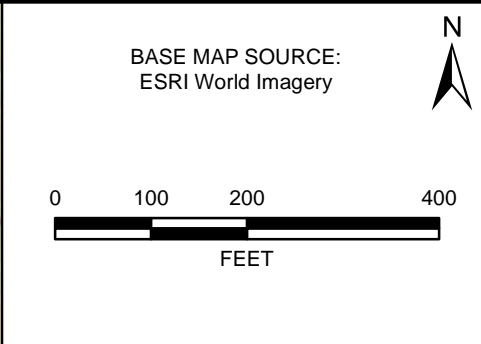
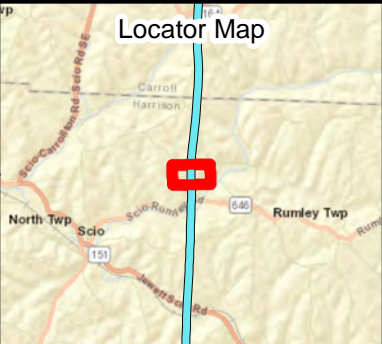
 Delineated PSS Wetland


▨

 Delineated PUB Wetland

■

 Delineated Pond





ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

FIGURE 3-M
DELINEATED FEATURES MAP

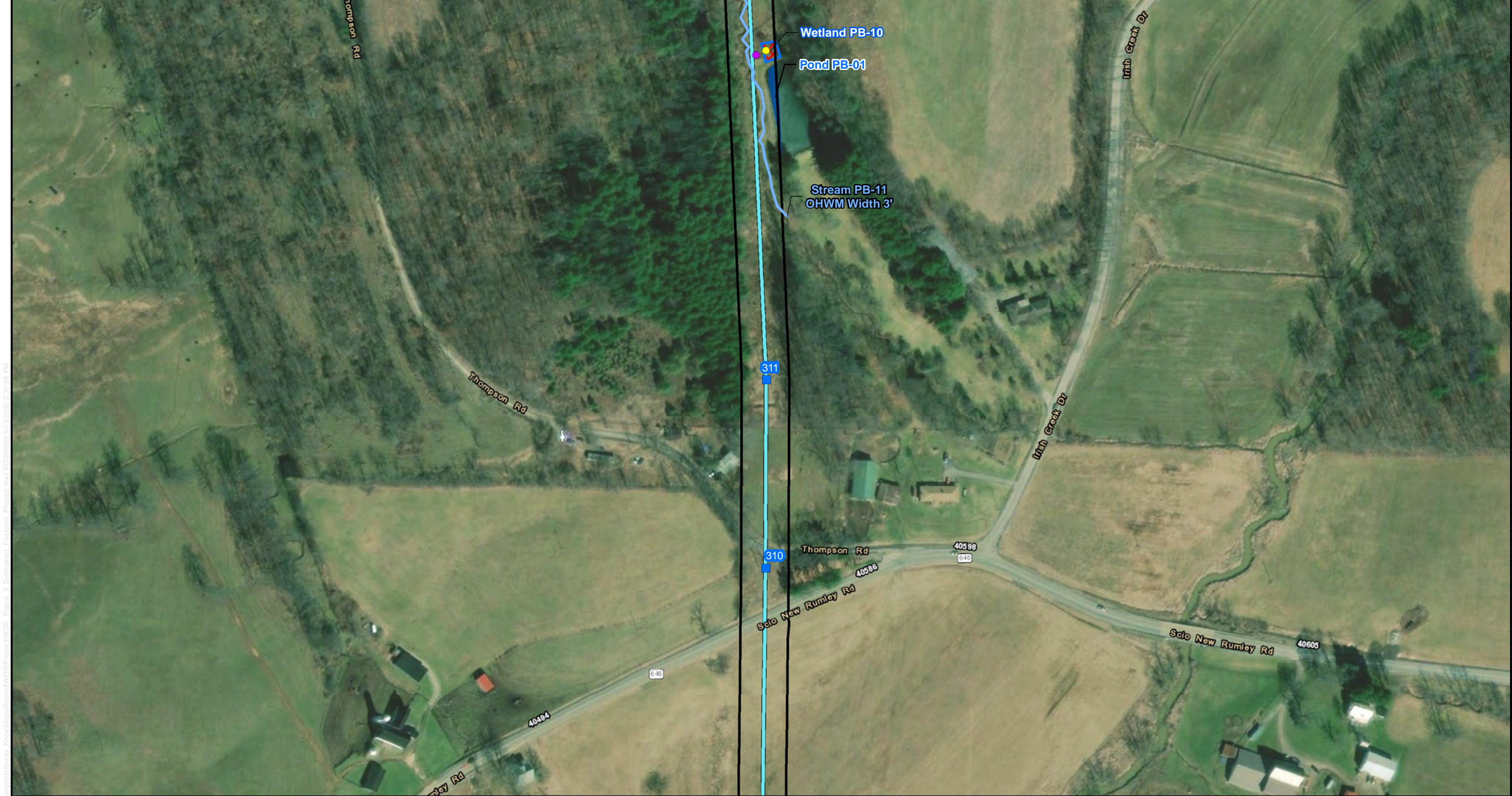
PN: 699212

CREATED BY: RED

REVIEWED BY: BAO

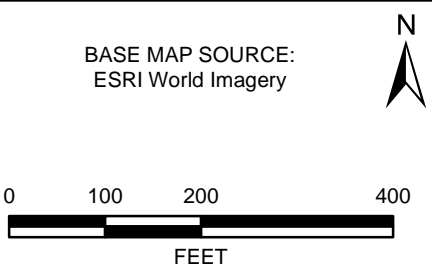
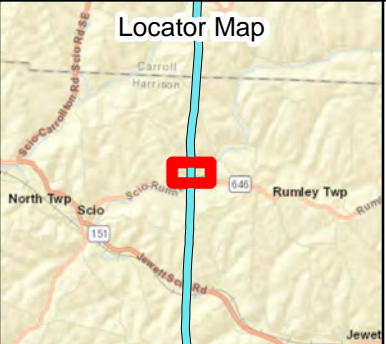
Date: 5/13/2020



Jacobs



LEGEND:

- | | |
|---|--------------------------|
| ● Substation | ■ Delineated Stream |
| ■ Proposed Structure | ▨ Delineated PEM Wetland |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | ▨ Delineated PFO Wetland |
| □ Environmental Survey Corridor | ▨ Delineated PSS Wetland |
| ● Upland Data Point | ▨ Delineated PUB Wetland |
| ● Wetland Data Point | ■ Delineated Pond |














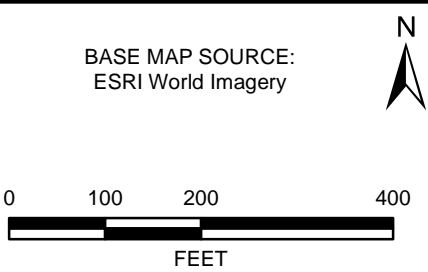
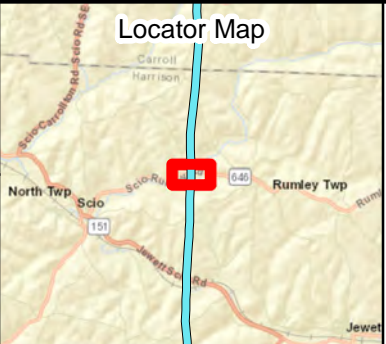
 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-N DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			





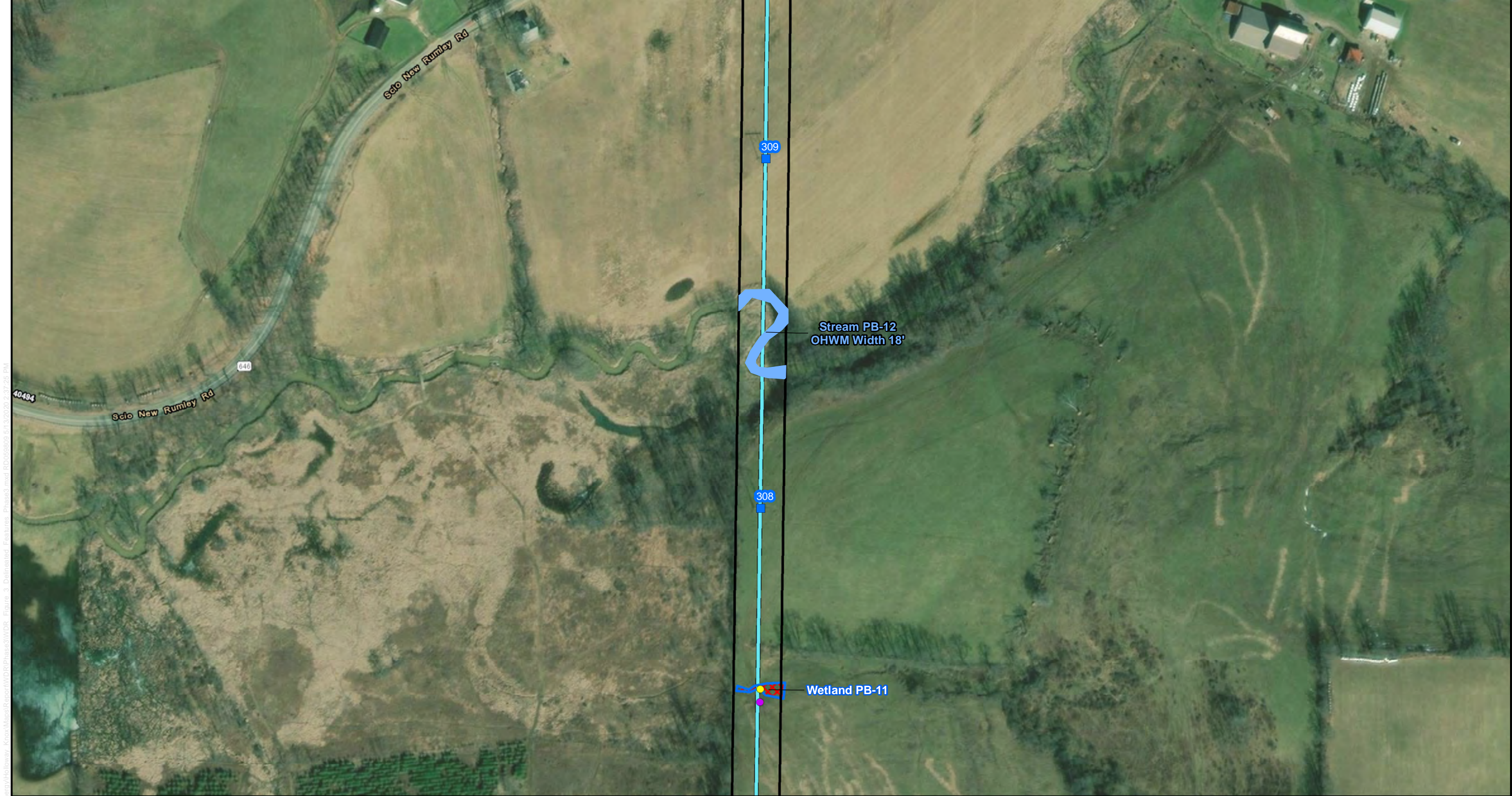
\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |



 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-O DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



LEGEND:

● Substation	■ Delineated Stream
■ Proposed Structure	▨ Delineated PEM Wetland
■ Polo Road (Kilgore) - Buckeye Power (New Stacy)	▨ Delineated PFO Wetland
■ Environmental Survey Corridor	▨ Delineated PSS Wetland
● Upland Data Point	▨ Delineated PUB Wetland
● Wetland Data Point	■ Delineated Pond

Locator Map

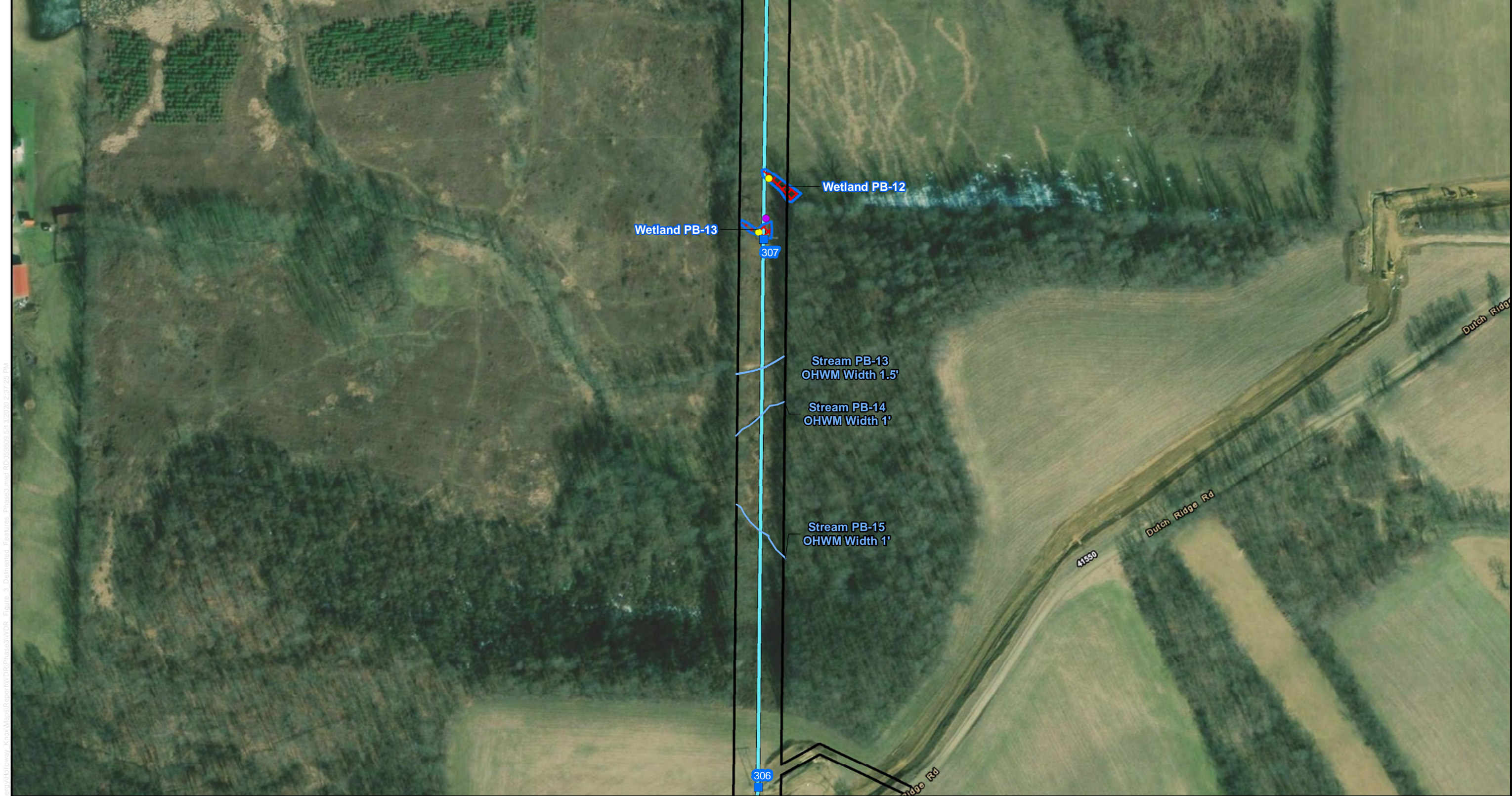
BASE MAP SOURCE:
ESRI World Imagery

0 100 200 400
FEET

N












ATSI American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-P DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED		Jacobs	
REVIEWED BY: BAO			

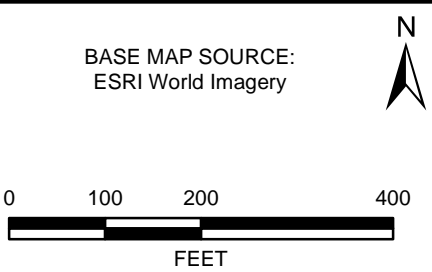
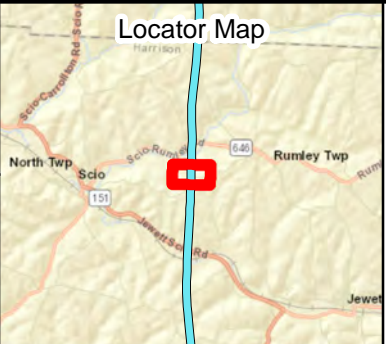
\\brooks\delles\GIS_SHARE\ENB0100_Proj\FirEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM





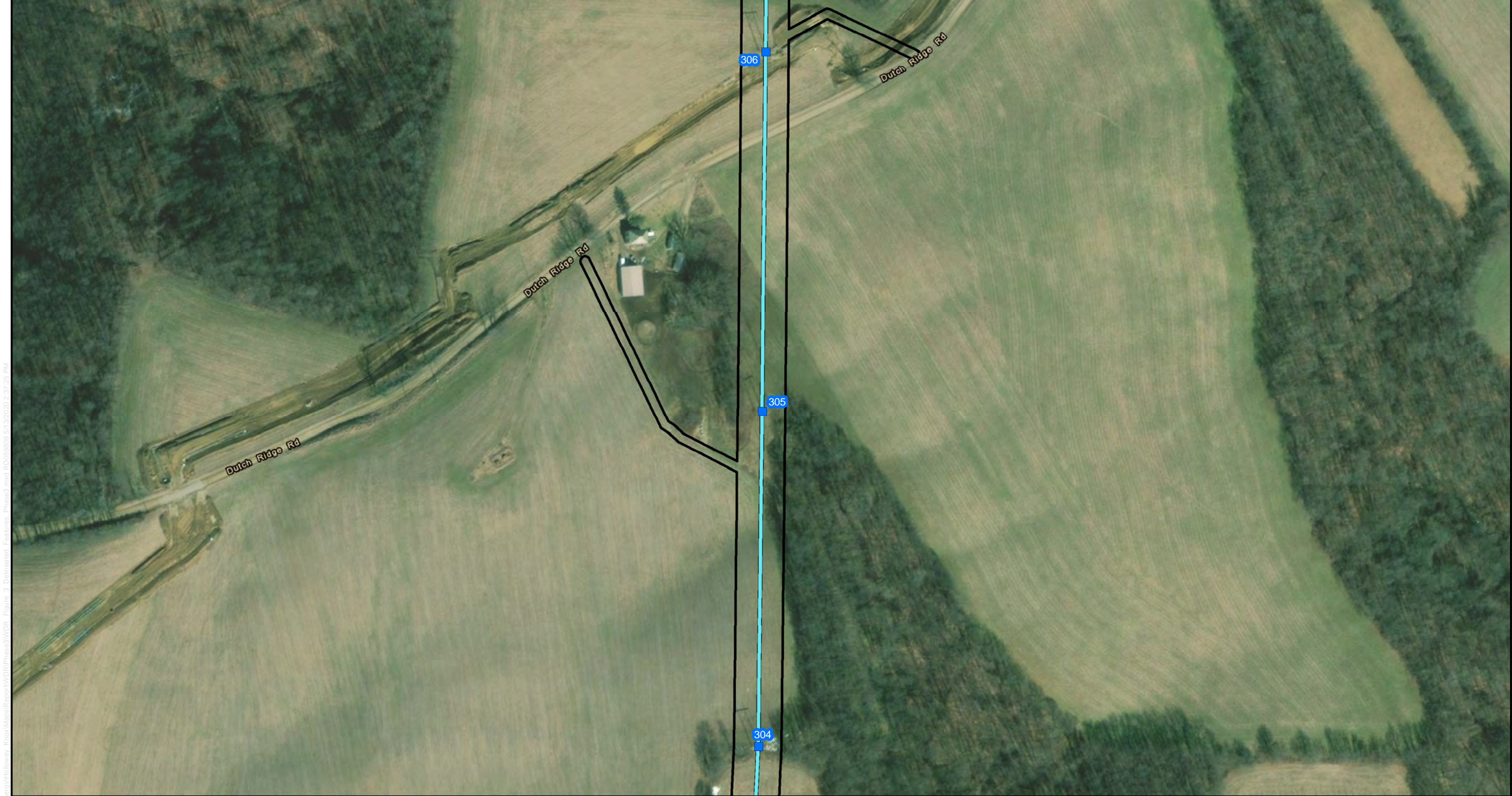
\\brooks\delles\GIS_SHARE\ENB0100_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |














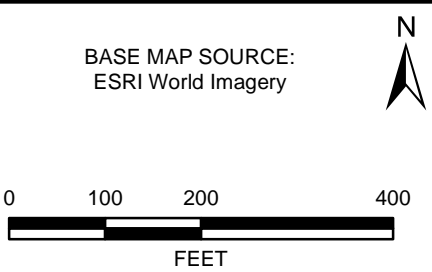
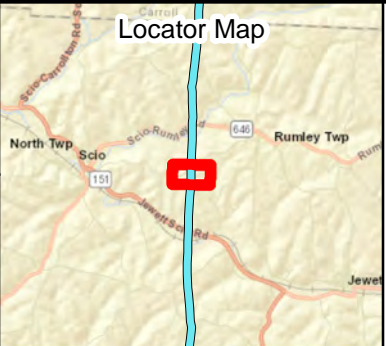
 American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-Q DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			





\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |














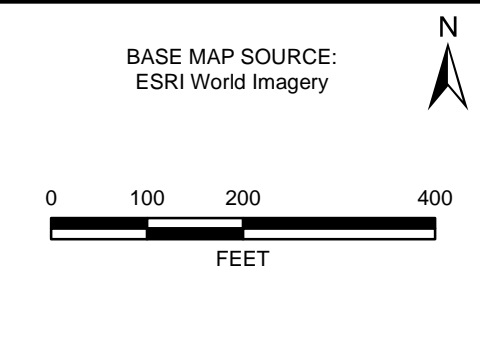
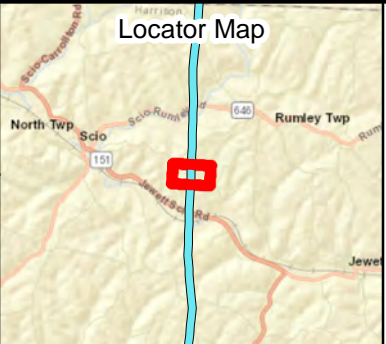
 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>		<i>Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project</i>	
FIGURE 3-R DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			





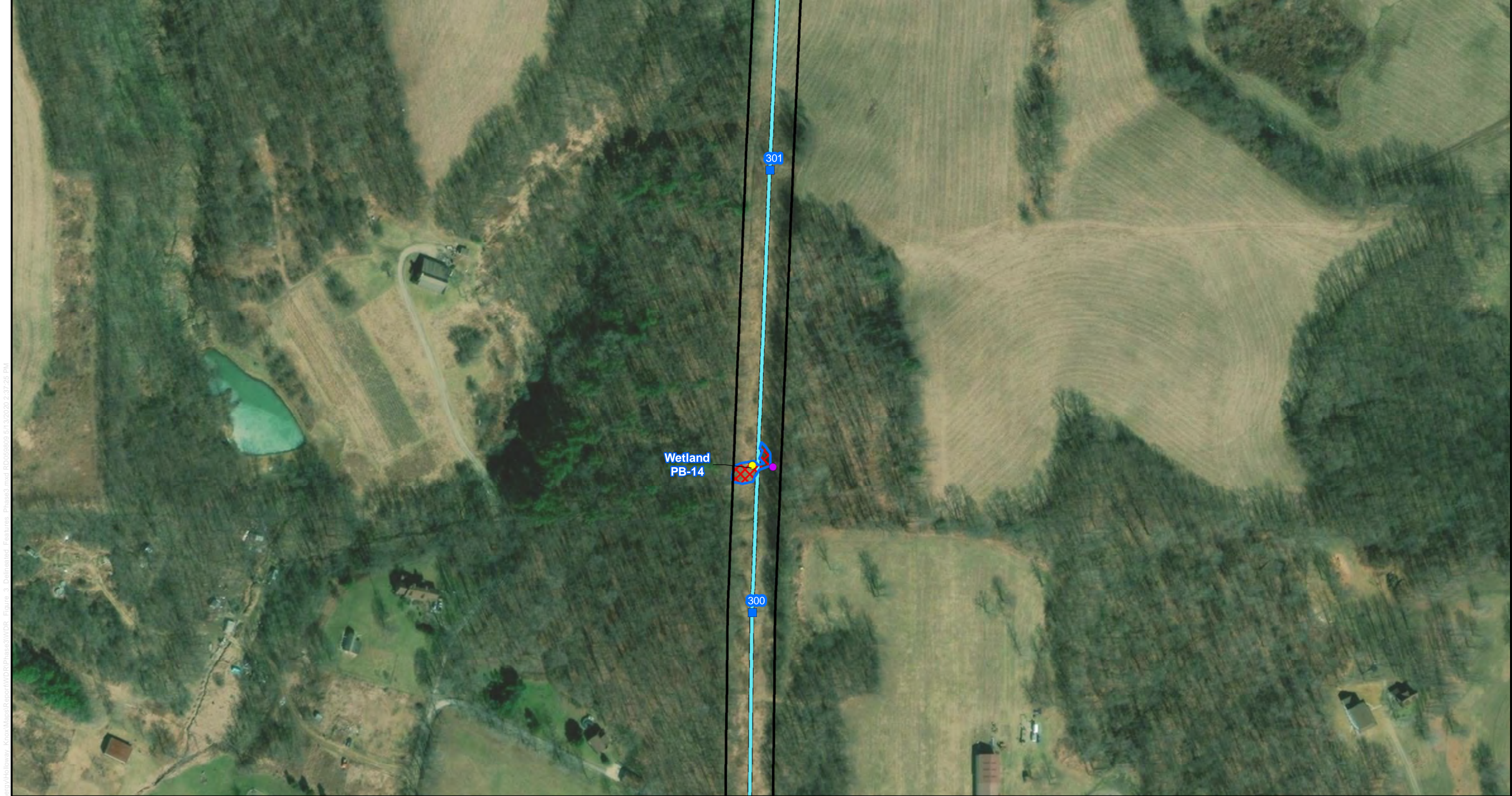
\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:












- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |

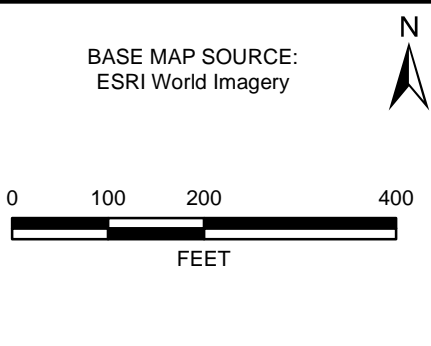
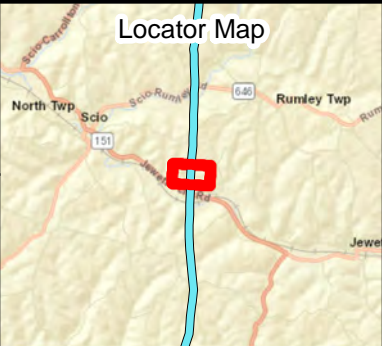




 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-S DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	
REVIEWED BY: BAO	

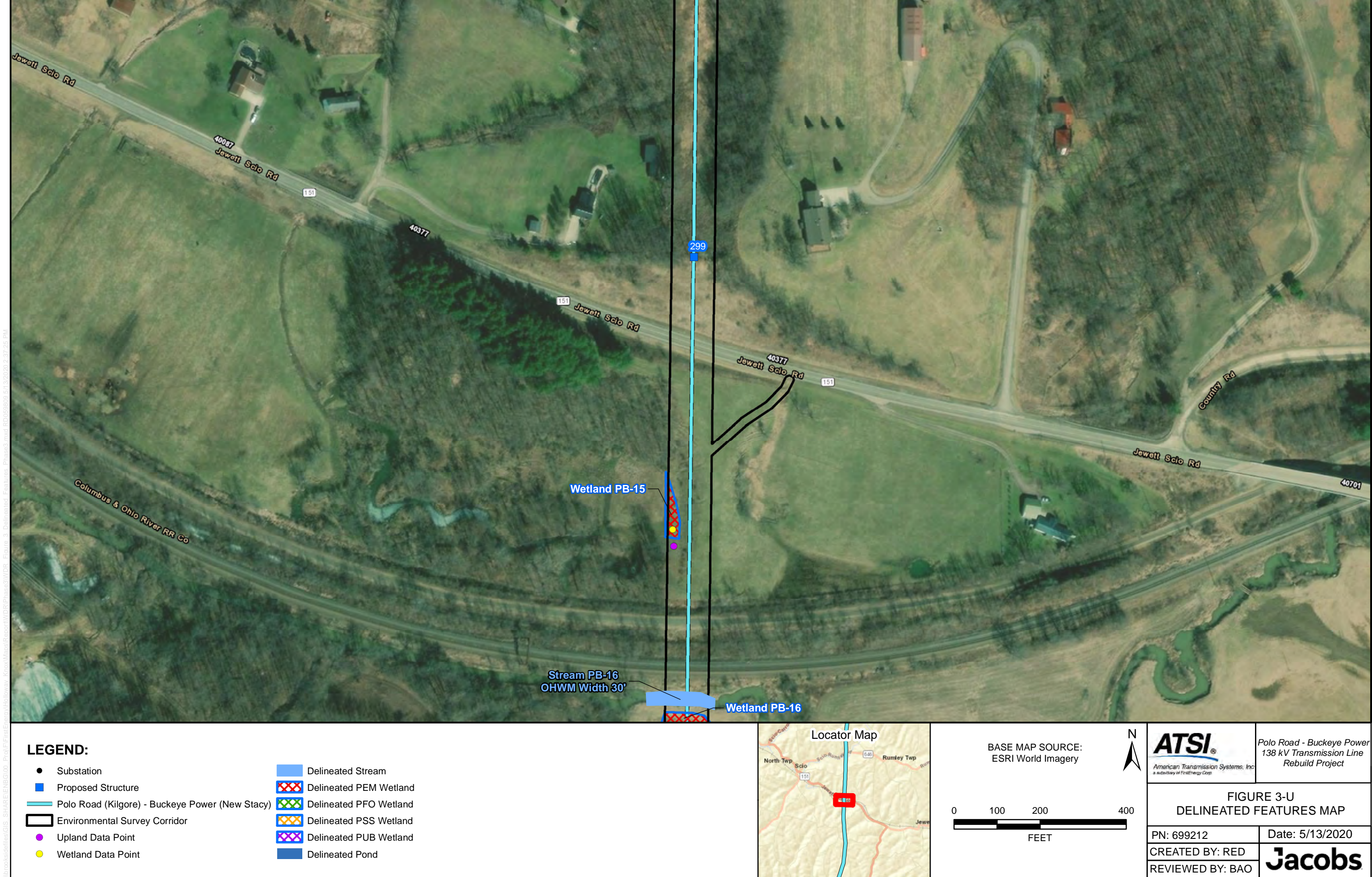


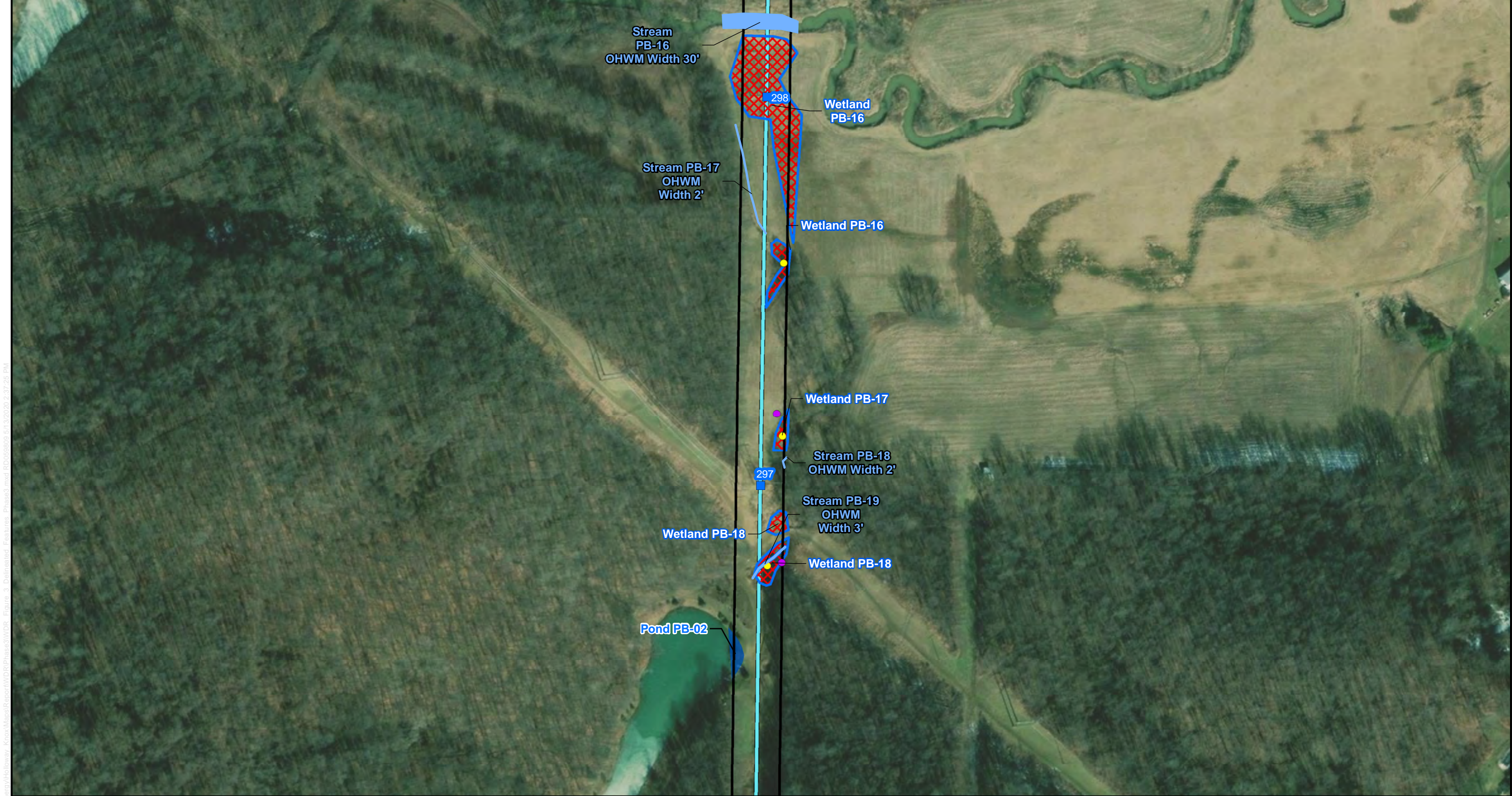
LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |














 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-T DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	
REVIEWED BY: BAO	

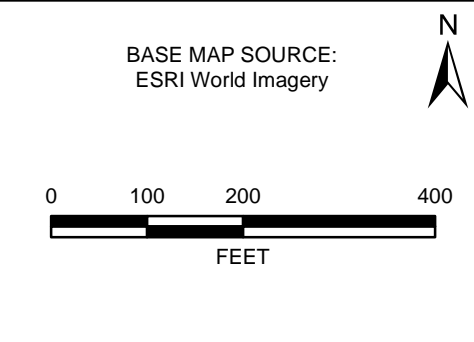
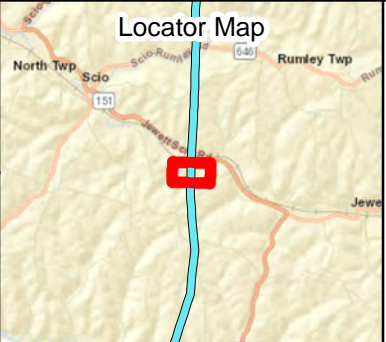






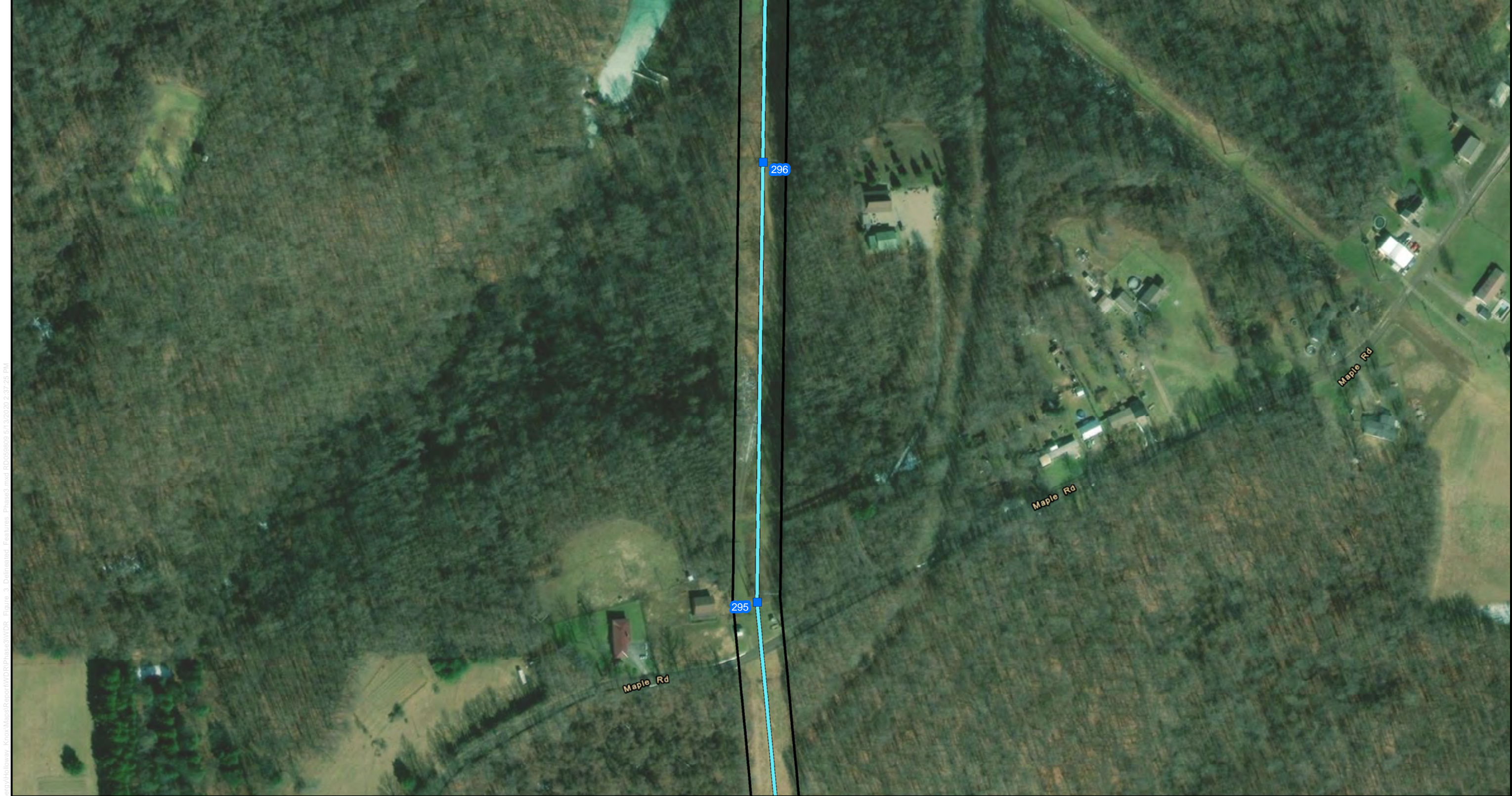
\\brooks\del\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |














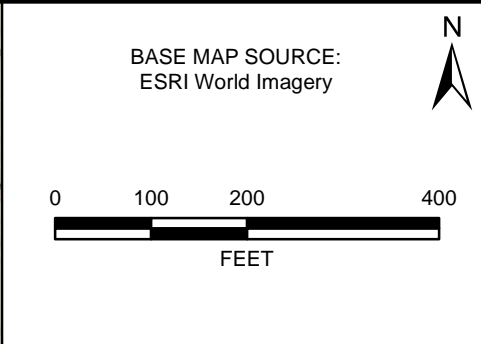
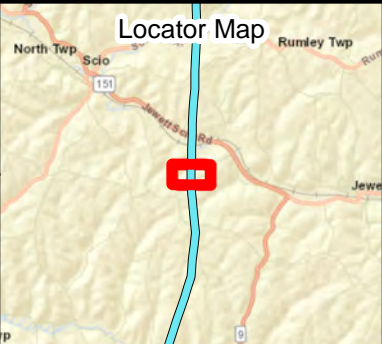
 American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-V DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			





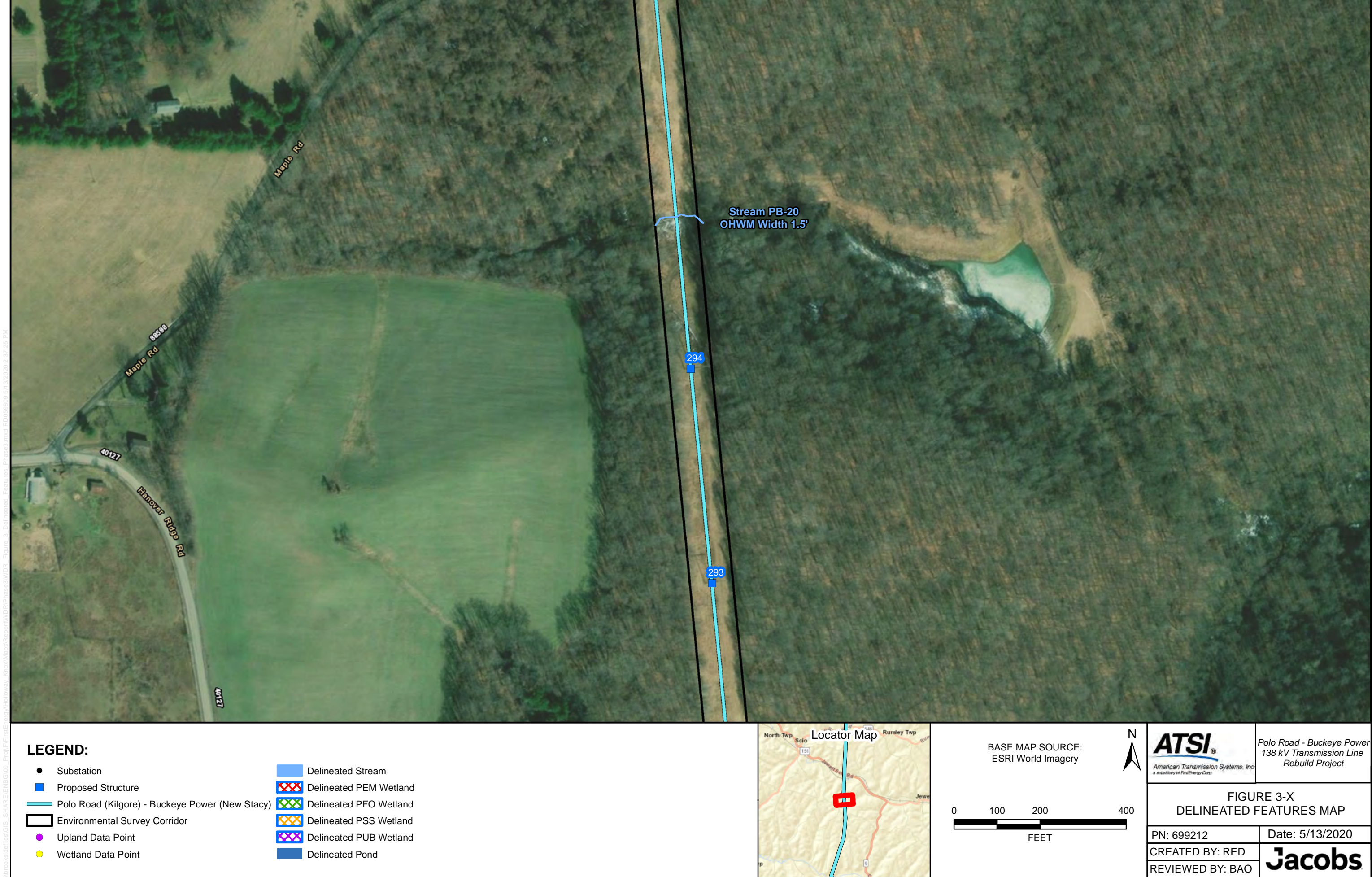
\\brooks\delles\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

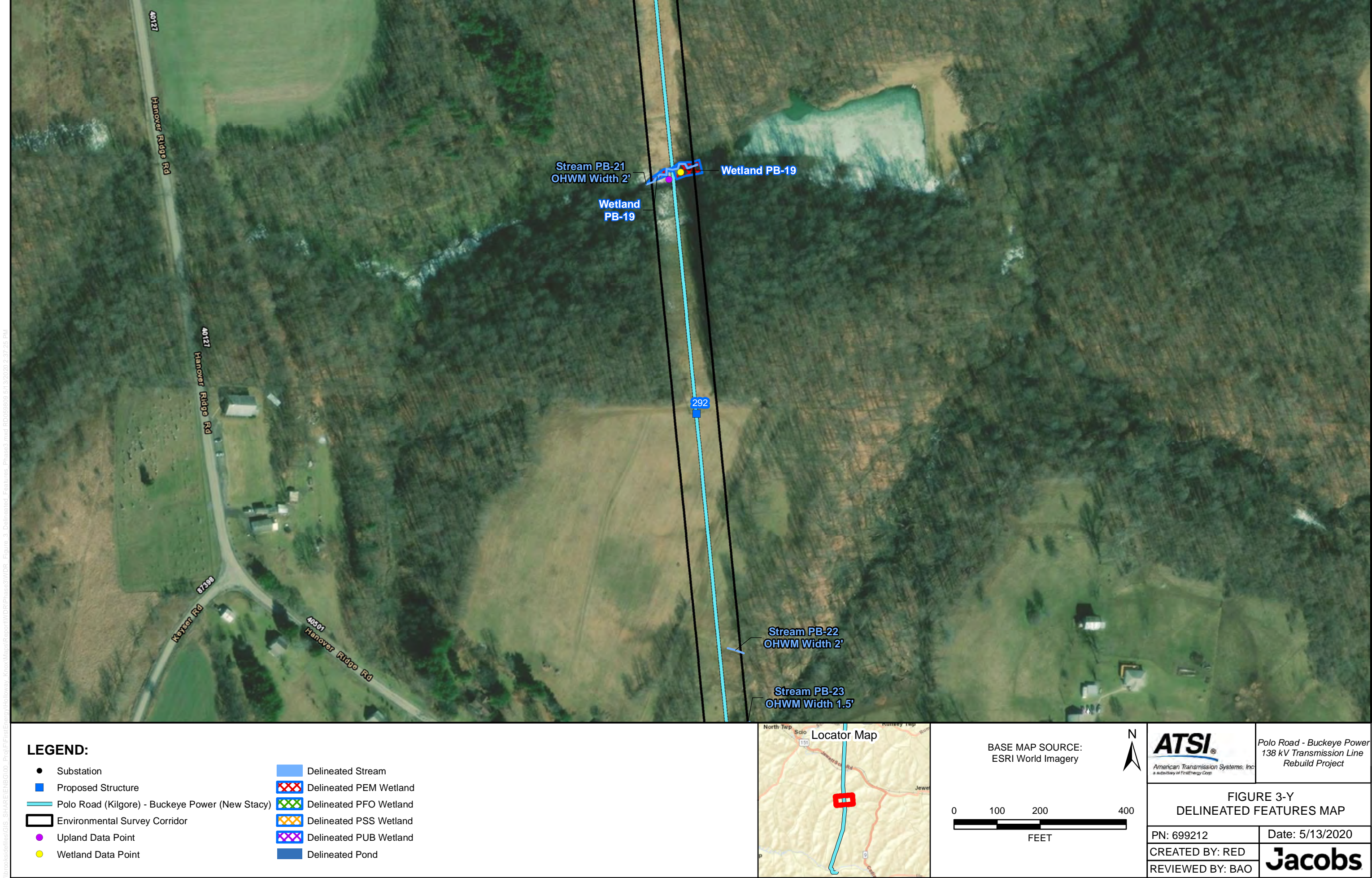
LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |

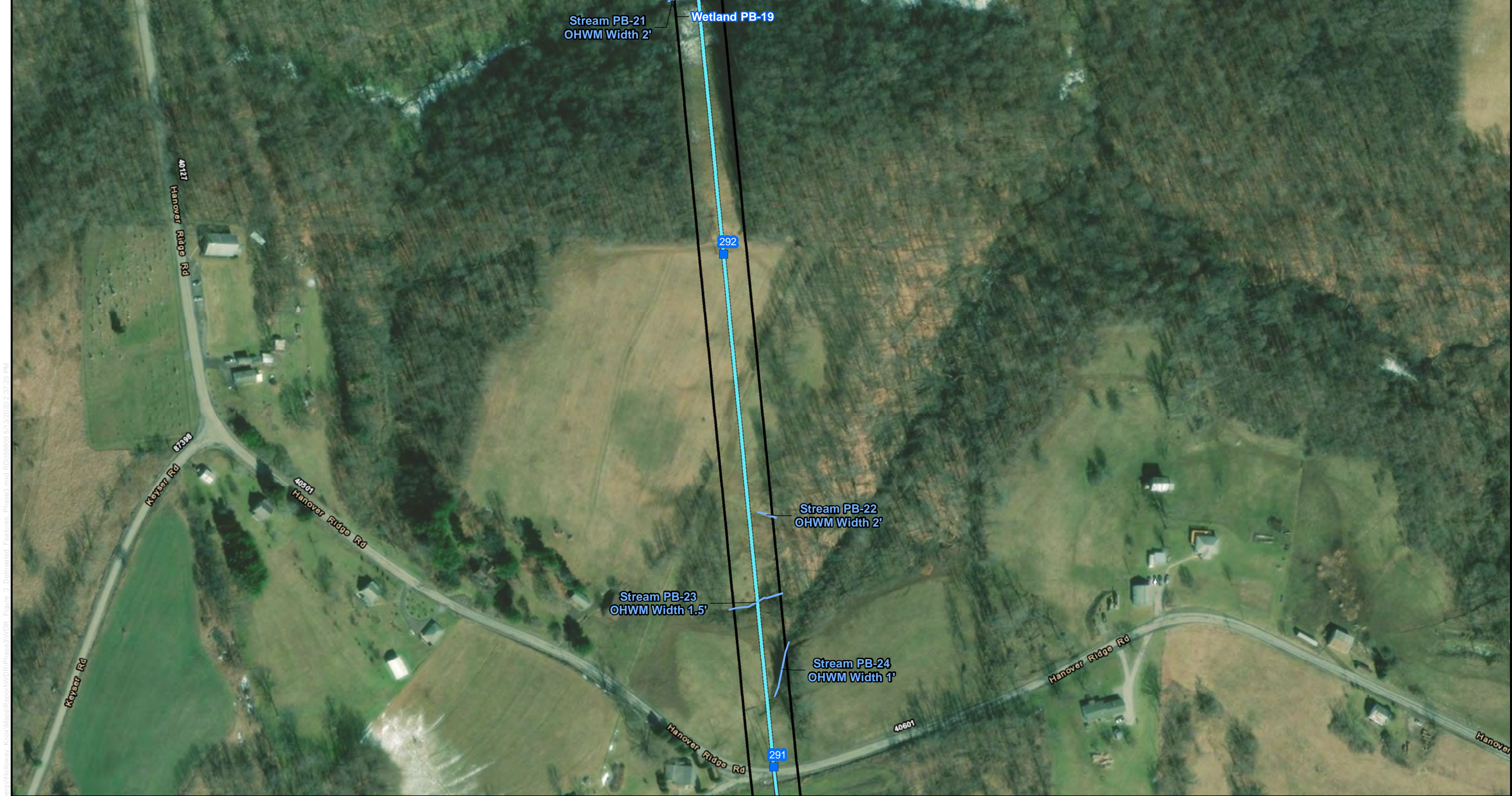


 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-W DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			














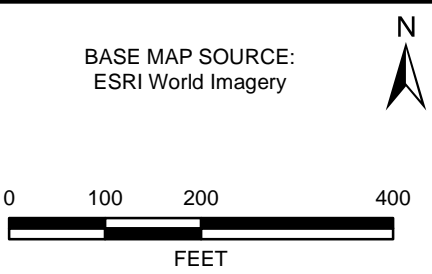
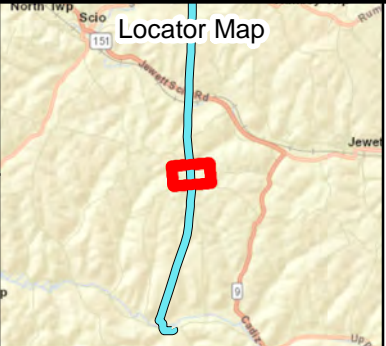




\\brooksdelles\GIS_SHARE\ENB0100_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM



LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |



 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-Z DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			



LEGEND:

- Substation
- Proposed Structure
- Polo Road (Kilgore) - Buckeye Power (New Stacy)
- ▭ Environmental Survey Corridor
- Upland Data Point
- Wetland Data Point
- ▭ Delineated Stream
- ▭ Delineated PEM Wetland
- ▭ Delineated PFO Wetland
- ▭ Delineated PSS Wetland
- ▭ Delineated PUB Wetland
- ▭ Delineated Pond

Locator Map

BASE MAP SOURCE:
ESRI World Imagery

0 100 200 400
FEET

ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

**FIGURE 3-AA
DELINEATED FEATURES MAP**

PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	

\\brooks\delles\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM



LEGEND:

● Substation	Delineated Stream
■ Proposed Structure	Delineated PEM Wetland
— Polo Road (Kilgore) - Buckeye Power (New Stacy)	Delineated PFO Wetland
□ Environmental Survey Corridor	Delineated PSS Wetland
● Upland Data Point	Delineated PUB Wetland
● Wetland Data Point	Delineated Pond

Locator Map

BASE MAP SOURCE:
ESRI World Imagery

0 100 200 400
FEET

ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

**FIGURE 3-AB
DELINEATED FEATURES MAP**

PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	

Polo Road - Buckeye Power
138 kV Transmission Line
Rebuild Project

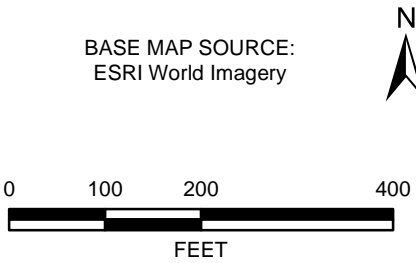
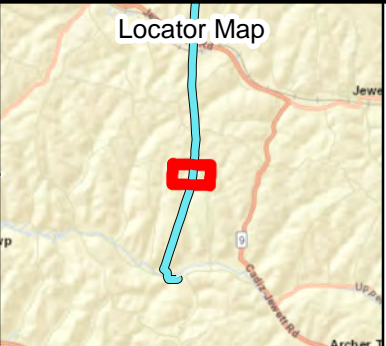
\\brooksdelles\GIS_SHARE\ENB0100_Proj\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM



\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|------------------------|
| ● Substation | Delineated Stream |
| ■ Proposed Structure | Delineated PEM Wetland |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | Delineated PFO Wetland |
| □ Environmental Survey Corridor | Delineated PSS Wetland |
| ● Upland Data Point | Delineated PUB Wetland |
| ● Wetland Data Point | Delineated Pond |



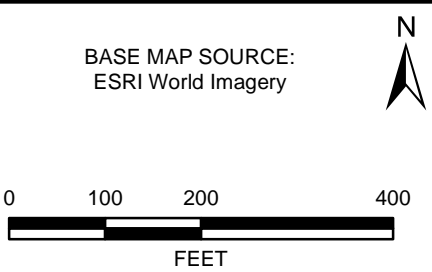
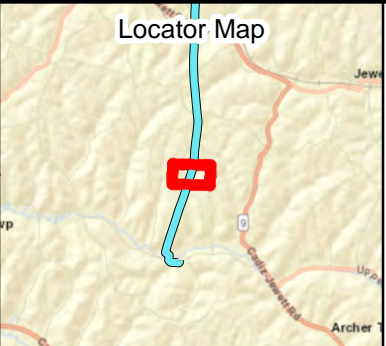
ATSI American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-AC DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	



\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|------------------------|
| ● Substation | Delineated Stream |
| ■ Proposed Structure | Delineated PEM Wetland |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | Delineated PFO Wetland |
| □ Environmental Survey Corridor | Delineated PSS Wetland |
| ● Upland Data Point | Delineated PUB Wetland |
| ● Wetland Data Point | Delineated Pond |



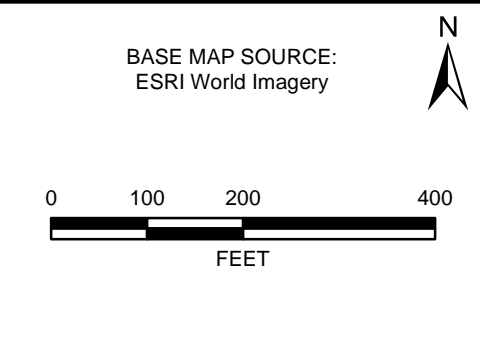
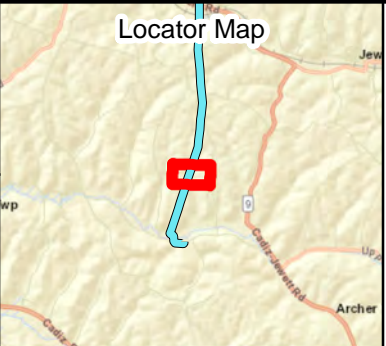
ATSI American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-AD DELINEATED FEATURES MAP		
PN: 699212	Date: 5/13/2020	
CREATED BY: RED	Jacobs	
REVIEWED BY: BAO		



\\brooks\dellies\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|------------------------|
| ● Substation | Delineated Stream |
| ■ Proposed Structure | Delineated PEM Wetland |
| — Polo Road (Kilgore) - Buckeye Power (New Stacy) | Delineated PFO Wetland |
| □ Environmental Survey Corridor | Delineated PSS Wetland |
| ● Upland Data Point | Delineated PUB Wetland |
| ● Wetland Data Point | Delineated Pond |














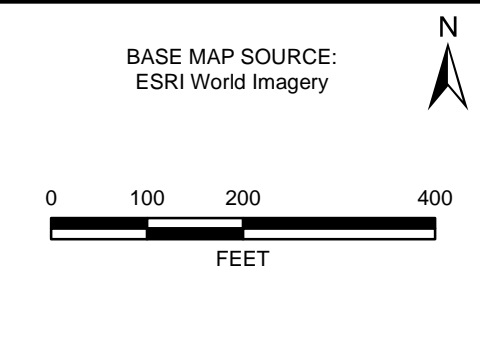
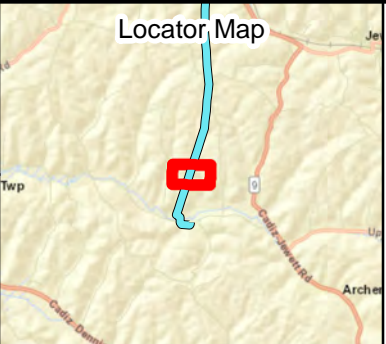
ATSI American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-AE DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	Jacobs
REVIEWED BY: BAO	





\\brooks\delles\GIS_SHARE\ENB\000_Proj\F\FirstEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |





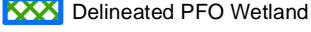



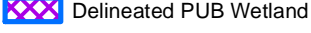




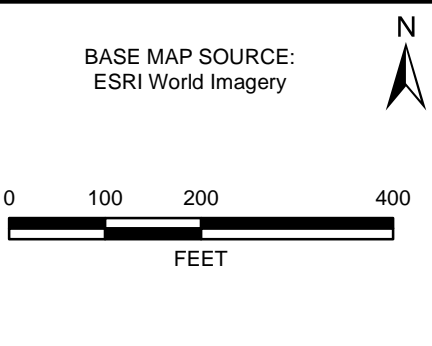
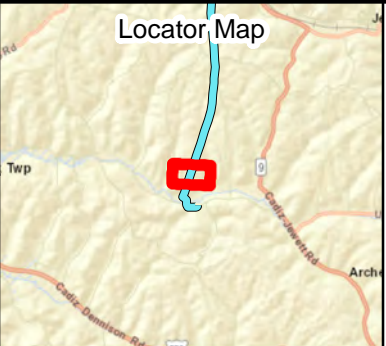
 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-AF DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	
REVIEWED BY: BAO	





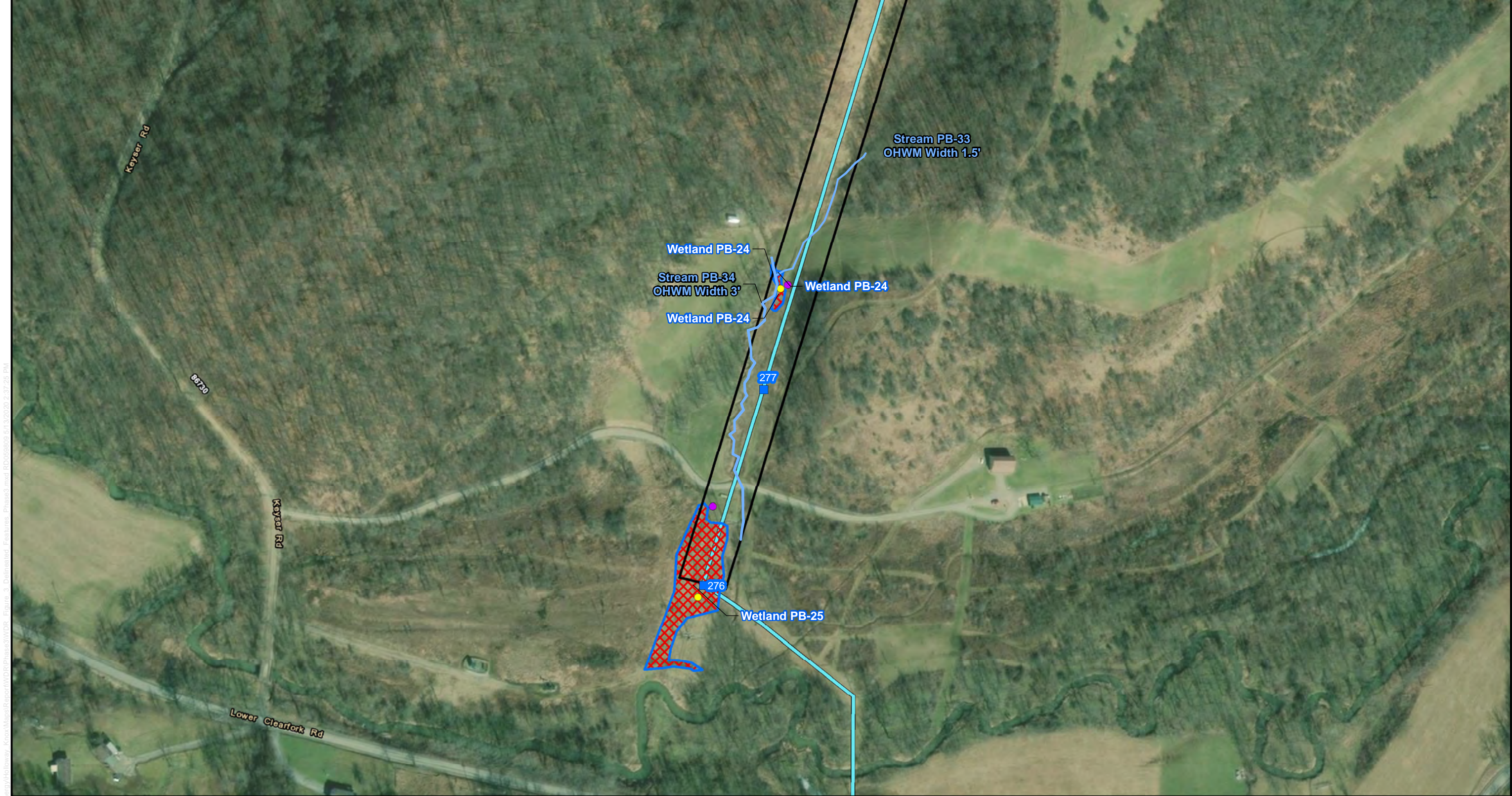
\\brooksdelles\GIS_SHARE\ENB\000_Proj\FinalEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |














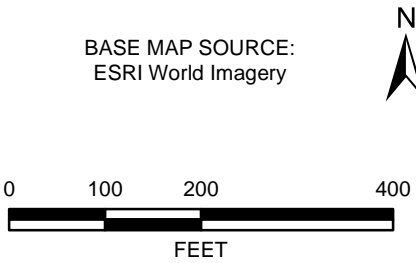
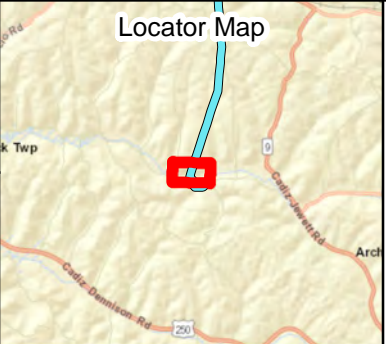
 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project
FIGURE 3-AG DELINEATED FEATURES MAP	
PN: 699212	Date: 5/13/2020
CREATED BY: RED	
REVIEWED BY: BAO	





\\brooks\delles\GIS_SHARE\ENB\000_Proj\FirEnergy\Holloway_Knox\Maps\Report\WDR\Phase3\WDR_Figure_3_Delineated_Features_Phase3.mxd RD059809 5/13/2020 2:37:25 PM

LEGEND:

- | | |
|---|--|
| ● Substation |  Delineated Stream |
|  Proposed Structure |  Delineated PEM Wetland |
|  Polo Road (Kilgore) - Buckeye Power (New Stacy) |  Delineated PFO Wetland |
|  Environmental Survey Corridor |  Delineated PSS Wetland |
|  Upland Data Point |  Delineated PUB Wetland |
|  Wetland Data Point |  Delineated Pond |



 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>		Polo Road - Buckeye Power 138 kV Transmission Line Rebuild Project	
FIGURE 3-AH DELINEATED FEATURES MAP			
PN: 699212		Date: 5/13/2020	
CREATED BY: RED			
REVIEWED BY: BAO			

Appendix A
USACE Wetland Determination Field Datasheets

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Upland PB-01
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 5/24/2018
 Investigator(s): T Qualio, J. Frer, Jacobs Section, Township, Range: S 23 T 12N R 5W
 Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): convex Slope (%): 3
 Subregion (LRR or MLRA): LRR N Lat.: 40.45103977 Long.: -81.04948464 Datum: WGS 84
 Soil Map Unit Name: WmD - Westmoreland-Coshocton silt loams, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

UPLAND area near wetland PB-01 in routinely maintained ROW.

HYDROLOGY

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: u-tmq-05242018-04

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Andropogon gerardii</i>					45	Y	FAC	
2	<i>Solidago rugosa</i>					35	Y	FAC	
3	<i>Valerianella olitoria</i>					25	N	UPL	
4	<i>Podophyllum peltatum</i>					20	N	FACU	
5	<i>Rubus allegheniensis</i>					15	N	FACU	
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							140	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	28	70
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across all Strata: 2 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 80 x 3 = 240
 FACU species 35 x 4 = 140
 UPL species 25 x 5 = 125
 Column totals 140 (A) 505 (B)
 Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:
☐ Rapid test for hydrophytic vegetation
☒ Dominance test is >50%
☐ Prevalence index is ≤3.0*
☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: u-tmq-05242018-04

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Upland PB-02
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 5/24/2018
 Investigator(s): T Qualio, J. Frer, Jacobs Section, Township, Range: S 23 T 12N R 5W
 Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): convex Slope (%): 3
 Subregion (LRR or MLRA): LRR N Lat.: 40.44841588 Long.: -81.04951574 Datum: WGS 84
 Soil Map Unit Name: Or - Orrville silt loam, 0 to 3 percent slopes, occasionally flood NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

UPLAND area near Wetland PB-02 in routinely maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-tmq-05242018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Triticum aestivum</i>						65	Y	UPL
2	<i>Elymus virginicus</i>						40	Y	FACW
3	<i>Alliaria petiolata</i>						15	N	FACU
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							120	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	24	60
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	65	x 5 =	325
Column totals	120 (A)		465 (B)
Prevalence Index = B/A =			3.88

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-tmq-05242018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name Upland PB-03,04
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/6/2018
 Investigator(s) M. Thomayer, T. Qualio; Jacob: Section, Township, Range S 23 T 12N R 5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.44613297 Long.: -81.04968555 Datum: NAD 83
 Soil Map Unit Name CpD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland adjacent to Wetlands PB-03 and PB-04 and within maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/6/2018-03

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa pratensis</i>						70	Y	FACU
2	<i>Solidago sp.</i>						20	Y	FAC
3	<i>Rubus pensilvanicus</i>						10	N	FAC
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column totals	100	(A)	370 (B)
Prevalence Index = B/A =			3.70

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

Solidago sp. conservatively assigned FAC indicator status, hydrophytic vegetation indicator not met.

SOIL

Sampling Point: Upl-mdt-6/6/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name Upland PB-05
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/6/2018
 Investigator(s) M. Thomayer, T. Qualio; Jacob: Section, Township, Range S 23 T 12N R 5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.44315037 Long.: -81.04985794 Datum: NAD 83
 Soil Map Unit Name CpD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland adjacent to Wetland PB-05 and within maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/6/2018-02

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Solidago sp.</i>						30	Y	FAC
2	<i>Rubus pensilvanicus</i>						30	Y	FAC
3	<i>Verbesina alternifolia</i>						20	Y	FAC
4	<i>Podophyllum peltatum</i>						10	N	FACU
5	<i>Rosa multiflora</i>						10	N	FACU
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column totals	100 (A)		320 (B)
Prevalence Index = B/A =			3.20

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

Solidago sp. conservatively assigned FAC indicator status.

SOIL

Sampling Point: Upl-mdt-6/6/2018-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Upland PB-06
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S 23 T 12N R 5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.44233818 Long.: -81.04996387 Datum: NAD 83
 Soil Map Unit Name: CpD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland adjacent to Wetland PB-06 and within maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/6/2018-01

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Solidago sp.</i>						70	Y	FAC
2	<i>Rubus pensilvanicus</i>						30	Y	FAC
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		300 (B)
Prevalence Index = B/A =			3.00

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

Solidago sp. conservatively assigned FAC indicator status.

SOIL

Sampling Point: Upl-mdt-6/6/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name Upland PB-07,08
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/6/2018
 Investigator(s) M. Thomayer, T. Qualio; Jacob: Section, Township, Range S 21 T 12N R 5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 2
 Subregion (LRR or MLRA): LRR N Lat.: 40.42572479 Long.: -81.05013349 Datum: NAD 83
 Soil Map Unit Name WnF - Westmoreland-Dekalb complex, 40 to 70 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetlands PB-07 and PB-08, within maintained ROW.

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>N</u>
Surface water present?	Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Water table present?	Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/6/18-05/0

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa pratensis</i>						50	Y	FACU
2	<i>Solidago sp.</i>						30	Y	FAC
3	<i>Rubus pensilvanicus</i>						20	Y	FAC
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across all Strata: 3 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 50 x 3 = 150
 FACU species 50 x 4 = 200
 UPL species 0 x 5 = 0
 Column totals 100 (A) 350 (B)
 Prevalence Index = B/A = 3.50

Hydrophytic Vegetation Indicators:
☐ Rapid test for hydrophytic vegetation
☒ Dominance test is >50%
☐ Prevalence index is ≤3.0*
☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet
 Solidago sp. conservatively assigned FAC indicator status.

SOIL

Sampling Point: Upl-mdt-6/6/18-05/06

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-09,10
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S 20 T 12N R 5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.40764607 Long.: -81.05168331 Datum: NAD 83
 Soil Map Unit Name: GsB - Glenford silt loam, 3 to 8 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetlands PB-09 and PB-10, within maintained ROW.

HYDROLOGY

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

Field Observations:				Wetland hydrology present? <u>N</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/6/2018-07

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Verbesina alternifolia</i>						70	Y	FAC
2	<i>Poa pratensis</i>						25	Y	FACU
3	<i>Dicanthelium clandestinum</i>						15	N	FAC
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							110	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across all Strata: 2 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 85 x 3 = 255
 FACU species 25 x 4 = 100
 UPL species 0 x 5 = 0
 Column totals 110 (A) 355 (B)
 Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:
☐ Rapid test for hydrophytic vegetation
☐ Dominance test is >50%
☐ Prevalence index is ≤3.0*
☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-mdt-6/6/2018-07

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name Upland PB-11
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/07/2018
 Investigator(s) M. Thomayer, T. Qualio; Jacob: Section, Township, Range S 20 T 12N R 5W
 Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.39960799 Long.: -81.05185961 Datum: NAD 83
 Soil Map Unit Name GsB - Glenford silt loam, 3 to 8 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-11 and within maintained ROW.

HYDROLOGY

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/07/2018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa pratensis</i>						65	Y	FACU
2	<i>Solidago rugosa</i>						25	Y	FAC
3	<i>Trifolium repens</i>						20	N	FACU
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							110	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	85	x 4 =	340
UPL species	0	x 5 =	0
Column totals	110 (A)		415 (B)
Prevalence Index = B/A =			3.77

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-mdt-6/07/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-12,13
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S 19 T 12N R 5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.39812932 Long.: -81.05192015 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetlands PB-12 and PB-13, within maintained ROW.

HYDROLOGY

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

Field Observations:				Wetland hydrology present? <u>N</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/07/2018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Solidago rugosa</i>						50	Y	FAC
2	<i>Dichanthelium clandestinum</i>						30	Y	FAC
3	<i>Verbesina alternifolia</i>						20	N	FAC
4	<i>Rubus pensilvanicus</i>						15	N	FAC
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							115	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across all Strata: 2 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 115 x 3 = 345
 FACU species 0 x 4 = 0
 UPL species 0 x 5 = 0
 Column totals 115 (A) 345 (B)
 Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:
☐ Rapid test for hydrophytic vegetation
☒ Dominance test is >50%
☒ Prevalence index is ≤3.0*
 Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)
 *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: Upl-mdt-6/07/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name Upland PB-14
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/07/2018
 Investigator(s) M. Thomayer, T. Qualio; Jacob: Section, Township, Range S 19 T 12N R 5W
 Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.3838428 Long.: -81.05263681 Datum: NAD 83
 Soil Map Unit Name WnE - Westmoreland-Dekalb complex, 25 to 40 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-14 and within maintained ROW.

HYDROLOGY

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/07/2018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Fragaria virginiana</i>						30	Y	FACU
2	<i>Rubus allegheniensis</i>						20	Y	FACU
3	<i>Poa pratensis</i>						20	Y	FACU
4	<i>Solidago rugosa</i>						15	N	FAC
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							85	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	17	43
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column totals	85 (A)		325 (B)
Prevalence Index = B/A =			3.82

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

5

SOIL

Sampling Point: Upl-mdt-6/07/2018-04

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-15
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S 24 T 11 N R 5 W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.37875768 Long.: -81.05310721 Datum: NAD 83
 Soil Map Unit Name: Me - Melvin silt loam, frequently ponded, 0 to 3 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-15 and within maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: U-mdt-6/07/2018-08

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>poa pratensis</i>						80	Y	FACU
2	<i>Solidago rugosa</i>						30	Y	FAC
3	<i>Trifolium pratense</i>						25	N	FACU
4	<i>Vernonia gigantea</i>						10	N	FAC
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							145	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	29	73
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across all Strata: 2 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 40 x 3 = 120
 FACU species 105 x 4 = 420
 UPL species 0 x 5 = 0
 Column totals 145 (A) 540 (B)
 Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:
☐ Rapid test for hydrophytic vegetation
☐ Dominance test is >50%
☐ Prevalence index is ≤3.0*
☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: U-mdt-6/07/2018-08

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-16,17
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S 24 T 11 N R 5 W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.37551503 Long.: -81.05299632 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-16 and PB-17, within maintained ROW.

HYDROLOGY

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: u-mdt-060718-06,07

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Solidago rugosa</i>						60	Y	FAC
2	<i>Verbesina alternifolia</i>						25	Y	FAC
3	<i>Apocynum cannabinum</i>						25	Y	FACU
4	<i>Rubus allegheniensis</i>						15	N	FACU
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							125	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	25	63
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across all Strata: 3 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 85 x 3 = 255
 FACU species 40 x 4 = 160
 UPL species 0 x 5 = 0
 Column totals 125 (A) 415 (B)
 Prevalence Index = B/A = 3.32

Hydrophytic Vegetation Indicators:
☐ Rapid test for hydrophytic vegetation
☒ Dominance test is >50%
☐ Prevalence index is ≤3.0*
☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: u-mdt-060718-06,07

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name Upland PB-18
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/07/2018
 Investigator(s) M. Thomayer, T. Qualio; Jacob: Section, Township, Range S 24 T 11 N R 5 W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.37465371 Long.: -81.05297605 Datum: NAD 83
 Soil Map Unit Name CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-18 and within maintained ROW. The area has been disturbed by recent pipeline construction.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

<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 type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/07/2018-c

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa pratensis</i>						60	Y	FACU
2	<i>Solidago rugosa</i>						15	Y	FAC
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							75	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	15	38
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column totals	75 (A)		285 (B)
Prevalence Index = B/A =			3.80

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-mdt-6/07/2018-05

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-19
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/11/2018
 Investigator(s): M. Thomayer, B. Otto Jacobs Section, Township, Range: S 23 T 11N R 5W Sampling Point U-bao-6/11/2018-01
 Landform (hillslope, terrace, etc.): hillside Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA) LRR N Lat.: 40.36391485 Long.: -81.05270745 Datum: NAD 83
 Soil Map Unit Name WnE - Westmoreland-Dekalb complex, 25 to 40 percent slopes NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes

Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u> No </u> Hydric soil present? <u> No </u> Wetland hydrology present? <u> No </u>	Is the sampled area within a wetland? <u> No </u>
Remarks: <div style="text-align: center; margin-top: 20px;">Upland point for PEM Wetland PB-19 in routinely maintained ROW.</div>	

HYDROLOGY

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

VEGETATION - Use scientific names of plants

Sampling Point: U-bao-6/11/2018-01

50/20 Thresholds					
Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
		0 = Total Cover			
Sapling/Shrub Stratum	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1	<i>Rubus allegheniensis</i>	20	Y	FACU	
2	<i>Rhus copallinum</i>	10	Y	FACU	
3					
4					
5					
6					
7					
8					
9					
10					
		30 = Total Cover			
Herb Stratum	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1	<i>Verbesina alternifolia</i>	40	Y	FAC	
2	<i>Dichanthelium clandestinum</i>	20	Y	FAC	
3	<i>Trifolium repens</i>	20	Y	FACU	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
		80 = Total Cover			
Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
		0 = Total Cover			

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 40.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	<u>0</u>	x 1 =	<u>0</u>
FACW species	<u>0</u>	x 2 =	<u>0</u>
FAC species	<u>60</u>	x 3 =	<u>180</u>
FACU species	<u>50</u>	x 4 =	<u>200</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column totals	<u>110</u>	(A)	<u>380</u> (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators

 Rapid test for hydrophytic vegetation

 Dominance test is >50%

 Prevalence index is ≤3.0*

 Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

 Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present?

 N

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

S

SOIL

Sampling Point: U-bao-6/11/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-20
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/11/2018
 Investigator(s): M. Thomayer, B. Otto Jacobs Section, Township, Range: S 23 T 11N R 5W Sampling Point Upl-bao-6/11/2018-03
 Landform (hillslope, terrace, etc.): hillside Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA) LRR N Lat.: 40.3576897 Long.: -81.05195388 Datum: NAD 83
 Soil Map Unit Name WnE - Westmoreland-Dekalb complex, 25 to 40 percent slopes NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes

Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u> No </u> Hydric soil present? <u> No </u> Wetland hydrology present? <u> No </u>	Is the sampled area within a wetland? <u> No </u>
Remarks: <div style="text-align: center; margin-top: 20px;">Upland point for PEM Wetland PB-20 in routinely maintained ROW.</div>	

HYDROLOGY

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

VEGETATION - Use scientific names of plants

Sampling Point: Upl-bao-6/11/2018-(

Sampling Form: C:\pba3\c\1\12010																				
50/20 Thresholds <table border="1"> <thead> <tr> <th></th> <th>20%</th> <th>50%</th> </tr> </thead> <tbody> <tr> <td>Tree Stratum</td> <td>0</td> <td>0</td> </tr> <tr> <td>Sapling/Shrub Stratum</td> <td>0</td> <td>0</td> </tr> <tr> <td>Herb Stratum</td> <td>20</td> <td>50</td> </tr> <tr> <td>Woody Vine Stratum</td> <td>0</td> <td>0</td> </tr> </tbody> </table>				20%	50%	Tree Stratum	0	0	Sapling/Shrub Stratum	0	0	Herb Stratum	20	50	Woody Vine Stratum	0	0			
	20%	50%																		
Tree Stratum	0	0																		
Sapling/Shrub Stratum	0	0																		
Herb Stratum	20	50																		
Woody Vine Stratum	0	0																		
Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>66.67%</u> (A/B)																				
Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>70</u> x 3 = <u>210</u> FACU species <u>30</u> x 4 = <u>120</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>100</u> (A) <u>330</u> (B) Prevalence Index = B/A = <u>3.30</u>																				
Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation Dominance test is >50% Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic																				
Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.																				
Hydrophytic vegetation present? <u>Y</u>																				
Tree Stratum Plot Size (30 ft.) Absolute % Cover Dominant Species Indicator Status 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ <u>0</u> = Total Cover																				
Sapling/Shrub Stratum Plot Size (15 ft.) Absolute % Cover Dominant Species Indicator Status 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ <u>0</u> = Total Cover																				
Herb Stratum Plot Size (5 ft.) Absolute % Cover Dominant Species Indicator Status 1 <u>Poa sp.</u> <u>40</u> <u>Y</u> <u>FAC</u> 2 <u>Trifolia repens</u> <u>20</u> <u>Y</u> <u>FACU</u> 3 <u>Verbesina alternifolia</u> <u>20</u> <u>Y</u> <u>FAC</u> 4 <u>Taraxacum officinale</u> <u>10</u> <u>N</u> <u>FACU</u> 5 <u>Coronilla vaia</u> <u>10</u> <u>N</u> <u>FAC</u> 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ 11 _____ 12 _____ 13 _____ 14 _____ 15 _____ <u>100</u> = Total Cover																				
Woody Vine Stratum Plot Size (30 ft.) Absolute % Cover Dominant Species Indicator Status 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ <u>0</u> = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet)																				
Poa sp. conservatively assigned FAC indicator status																				

SOIL

Sampling Point: Upl-bao-6/11/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-21
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/11/2018
 Investigator(s): M. Thomayer, B. Otto Jacobs Section, Township, Range: S 23 T 11N R 5W Sampling Point Upl-bao-6/11/2018-02
 Landform (hillslope, terrace, etc.): hillside Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA) LRR N Lat.: 40.35644735 Long.: -81.05232966 Datum: NAD 83
 Soil Map Unit Name GuD2 - Guernsey silty clay loam, 15 to 25 percent slopes, eroded NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes

Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u> No </u> Hydric soil present? <u> No </u> Wetland hydrology present? <u> No </u>	Is the sampled area within a wetland? <u> No </u>
Remarks: <div style="text-align: center; margin-top: 20px;">Upland point for PEM Wetland PB-21 in routinely maintained ROW.</div>	

HYDROLOGY

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

VEGETATION - Use scientific names of plants
Sampling Point: Upl-bao-6/11/2018-0

Tree Stratum						50/20 Thresholds		
Plot Size (	30 ft.	)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%
1						Tree Stratum	0	0
2						Sapling/Shrub Stratum	0	0
3						Herb Stratum	22	55
4						Woody Vine Stratum	0	0
5								
6								
7								
8								
9								
10								
			0	= Total Cover				
Sapling/Shrub Stratum						Dominance Test Worksheet		
Plot Size (	15 ft.	)	Absolute % Cover	Dominant Species	Indicator Status			
1						Number of Dominant Species that are OBL, FACW, or FAC: <u>1</u> (A)		
2						Total Number of Dominant Species Across all Strata: <u>2</u> (B)		
3						Percent of Dominant Species that are OBL, FACW, or FAC: <u>50.00%</u> (A/B)		
4								
5								
6								
7								
8								
9								
10								
			0	= Total Cover				
Herb Stratum						Prevalence Index Worksheet		
Plot Size (	5 ft.	)	Absolute % Cover	Dominant Species	Indicator Status			
1						Total % Cover of:		
2						OBL species <u>0</u> x 1 = <u>0</u>		
3						FACW species <u>0</u> x 2 = <u>0</u>		
4						FAC species <u>30</u> x 3 = <u>90</u>		
5						FACU species <u>30</u> x 4 = <u>120</u>		
6						UPL species <u>50</u> x 5 = <u>250</u>		
7						Column totals <u>110</u> (A) <u>460</u> (B)		
8						Prevalence Index = B/A = <u>4.18</u>		
9								
10								
11								
12								
13								
14								
15								
			110	= Total Cover				
Woody Vine Stratum						Hydrophytic Vegetation Indicators		
Plot Size (	30 ft.	)	Absolute % Cover	Dominant Species	Indicator Status			
1						<input type="checkbox"/> Rapid test for hydrophytic vegetation		
2						<input type="checkbox"/> Dominance test is >50%		
3						<input type="checkbox"/> Prevalence index is ≤3.0*		
4						<input type="checkbox"/> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
5						<input type="checkbox"/> Problematic hydrophytic vegetation* (explain)		
6						*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
7								
8								
9								
10								
11								
12								
13								
14								
15								
			0	= Total Cover				
Remarks: (Include photo numbers here or on a separate sheet w Poa sp. conservatively assigned FAC indicator status						Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. Hydrophytic vegetation present? <u>N</u>		

SOIL

Sampling Point: Upl-bao-6/11/2018-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-22
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, B. Otto; Jacob Section, Township, Range: S 22 T 11 N R 5 W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.344151 Long.: -81.054849 Datum: NAD 83
 Soil Map Unit Name: WmE - Westmoreland-Coshocton complex, 25 to 40 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-22 and within maintained ROW.

HYDROLOGY

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/12/2018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Trifolium pratense</i>						60	Y	FACU
2	<i>Poa pratensis</i>						40	Y	FACU
3	<i>Triticum aestivum</i>						20	N	UPL
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							120	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	24	60
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across all Strata: 2 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 0 x 3 = 0
 FACU species 100 x 4 = 400
 UPL species 20 x 5 = 100
 Column totals 120 (A) 500 (B)
 Prevalence Index = B/A = 4.17

Hydrophytic Vegetation Indicators:
☐ Rapid test for hydrophytic vegetation
☐ Dominance test is >50%
☐ Prevalence index is ≤3.0*
☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-mdt-6/12/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name Upland PB-23
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/07/2018
 Investigator(s) M. Thomayer, B. Otto; Jacob: Section, Township, Range S22 T11N R5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.3300034 Long.: -81.06100922 Datum: NAD 83
 Soil Map Unit Name RcB-Richland silt loam, 2 to 6 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-23 and within maintained ROW.

HYDROLOGY

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/12/2018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa pratensis</i>						70	Y	FACU
2	<i>Dipsacus fullonum</i>						20	N	FACU
3	<i>Ambrosia artemisiifolia</i>						15	N	FACU
4	<i>Verbesina alternifolia</i>						10	N	FAC
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							115	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column totals	115 (A)		450 (B)
Prevalence Index = B/A =			3.91

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-mdt-6/12/2018-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Upland PB-24
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, B. Otto; Jacob: Section, Township, Range: S 21 T 11 N R 5 W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.3300034 Long.: -81.06100922 Datum: NAD 83
 Soil Map Unit Name: RcB - Richland silt loam, 2 to 6 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-24 and within maintained ROW.

HYDROLOGY

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

Field Observations:				Wetland hydrology present? <u>N</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-6/12/2018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Dichanthelium clandestinum</i>						30	Y	FAC
2	<i>Verbesina alternifolia</i>						30	Y	FAC
3	<i>Cirsium arvense</i>						20	Y	FACU
4	<i>Rubus allegheniensis</i>						20	Y	FACU
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column totals	100 (A)		340 (B)
Prevalence Index = B/A =			3.40

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-mdt-6/12/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name Upland PB-25
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/07/2018
 Investigator(s) M. Thomayer, B. Otto; Jacob: Section, Township, Range S 21 T 11 N R 5 W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.32873025 Long.: -81.06160298 Datum: NAD 83
 Soil Map Unit Name RcB - Richland silt loam, 2 to 6 percent slope NWI Classification: N/A

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

Are vegetation , soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	

Remarks:

Upland data point adjacent to Wetland PB-25 and within maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes No X Depth (inches):
 (includes capillary fringe)

**Wetland
hydrology
present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Upl-mdt-06122018-C

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Trifolium pratense</i>						60	Y	FACU
2	<i>Poa pratensis</i>						30	Y	FACU
3	<i>Plantago major</i>						30	Y	FACU
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							120	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	24	60
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	120	x 4 =	480
UPL species	0	x 5 =	0
Column totals	120 (A)		480 (B)
Prevalence Index = B/A =			4.00

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Upl-mdt-06122018-04

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Report Name: Wetland PB-01
 Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Sampling Date: 5/24/2018
 Applicant/Owner: FirstEnergy State: Ohio Sampling Point: W-tmq-05/24/18-04
 Investigator(s): T. Qualio, J.Freer; Jacobs Section, Township, Range: S23 T12N R5W
 Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 1-3
 Subregion (LRR or MLRA): LRR N Lat.: 40.451423 Long.: -81.049639 Datum: WGS 84
 Soil Map Unit Name: RgD - Rigley sandy loam, 15 to 25 percent slopes NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u> Hydric soil present? <u>Yes</u> Wetland hydrology present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Remarks: PEM wetland in routinely maintained ROW, depressional wetland drains into NHD stream.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water table present? Yes <u>X</u> No <u> </u> Depth (inches): <u>10</u> Saturation present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)		Wetland hydrology present? <u>Y</u>
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION - Use scientific names of plants

Sampling Point: W-tmq-05/24/18-04

Tree Stratum					50/20 Thresholds		
Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%
1					Tree Stratum	0	0
2					Sapling/Shrub Stratum	0	0
3					Herb Stratum	25	63
4					Woody Vine Stratum	0	0
5							
6							
7							
8							
9							
10							
		0	= Total Cover				
					Dominance Test Worksheet		
					Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A)		
					Total Number of Dominant Species Across all Strata: <u>2</u> (B)		
					Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)		
					Prevalence Index Worksheet		
					Total % Cover of:		
					OBL species <u>45</u> x 1 = <u>45</u>		
					FACW species <u>60</u> x 2 = <u>120</u>		
					FAC species <u>20</u> x 3 = <u>60</u>		
					FACU species <u>0</u> x 4 = <u>0</u>		
					UPL species <u>0</u> x 5 = <u>0</u>		
					Column totals <u>125</u> (A) <u>225</u> (B)		
					Prevalence Index = B/A = <u>1.80</u>		
					Hydrophytic Vegetation Indicators:		
					<input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation		
					<input checked="" type="checkbox"/> Dominance test is >50%		
					<input checked="" type="checkbox"/> Prevalence index is ≤3.0*		
					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
					Problematic hydrophytic vegetation* (explain)		
					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
					Definitions of Vegetation Strata:		
					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
					Woody vines - All woody vines greater than 3.28 ft in height.		
					Hydrophytic vegetation present? <u>Y</u>		
Remarks: (Include photo numbers here or on a separate sheet)							

SOIL

Sampling Point: W-tmq-05/24/18-04

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

[illegible]

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

<input type="checkbox"/>	Dark Surface (S7)	<input type="checkbox"/>	2 cm
<input type="checkbox"/>	Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/>	Coars
<input type="checkbox"/>	Thin Dark Surface (S9)	<input type="checkbox"/>	Piedr
<input type="checkbox"/>	(MLRA 147, 148)	<input type="checkbox"/>	(MLR
<input type="checkbox"/>	Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	Very
<input checked="" type="checkbox"/>	Depleted Matrix (F3)	<input type="checkbox"/>	Other
<input type="checkbox"/>	Redox Dark Surface (F6)		
<input type="checkbox"/>	Depleted Dark Surface (F7)		
<input type="checkbox"/>	Redox Depressions (F8)		
<input type="checkbox"/>	Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/>	Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/>	Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/>	Red Parent Material (F21) (MLRA 127, 147)		

Indicators for Problematic Hydric Soils:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-02
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 5/24/2018
 Investigator(s): T. Qualio, J. Freer, Jacobs Section, Township, Range: S23 T12N R5W Sampling Point: W-tmq-05/24/18-03
 Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 1-3
 Subregion (LRR or MLRA): LRR N Lat.: 40.448444 Long.: -81.049571 Datum: WGS 84
 Soil Map Unit Name: Or - Orrville silt loam, 0 to 3 percent slopes, occasionally flooded NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?

(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u> Hydric soil present? <u>Yes</u> Wetland hydrology present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Remarks: PEM wetland in routinely maintained ROW, depressional wetland drains into NHD stream.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Saturation present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0-3</u> (includes capillary fringe)		Wetland hydrology present? <u>Y</u>	
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION - Use scientific names of plants
Sampling Point: W-tmq-05/24/18-03

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa palustris</i>						65	Y	FACW
2	<i>Juncus effusus</i>						25	Y	FACW
3	<i>Vernonia noveboracensis</i>						10	N	FACW
4	<i>Carex lurida</i>						10	N	OBL
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							110	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	110 (A)		210 (B)
Prevalence Index = B/A =			1.91

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-tmq-05/24/18-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-3	10 YR 4/1	100					clay loam	saturated
3-12	10 YR 5/1	60	10 YR 5/6	40	C	M	clay loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

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

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

Restrictive Layer (if observed): Type: Depth (inches):	Hydric soil present? Y
--	--------------------------

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Wetland PB-03
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S23 T12N R5W
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): LRR N Lat.: 40.446774 Long.: -81.049839 Datum: NAD 83
 Soil Map Unit Name: Or - Orrville silt loam, 0 to 3 percent slopes, occasionally flood NWI Classification: R4SBC

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

Are vegetation, soil, or hydrology significantly disturbed? Are "normal circumstances" present? Yes ☐

Are vegetation, soil, or hydrology naturally problematic? present? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in floodplain within maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<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 on 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 checked="" 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:		Wetland hydrology present? <u>Y</u>
Surface water present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u>		
Water table present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u>		
Saturation present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6</u>		

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout, wetland receives flooding from perennial stream

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/6/2018-04

Tree Stratum					Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
					0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
					0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phalaris arundinacea</i>					100	Y	FACW
2	<i>Impatiens capensis</i>					20	N	FACW
3	<i>Verbesina alternifolia</i>					20	N	FAC
4	<i>Rubus pensilvanicus</i>					10	N	FAC
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
					150	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1								
2								
3								
4								
5								
					0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	30	75
Woody Vine Stratum	0	0

Dominance Test Worksheet
 Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across all Strata: 1 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet
 Total % Cover of:
 OBL species 0 x 1 = 0
 FACW species 120 x 2 = 240
 FAC species 30 x 3 = 90
 FACU species 0 x 4 = 0
 UPL species 0 x 5 = 0
 Column totals 150 (A) 330 (B)
 Prevalence Index = B/A = 2.20

Hydrophytic Vegetation Indicators:
☒ Rapid test for hydrophytic vegetation
☒ Dominance test is >50%
☒ Prevalence index is ≤3.0*
 Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
 Problematic hydrophytic vegetation* (explain)
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/6/2018-04

Sampling Form - W. Mat. G.S./2016-07

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-12	10YR 4/2	100					silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☒ 2 cm Muck (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8)
☐ (**MLRA 147, 148**)
☐ Thin Dark Surface (S9)
☐ (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) **LRR N, MLRA 136**)
☐ Umbric Surface (F13)(**MLRA 136, 122**)
☐ Piedmont Floodplain Soils (F19) **MLRA 148**)
☐ Red Parent Material (F21)(**MLRA 127, 147**)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problem

Restrictive Layer (if observed) Type: _____ Depth (inches): _____	Hydric soil present? Y
Remarks: Lots of silt from stream flooding making redox not visible. Hydric soil assumed.	

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name Wetland PB-04
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/6/2018
 Investigator(s) M. Thomayer, T. Qualio; Jacob Section, Township, Range S23 T12N R5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): LRR N Lat.: 40.446056 Long.: -81.049701 Datum: NAD 83
 Soil Map Unit Name CpD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland on hillside within linear swale in maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>1</u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>

(includes capillary fringe)

**Wetland
hydrology
present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout, wetland conveys surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/6/2018-03

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Symplocarpus foetidus</i>						45	Y	OBL
2	<i>Carex vulpinoidea</i>						20	Y	OBL
3	<i>Phalaris arundinacea</i>						15	N	FACW
4	<i>Juncus effusus</i>						10	N	FACW
5	<i>Carex lurida</i>						10	N	OBL
6	<i>Onoclea sensibilis</i>						10	N	FACW
7	<i>Impatiens capensis</i>						5	N	FACW
8									
9									
10									
11									
12									
13									
14									
15									
							115	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	75	x 1 =	75
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	115 (A)		155 (B)
Prevalence Index = B/A =			1.35

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL
Sampling Point: W-mdt-6/6/2018-03

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-12	10YR 4/1	80	7.5YR 3/3	20	C	M	sandy clay	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) **(LRR N)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ **(LRR N, MLRA 147, 148)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8)
☐ **(MLRA 147, 148)**
☐ Thin Dark Surface (S9)
☐ **(MLRA 147, 148)**
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) **LRR N, MLRA 136)**
☐ Umbric Surface (F13) **(MLRA 136, 122)**
☐ Piedmont Floodplain Soils (F19) **MLRA 148)**
☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problem

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

 Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Wetland PB-05
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob Section, Township, Range: S23 T12N R5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.44302 Long.: -81.049866 Datum: NAD 83
 Soil Map Unit Name: CpD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland on hillside surrounding small stream in maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>

(includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout, surrounds small stream

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/6/2018-02

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex vulpinoidea</i>						60	Y	OBL
2	<i>Impatiens capensis</i>						25	Y	FACW
3	<i>Carex lurida</i>						20	N	OBL
4	<i>Onoclea sensibilis</i>						10	N	FACW
5	<i>Juncus effusus</i>						10	N	FACW
6	<i>Symplocarpus foetidus</i>						5	N	OBL
7									
8									
9									
10									
11									
12									
13									
14									
15									
							130	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	26	65
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	85	x 1 =	85
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	130	(A)	175 (B)
Prevalence Index = B/A =	1.35		

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/6/2018-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Wetland PB-06
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S23 T12N R5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.442307 Long.: -81.050011 Datum: NAD 83
 Soil Map Unit Name: CpD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland on hillside likely from a seep in maintained ROW.

HYDROLOGY

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

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>5</u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout, water in pit

VEGETATION - Use scientific names of plants

Sampling Point: w-mdt-6/6/2018-01

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Impatiens capensis</i>						50	Y	FACW
2	<i>Onoclea sensibilis</i>						40	Y	FACW
3	<i>Carex lurida</i>						20	N	OBL
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							110	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	110 (A)		200 (B)
Prevalence Index = B/A =			1.82

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-mdt-6/6/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Wetland PB-07
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S21 T12N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.426431 Long.: -81.050114 Datum: NAD 83
 Soil Map Unit Name: RgE - Rigley loam, 25 to 40 percent slope NWI Classification: R4SBC

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in valley surrounding intermittent stream in maintained ROW/pasture.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>1</u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>

(includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with pockets of inundation; periodically receives flooding

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/6/2018-06

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex lurida</i>						30	Y	OBL
2	<i>Carex vulpinoidea</i>						20	Y	OBL
3	<i>Symplocarpus foetidus</i>						15	N	OBL
4	<i>Impatiens capensis</i>						15	N	FACW
5	<i>Juncus effusus</i>						10	N	FACW
6	<i>Onoclea sensibilis</i>						10	N	FACW
7									
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	65	x 1 =	65
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		135 (B)
Prevalence Index = B/A =			1.35

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/6/2018-06

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Wetland PB-08
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S21 T12N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.425511 Long.: -81.050228 Datum: NAD 83
 Soil Map Unit Name: WnF - Westmoreland-Dekalb complex, 40 to 70 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in valley surrounding ephemeral stream within maintained ROW/pasture.

HYDROLOGY

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

Field Observations:

Surface water present? Yes X No Depth (inches): 1
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes X No Depth (inches): 0
 (includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout, wetland receives flooding from ephemeral stream/seeps

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/6/2018-05

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Panicum sp.</i>						60	Y	
2	<i>Carex vulpinoidea</i>						30	Y	OBL
3	<i>Impatiens capensis</i>						30	Y	FACW
4	<i>Eupatorium perfoliatum</i>						10	N	FACW
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							130	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	26	65
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	30	x 1 =	30
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	70 (A)		110 (B)
Prevalence Index = B/A =			1.57

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/6/2018-05

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Wetland PB-09
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob Section, Township, Range: S20 T12N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.408456 Long.: -81.051824 Datum: NAD 83
 Soil Map Unit Name: BkE - BerkSchannery silt loam, 25 to 35 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes ☐

Are vegetation , soil , or hydrology naturally problematic? present? ☐ (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in valley adjacent to intermittent stream in maintained ROW

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>1</u>
Water table present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u> </u>
Saturation present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with pockets of inundation

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/6/2018-08

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex vulpinoidea</i>						50	Y	OBL
2	<i>Onoclea sensibilis</i>						30	Y	FACW
3	<i>Carex lurida</i>						20	N	OBL
4	<i>Juncus effusus</i>						20	N	FACW
5	<i>Impatiens capensis</i>						15	N	FACW
6	<i>Eupatorium perfoliatum</i>						10	N	FACW
7	<i>Symplocarpus foetidus</i>						10	N	OBL
8									
9									
10									
11									
12									
13									
14									
15									
							155	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	31	78
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	80	x 1 =	80
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	155 (A)		230 (B)
Prevalence Index = B/A =			1.48

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/6/2018-08

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Carroll Report Name: Wetland PB-10
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/6/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S20 T12N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.40766 Long.: -81.051582 Datum: NAD 83
 Soil Map Unit Name: GsB - Glenford silt loam, 3 to 8 percent slope NWI Classification: R4SBC

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in valley between pond and intermittent stream in maintained ROW

HYDROLOGY

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

Field Observations:

Surface water present? Yes X No Depth (inches): 1
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes X No Depth (inches): 0
 (includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with pockets of inundation; may periodically receive flooding

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/6/2018-07

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Impatiens capensis</i>						60	Y	FACW
2	<i>Carex lurida</i>						30	Y	OBL
3	<i>Juncus effusus</i>						30	Y	FACW
4	<i>Carex vulpinoidea</i>						20	N	OBL
5	<i>Panicum sp.</i>						20	N	
6	<i>Onoclea sensibilis</i>						10	N	FACW
7	<i>Symplocarpus foetidus</i>						10	N	OBL
8									
9									
10									
11									
12									
13									
14									
15									
							180	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	36	90
Woody Vine Stratum	0	0

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	60	x 1 =	60
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	160 (A)		260 (B)
Prevalence Index = B/A =			1.63

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/6/2018-07

Sampling Form - Wetland Soils
Wetland Soil Data Entry

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-12	10YR 5/1	90	10YR 5/8	10	C	PL/M	silty clay	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☒ 2 cm Muck (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8)
☐ (**MLRA 147, 148**)
☐ Thin Dark Surface (S9)
☐ (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13)(**MLRA 136, 122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (F21)(**MLRA 127, 147**)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problem

<div>Restrictive Layer (if observed) Type: Depth (inches):</div>	<div>Hydric soil present? Y</div>
--	---------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-11
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob Section, Township, Range: S20 T12N R5W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.399676 Long.: -81.051811 Datum: NAD 83
 Soil Map Unit Name: GsB - Glenford silt loam, 3 to 8 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in maintained ROW/cow pasture.

HYDROLOGY

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

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-03

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa palustris</i>						50	Y	FACW
2	<i>Juncus effusus</i>						25	Y	FACW
3	<i>Rumex crispus</i>						15	N	FAC
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							90	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	90 (A)		195 (B)
Prevalence Index = B/A =			2.17

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL
Sampling Point: W-mdt-6/07/2018-03

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-14	10YR 5/1	95	10YR 4/6	5	C	M	clay loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8)
☐ (**MLRA 147, 148**)
☐ Thin Dark Surface (S9)
☐ (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) **LRR N, MLRA 136**
☐ Umbric Surface (F13) (**MLRA 136, 122**)
☐ Piedmont Floodplain Soils (F19) **MLRA 148**
☐ Red Parent Material (F21) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problem

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

 Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-12
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob Section, Township, Range: S20 T12N R5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.39833 Long.: -81.051836 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland on hillside in maintained ROW/cow pasture

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>

(includes capillary fringe)

**Wetland
hydrology
present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-02

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex sp.</i>						40	Y	
2	<i>Juncus effusus</i>						25	Y	FACW
3	<i>Carex vulpinoidea</i>						20	N	OBL
4	<i>Eupatorium perfoliatum</i>						15	N	FACW
5	<i>Scirpus atrovirens</i>						5	N	OBL
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							105	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	21	53
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	25	x 1 =	25
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	65 (A)		105 (B)
Prevalence Index = B/A =			1.62

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☒ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/07/2018-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-13
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob Section, Township, Range: S19 T12N R5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.398059 Long.: -81.051966 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation, soil, or hydrology significantly disturbed? Are "normal circumstances" present? Yes ☐

Are vegetation, soil, or hydrology naturally problematic? present? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland on hillside in maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<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 on 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 checked="" 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 type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface water present? Yes ☐ No ☒ Depth (inches):
 Water table present? Yes ☐ No ☒ Depth (inches):
 Saturation present? Yes ☒ No ☐ Depth (inches): 0
 (includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-01

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Impatiens capensis</i>						60	Y	FACW
2	<i>Phalaris arundinacea</i>						15	N	FACW
3	<i>Agrimonia parviflora</i>						15	N	FACW
4	<i>Carex comosa</i>						15	N	OBL
5	<i>Scirpus atrovirens</i>						10	N	OBL
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							115	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	25	x 1 =	25
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	115 (A)		205 (B)
Prevalence Index = B/A =			1.78

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/07/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-14
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S19 T12N R5W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.383833 Long.: -81.052798 Datum: NAD 83
 Soil Map Unit Name: WnE - Westmoreland-Dekalb complex, 25 to 40 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland on hillside in maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes X No Depth (inches): 0
 (includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-04

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex vulpinoidea</i>						60	Y	OBL
2	<i>Impatiens capensis</i>						50	Y	FACW
3	<i>Dichanthelium clandestinum</i>						25	N	FAC
4	<i>Carex lurida</i>						20	N	OBL
5	<i>Typha angustifolia</i>						5	N	OBL
6	<i>Symplocarpus foetidus</i>						5	N	OBL
7									
8									
9									
10									
11									
12									
13									
14									
15									
							165	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	33	83
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	90	x 1 =	90
FACW species	50	x 2 =	100
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	165 (A)		265 (B)
Prevalence Index = B/A =			1.61

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

V

SOIL

Sampling Point: W-mdt-6/07/2018-04

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-15
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob Section, Township, Range: S24 T11N R5W
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat.: 40.378942 Long.: -81.053108 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in maintained ROW/cow pasture and within 100-Year floodplain.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>1</u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>

(includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout, 80% inundated

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-08

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex vulpinoidea</i>						60	Y	OBL
2	<i>Carex cristatella</i>						30	Y	FACW
3	<i>Scirpus atrovirens</i>						10	N	OBL
4	<i>Eupatorium perfoliatum</i>						5	N	FACW
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							105	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	21	53
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	70	x 1 =	70
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	105 (A)		140 (B)
Prevalence Index = B/A =			1.33

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/07/2018-08

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-16
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob Section, Township, Range: S24 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.377245 Long.: -81.053006 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: R4SBC

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in maintained ROW. Northern portion of wetland is surrounded by ag field

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>1</u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>

(includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout, 80% inundated; some surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-07

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phalaris arundinacea</i>						60	Y	FACW
2	<i>Symplocarpus foetidus</i>						40	Y	OBL
3	<i>Carex crinita</i>						15	N	OBL
4	<i>Impatiens capensis</i>						15	N	FACW
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							130	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	26	65
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	55	x 1 =	55
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	130	(A)	205
Prevalence Index = B/A =			1.58

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/07/2018-07

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-17
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S24 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 15
 Subregion (LRR or MLRA): LRR N Lat.: 40.375372 Long.: -81.052971 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland valley in maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>

(includes capillary fringe)

**Wetland
hydrology
present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-06

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phalaris arundinacea</i>						100	Y	FACW
2	<i>Symplocarpus foetidus</i>						20	N	OBL
3	<i>Carex crinita</i>						15	N	OBL
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							135	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	27	68
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	35	x 1 =	35
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	135 (A)		235 (B)
Prevalence Index = B/A =			1.74

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/07/2018-06

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-18
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/07/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacob: Section, Township, Range: S24 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 15
 Subregion (LRR or MLRA): LRR N Lat.: 40.37487 Long.: -81.053009 Datum: NAD 83
 Soil Map Unit Name: CnD - Coshocton silt loam, 15 to 25 percent slope NWI Classification: R4SBC

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

Are vegetation ☐, soil ☒, or hydrology ☒ significantly disturbed? Are "normal circumstances" present? Yes ☐

Are vegetation ☐, soil ☐, or hydrology ☐ naturally problematic? present? ☐ (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	Is the sampled area within a wetland? <input checked="" type="checkbox"/>
Hydric soil present? <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	
Wetland hydrology present? <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	

Remarks:

PEM wetland in stream valley in maintained ROW. Recently impacted by pipeline construction.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<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 checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on 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 checked="" 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 type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface water present? Yes ☐ No ☒ Depth (inches):
 Water table present? Yes ☐ No ☒ Depth (inches):
 Saturation present? Yes ☒ No ☐ Depth (inches): 0
 (includes capillary fringe)

Wetland hydrology present? ☒ Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/07/2018-05

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex vulpinoidea</i>						30	Y	OBL
2	<i>Leersia oryzoides</i>						25	Y	OBL
3	<i>Carex crinita</i>						15	Y	OBL
4	<i>Juncus effusus</i>						15	Y	FACW
5	<i>Carex lurida</i>						10	N	OBL
6	<i>Impatiens capensis</i>						10	N	FACW
7	<i>Onoclea sensibilis</i>						10	N	FACW
8									
9									
10									
11									
12									
13									
14									
15									
							115	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	80	x 1 =	80
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	115 (A)		150 (B)
Prevalence Index = B/A =			1.30

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/07/2018-05

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-19
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/11/2018
 Investigator(s): M. Thomayer, B. Otto; Jacobs Section, Township, Range: S23 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA) LRR N Lat.: 40.363957 Long.: -81.052631 Datum: NAD 83
 Soil Map Unit Name WnE - Westmoreland-Dekalb complex, 25 to 40 percent slopes NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes

Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u> Hydric soil present? <u>Yes</u> Wetland hydrology present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Remarks: <p style="text-align: center;">PEM wetland along stream and pond within valley in existing ROW.</p>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water table present? Yes <u>X</u> No <u> </u> Depth (inches): <u>2</u> Saturation present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)		Wetland hydrology present? <u>Y</u>
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION - Use scientific names of plants

Sampling Point: W-bao-6/11/2018-01

Sampling Form: W-545-017/2010-0						50/20 Thresholds		
Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1						Tree Stratum	0	0
2						Sapling/Shrub Stratum	0	0
3						Herb Stratum	20	50
4						Woody Vine Stratum	0	0
5						Dominance Test Worksheet		
6						Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A)		
7						Total Number of Dominant Species Across all Strata: <u>3</u> (B)		
8						Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)		
9						Prevalence Index Worksheet		
10						Total % Cover of:		
		<u>0</u> = Total Cover				OBL species <u>10</u> x 1 = <u>10</u>		
Sapling/Shrub Stratum	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status		FACW species <u>70</u> x 2 = <u>140</u>		
1						FAC species <u>20</u> x 3 = <u>60</u>		
2						FACU species <u>0</u> x 4 = <u>0</u>		
3						UPL species <u>0</u> x 5 = <u>0</u>		
4						Column totals <u>100</u> (A) <u>210</u> (B)		
5						Prevalence Index = B/A = <u>2.10</u>		
6						Hydrophytic Vegetation Indicators		
7						Rapid test for hydrophytic vegetation		
8						<input checked="" type="checkbox"/> Dominance test is >50%		
9						<input checked="" type="checkbox"/> Prevalence index is ≤3.0*		
10						Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
11						<input type="checkbox"/> Problematic hydrophytic vegetation* (explain)		
12						*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
13						Definitions of Vegetation Strata:		
14						Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
15						Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
		<u>100</u> = Total Cover				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		Woody vines - All woody vines greater than 3.28 ft in height.		
1						Hydrophytic vegetation present? <u>Y</u>		
2								
3								
4								
5								
		<u>0</u> = Total Cover						
Remarks: (Include photo numbers here or on a separate sheet)								

SOIL

Sampling Point: W-bao-6/11/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-20
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/11/2018
 Investigator(s): M. Thomayer, B. Otto; Jacobs Section, Township, Range: S23 T11N R5W Sampling Point: W-bao-6/11/2018-03
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA) LRR N Lat.: 40.357577 Long.: -81.052034 Datum: NAD 83
 Soil Map Unit Name WnE - Westmoreland-Dekalb complex, 25 to 40 percent slopes NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes

Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u> Hydric soil present? <u>Yes</u> Wetland hydrology present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Remarks: <p style="text-align: center;">PEM wetland along stream within valley in existing ROW.</p>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water table present? Yes <u>X</u> No <u> </u> Depth (inches): <u>2</u> Saturation present? Yes <u>X</u> No <u> </u> Depth (inches): <u>surface</u> (includes capillary fringe)		Wetland hydrology present? <u>Y</u>
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION - Use scientific names of plants

Sampling Point: W-bao-6/11/2018-0

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Leersia oryzoides</i>						20	Y	OBL
2	<i>Impatiens capensis</i>						20	Y	FACW
3	<i>Juncus effusus</i>						20	Y	FACW
4	<i>Onoclea sensibilis</i>						10	N	FACW
5	<i>Carex lurida</i>						10	N	OBL
6	<i>Carex cristatella</i>						10	N	FACW
7	<i>Euphorbia purpurea</i>						10	N	FAC
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	<u>30</u>	x 1 =	<u>30</u>
FACW species	<u>60</u>	x 2 =	<u>120</u>
FAC species	<u>10</u>	x 3 =	<u>30</u>
FACU species	<u>0</u>	x 4 =	<u>0</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column totals	<u>100</u>	(A)	<u>180</u> (B)
Prevalence Index = B/A =		<u>1.80</u>	

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-bao-6/11/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-21
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/11/2018
 Investigator(s): M. Thomayer, B. Otto; Jacobs Section, Township, Range: S23 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA) LRR N Lat.: 40.356249 Long.: -81.052299 Datum: NAD 83
 Soil Map Unit Name WnE - Westmoreland-Dekalb complex, 25 to 40 percent slopes NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes

Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u> Hydric soil present? <u>Yes</u> Wetland hydrology present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Remarks: <p style="text-align: center;">PEM wetland along stream within valley in existing ROW.</p>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Saturation present? Yes <u>X</u> No <u> </u> Depth (inches): <u>surface</u> (includes capillary fringe)		Wetland hydrology present? <u>Y</u>
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION - Use scientific names of plants

Sampling Point: W-bao-6/11/2018-02

Sampling Form - Wetland Form					50/20 Thresholds		
Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%
1					Tree Stratum	0	0
2					Sapling/Shrub Stratum	0	0
3					Herb Stratum	22	55
4					Woody Vine Stratum	0	0
5					Dominance Test Worksheet		
6					Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A)		
7					Total Number of Dominant Species Across all Strata: <u>2</u> (B)		
8					Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)		
9					Prevalence Index Worksheet		
10					Total % Cover of:		
		0 = Total Cover			OBL species <u>55</u> x 1 = <u>55</u>		
Sapling/Shrub Stratum	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	FACW species <u>45</u> x 2 = <u>90</u>		
1					FAC species <u>10</u> x 3 = <u>30</u>		
2					FACU species <u>0</u> x 4 = <u>0</u>		
3					UPL species <u>0</u> x 5 = <u>0</u>		
4					Column totals <u>110</u> (A) <u>175</u> (B)		
5					Prevalence Index = B/A = <u>1.59</u>		
6					Hydrophytic Vegetation Indicators		
7					<input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation		
8					<input checked="" type="checkbox"/> Dominance test is >50%		
9					<input checked="" type="checkbox"/> Prevalence index is ≤3.0*		
10					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
11					Problematic hydrophytic vegetation* (explain)		
12					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
13					Definitions of Vegetation Strata:		
14					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
15					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
		110 = Total Cover			Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	Woody vines - All woody vines greater than 3.28 ft in height.		
1					Hydrophytic vegetation present? <u>Y</u>		
2							
3							
4							
5							
		0 = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet)							

SOIL

Sampling Point: W-bao-6/11/2018-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name Wetland PB-22
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date 6/12/2018
 Investigator(s) M. Thomayer, B. Otto; Jacob Section, Township, Range S22 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.344246 Long.: -81.054744 Datum: NAD 83
 Soil Map Unit Name WmE - Westmoreland-Coshocton complex, 25 to 40 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland at toe of slope in maintained ROW

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes X No Depth (inches): 0
 (includes capillary fringe)

**Wetland
hydrology
present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/12/2018-01

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa sp.</i>						80	Y	
2	<i>Carex vulpinoidea</i>						30	Y	OBL
3	<i>Scirpus atrovirens</i>						20	N	OBL
4	<i>Impatiens capensis</i>						15	N	FACW
5	<i>Symplocarpus foetidus</i>						10	N	OBL
6	<i>Carex lurida</i>						10	N	OBL
7	<i>Onoclea sensibilis</i>						10	N	FACW
8									
9									
10									
11									
12									
13									
14									
15									
							175	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	35	88
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	70	x 1 =	70
FACW species	25	x 2 =	50
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	95 (A)		120 (B)
Prevalence Index = B/A =			1.26

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/12/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-23
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/12/2018
 Investigator(s): M. Thomayer, B. Otto; Jacob Section, Township, Range: S22 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.342492 Long.: -81.055453 Datum: NAD 83
 Soil Map Unit Name: WmE - Westmoreland-Coshocton complex, 25 to 40 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes ☐

Are vegetation , soil , or hydrology naturally problematic? present? ☐ (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland at toe of slope in maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>1</u>
Water table present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches): <u> </u>
Saturation present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>0</u>

(includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow/inundation

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/12/2018-02

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Leersia oryzoides</i>						50	Y	OBL
2	<i>Onoclea sensibilis</i>						20	Y	FACW
3	<i>Symplocarpus foetidus</i>						20	Y	OBL
4	<i>Impatiens capensis</i>						15	N	FACW
5	<i>Juncus effusus</i>						10	N	FACW
6	<i>Carex lurida</i>						5	N	OBL
7	<i>Carex vulpinoidea</i>						5	N	OBL
8									
9									
10									
11									
12									
13									
14									
15									
							125	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	25	63
Woody Vine Stratum	0	0

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	80	x 1 =	80
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	125 (A)		170 (B)
Prevalence Index = B/A =			1.36

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/12/2018-02

Sampling Form - W.M.A.C. 12-2010

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-14	10YR 4/1	98	10YR 3/3	2	C	PL	silty clay	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☒ 2 cm Muck (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8)
☐ (**MLRA 147, 148**)
☐ Thin Dark Surface (S9)
☐ (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) **LRR N, MLRA 136**)
☐ Umbric Surface (F13)(**MLRA 136, 122**)
☐ Piedmont Floodplain Soils (F19) **MLRA 148**)
☐ Red Parent Material (F21)(**MLRA 127, 147**)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problem

<div>Restrictive Layer (if observed) Type: _____ Depth (inches): _____</div>	Hydric soil present? Y
Remarks: 	

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-24
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/12/2018
 Investigator(s): M. Thomayer, B. Otto; Jacob Section, Township, Range: S21 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.329959 Long.: -81.061079 Datum: NAD 83
 Soil Map Unit Name: RcB - Richland silt loam, 2 to 6 percent slope NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland at toe of slope and adjacent to intermittent stream in maintained ROW.

HYDROLOGY

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

Field Observations:

Surface water present? Yes X No Depth (inches): 1
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes X No Depth (inches): 0
 (includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated throughout with some surface flow/inundation. Likely receives flood water periodically.

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/12/2018-03

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Carex lurida</i>						55	Y	OBL
2	<i>Carex vulpinoidea</i>						30	Y	OBL
3	<i>Juncus effusus</i>						15	N	FACW
4	<i>Impatiens capensis</i>						15	N	FACW
5	<i>Onoclea sensibilis</i>						10	N	FACW
6	<i>Eupatorium perfoliatum</i>						10	N	FACW
7									
8									
9									
10									
11									
12									
13									
14									
15									
							135	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	27	68
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	85	x 1 =	85
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	135	(A)	185
Prevalence Index = B/A =	1.37		

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/12/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Holloway-Knox 138 kV Transmission Line City/County: Harrison Report Name: Wetland PB-25
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 6/12/2018
 Investigator(s): M. Thomayer, B. Otto; Jacob: Section, Township, Range: S21 T11N R5W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): LRR N Lat.: 40.328459 Long.: -81.061659 Datum: NAD 83
 Soil Map Unit Name: Or - Orrville silt loam, 0 to 3 percent slopes, occasionally flood NWI Classification: N/A

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

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes

Are vegetation , soil , or hydrology naturally problematic? present?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in floodplain in maintained ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes No X Depth (inches):
 Water table present? Yes No X Depth (inches):
 Saturation present? Yes X No Depth (inches): 0
 (includes capillary fringe)

**Wetland
hydrology
present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available

Remarks:

Saturated through 80% of wetland

VEGETATION - Use scientific names of plants

Sampling Point: W-mdt-6/12/2018-04

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phalaris arundinacea</i>						35	Y	FACW
2	<i>Juncus effusus</i>						20	Y	FACW
3	<i>Carex sp.</i>						20	Y	
4	<i>Agrimonia parviflora</i>						15	N	FACW
5	<i>Solidago gigantea</i>						15	N	FACW
6	<i>Scirpus atrovirens</i>						10	N	OBL
7									
8									
9									
10									
11									
12									
13									
14									
15									
							115	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
							0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	85	x 2 =	170
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	95 (A)		180 (B)
Prevalence Index = B/A =			1.89

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W-mdt-6/12/2018-04

[illegible]

Appendix B

OEPA ORAM Datasheets

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): T. Qualio, J.Freer	Date: 05/24/2018
--	-------------------------------------	-------------------------

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)

w-tmq-5/24/2018-04

5	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☒ LOW. Old field (>10 years), 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)

11	16
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

8	24
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 type="checkbox"/> shrub/sapling removal
<input checked="" type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input 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

24

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): T. Qualio, J.Freer	Date: 05/24/2018
--	-------------------------------------	-------------------------

24

subtotal first page

w-bao-5/15/2018-01

0	24
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	26
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

26 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): T. Qualio, J.Freer	Date: 05/24/2018
--	-------------------------------------	-------------------------

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-tmq-5/24/2018-03

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)

5	6
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

10.5	16.5
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 only one and assign score.

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

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

8	24.5
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 checked="" type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal |
| <input checked="" type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input checked="" type="checkbox"/> clearcutting | <input 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 |

24.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): T. Qualio, J.Freer	Date: 05/24/2018
--	-------------------------------------	-------------------------

24.5

subtotal first page

0	24.5
---	------

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	26.5
---	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

26.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, T. Qualio

Date: 6/06/2018

2

2

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

w-mdt-06/06/2018-04

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)

8

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)

16

26

max 30 pts.

subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☒ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

7.5

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

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

33.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

33.5

subtotal first page

w-mdt-6/06/2018-04

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 1 Qualitative Rating (-10)

-4	29.5
----	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

29.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/06/2018-03

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)

11	11
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☒ LOW. Old field (>10 years), 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)

9	20
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

6.5	26.5
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 checked="" type="checkbox"/> mowing	<input checked="" type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input checked="" type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

26.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

26.5

subtotal first page

w-mdt-6/06/2018-03

0	26.5
---	------

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

0	26.5
---	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

26.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, T. Qualio

Date: 6/06/2018

0 0

max 6 pts. subtotal

Metric 1. Wetland Area (size).

w-mdt-06/06/2018-02

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)

8 8

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)

13 21

max 30 pts. subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

7 28

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

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

28

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

28

subtotal first page

w-mdt-6/06/2018-02

0	28
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

1	29
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

29 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, T. Qualio

Date: 6/06/2018

0 0

max 6 pts. subtotal

Metric 1. Wetland Area (size).

w-mdt-06/06/2018-01

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)

8 8

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)

7 15

max 30 pts. subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

6 21

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

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

21

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

21

subtotal first page

w-mdt-6/06/2018-01

0	21
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

1	22
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

22 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, T. Qualio

Date: 6/06/2018

2

2

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

w-mdt-06/06/2018-06

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)

8

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)

12.5

22.5

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 only one and assign score.

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☒ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

9

31.5

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

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

31.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

31.5

subtotal first page

w-mdt-06/06/2018-06

0	31.5
---	------

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	33.5
---	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

33.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/06/2018-05

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)

8	9
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)

9.5	18.5
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 only one and assign score.

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

6	24.5
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 checked="" type="checkbox"/> mowing	<input checked="" type="checkbox"/> shrub/sapling removal
<input checked="" 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

24.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

24.5

subtotal first page

w-mdt-6/06/2018-05

0	24.5
---	------

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

1	25.5
---	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

25.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, T. Qualio

Date: 6/06/2018

1

1

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

w-mdt-06/06/2018-08

8

9

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)

12.5

21.5

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 only one and assign score.

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input

- ☐ point source (nonstormwater)
☒ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

9

30.5

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
☒ 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

- ☒ mowing
☒ grazing
☐ clearcutting
☒ selective cutting
☐ woody debris removal
☐ toxic pollutants

- ☒ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☒ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

30.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

30.5

subtotal first page

w-mdt-6/06/2018-08

0	30.5
---	------

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

3	33.5
---	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

33.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/06/2018-07

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)

5	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☒ LOW. Old field (>10 years), 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)

10	15
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

7	22
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"/> grazing <input type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input checked="" type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input checked="" type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

22

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/06/2018
--	---	------------------------

22

subtotal first page

w-mdt-6/06/2018-07

0	22
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	24
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

24 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/18
--	---	----------------------

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-03

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)

2	2
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)

10	12
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

7	19
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 type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

19

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/18
--	---	----------------------

19

subtotal first page

w-mdt-5/01/2018-01

0	19
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	21
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

21 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-02

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)

5	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☒ LOW. Old field (>10 years), 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)

6	11
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

7	18
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input checked="" type="checkbox"/> mowing	<input checked="" type="checkbox"/> shrub/sapling removal
<input checked="" type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input 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

18

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

18

subtotal first page

w-mdt-06/07/2018-02

0	18
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	20
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

20 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, T. Qualio

Date: 6/07/2018

0 0

max 6 pts. subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-01

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)

5 5

max 14 pts. subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), 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)

6 11

max 30 pts. subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

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

7 18

max 20 pts. subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed

- | | |
|---|---|
| <input checked="" type="checkbox"/> mowing | <input checked="" type="checkbox"/> shrub/sapling removal |
| <input checked="" type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input 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 |

18

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

18

subtotal first page

w-mdt-06/07/2018-01

0	18
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	20
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

20 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-04

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)

8	9
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)

7	16
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

8	24
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 checked="" type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input 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

24

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

24

subtotal first page

w-mdt-06/07/2018-04

0	24
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

3	27
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

27 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-08

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)

8	9
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)

7	16
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

8	24
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 checked="" type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input 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

24

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

24

subtotal first page

w-mdt-06/07/2018-08

0	24
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

3	27
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

27 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-07

Select one size class and assign score.

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

7	9
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	23
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

9	32
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ 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 checked="" type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input 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 checked="" type="checkbox"/> nutrient enrichment

32

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

32

subtotal first page

w-mdt-06/07/2018-07

0	32
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-1	31
----	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

31 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, T. Qualio

Date: 6/07/2018

0 0

max 6 pts. subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-06

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)

8 8

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)

10 18

max 30 pts. subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

3d. Duration inundation/saturation. Score one or 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

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

9 27

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

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

27

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

27

subtotal first page

w-mdt-06/07/2018-06

0	27
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-4	23
----	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

23 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/07/2018-05

Select one size class and assign score.

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

4	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☒ LOW. Old field (>10 years), 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)

10	14
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" 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 _____

7	21
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 type="checkbox"/> clearcutting	<input checked="" type="checkbox"/> sedimentation
<input checked="" type="checkbox"/> selective cutting	<input checked="" type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input checked="" type="checkbox"/> nutrient enrichment

21

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, T. Qualio	Date: 6/07/2018
--	---	------------------------

21

subtotal first page

w-mdt-06/07/2018-05

0	21
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	23
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

23 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/11/2018
--	--------------------------------------	------------------------

w-bao-6/11/2018-01

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

3	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☒ LOW. Old field (>10 years), 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)

10.5	14.5
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 only one and assign score.

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

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

8	22.5
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 checked="" 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 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 |

22.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/11/2018
--	--------------------------------------	------------------------

22.5

subtotal first page

w-bao-6/11/2018-01

0	22.5
---	------

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	24.5
---	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

24.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/11/2018
--	--------------------------------------	------------------------

0	0
---	---

w-bao-6/11/2018-03

Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

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

7	7
---	---

max 14 pts. subtotal

Metric 2. Upland buffers and surrounding land use.

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

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☒ 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)

12	19
----	----

max 30 pts. subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

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

8	27
---	----

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 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 |

27

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/11/2018
--	--------------------------------------	------------------------

27

subtotal first page

w-bao-6/11/2018-03

0	27
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	29
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

29 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/11/2018
--	--------------------------------------	------------------------

0	0
max 6 pts.	subtotal

w-bao-6/11/2018-02

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)

8	8
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)

12	20
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

8	28
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 type="checkbox"/> grazing <input checked="" type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input checked="" type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

28

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/11/2018
--	--------------------------------------	------------------------

28

subtotal first page

w-bao-6/11/2018-02

0	28
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-1	27
----	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

27 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/12/2018
--	--------------------------------------	------------------------

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/12/2018-01

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)

8	8
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)

12	20
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

8	28
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 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 checked="" type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

28

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/12/2018
--	--------------------------------------	------------------------

28

subtotal first page

w-mdt-6/12/2018-01

0	28
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	30
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

30 **GRAND TOTAL (max 100 pts)**

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, B.Otto

Date: 6/12/2018

0 0

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

w-mdt-06/12/2018-02

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)

8 8

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 22

max 30 pts.

subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☒ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

6.5 28.5

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
☒ Recovered (3)
☒ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☐ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☒ mowing
☐ grazing
☐ clearcutting
☒ selective cutting
☐ woody debris removal
☐ toxic pollutants
☒ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☒ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

28.5

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/12/2018
--	--------------------------------------	------------------------

28.5

subtotal first page

w-mdt-6/12/2018-02

0	28.5
---	------

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

2	30.5
---	------

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

30.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/12/2018
--	--------------------------------------	------------------------

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

w-mdt-06/12/2018-03

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)

8	8
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	22
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☒ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
- ☒ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☒ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- | | |
|---|---|
| <input checked="" type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile | <input checked="" type="checkbox"/> filling/grading |
| <input type="checkbox"/> dike | <input checked="" type="checkbox"/> road bed/RR track |
| <input type="checkbox"/> weir | <input type="checkbox"/> dredging |
| <input type="checkbox"/> stormwater input | <input type="checkbox"/> other _____ |

6	28
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 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 |

28

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/12/2018
--	--------------------------------------	------------------------

28

subtotal first page

w-mdt-6/12/2018-03

0	28
---	----

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

2	30
---	----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

30 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Holloway-Knox 138kV

Rater(s): M. Thomayer, B.Otto

Date: 6/12/2018

2

2

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

w-mdt-06/12/2018-04

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)

8

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)

14

24

max 30 pts.

subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
☒ Other groundwater (3)
☒ Precipitation (1)
☐ Seasonal/Intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
☐ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g. forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☐ Seasonally inundated (2)
☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- ☒ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

6

30

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

- ☒ mowing
☐ grazing
☐ clearcutting
☒ selective cutting
☐ woody debris removal
☐ toxic pollutants
☒ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☒ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

30

subtotal this page

Site: FirstEnergy Holloway-Knox 138kV	Rater(s): M. Thomayer, B.Otto	Date: 6/12/2018
--	--------------------------------------	------------------------

30

subtotal first page

w-mdt-6/12/2018-04

0	30
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

1	31
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 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 to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

31 GRAND TOTAL (max 100 pts)

Appendix C

OEPA QHEI Datasheets



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score:

45

Stream & Location: Holloway-Knox 138kV Transmission Line (Dining Fork)

RM: _ _ _ Date: 06 / 06 / 18

S-MDT-06062018-03

Scorers Full Name & Affiliation: M. Thomayer, T. Qualio-CH2M HILL

River Code: - - - STORET #: Lat./ Long.: 40 . 44736 18 1 . 049597 Office verified location ☒

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

Check ONE (Or 2 & average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate 5 Maximum 20
<input type="checkbox"/>	BLDR /SLABS [10]			<input type="checkbox"/>	HARDPAN [4]	25	10	<input checked="" type="checkbox"/>	LIMESTONE [1]	<input checked="" type="checkbox"/>	HEAVY [-2]	
<input type="checkbox"/>	BOULDER [9]			<input type="checkbox"/>	DETRITUS [3]			<input type="checkbox"/>	TILLS [1]	<input type="checkbox"/>	MODERATE [-1]	
<input type="checkbox"/>	COBBLE [8]		20	<input type="checkbox"/>	MUCK [2]			<input checked="" type="checkbox"/>	WETLANDS [0]	<input type="checkbox"/>	NORMAL [0]	
<input type="checkbox"/>	GRAVEL [7]	10	40	<input checked="" type="checkbox"/>	SILT [2]	45	10	<input checked="" type="checkbox"/>	HARDPAN [0]	<input type="checkbox"/>	FREE [1]	
<input checked="" type="checkbox"/>	SAND [6]	20	25	<input type="checkbox"/>	ARTIFICIAL [0]			<input type="checkbox"/>	SANDSTONE [0]	<input checked="" type="checkbox"/>	EXTENSIVE [-2]	
<input type="checkbox"/>	BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)				<input type="checkbox"/>	RIP/RAP [0]	<input type="checkbox"/>	MODERATE [-1]	
								<input type="checkbox"/>	LACUSTURINE [0]	<input type="checkbox"/>	NORMAL [0]	
								<input type="checkbox"/>	SHALE [-1]	<input type="checkbox"/>	NONE [1]	
								<input type="checkbox"/>	COAL FINES [-2]			

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments

bricks lining stream bed

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

AMOUNT

Check ONE (Or 2 & average)

<input type="checkbox"/>	UNDERCUT BANKS [1]	<input type="checkbox"/>	POOLS > 70cm [2]	<input type="checkbox"/>	OXBOWS, BACKWATERS [1]	<input type="checkbox"/>	EXTENSIVE >75% [11]
<input type="1"/>	OVERHANGING VEGETATION [1]	<input type="checkbox"/>	ROOTWADS [1]	<input type="checkbox"/>	AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/>	MODERATE 25-75% [7]
<input type="1"/>	SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/>	BOULDERS [1]	<input type="1"/>	LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/>	SPARSE 5-<25% [3]
<input type="checkbox"/>	ROOTMATS [1]					<input type="checkbox"/>	NEARLY ABSENT <5% [1]

Comments

Cover
Maximum
20
10

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input checked="" type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel
Maximum
20
11

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY			
<input type="L"/>	<input type="R"/>	<input type="L"/>	<input type="R"/>	<input type="L"/>	<input type="R"/>	<input type="L"/>	<input type="R"/>
<input type="checkbox"/>	NONE / LITTLE [3]	<input type="checkbox"/>	WIDE > 50m [4]	<input type="checkbox"/>	FOREST, SWAMP [3]	<input type="checkbox"/>	CONSERVATION TILLAGE [1]
<input type="checkbox"/>	MODERATE [2]	<input type="checkbox"/>	MODERATE 10-50m [3]	<input type="checkbox"/>	SHRUB OR OLD FIELD [2]	<input type="checkbox"/>	URBAN OR INDUSTRIAL [0]
<input checked="" type="checkbox"/>	HEAVY / SEVERE [1]	<input type="checkbox"/>	NARROW 5-10m [2]	<input type="checkbox"/>	RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/>	MINING / CONSTRUCTION [0]
		<input type="checkbox"/>	VERY NARROW < 5m [1]	<input type="checkbox"/>	FENCED PASTURE [1]	Indicate predominant land use(s) past 100m riparian.	
		<input type="checkbox"/>	NONE [0]	<input checked="" type="checkbox"/>	OPEN PASTURE, ROWCROP [0]	Riparian	

Comments

Riparian
Maximum
12
5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check ONE (ONLY!)

☐ > 1m [6]
☐ 0.7-<1m [4]
☒ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH

Check ONE (Or 2 & average)

☒ POOL WIDTH > RIFFLE WIDTH [2]
☐ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

☐ TORRENTIAL [-1] ☒ SLOW [1]
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☐ FAST [1] ☐ INTERMITTENT [-2]
☐ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential

Primary Contact

Secondary Contact

(circle one and comment on back)

Comments

Pool /
Current
Maximum
12
5

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle /
Run
Maximum
8
3

6] GRADIENT

DRAINAGE AREA

(4.92 mi²)
☐ VERY LOW - LOW [2-4]
☒ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 30

%GLIDE: 20

%RUN: 20

%RIFFLE: 30

Gradient
Maximum
10
6

AJ SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
☐ WADE
☐ L. LINE
☒ OTHER
- ☐ HIGH
☒ UP
☐ NORMAL
☐ LOW
☐ DRY

STAGE

- 1st --sample pass-- 2nd
- ☐ < 20 cm
☐ 20-<40 cm
☐ 40-70 cm
☐ > 70 cm/ CTB
☐ SECCHI DEPTH

CLARITY

- 0.5 Km
0.2 Km
0.15 Km
0.12 Km
OTHER
- 37
- meters

CANOPY

- ☒ > 85%- OPEN
☐ 55%-<85%
☐ 30%-<55%
☐ 10%-<30%
☐ <10%- CLOSED

CJ RECREATION

AREA DEPTH
POOL: ☐ >100R2 ☐ >3ft

BJ AESTHETICS

- ☐ NUISANCE ALGAE
☐ INVASIVE MACROPHYTES
☐ EXCESS TURBIDITY
☐ DISCOLORATION
☐ FOAM / SCUM
☐ OIL SHEEN
☐ TRASH / LITTER
☐ NUISANCE ODOR
☐ SLUDGE DEPOSITS
☐ CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

EJ ISSUES

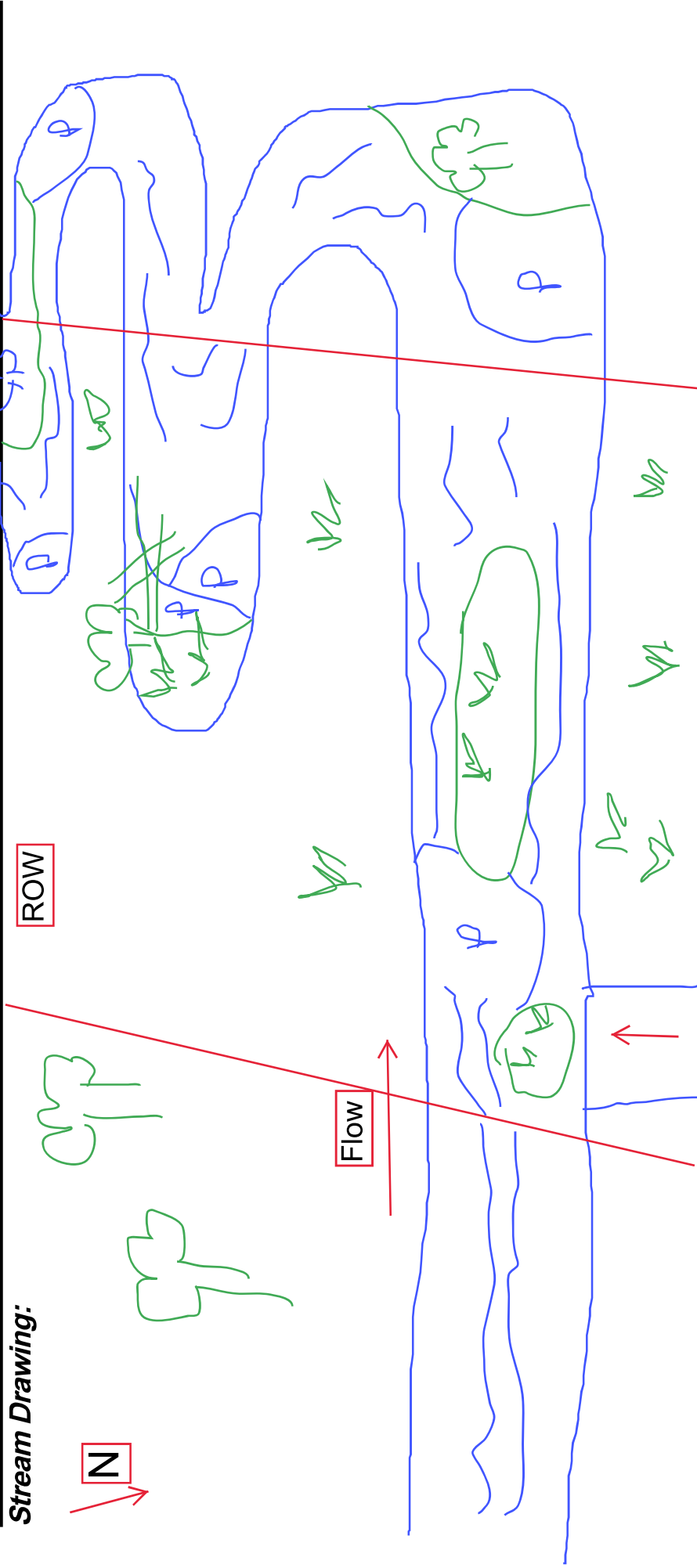
- WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H₂O / TILE / H₂O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- \bar{x} width
 \bar{x} depth
max. depth
 \bar{x} bankfull width
bankfull \bar{x} depth
W/D ratio
bankfull max. depth
floodprone \bar{x} width
entrench. ratio

Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score:

48

Stream & Location: Holloway-Knox 138kV Transmission Line (Irish Creek)

RM: _ _ _ Date: 06 / 07 / 18

S-MDT-06072018-04

Scorers Full Name & Affiliation: M. Thomayer, T. Qualio-CH2M HILL

River Code: - STORET #: Lat./ Long.: 40 401744 18 051716 Office verified location ☒

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

Check ONE (Or 2 & average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate 5 Maximum 20
<input type="checkbox"/>	BLDR /SLABS [10]			<input type="checkbox"/>	HARDPAN [4]	15	5	<input checked="" type="checkbox"/>	LIMESTONE [1]	<input checked="" type="checkbox"/>	HEAVY [-2]		5
<input type="checkbox"/>	BOULDER [9]			<input type="checkbox"/>	DETRITUS [3]			<input type="checkbox"/>	TILLS [1]	<input type="checkbox"/>	MODERATE [-1]	
<input type="checkbox"/>	COBBLE [8]		20	<input type="checkbox"/>	MUCK [2]			<input type="checkbox"/>	WETLANDS [0]	<input type="checkbox"/>	NORMAL [0]	
<input type="checkbox"/>	GRAVEL [7]	10	40	<input checked="" type="checkbox"/>	SILT [2]	55	15	<input checked="" type="checkbox"/>	HARDPAN [0]	<input type="checkbox"/>	FREE [1]	
<input checked="" type="checkbox"/>	SAND [6]	20	20	<input type="checkbox"/>	ARTIFICIAL [0]			<input type="checkbox"/>	SANDSTONE [0]	<input checked="" type="checkbox"/>	EXTENSIVE [-2]	
<input type="checkbox"/>	BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)				<input type="checkbox"/>	RIP/RAP [0]	<input type="checkbox"/>	MODERATE [-1]	
								<input type="checkbox"/>	LACUSTURINE [0]	<input type="checkbox"/>	NORMAL [0]	
								<input type="checkbox"/>	SHALE [-1]	<input type="checkbox"/>	NONE [1]	
								<input type="checkbox"/>	COAL FINES [-2]			

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments

bricks lining stream bed

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

AMOUNT

Check ONE (Or 2 & average)

<input type="checkbox"/>	UNDERCUT BANKS [1]	<input type="checkbox"/>	POOLS > 70cm [2]	<input type="checkbox"/>	OXBOWS, BACKWATERS [1]	<input type="checkbox"/>	EXTENSIVE >75% [11]
<input type="checkbox"/>	OVERHANGING VEGETATION [1]	<input type="checkbox"/>	ROOTWADS [1]	<input type="checkbox"/>	AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/>	MODERATE 25-75% [7]
<input type="checkbox"/>	SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/>	BOULDERS [1]	<input type="checkbox"/>	LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/>	SPARSE 5-<25% [3]
<input type="checkbox"/>	ROOTMATS [1]					<input type="checkbox"/>	NEARLY ABSENT <5% [1]

Comments

Cover
Maximum
20
11

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input checked="" type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input checked="" type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel
Maximum
20
12

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
<input type="checkbox"/>	NONE / LITTLE [3]	<input type="checkbox"/>	WIDE > 50m [4]	<input type="checkbox"/>	FOREST, SWAMP [3]	<input type="checkbox"/>	CONSERVATION TILLAGE [1]
<input type="checkbox"/>	MODERATE [2]	<input type="checkbox"/>	MODERATE 10-50m [3]	<input type="checkbox"/>	SHRUB OR OLD FIELD [2]	<input type="checkbox"/>	URBAN OR INDUSTRIAL [0]
<input checked="" type="checkbox"/>	HEAVY / SEVERE [1]	<input checked="" type="checkbox"/>	NARROW 5-10m [2]	<input type="checkbox"/>	RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/>	MINING / CONSTRUCTION [0]
		<input checked="" type="checkbox"/>	VERY NARROW < 5m [1]	<input type="checkbox"/>	FENCED PASTURE [1]		
		<input type="checkbox"/>	NONE [0]	<input checked="" type="checkbox"/>	OPEN PASTURE, ROWCROP [0]		

Comments

Indicate predominant land use(s) past 100m riparian.
Riparian
Maximum
10
2

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]
<input type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]
<input checked="" type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> FAST [1]
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> INTERMITTENT [-1]
		<input type="checkbox"/> MODERATE [1]
		<input type="checkbox"/> EDDIES [1]

Comments

Recreation Potential
 Primary Contact
 Secondary Contact
 (circle one and comment on back)

Pool /
Current
Maximum
12
5

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle /
Run
Maximum
8
3

6] GRADIENT

DRAINAGE AREA

(16.2 mi²)

<input type="checkbox"/> VERY LOW - LOW [2-4]
<input checked="" type="checkbox"/> MODERATE [6-10]
<input type="checkbox"/> HIGH - VERY HIGH [10-6]

%POOL: 30

%GLIDE: 20

%RUN: 20

%RIFFLE: 30

Gradient
Maximum
10
6

AJ SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
☐ WADE
☐ L. LINE
☒ OTHER

STAGE

- 1st --sample pass-- 2nd
☐ HIGH
☐ UP
☒ NORMAL
☐ LOW
☐ DRY

DISTANCE

- ☐ 0.5 Km
☐ 0.2 Km
☐ 0.15 Km
☐ 0.12 Km
☒ OTHER

37

meters

CANOPY

- ☒ > 85%- OPEN
☐ 55%-<85%
☐ 30%-<55%
☐ 10%-<30%
☐ <10%- CLOSED

CJ RECREATION

POOL: ☐ >100R2 ☐ >3ft

CLARITY

- 1st --sample pass-- 2nd
☐ < 20 cm
☐ 20-<40 cm
☐ 40-70 cm
☐ > 70 cm/ CTB
☐ SECCHI DEPTH

1st pass _____ cm
2nd pass _____ cm

BJAESTHETICS

- ☐ NUISANCE ALGAE
☐ INVASIVE MACROPHYTES
☐ EXCESS TURBIDITY
☐ DISCOLORATION
☐ FOAM / SCUM
☐ OIL SHEEN
☐ TRASH / LITTER
☐ NUISANCE ODOR
☐ SLUDGE DEPOSITS
☐ CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H₂O / TILE / H₂O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- \bar{x} width
 \bar{x} depth
max. depth
 \bar{x} bankfull width
bankfull \bar{x} depth
W/D ratio
bankfull max. depth
floodprone x^2 width
entrench. ratio

Legacy Tree:

Stream Drawing:

N

ROW

Stream PB-12

open field

open field

wooded

Flow

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.
Perennial flow regime.

OHWM = 18, TOB = 22'



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score:

44

Stream & Location: Holloway-Knox 138kV Transmission Line (Conotton Creek)

RM: _ _ _ Date: 06 / 07 / 18

S-MDT-06072018-06

Scorers Full Name & Affiliation: M. Thomayer, T. Qualio-CH2M HILL

River Code: - - - STORET #: Lat./ Long.: 40 . 401744 18 1 . 051716 Office verified location ☒

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

Check ONE (Or 2 & average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate 5 Maximum 20
<input type="checkbox"/>	BLDR /SLABS [10]			<input type="checkbox"/>	HARDPAN [4]	15	5	<input checked="" type="checkbox"/>	LIMESTONE [1]	<input checked="" type="checkbox"/>	HEAVY [-2]	
<input type="checkbox"/>	BOULDER [9]			<input type="checkbox"/>	DETRITUS [3]			<input type="checkbox"/>	TILLS [1]	<input type="checkbox"/>	MODERATE [-1]	
<input type="checkbox"/>	COBBLE [8]		5	<input type="checkbox"/>	MUCK [2]			<input type="checkbox"/>	WETLANDS [0]	<input type="checkbox"/>	NORMAL [0]	
<input type="checkbox"/>	GRAVEL [7]	10	40	<input checked="" type="checkbox"/>	SILT [2]	45	20	<input checked="" type="checkbox"/>	HARDPAN [0]	<input type="checkbox"/>	FREE [1]	
<input checked="" type="checkbox"/>	SAND [6]	30	30	<input type="checkbox"/>	ARTIFICIAL [0]			<input type="checkbox"/>	SANDSTONE [0]	<input checked="" type="checkbox"/>	EXTENSIVE [-2]	
<input type="checkbox"/>	BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)				<input type="checkbox"/>	RIP/RAP [0]	<input type="checkbox"/>	MODERATE [-1]	
								<input type="checkbox"/>	LACUSTURINE [0]	<input type="checkbox"/>	NORMAL [0]	
								<input type="checkbox"/>	SHALE [-1]	<input type="checkbox"/>	NONE [1]	
								<input type="checkbox"/>	COAL FINES [-2]			

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments

bricks lining stream bed

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

AMOUNT

Check ONE (Or 2 & average)

1 UNDERCUT BANKS [1]	POOLS > 70cm [2]	OXBOWS, BACKWATERS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
1 OVERHANGING VEGETATION [1]	1 ROOTWADS [1]	AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
SHALLOWS (IN SLOW WATER) [1]	BOULDERS [1]	LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> SPARSE 5-<25% [3]
ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments

Cover
Maximum
20
11

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input checked="" type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input checked="" type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel
Maximum
20
12

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]				
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]				
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]				
	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]					
	<input type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]					

Comments

Indicate predominant land use(s) past 100m riparian.

Riparian
Maximum
10
2

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check ONE (ONLY!)

☐ > 1m [6]
☐ 0.7-<1m [4]
☒ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH

Check ONE (Or 2 & average)

☒ POOL WIDTH > RIFFLE WIDTH [2]
☐ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

☐ TORRENTIAL [-1] ☒ SLOW [1]
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☐ FAST [1] ☐ INTERMITTENT [-2]
☐ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Comments

Recreation Potential
Primary Contact
Secondary Contact
 (circle one and comment on back)

Pool /
Current
Maximum
12
5

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle /
Run
Maximum
8
3

6] GRADIENT (

DRAINAGE AREA

ft/mi)

mi²)
☐ VERY LOW - LOW [2-4]
☒ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL:

30

%GLIDE:

20

%RUN:

20

%RIFFLE:

30

Gradient
Maximum
10
6

AJ SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
☐ WADE
☐ L. LINE
☒ OTHER
- ☐ HIGH
☐ UP
☐ NORMAL
☐ LOW
☐ DRY

STAGE

- 1st --sample pass-- 2nd
☐ < 20 cm
☐ 20-40 cm
☐ 40-70 cm
☐ > 70 cm/ CTB
☐ SECCHI DEPTH
☐ 0.5 Km
☐ 0.2 Km
☐ 0.15 Km
☐ 0.12 Km
☒ OTHER

DISTANCE

- 37 meters
- ☐ CANOPY
☒ > 85%- OPEN
☐ 55%-<85%
☐ 30%-<55%
☐ 10%-<30%
☐ <10%- CLOSED

CLARITY

- 1st --sample pass-- 2nd
☐ < 20 cm
☐ 20-40 cm
☐ 40-70 cm
☐ > 70 cm/ CTB
☐ SECCHI DEPTH
☐ 0.5 Km
☐ 0.2 Km
☐ 0.15 Km
☐ 0.12 Km
☒ OTHER

CANOPY

- 1st pass 2nd pass
☐ < 20 cm
☐ 20-40 cm
☐ 40-70 cm
☐ > 70 cm/ CTB
☐ SECCHI DEPTH
☐ 0.5 Km
☐ 0.2 Km
☐ 0.15 Km
☐ 0.12 Km
☒ OTHER

CJ RECREATION

- POOL: ☐ >100R2 ☐ >3ft

BJ AESTHETICS

- ☐ NUISANCE ALGAE
☐ INVASIVE MACROPHYTES
☐ EXCESS TURBIDITY
☐ DISCOLORATION
☐ FOAM / SCUM
☐ OIL SHEEN
☐ TRASH / LITTER
☐ NUISANCE ODOR
☐ SLUDGE DEPOSITS
☐ CSOs/ISSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

EJ ISSUES

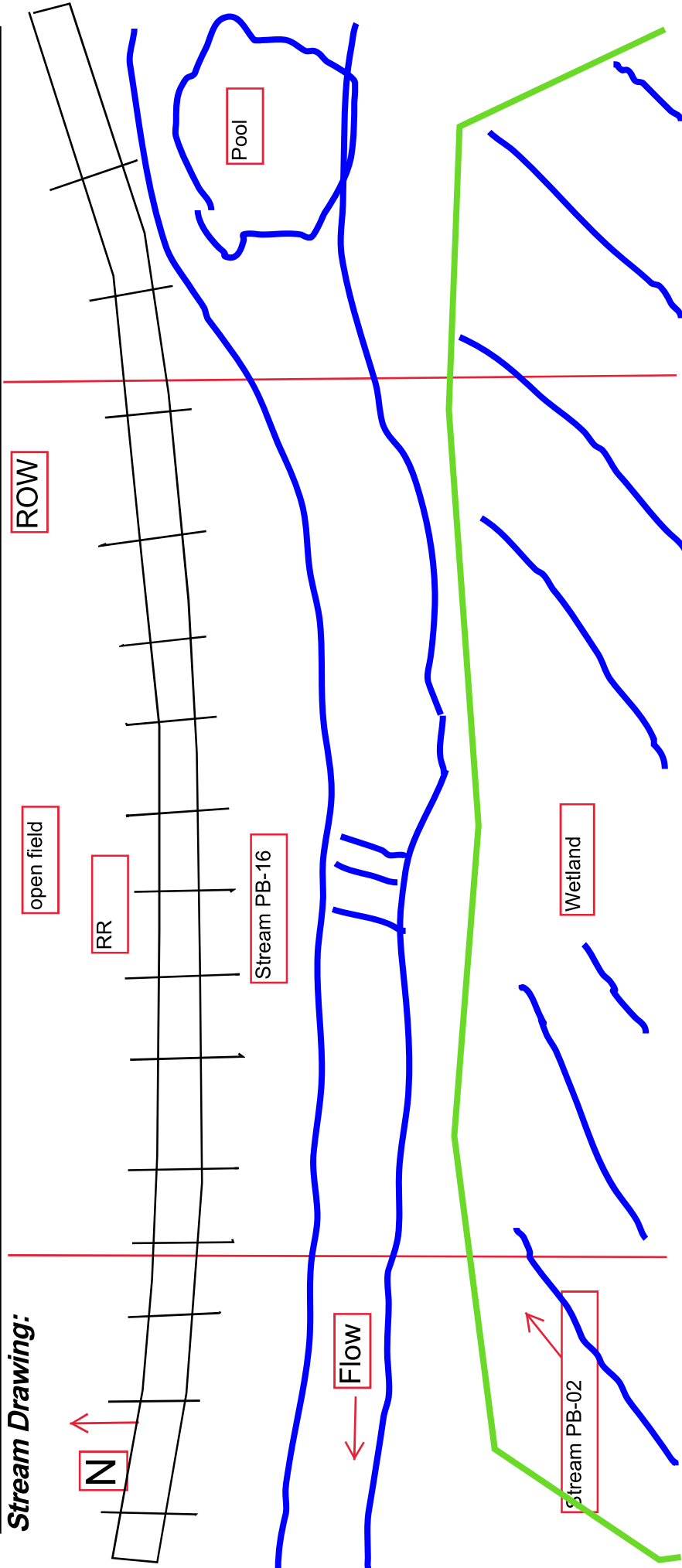
- WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H₂O / TILE / H₂O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- \bar{x} width
 \bar{x} depth
max. depth
 \bar{x} bankfull width
bankfull \bar{x} depth
W/D ratio
bankfull max. depth
floodprone \bar{x} width
entrench. ratio

Legacy Tree:

Stream Drawing:



Appendix D

OEPA HHEI Datasheets



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

28

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-tmq-05242018-03**

SITE NUMBER **PB-01** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **62** LAT. **40.45073** LONG. **-81.04962** RIVER CODE RIVER MILE

DATE **05/24/18** SCORER **TMQ, JF** 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 MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

stream through 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	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="90%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

18

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH **1** inches

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]	

Bankfull Width Max=30

5

COMMENTS **to: 2 ohwm: 0.5** AVERAGE BANKFULL WIDTH **2.00** Feet

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY			
L	R	L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	(Per Bank)	(Most Predominant per Bank)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	None	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS **ROW**

- FLOW REGIME** (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/>	Stream Flowing	<input type="checkbox"/>	Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/>	Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/>	Dry channel, no water (Ephemeral)

COMMENTS **ephemeral**

- SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/>	None	<input checked="" type="checkbox"/>	1.0	<input type="checkbox"/>	2.0	<input type="checkbox"/>	3.0
<input type="checkbox"/>	0.5	<input type="checkbox"/>	1.5	<input type="checkbox"/>	2.5	<input type="checkbox"/>	>3

STREAM GRADIENT ESTIMATE

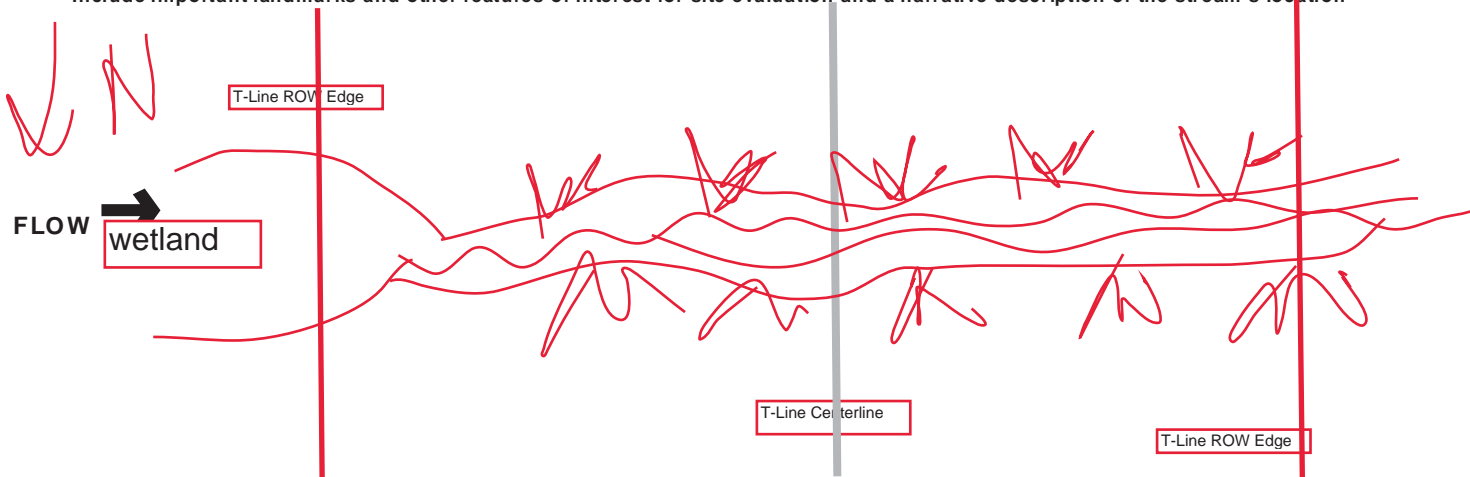
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name: Dining Fork	Distance from Evaluated Stream	<input type="text"/> 0.29	miles
<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: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Carroll Township / City: Perry**MISCELLANEOUS**Base Flow Conditions? (Y/N): Y Date of last precipitation: 05/22/18 Quantity: 1.18
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 95%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

50

SITE NAME/LOCATION		FirstEnergy Holloway-Knox 138kV Transmission Line			Field ID: s-mdt-06/06/2018-04	
SITE NUMBER			RIVER BASIN	05040001	DRAINAGE AREA (mi ²)	0.95
LENGTH OF STREAM REACH (ft)		424	LAT.	40.44742	LONG.	-81.04974
			RIVER CODE		RIVER MILE	
DATE	06/06/18	SCORER	MDT, TMQ	COMMENTS		
		perennial flow regime				

NOTE: Complete All Items On This Form - Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY
MODIFICATIONS: appears some impact from prior powerline work

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"/>	<input type="checkbox"/>	BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SILT [3 pt]	<input type="text" value="50%"/>
<input type="checkbox"/>	<input type="checkbox"/>	BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/>	<input type="checkbox"/>	LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/>	<input type="checkbox"/>	BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/>	<input type="checkbox"/>	FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/>	<input type="checkbox"/>	COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/>	<input type="checkbox"/>	CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	GRAVEL (2-64 mm) [9 pts]	<input type="text" value="30%"/>	<input type="checkbox"/>	<input type="checkbox"/>	MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/>	<input type="checkbox"/>	SAND (<2 mm) [6 pts]	<input type="text" value="20%"/>	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check	100%
----------------------------	------

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: 3

2. **Maximum Pool Depth** (*Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes*) (Check **ONLY** one box):

<input checked="" 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 type="checkbox"/>	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH Inches

12

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/>	> 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/>	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/>	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/>	≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/>	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS

AVERAGE BANKFULL WIDTH Feet

4.00

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTSrow

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/>	Stream Flowing	<input type="checkbox"/>	Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/>	Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/>	Dry channel, no water (Ephemeral)
COMMENTS perennial			

COMMENTS **perennial**

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

SINCECH-1 (Number of berds per 0.1 mi (200 ft) of channel) (Check ONE / one box).							
<input type="checkbox"/>	None	<input type="checkbox"/>	1.0	<input type="checkbox"/>	2.0	<input type="checkbox"/>	3.0
<input type="checkbox"/>	0.5	<input type="checkbox"/>	1.5	<input type="checkbox"/>	2.5	<input checked="" 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)

HHEI Metric Points

Substrate
Max = 40

15

A + B

Pool Depth
Max = 30

20

**Bankfull
Width
Max=30**

15

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Distance from Evaluated Stream miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-04

23

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/06/2018-02**

SITE NUMBER **PB-04** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.04**

LENGTH OF STREAM REACH (ft) **120** LAT. **40.44341** LONG. **-81.04988** RIVER CODE RIVER MILE

DATE **06/06/18** SCORER **MDT, TMQ** 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: ☐ appears some impact from prior powerline work

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="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="60%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="25%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

9

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI Metric Points

Substrate Max = 40

13

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH

2

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]	

Bankfull Width Max=30

5

COMMENTS

AVERAGE BANKFULL WIDTH

1.00

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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

COMMENTS row**FLOW REGIME** (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS 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 checked="" type="checkbox"/> WWH Name: Dining Fork	Distance from Evaluated Stream	0.19
<input type="checkbox"/> CWH Name:	Distance from Evaluated Stream	
<input type="checkbox"/> EWH Name:	Distance from Evaluated Stream	

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order: County: Carroll Township / City: Perry

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11

Photograph Information: 3 photos

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N): Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

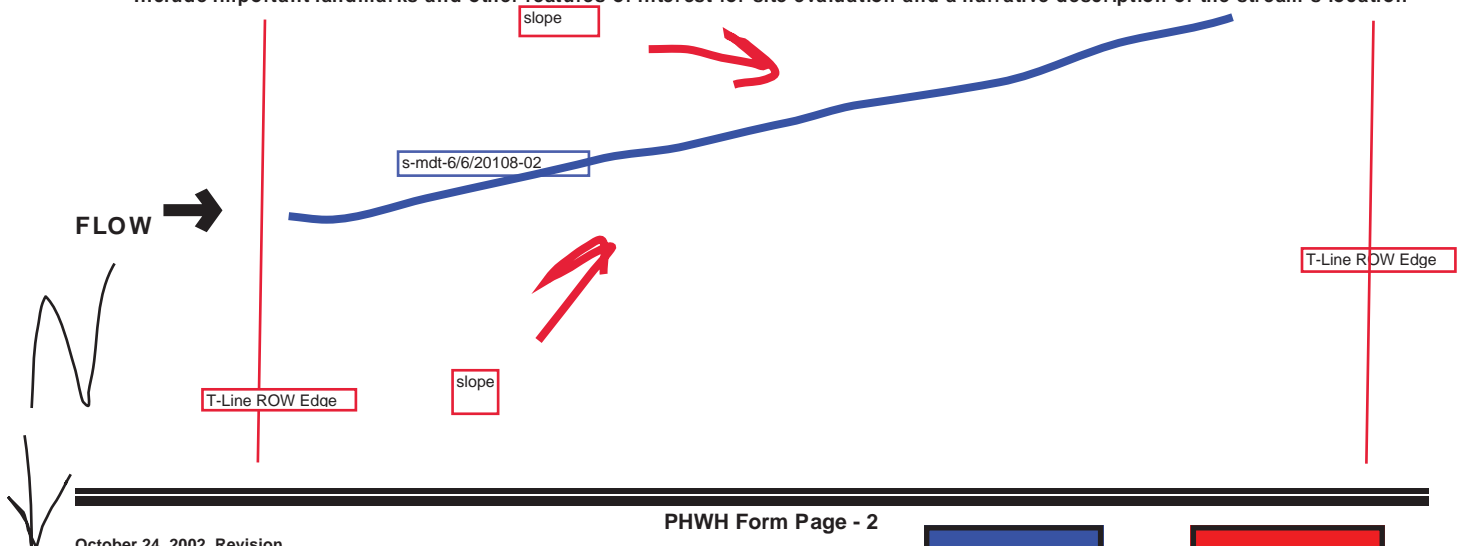
Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N

Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-05

28

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/06/2018-01**

SITE NUMBER **PB-05** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **48** LAT. **40.44312** LONG. **-81.05000** RIVER CODE RIVER MILE

DATE **06/06/18** SCORER **MDT, TMQ** 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: ☐ appears some impact from prior powerline work

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="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="45%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **3**HHEI
Metric
PointsSubstrate
Max = 40

18

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

5

COMMENTS MAXIMUM POOL DEPTH **1** inches

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]	

Bankfull
Width
Max=30

5

COMMENTS AVERAGE BANKFULL WIDTH **1.50** Feet

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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

COMMENTS **row**FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **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 checked="" type="checkbox"/> WWH Name: Dining Fork	Distance from Evaluated Stream	0.19
<input type="checkbox"/> CWH Name:	Distance from Evaluated Stream	
<input type="checkbox"/> EWH Name:	Distance from Evaluated Stream	

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order: County: Carroll Township / City: Perry

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11

Photograph Information: 3 photos

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N): Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

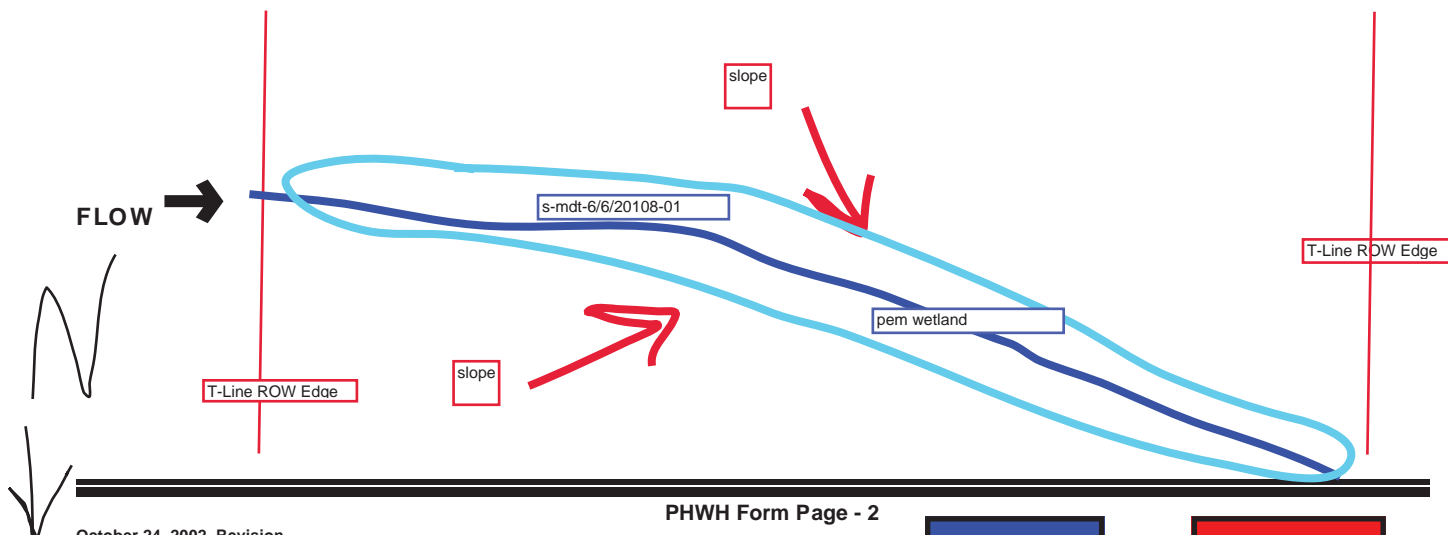
Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N

Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

26

SITE NAME/LOCATION		FirstEnergy Holloway-Knox 138kV Transmission Line			Field ID: s-mdt-06/06/2018-07	
SITE NUMBER			RIVER BASIN	05040001	DRAINAGE AREA (mi ²)	0.01
LENGTH OF STREAM REACH (ft)		218	LAT.	40.42673	LONG.	-81.05012
DATE		06/06/18	SCORER	MDT, TMQ	COMMENTS	ephemeral flow regime
					RIVER CODE	
					RIVER MILE	

NOTE: Complete All Items On This Form - Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY
MODIFICATIONS: appears some impact from landowner/livestock

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"/>	<input type="checkbox"/>	BLDR SLABS [16 pts]	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SILT [3 pt]
<input type="checkbox"/>	<input type="checkbox"/>	BOULDER (>256 mm) [16 pts]	<input type="checkbox"/>	<input type="checkbox"/>	LEAF PACK/WOODY DEBRIS [3 pts]
<input type="checkbox"/>	<input type="checkbox"/>	BEDROCK [16 pt]	<input type="checkbox"/>	<input type="checkbox"/>	FINE DETRITUS [3 pts]
<input type="checkbox"/>	<input type="checkbox"/>	COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/>	<input type="checkbox"/>	CLAY or HARDPAN [0 pt]
<input checked="" type="checkbox"/>	<input type="checkbox"/>	GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/>	<input type="checkbox"/>	MUCK [0 pts]
<input type="checkbox"/>	<input type="checkbox"/>	SAND (<2 mm) [6 pts]	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFICIAL [3 pts]
		0%			25%
		0%			0%
		0%			0%
		0%			10%
		50%			0%
		15%			0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)







Substrate Percentage Check	100%
----------------------------	------

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: 4

2. **Maximum Pool Depth** (*Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes*) (Check **ONLY** one box):

	> 30 centimeters [20 pts]		> 5 cm - 10 cm [15 pts]
	> 22.5 - 30 cm [30 pts]		< 5 cm [5 pts]
	> 10 - 22.5 cm [25 pts]		NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH Inches

1

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

1.00

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTSrow

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/>	Stream Flowing	<input type="checkbox"/>	Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/>	Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/>	Dry channel, no water (Ephemeral)
COMMENTS ephemeral			

COMMENTS **ephemeral**

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

SUCCESS 1 (Number of birds per 6 ft (200 ft) of channel) (Check ONE / one box).				
None	<input type="checkbox"/>	1.0	<input type="checkbox"/>	3.0
0.5	<input checked="" type="checkbox"/>	1.5	<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)

HHEI Metric Points

Substrate
Max = 40

16

A + B

Pool Depth
Max = 30

5

**Bankfull
Width
Max=30**

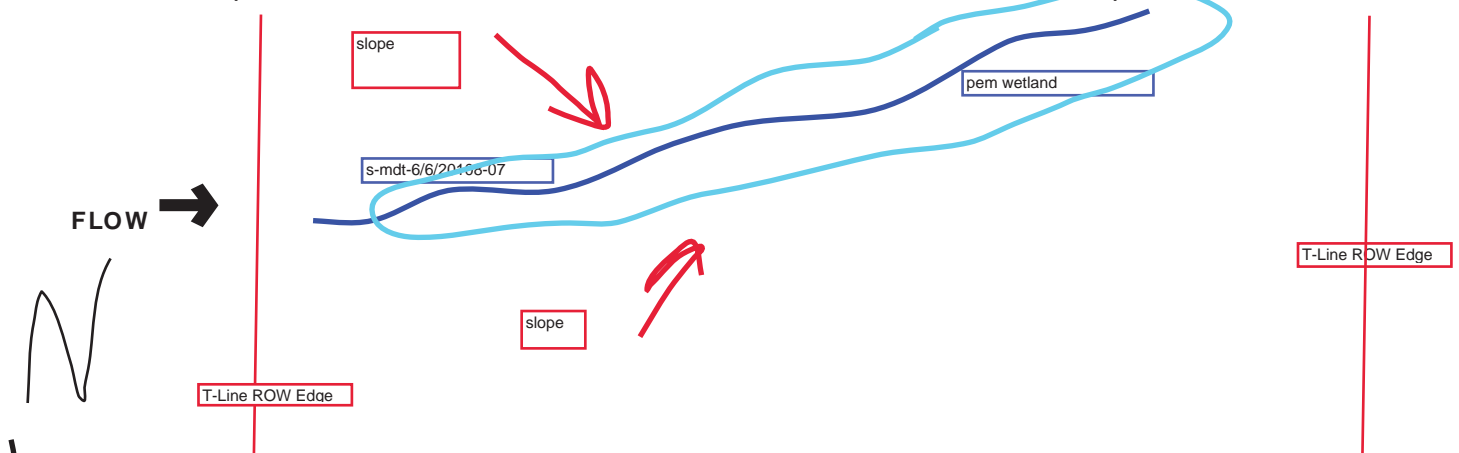
5

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 checked="" type="checkbox"/> WWH Name: <u>Irish Creek</u>	Distance from Evaluated Stream	<u>0.76</u>
<input type="checkbox"/> CWH Name: <u></u>	Distance from Evaluated Stream	<u></u>
<input type="checkbox"/> EWH Name: <u></u>	Distance from Evaluated Stream	<u></u>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Rumley**MISCELLANEOUS**Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

35

SITE NAME/LOCATION		FirstEnergy Holloway-Knox 138kV Transmission Line			Field ID: s-mdt-06/06/2018-06	
SITE NUMBER			RIVER BASIN	05040001	DRAINAGE AREA (mi ²)	0.09
LENGTH OF STREAM REACH (ft)		191	LAT.	40.42625	LONG.	-81.05006
DATE		06/06/18	RIVER CODE		RIVER MILE	
SCORER	MDT, TMQ		COMMENTS			
		intermittent flow regime				

NOTE: Complete All Items On This Form - Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY
MODIFICATIONS: appears some impact from landowner/livestock

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"/>	<input type="checkbox"/>	BLDR SLABS [16 pts]	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SILT [3 pt]
<input type="checkbox"/>	<input type="checkbox"/>	BOULDER (>256 mm) [16 pts]	<input type="checkbox"/>	<input type="checkbox"/>	LEAF PACK/WOODY DEBRIS [3 pts]
<input type="checkbox"/>	<input type="checkbox"/>	BEDROCK [16 pt]	<input type="checkbox"/>	<input type="checkbox"/>	FINE DETRITUS [3 pts]
<input type="checkbox"/>	<input type="checkbox"/>	COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/>	<input type="checkbox"/>	CLAY or HARDPAN [0 pt]
<input checked="" type="checkbox"/>	<input type="checkbox"/>	GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/>	<input type="checkbox"/>	MUCK [0 pts]
<input type="checkbox"/>	<input type="checkbox"/>	SAND (<2 mm) [6 pts]	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFICIAL [3 pts]
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock		0.00%	(A)	Substrate Percentage Check 100%	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: 3

2. **Maximum Pool Depth** (*Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes*) (Check **ONLY** one box):

	> 30 centimeters [20 pts]		> 5 cm - 10 cm [15 pts]
	> 22.5 - 30 cm [30 pts]		< 5 cm [5 pts]
	> 10 - 22.5 cm [25 pts]		NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH Inches

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 :

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTSrow

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/>	Stream Flowing	<input type="checkbox"/>	Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/>	Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/>	Dry channel, no water (Ephemeral)
COMMENTS intermittent			

COMMENTS intermittent

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

SUCCESS 1 (Number of birds per 6 ft (200 ft) of channel) (Check ONE / one box).				
None	<input type="checkbox"/>	1.0	<input type="checkbox"/>	3.0
0.5	<input checked="" type="checkbox"/>	1.5	<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)

HHEI Metric Points

Substrate
Max = 40

15

A + B

Pool Depth
Max = 30

15

**Bankfull
Width
Max=30**

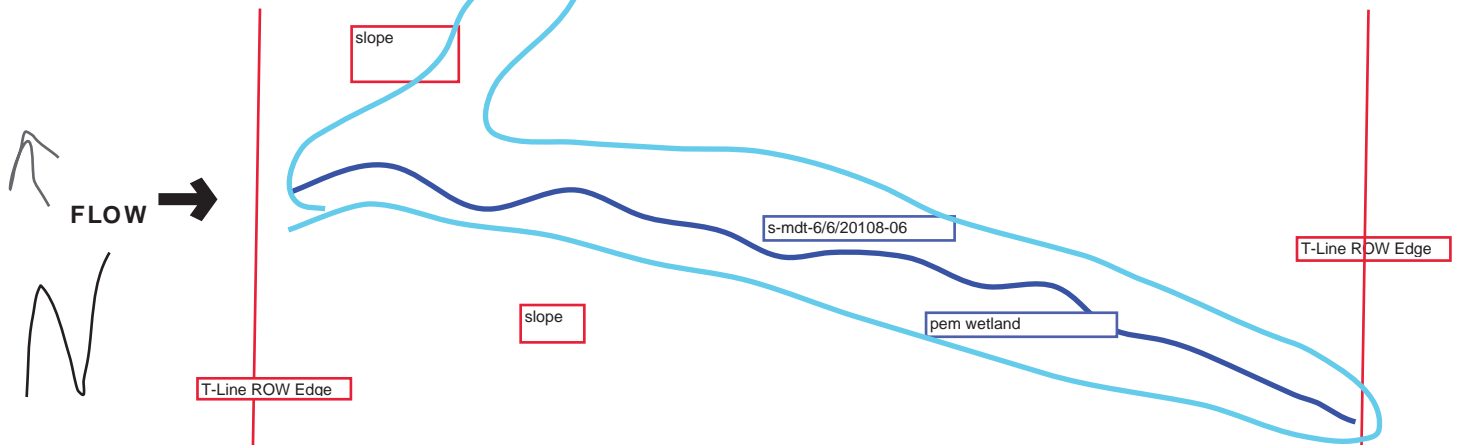
5

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 checked="" type="checkbox"/> WWH Name: <u>Irish Creek</u>	Distance from Evaluated Stream: <u>0.73</u>
<input type="checkbox"/> CWH Name: <u></u>	Distance from Evaluated Stream: <u></u>
<input type="checkbox"/> EWH Name: <u></u>	Distance from Evaluated Stream: <u></u>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order:
County: Harrison Township / City: Rumley**MISCELLANEOUS**Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-08

17

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/06/2018-05**

SITE NUMBER **PB-08** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **116** LAT. **40.42551** LONG. **-81.05022** RIVER CODE RIVER MILE

DATE **06/06/18** SCORER **MDT, TMQ** 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: ☐ appears some impact from landowner to straighten

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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="30%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="40%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

3

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI Metric Points

Substrate Max = 40

7

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

Inches

1

Pool Depth Max = 30

5

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

1.00

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS: row

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS: 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 type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

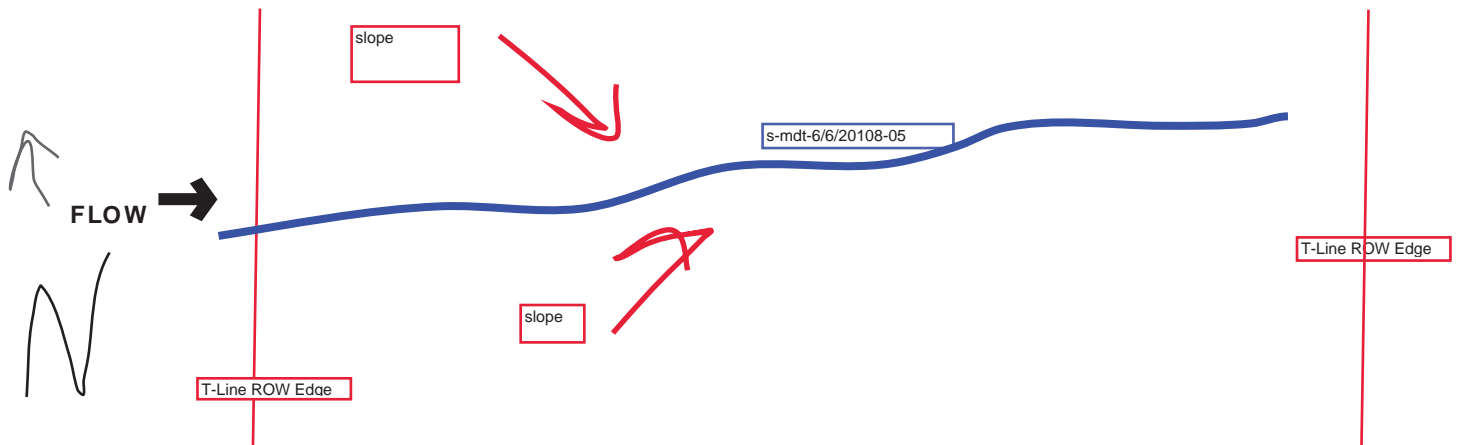
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name: <u>Irish Creek</u>	Distance from Evaluated Stream	<u>0.71</u>
<input type="checkbox"/> CWH Name: <u></u>	Distance from Evaluated Stream	<u></u>
<input type="checkbox"/> EWH Name: <u></u>	Distance from Evaluated Stream	<u></u>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Rumley**MISCELLANEOUS**Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-09

35

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/06/2018-10**

SITE NUMBER **PB-09** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.04**

LENGTH OF STREAM REACH (ft) **166** LAT. **40.42072** LONG. **-81.05074** RIVER CODE RIVER MILE

DATE **06/06/18** SCORER **MDT, TMQ** COMMENTS **intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

channelized

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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="65%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH **inches** **3**

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** **2.00**

HHEI Metric Points

Substrate Max = 40

15

A + B

Pool Depth Max = 30

15

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 **row****FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" 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 checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent**

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

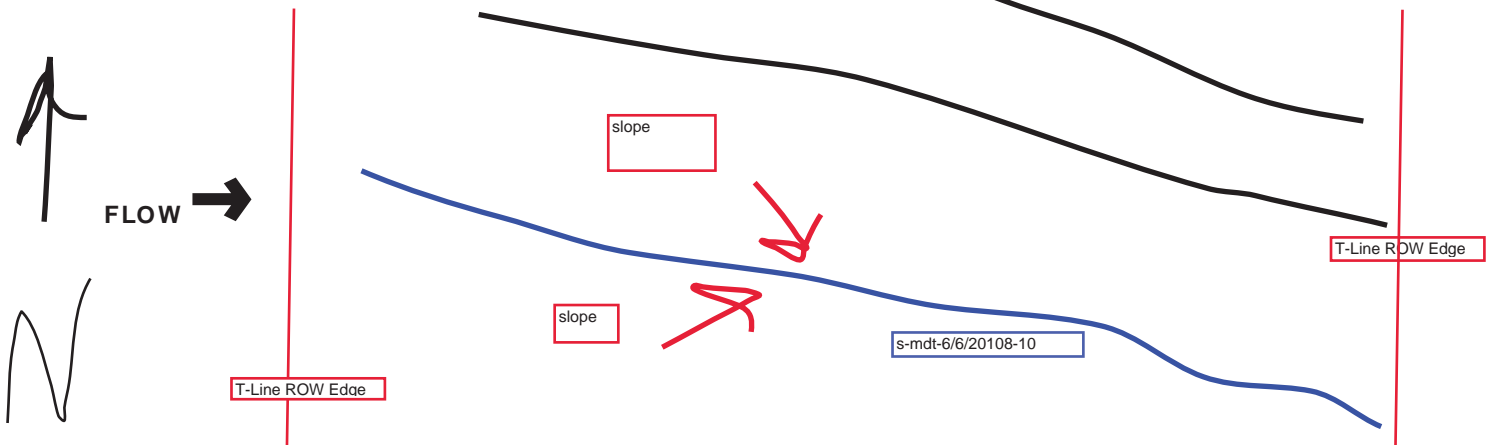
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name: <u>Irish Creek</u>	Distance from Evaluated Stream	<u>0.97</u>
<input type="checkbox"/> CWH Name: <u></u>	Distance from Evaluated Stream	<u></u>
<input type="checkbox"/> EWH Name: <u></u>	Distance from Evaluated Stream	<u></u>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Rumley**MISCELLANEOUS**Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-10

26

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/06/2018-09**

SITE NUMBER **PB-10** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.02**

LENGTH OF STREAM REACH (ft) **92** LAT. **40.41043** LONG. **-81.05195** RIVER CODE RIVER MILE

DATE **06/06/18** SCORER **MDT, TMQ** 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: channelized for culvert

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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="35%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="40%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage
Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

12

TOTAL NUMBER OF SUBSTRATE TYPES:

4

**HHEI
Metric
Points**Substrate
Max = 40

16

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

Inches

1

Pool Depth
Max = 30

5

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

1.00

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS row**FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS ephemeral**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

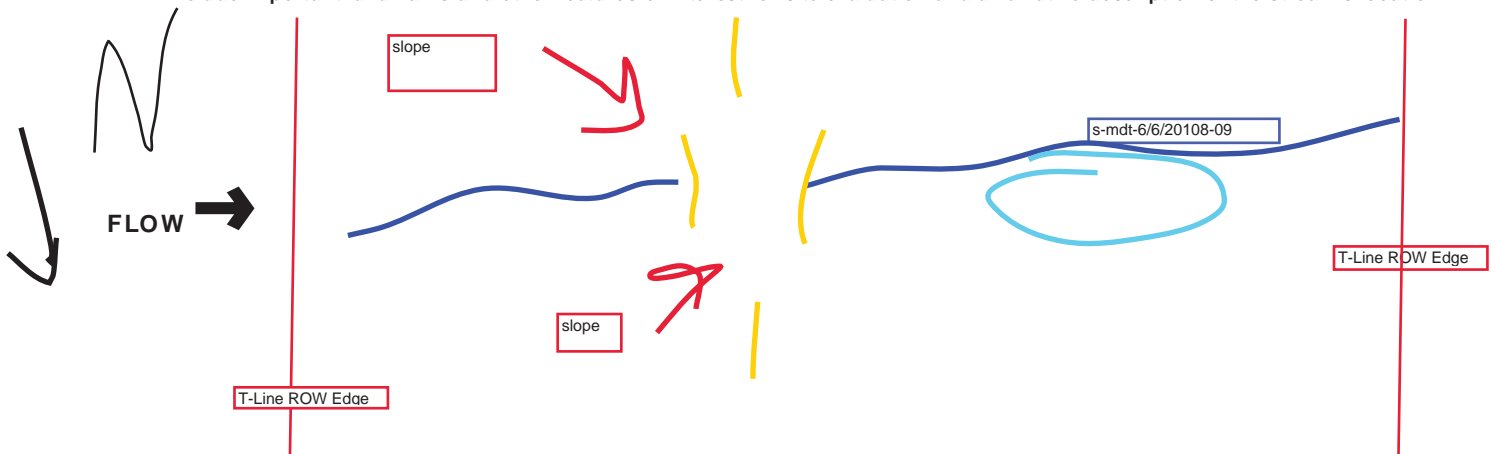
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name: <u>Irish Creek</u>	Distance from Evaluated Stream	<u>0.56</u>
<input type="checkbox"/> CWH Name: <u></u>	Distance from Evaluated Stream	<u></u>
<input type="checkbox"/> EWH Name: <u></u>	Distance from Evaluated Stream	<u></u>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Rumley**MISCELLANEOUS**Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-11

46

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/06/2018-08**

SITE NUMBER **PB-11** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.45**

LENGTH OF STREAM REACH (ft) **680** LAT. **40.40730** LONG. **-81.05164** RIVER CODE RIVER MILE

DATE **06/06/18** SCORER **MDT, TMQ** COMMENTS **intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 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="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="35%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **20.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** TOTAL NUMBER OF SUBSTRATE TYPES: **4**

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH **8** inches

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 **3.00** Feet

HHEI Metric Points

Substrate Max = 40

16

A + B

Pool Depth Max = 30

25

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		FLOODPLAIN QUALITY			
L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Per Bank) Wide >10m		(Most Predominant per Bank) Mature Forest, Wetland		Conservation Tillage	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field		Urban or Industrial	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field		Open Pasture, Row Crop	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture		Mining or Construction	

COMMENTS **row**

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent**

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ 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 checked="" type="checkbox"/> WWH Name: <input type="text" value="Irish Creek"/>	Distance from Evaluated Stream <input type="text" value="0.24"/> miles
<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 LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:

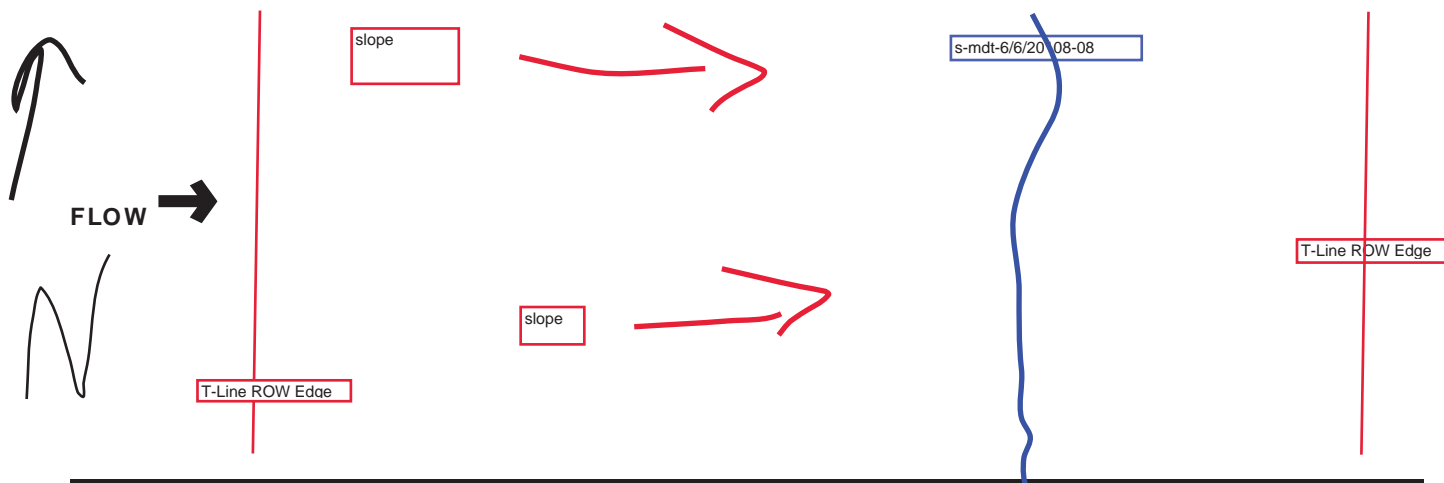
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

35

SITE NAME/LOCATION		FirstEnergy Holloway-Knox 138kV Transmission Line			Field ID: s-mdt-06/07/2018-03	
SITE NUMBER			RIVER BASIN	05040001	DRAINAGE AREA (mi ²)	0.01
LENGTH OF STREAM REACH (ft)		105	LAT.	40.39726	LONG.	-81.05197
			RIVER CODE		RIVER MILE	
DATE	06/07/18	SCORER	MDT, TMQ		COMMENTS	
				ephemeral flow regime		

NOTE: Complete All Items On This Form - Refer to “Field Evaluation Manual for Ohio’s PWH Streams” for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

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"/>	<input type="checkbox"/>	BLDR SLABS [16 pts]	<input type="checkbox"/>	<input type="checkbox"/>	SILT [3 pt]
<input type="checkbox"/>	<input type="checkbox"/>	BOULDER (>256 mm) [16 pts]	<input type="checkbox"/>	<input type="checkbox"/>	LEAF PACK/WOODY DEBRIS [3 pts]
<input type="checkbox"/>	<input type="checkbox"/>	BEDROCK [16 pt]	<input type="checkbox"/>	<input type="checkbox"/>	FINE DETRITUS [3 pts]
<input type="checkbox"/>	<input checked="" type="checkbox"/>	COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/>	<input type="checkbox"/>	CLAY or HARDPAN [0 pt]
<input checked="" type="checkbox"/>	<input type="checkbox"/>	GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/>	<input type="checkbox"/>	MUCK [0 pts]
<input type="checkbox"/>	<input type="checkbox"/>	SAND (<2 mm) [6 pts]	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFICIAL [3 pts]
		0%			10%
		0%			0%
		0%			0%
		20%			0%
		60%			0%
		10%			0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **20.00%**

(A)

Substrate Percentage Check	100%
----------------------------	-------------

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES: 4

2. **Maximum Pool Depth** (*Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes*) (Check **ONLY** one box):

<input type="checkbox"/>	> 30 centimeters [20 pts]	<input type="checkbox"/>	> 5 cm - 10 cm [15 pts]
<input type="checkbox"/>	> 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/>	< 5 cm [5 pts]
<input type="checkbox"/>	> 10 - 22.5 cm [25 pts]	<input type="checkbox"/>	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH Inches

1

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 :

1.50

HEI Metric Points

Substrate
Max = 40

25

A + B

Pool Depth
Max = 30

5

**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

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTSrow

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/>	Stream Flowing	<input type="checkbox"/>	Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/>	Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/>	Dry channel, no water (Ephemeral)
COMMENTS <u>ephemeral</u>			

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

✓	None	1.0	2.0	3.0
	0.5	1.5	2.5	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Irish Creek Distance from Evaluated Stream 0.49 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Rumley

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

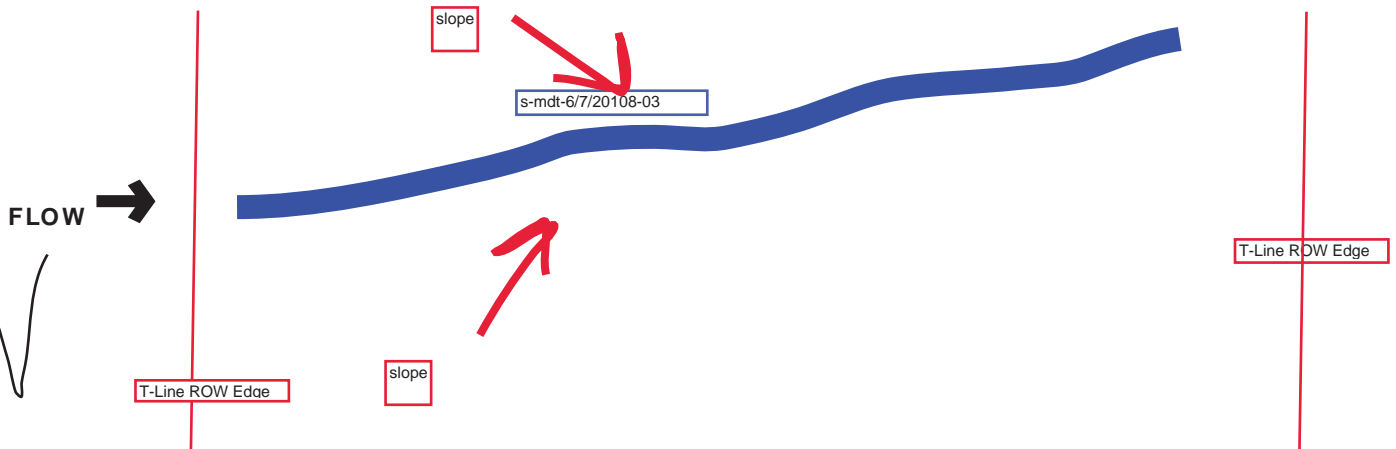
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-14

35

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/07/2018-02**

SITE NUMBER **PB-14** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **124** LAT. **40.39698** LONG. **-81.05198** RIVER CODE RIVER MILE

DATE **06/07/18** SCORER **MDT, TMQ** 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 MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="15%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="55%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20.00% (A)		Substrate Percentage Check 100% (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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH **1** inches

Pool Depth Max = 30

5

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 **1.00** Feet

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS **row****FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **ephemeral****SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Irish Creek Distance from Evaluated Stream 0.49 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Rumley

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

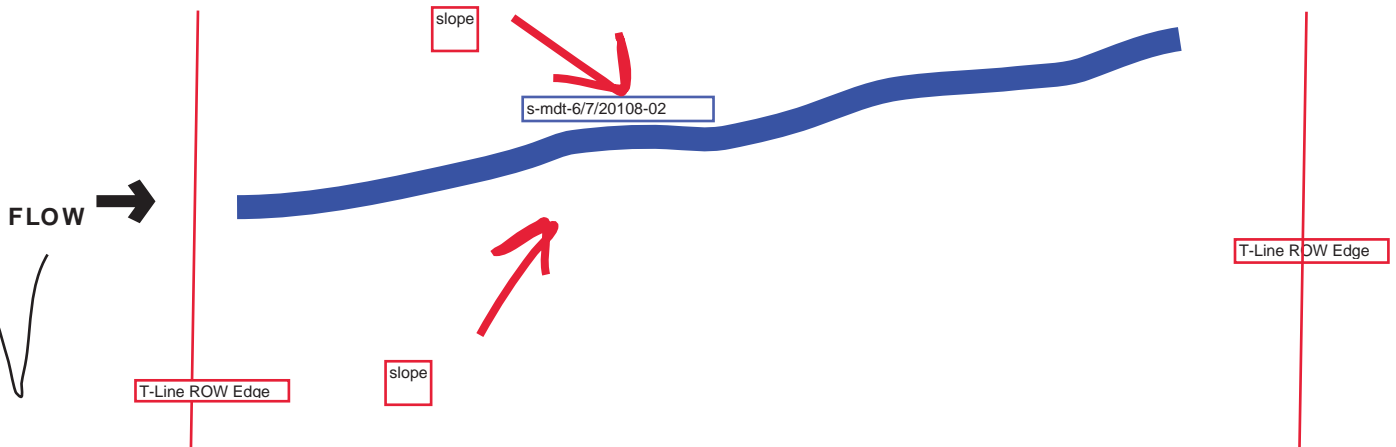
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

34

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/07/2018-01**

SITE NUMBER **PB-15** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.02**

LENGTH OF STREAM REACH (ft) **151** LAT. **40.39632** LONG. **-81.05200** RIVER CODE RIVER MILE

DATE **06/07/18** SCORER **MDT, TMQ** 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 MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

existing ROW causing some fill and grading to happen along stream

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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="45%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="35%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **45.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES:

3

HHEI Metric Points

Substrate Max = 40

24

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

Inches

1

Pool Depth Max = 30

5

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 type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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

COMMENTS ROW, forested on either end of ROWFLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS ephemeralSINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Irish Creek Distance from Evaluated Stream 0.50 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Scio NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Rumley

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/05/18 Quantity: 0.11
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 85%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

Additional comments/description of pollution impacts: **BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-17,18,19

36

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/07/2018-05**

SITE NUMBER **PB-17,18,19** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.20**

LENGTH OF STREAM REACH (ft) **89** LAT. **40.37679** LONG. **-81.05317** RIVER CODE RIVER MILE

DATE **06/07/18** SCORER **MDT, TMQ** COMMENTS **intermittent 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: recent impact from pipeline construction

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 checked="" type="checkbox"/> 25%
<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 type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/> 15%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 50%	<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"/> 0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 15.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12**TOTAL NUMBER OF SUBSTRATE TYPES: **4****HHEI Metric Points**

Substrate Max = 40

16

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 checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

15

COMMENTS

MAXIMUM POOL DEPTH **inches****4**

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]	

Bankfull Width Max=30

5

COMMENTS

AVERAGE BANKFULL WIDTH **Feet****3.00**

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 type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" 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 checked="" 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

COMMENTS **row****FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent****SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

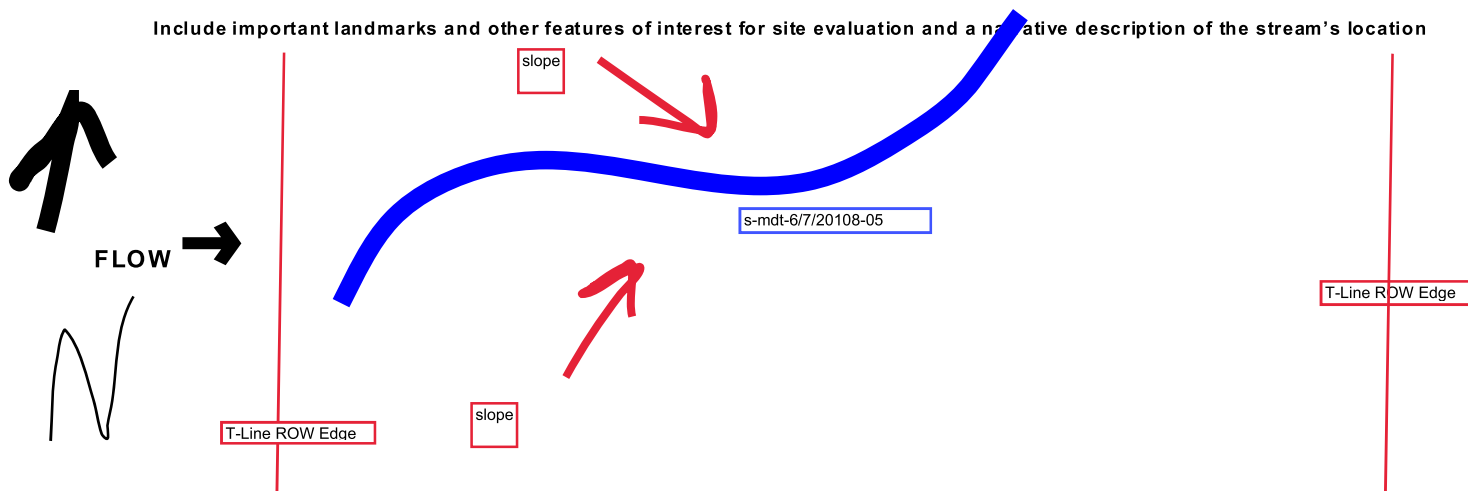
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name:	<input type="text" value="Headwaters Middle Conotton Creek"/>	Distance from Evaluated Stream	<input type="text" value="0.04"/> miles
<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): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

45

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-bao-06/11/2018-05**

SITE NUMBER **PB-20** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.06**

LENGTH OF STREAM REACH (ft) **112** LAT. **40.36798** LONG. **-81.05310** RIVER CODE RIVER MILE

DATE **06/11/18** SCORER **MDT, BAO** COMMENTS **Intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

ripari impact due to ROW, culvert

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 checked="" type="checkbox"/> 20%
<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 checked="" type="checkbox"/> 30%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 40%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input checked="" type="checkbox"/> 10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **30.00%**

(A)

Substrate Percentage Check **100%**

(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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH **inches**

3

Pool Depth Max = 30

15

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 **ohwm**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 type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" 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 **row**

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent**SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Headwaters Middle Conotton Creek** Distance from Evaluated Stream **1.05** miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order
County: **Harrison** Township / City: **Rumley**

MISCELLANEOUS

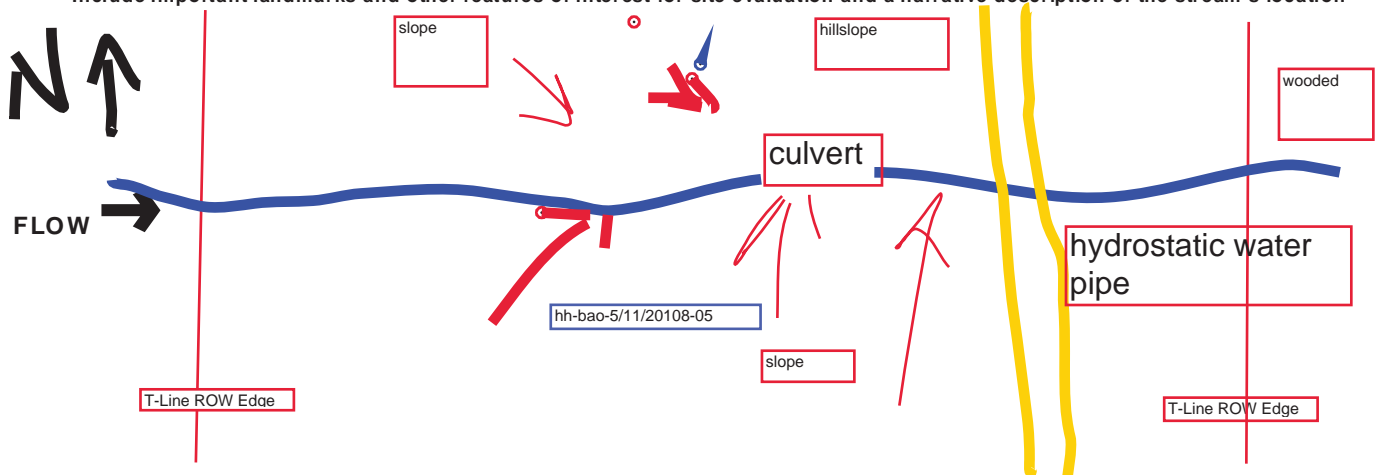
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts: **BIOTIC EVALUATION**

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

39

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-bao-06/11/2018-04**

SITE NUMBER **PB-21** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.10**

LENGTH OF STREAM REACH (ft) **135** LAT. **40.36397** LONG. **-81.05269** RIVER CODE RIVER MILE

DATE **06/11/18** SCORER **MDT, BAO** COMMENTS **Intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

ripari impact due to 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	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input checked="" type="checkbox"/> 20%
<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 type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/> 10%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 40%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input checked="" type="checkbox"/> 30%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15** TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

19

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH **inches** **4**

Pool Depth Max = 30

15

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 **ohwm** 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		FLOODPLAIN QUALITY	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Per Bank)		(Most Predominant per Bank)	
Wide >10m		Mature Forest, Wetland	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>
Moderate 5-10m		Residential, Park, New Field	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>
Narrow <5m			
<input type="checkbox"/>	<input type="checkbox"/>		
None			

COMMENTS **row**FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent**SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Headwaters Middle Conotton Creek** Distance from Evaluated Stream **1.04** miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order
County: **Harrison** Township / City: **Rumley**

MISCELLANEOUS

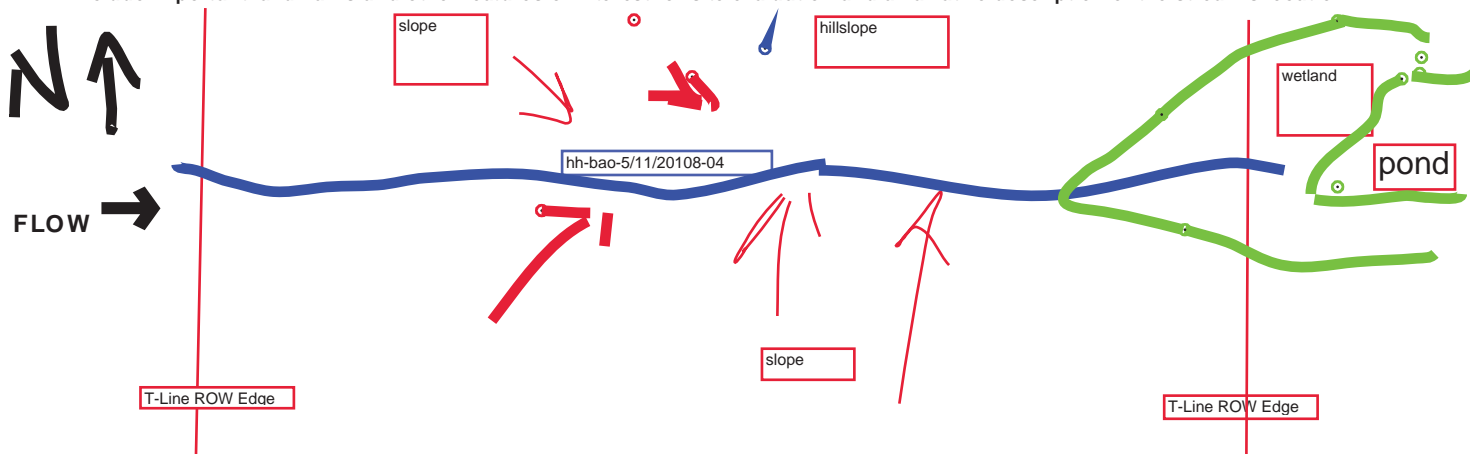
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts: **BIOTIC EVALUATION**

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

39

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-bao-06/11/2018-03**

SITE NUMBER **PB-22** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **32** LAT. **40.36090** LONG. **-81.05223** RIVER CODE RIVER MILE

DATE **06/11/18** SCORER **MDT, BAO** COMMENTS **Intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

pasture impact

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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="40%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

19

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH **inches**

4

Pool Depth Max = 30

15

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 **ohwm**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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" 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 **row**

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **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 type="checkbox"/> 0.5	<input checked="" 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)**

☒ WWH Name: **Headwaters Middle Conotton Creek** Distance from Evaluated Stream **1.21** miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order
County: **Harrison** Township / City: **Archer**

MISCELLANEOUS

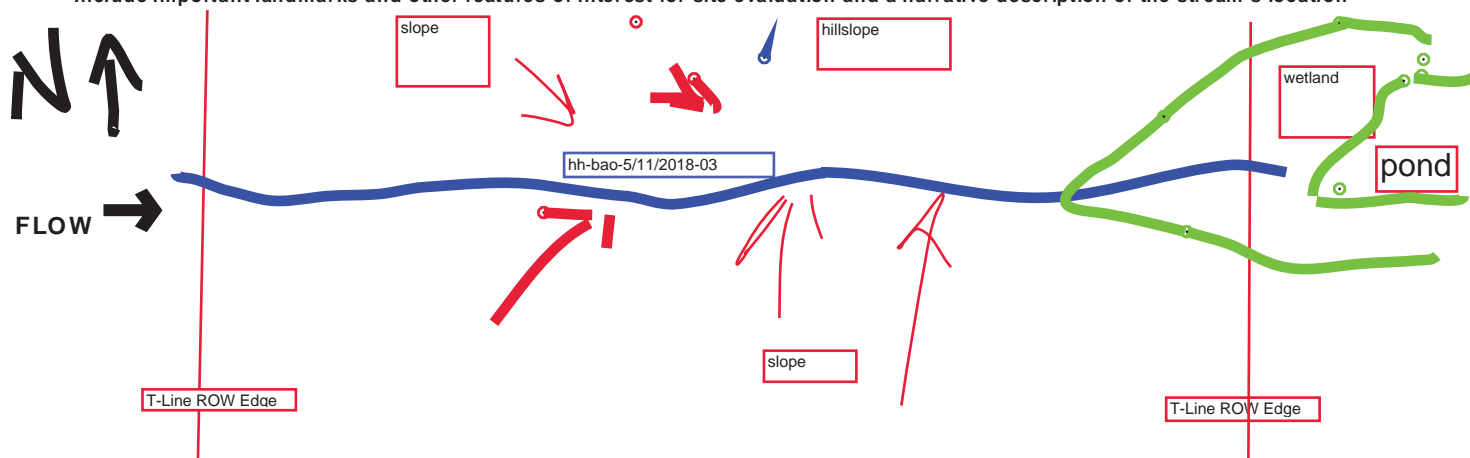
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts: **BIOTIC EVALUATION**

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

17

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-bao-06/11/2018-02**

SITE NUMBER **PB-23** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **104** LAT. **40.36040** LONG. **-81.05230** RIVER CODE RIVER MILE

DATE **06/11/18** SCORER **MDT, BAO** 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 MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

pasture impact

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="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="55%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="10%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

7

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH **inches**

1

Pool Depth Max = 30

5

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 **ohwm**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 type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS **row**

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **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 checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Headwaters Middle Conotton Creek** Distance from Evaluated Stream **1.20** miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order
County: **Harrison** Township / City: **Archer**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

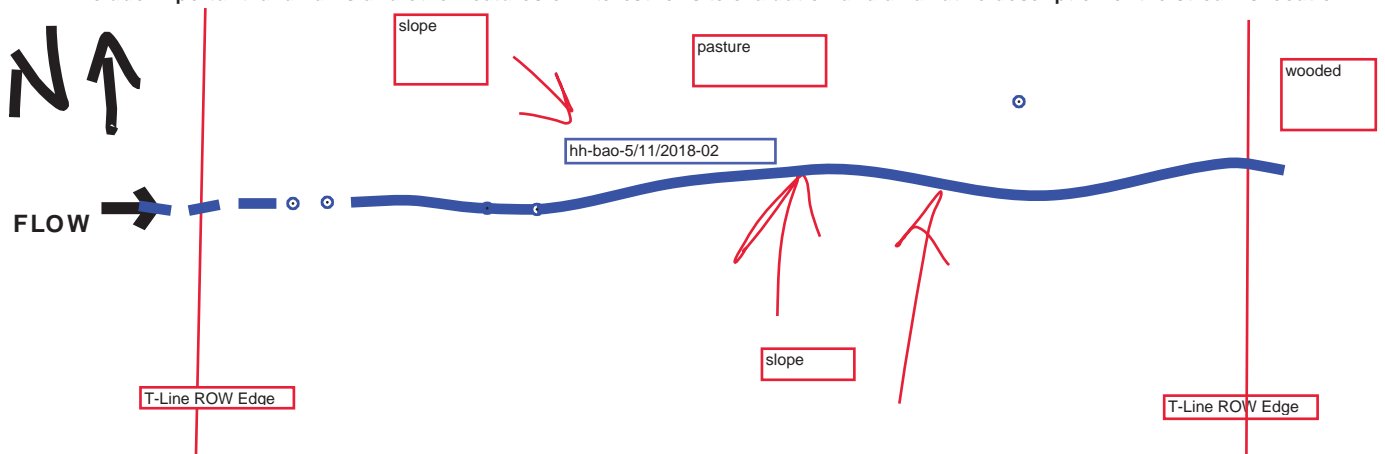
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

17

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-bao-06/11/2018-01**

SITE NUMBER **PB-24** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **98** LAT. **40.35998** LONG. **-81.05213** RIVER CODE RIVER MILE

DATE **06/11/18** SCORER **MDT, BAO** 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 MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

culvert and pasture impact

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="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="55%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="10%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

7

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH **inches**

1

Pool Depth Max = 30

5

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 **ohwm**AVERAGE BANKFULL WIDTH **Feet**: **1.00**

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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS **row**

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **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 checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Headwaters Middle Conotton Creek** Distance from Evaluated Stream **1.22** miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order
County: **Harrison** Township / City: **Archer**

MISCELLANEOUS

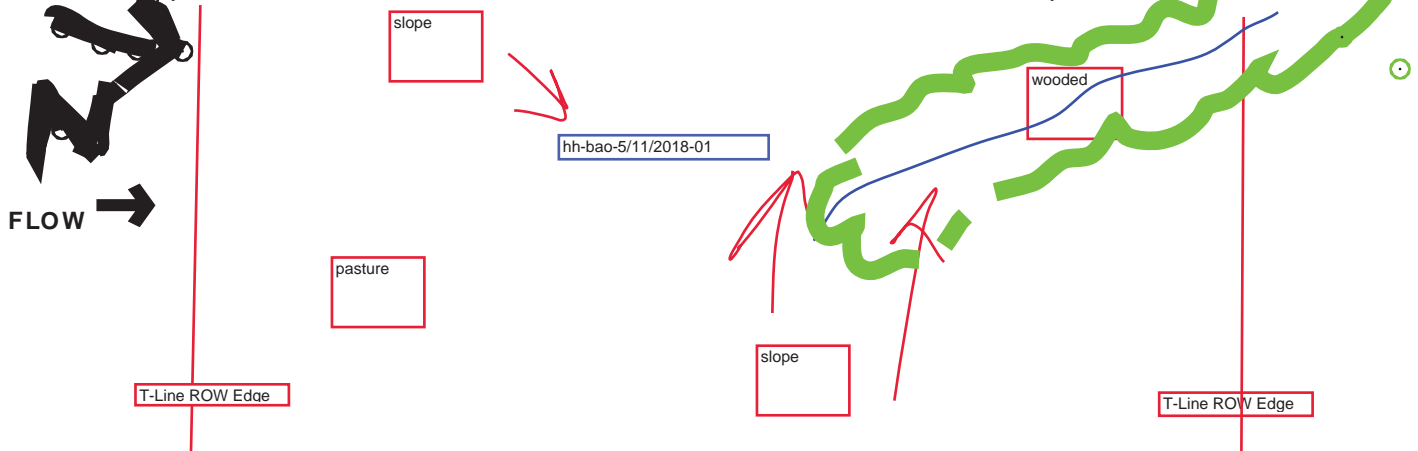
Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): **N** Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts: **BIOTIC EVALUATION**

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

25

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-bao-06/11/2018-07**

SITE NUMBER **PB-25** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **199** LAT. **40.35764** LONG. **-81.05208** RIVER CODE RIVER MILE

DATE **06/11/18** SCORER **MDT, BAO** 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 MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

riparian impact due to 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	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input checked="" type="checkbox"/> 70%
<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 type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 20%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input checked="" type="checkbox"/> 10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12**TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

15

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH **1** inches

Pool Depth Max = 30

5

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 **ohwm**AVERAGE BANKFULL WIDTH **1.00** Feet

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 type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" 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 **row**

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **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 checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

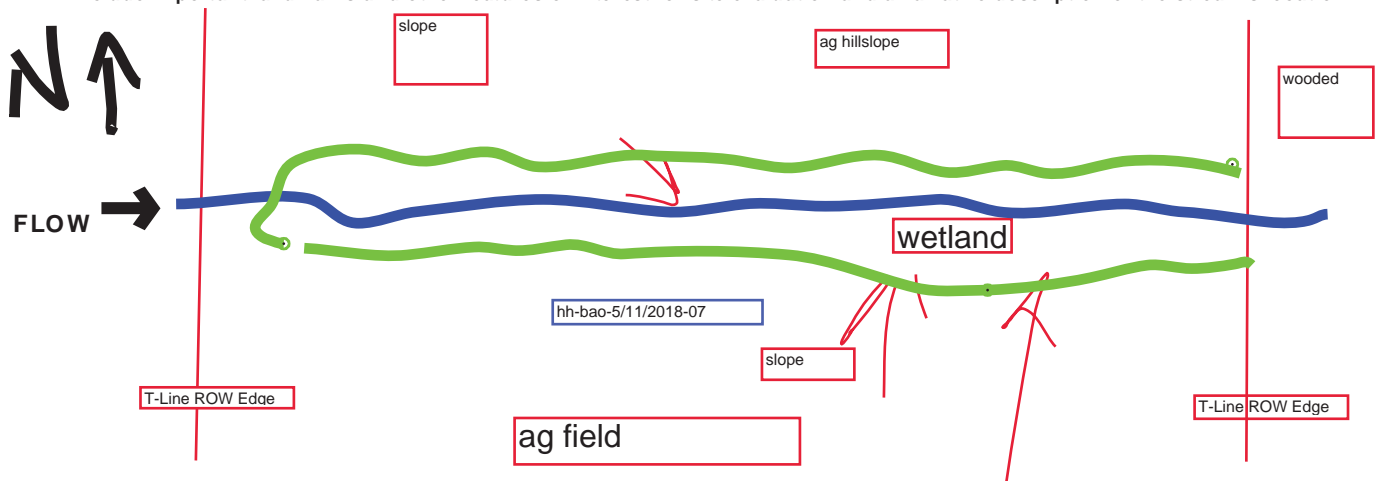
☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name:	<input type="text" value="Clear Fork"/>	Distance from Evaluated Stream	<input type="text" value=">2 miles"/>
<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): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

26

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-bao-06/11/2018-06**

SITE NUMBER **PB-26** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **112** LAT. **40.35629** LONG. **-81.05225** RIVER CODE RIVER MILE

DATE **06/11/18** SCORER **MDT, BAO** 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 MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

riparian impact due to 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	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input checked="" type="checkbox"/> 45%
<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"/> 5%	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 40%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input checked="" type="checkbox"/> 10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12**TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

16

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH **1** inches

Pool Depth Max = 30

5

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 **ohwm**AVERAGE BANKFULL WIDTH **1.00** Feet

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 type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" 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 **row**

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **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 checked="" 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 checked="" type="checkbox"/> WWH Name:	<input type="text" value="Clear Fork"/>	Distance from Evaluated Stream	<input type="text" value=" >2 miles"/>
<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 LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City:

MISCELLANEOUS

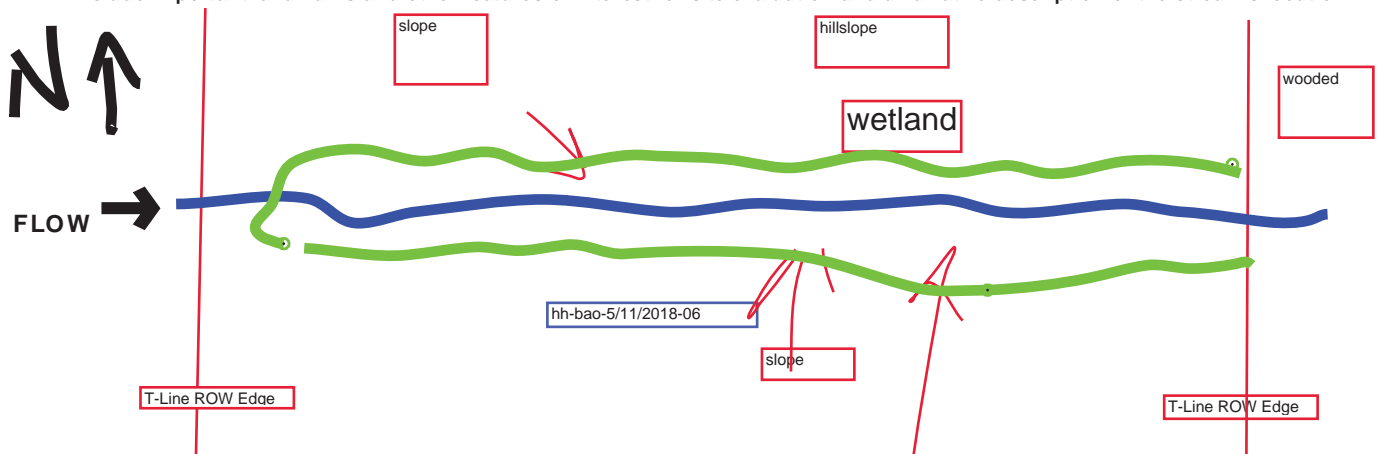
Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts: **BIOTIC EVALUATION**

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-27

12

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-01**

SITE NUMBER **PB-27** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **120** LAT. **40.35130** LONG. **-81.05285** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** 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:

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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="15%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="75%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**TOTAL NUMBER OF SUBSTRATE TYPES: **4****HHEI Metric Points**

Substrate Max = 40

7

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]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH inches

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]	

Bankfull Width Max=30

5

COMMENTS AVERAGE BANKFULL WIDTH Feet

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 type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS **FLOW REGIME** (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Clear Fork Distance from Evaluated Stream 1.70 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Jewett NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Archer

MISCELLANEOUS

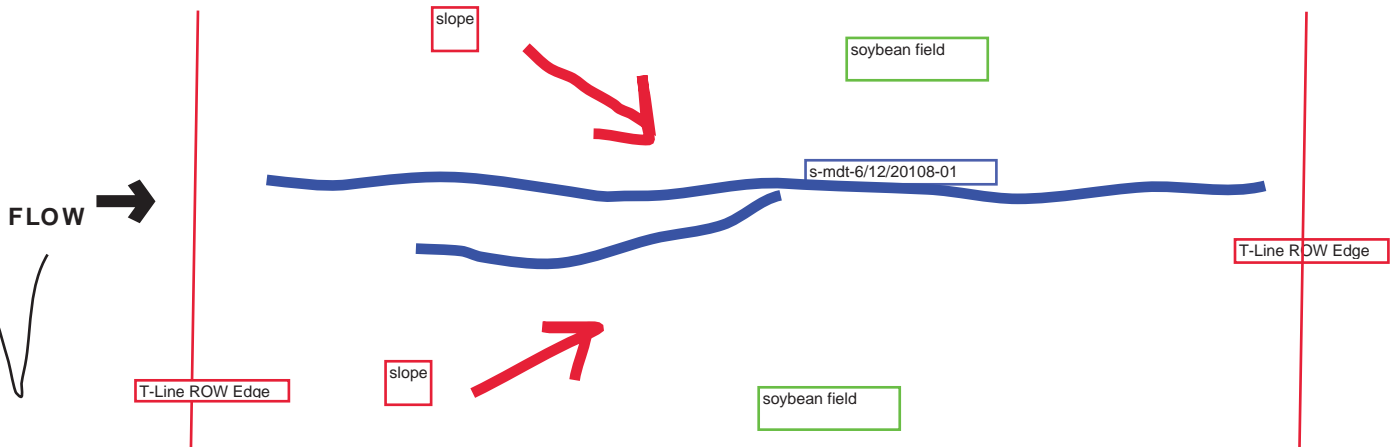
Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/11/18 Quantity: 0.47
Photograph Information: 2 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

Additional comments/description of pollution impacts:
BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-28

61

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-02**

SITE NUMBER **PB-28** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.34**

LENGTH OF STREAM REACH (ft) **337** LAT. **40.34373** LONG. **-81.05501** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** COMMENTS **intermittent 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: **Transmission line 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	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input checked="" type="checkbox"/> 15%
<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 type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/> 10%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 65%	<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"/> 0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12**TOTAL NUMBER OF SUBSTRATE TYPES: **4****HHEI Metric Points**

Substrate Max = 40

16

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 checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

30COMMENTS MAXIMUM POOL DEPTH **10** inches

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15COMMENTS AVERAGE BANKFULL WIDTH **4.00** Feet

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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

COMMENTS **row****FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent****SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Clear Fork Distance from Evaluated Stream 1.02 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Jewett NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Archer

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/11/18 Quantity: 0.47
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

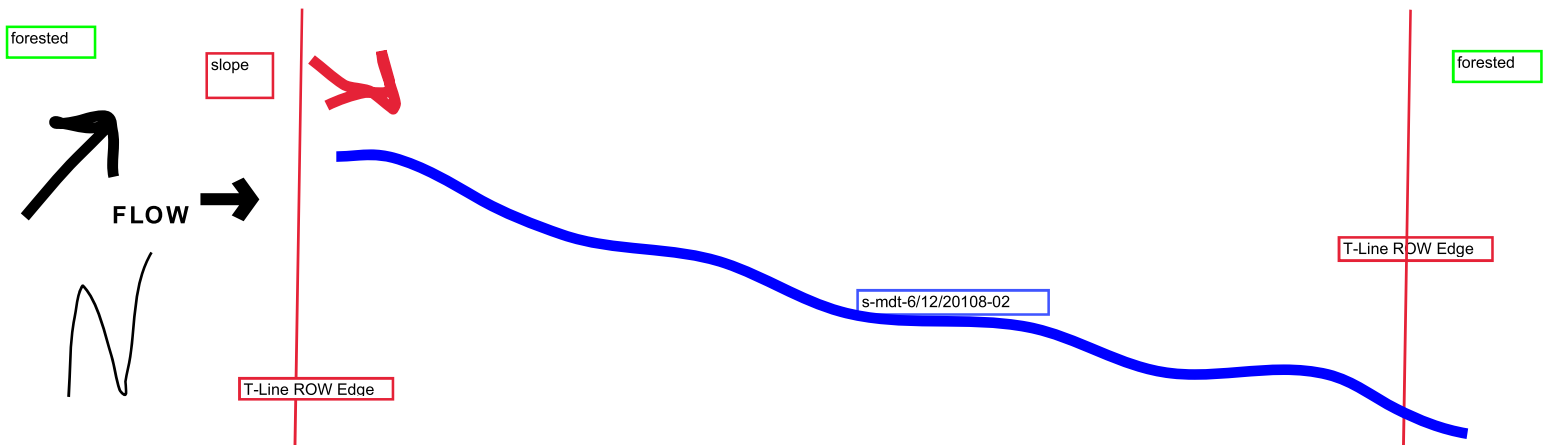
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

25

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-04**

SITE NUMBER **PB-29** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **17** LAT. **40.34355** LONG. **-81.05500** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** 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 impact from trails

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"/> 30%
<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 type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/> 0%	<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"/> 60%	<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"/> 0%

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage
Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12**TOTAL NUMBER OF SUBSTRATE TYPES: **3**HHEI
Metric
PointsSubstrate
Max = 40

15

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH inches

1

Pool Depth
Max = 30

5

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

0.50

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS row

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS ephemeralSINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ 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 checked="" type="checkbox"/> WWH Name: Clear Fork	Distance from Evaluated Stream	1.05 miles
<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 LOCATION

USGS Quadrangle Name: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order
County: **Harrison** Township / City: **Archer**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☐ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☐ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

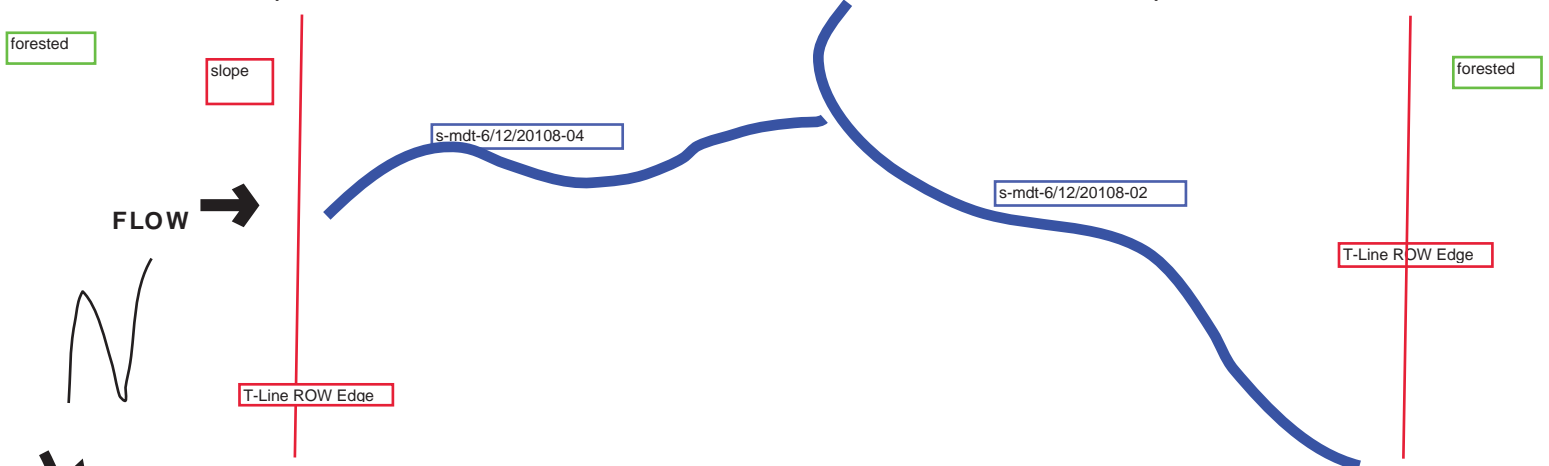
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☐ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N Salamanders Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N
Frogs or Tadpoles Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N Aquatic Macroinvertebrates Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-30

34

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-03**

SITE NUMBER **PB-30** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **17** LAT. **40.34338** LONG. **-81.05507** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** COMMENTS **intermittent 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: **Transmission Line 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	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="25%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="65%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock **25.00%**

(A)

Substrate Percentage
Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **21**TOTAL NUMBER OF SUBSTRATE TYPES: **3****HHEI
Metric
Points**Substrate
Max = 40**24**

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 checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH **inches****2**Pool Depth
Max = 30**5**

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****3.00**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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS **row****FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent****SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Clear Fork Distance from Evaluated Stream 1.03 miles
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Jewett NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Harrison Township / City: Archer

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 06/11/18 Quantity: 0.47
Photograph Information: 3 photos
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

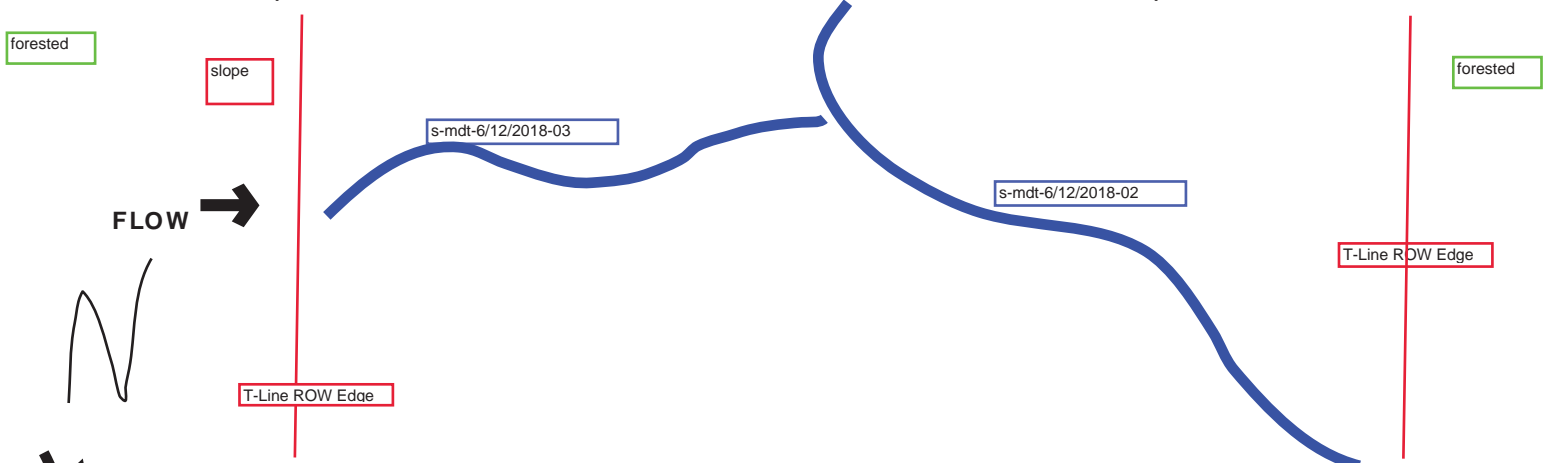
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-31

29

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-05**

SITE NUMBER **PB-31** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **123** LAT. **40.34227** LONG. **-81.05572** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** COMMENTS **intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

some impact from covert/channelization

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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="10%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="60%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **4****HHEI Metric Points**

Substrate Max = 40

19

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH **1** inches

Pool Depth Max = 30

5

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 **2.00** Feet

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS **row****FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent****SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input 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

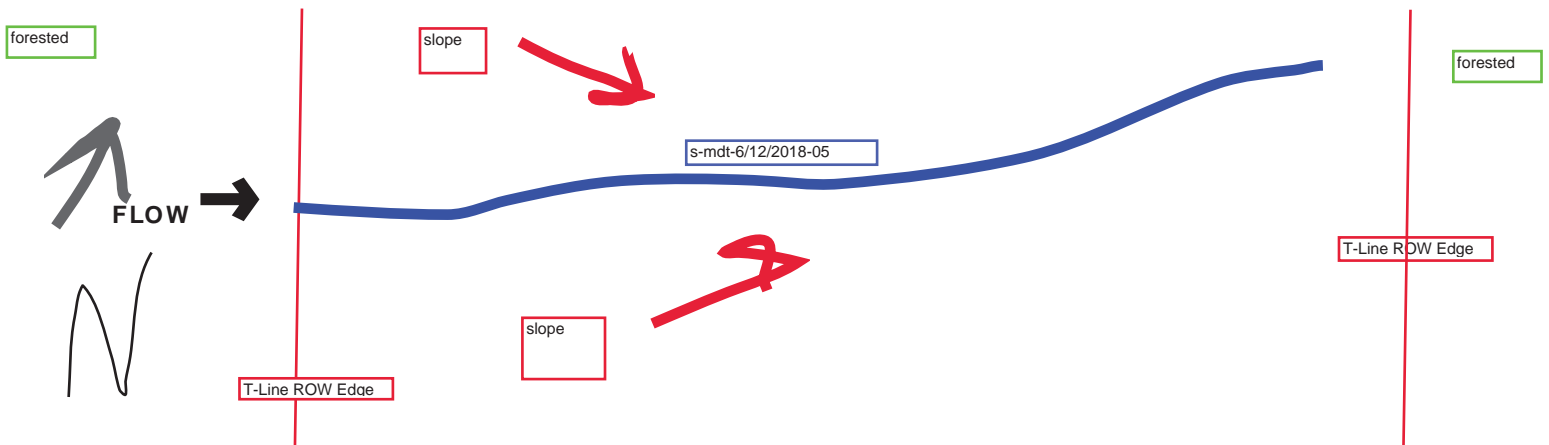
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name: Clear Fork	Distance from Evaluated Stream	0.96 miles
<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: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order
County: **Harrison** Township / City: **Archer****MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-32

40

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-06**

SITE NUMBER **PB-32** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.02**

LENGTH OF STREAM REACH (ft) **388** LAT. **40.33673** LONG. **-81.05806** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** COMMENTS **intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 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="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="15%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="5%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="45%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **20.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

15

TOTAL NUMBER OF SUBSTRATE TYPES:

5

HHEI Metric Points

Substrate Max = 40

20

A + B

Pool Depth Max = 30

15

Bankfull Width Max=30

5

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH

Inches

4

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

2.50

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS: row

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS: intermittent

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input 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

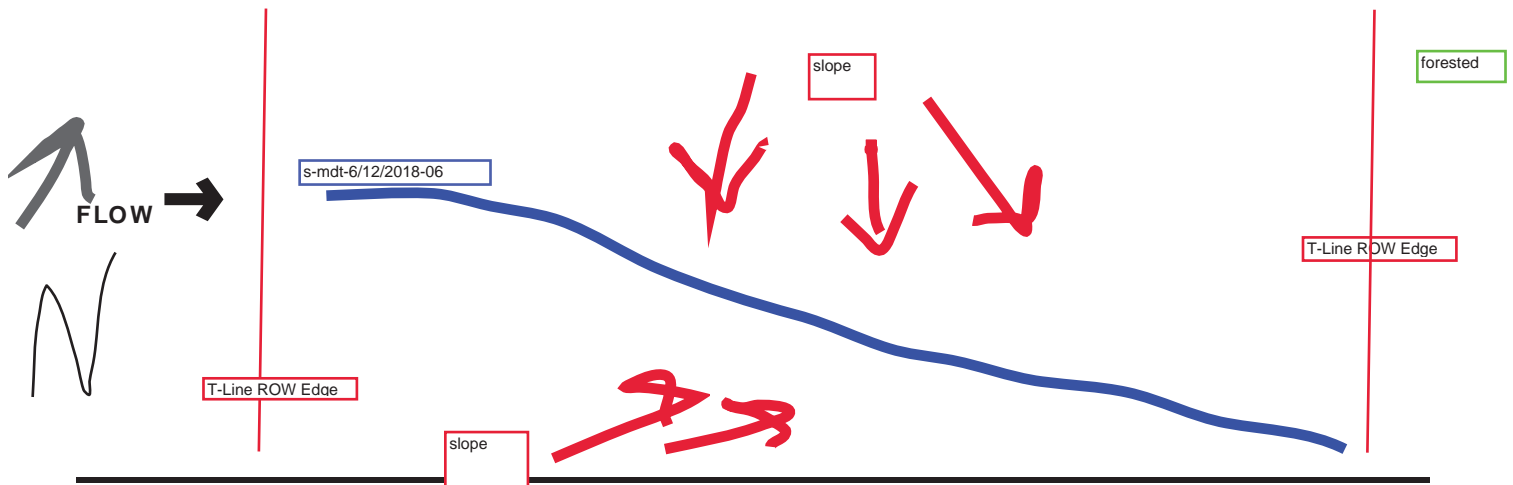
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name: Clear Fork	Distance from Evaluated Stream: 0.57 miles
<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: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order:
County: **Harrison** Township / City: **Archer****MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☐ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☐ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): ☐ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N Salamanders Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N
Frogs or Tadpoles Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N Aquatic Macroinvertebrates Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

Stream PB-33

25

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-07**

SITE NUMBER **PB-33** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **310** LAT. **40.33034** LONG. **-81.06075** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** 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 MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

signs channel has been relocated in spots and channelized

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="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="55%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="35%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH **inches** **2**

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**

HHEI Metric Points

Substrate
Max = 40

15

A + B

Pool Depth
Max = 30

5

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS **row**

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **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)



Primary Headwater Habitat Evaluation Form

Stream PB-34

36

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **FirstEnergy Holloway-Knox 138kV Transmission Line** Field ID: **s-mdt-06/12/2018-08**

SITE NUMBER **PB-34** RIVER BASIN **05040001** DRAINAGE AREA (mi²) **0.11**

LENGTH OF STREAM REACH (ft) **588** LAT. **40.32927** LONG. **-81.06137** RIVER CODE RIVER MILE

DATE **06/12/18** SCORER **MDT, BAO** COMMENTS **intermittent flow regime**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

signs channel has been relocated in spots and channelized

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="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="65%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12**TOTAL NUMBER OF SUBSTRATE TYPES: **4****HHEI Metric Points**

Substrate Max = 40

16

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 checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

15COMMENTS MAXIMUM POOL DEPTH **inches** **4**

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]	

Bankfull Width Max=30

5COMMENTS AVERAGE BANKFULL WIDTH **Feet** **3.00**

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 checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" 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

COMMENTS **row****FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **intermittent****SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input 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

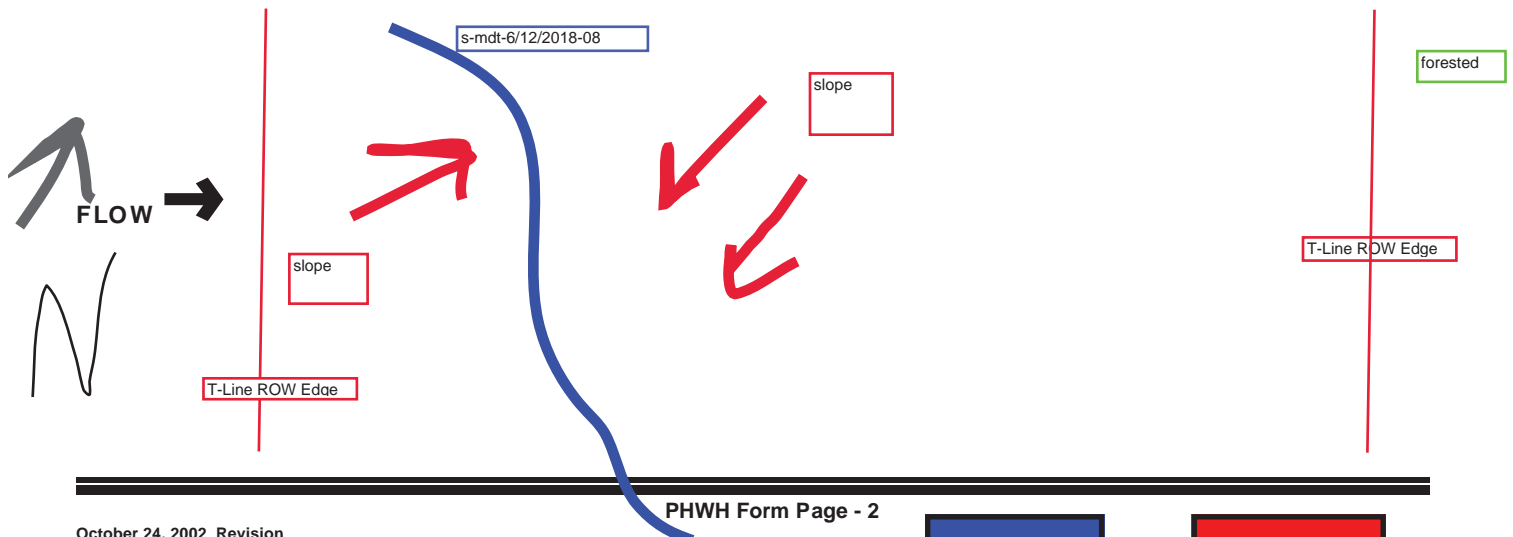
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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 checked="" type="checkbox"/> WWH Name: Clear Fork	Distance from Evaluated Stream	0.06 miles
<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: **Jewett** NRCS Soil Map Page: NRCS Soil Map Stream Order:
County: **Harrison** Township / City: **Archer****MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **06/11/18** Quantity: **0.47**
Photograph Information: **3 photos**
Elevated Turbidity? (Y/N): ☐ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☐ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): ☐ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N Salamanders Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N
Frogs or Tadpoles Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N Aquatic Macroinvertebrates Observed? (Y/N) ☐ N Voucher? (Y/N) ☐ N
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Appendix E
Jacobs Open Water/Pond Data Forms

POND DATA SHEET	
FEATURE ID: P-MDT-06062018-01 REPORT ID: POND PB-01	
ASSOCIATED FEATURES: Wetland PB-10	
DATE: 06/06/2018	CLIENT/PROJECT NAME: FIRSTENERGY / HOLLOWAY-KNOX 138 kV TRANSMISSION LINE
INVESTIGATORS: M Thomayer, T. Qualio	
STATE/COUNTY: OH / Harrison	IS THIS A MAPPED NWI FEATURE?: NA
WATERBODY CHARACTERISTICS	
WATERBODY TYPE:	Man-made
AVG. DEPTH:	8 ft
AVG. WIDTH (WATER SURFACE):	100 ft
APPROXIMATE SIZE:	0.04 acres within ROW, @ 1 acre total
QUALITATIVE ATTRIBUTES	
AVERAGE WATER APPEARANCE:	Slight green tint
PRIMARY SUBSTRATE (IF OBSERVED):	silt
POTENTIAL HABITAT FOR:	Amphibians, ducks
SURROUNDING LAND USE:	Forested, cleared ROW, wetland
WETLAND FRINGE (IF PRESENT):	.
COMMENTS	

POND DATA SHEET	
FEATURE ID: P-MDT-06072018-01 REPORT ID: POND PB-02	
ASSOCIATED FEATURES:	
DATE: 06/07/2018	CLIENT/PROJECT NAME: FIRSTENERGY / HOLLOWAY-KNOX 138 kV TRANSMISSION LINE
INVESTIGATORS: M Thomayer, T. Qualio	
STATE/COUNTY: OH / Harrison	IS THIS A MAPPED NWI FEATURE?: NA
WATERBODY CHARACTERISTICS	
WATERBODY TYPE:	Man-made
AVG. DEPTH:	10 ft
AVG. WIDTH (WATER SURFACE):	100 ft
APPROXIMATE SIZE:	0.03 acres within ROW, @ .5 acre total
QUALITATIVE ATTRIBUTES	
AVERAGE WATER APPEARANCE:	Slight green tint
PRIMARY SUBSTRATE (IF OBSERVED):	silt
POTENTIAL HABITAT FOR:	Amphibians, ducks
SURROUNDING LAND USE:	Forested, cleared ROW, wetland
WETLAND FRINGE (IF PRESENT):	.
COMMENTS	

Appendix F

Representative Photographs



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-01	PEM	East	5/24/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-02	PEM	Southeast	5/24/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-03	PEM	South	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-04	PEM	West	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-05	PEM	Southeast	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-06	PEM	Northeast	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-07	PEM	Southeast	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-08	PEM	East	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-09	PEM	North	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-10	PEM	East	6/06/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-11	PEM	Northwest	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-12	PEM	Northwest	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-13	PEM	East	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-14	PEM	North	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-15	PEM	Southeast	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-16	PEM	North	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-17	PEM	South	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-18	PEM	North	6/07/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-19	PEM	West	6/11/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-20	PEM	Northwest	6/11/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-21	PEM	West	6/11/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-22	PEM	Southwest	6/12/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-23	PEM	Southwest	6/12/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-24	PEM	South	6/12/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland PB-25	PEM	North	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-01	Ephemeral	Downstream	5/24/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-02	Perennial	Upstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-03	Perennial	Upstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-04	Ephemeral	Upstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-05	Ephemeral	Upstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-06	Ephemeral	Downstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-07	Intermittent	Downstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-08	Ephemeral	Downstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-09	Intermittent	Downstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-10	Ephemeral	Downstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-11	Intermittent	Downstream	6/06/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-12	Perennial	Downstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-13	Ephemeral	Upstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-14	Ephemeral	Upstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-15	Ephemeral	Downstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-16	Perennial	Downstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-17	Intermittent	Upstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-18	Intermittent	Upstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-19	Intermittent	Upstream	6/07/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-20	Intermittent	Downstream	06/11/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-21	Intermittent	Upstream	6/11/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-22	Ephemeral	Upstream	6/11/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-23	Ephemeral	Upstream	6/11/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-24	Ephemeral	Upstream	6/11/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-25	Ephemeral	Downstream	6/11/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-26	Ephemeral	Downstream	6/11/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-27	Ephemeral	Downstream	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-28	Intermittent	Downstream	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-29	Ephemeral	Upstream	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-30	Intermittent	Upstream	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-31	Intermittent	Upstream	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-32	Intermittent	Upstream	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-33	Ephemeral	Upstream	6/12/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream PB-34	Intermittent	Upstream	6/12/2018



Site Name	Photo Direction	Date of Survey
Pond PB-01	North	6/06/2018



Site Name	Photo Direction	Date of Survey
Pond PB-02	South	6/07/2018