

Letter of Notification for Amlin-Dublin 138 kV Transmission Line Project



PUCO Case No. 20-0946-EL-BLN

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

Submitted by:
AEP Ohio Transmission Company, Inc.

May 26, 2020

LETTER OF NOTIFICATION FOR AMLIN-DUBLIN 138 KV TRANSMISSION LINE PROJECT

Letter of Notification

Amlin-Dublin 138 kV Transmission Line Project

4906-6-05

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

4906-6-05(B) General Information

B(1) Project Description

The applicant shall provide the name of the project and applicant's reference number, names and reference number(s) of resulting circuits, a brief description of the project, and why the project meets the requirements for a letter of notification or construction notice application.

The Company is proposing the Amlin-Dublin 138 kV Transmission Line Project which involves constructing approximately 3.4 miles of single-circuit 138-kilovolt (kV) electric transmission line between the existing Amlin Substation and the existing Dublin Substation (the “Project”). The Project is located partially in the City of Dublin and partially within an unincorporated area of Washington Township in Franklin County, Ohio (the “Project Area”). The location of the Project is shown on a United States Geologic Survey (USGS) Topographic Map as Exhibit 1 in Appendix A.

The Project includes a single circuit 138 kV electric transmission line within an approximately 80-foot-wide permanent right-of-way (ROW).

The Project meets the requirements for a Letter of Notification (LON) because it is within the types of projects defined by Item (1)(d)(ii) of 4906-1-01 *Appendix A Application Requirement Matrix For Electric Power Transmission Lines* as it is intended to serve a private customer and will be located on property owned by someone other than the customer. Item (1)(a) of 4906-1-01 *Appendix A* states:

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

(d) Line(s) primarily needed to attract or meet the requirements of a specific customer or customers, as follows:

(ii) Any portion of the line is on property owned by someone other than the specific customer or applicant.

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The Project has been assigned PUCO Case No. 20-0946-EL-BLN.

B(2) Statement of Need

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

The Project (b3112) is required to address baseline thermal criteria violations identified on the existing Dublin – Sawmill 138 kV circuit due to bulk load additions for existing customers in the surrounding area. The PJM need and solution were presented and reviewed with stakeholders at the February 20th and March 25th 2019 PJM SRTEP Western meetings. The Project is also included in the Company's 2020 Long Term Forecast Table FE-T9 page 24 of 87 (see Appendix B).

The Dublin – Sawmill 138 kV circuit will load to 107% of its emergency rating in PJM's 2024 Summer RTEP case for loss of the Bethel – Davidson & Roberts – Davidson 138 kV circuits. However, based upon the load ramp schedules provided by a large customer in the area, it is anticipated that the scenario will become an issue in real time beginning in 2022.

In addition to alleviating the thermal issues on the Dublin – Sawmill 138 kV circuit, the new Amlin – Dublin 138 kV circuit will provide a third 138 kV source into both the Amlin and Dublin stations. Dublin Station has historically seen a peak load of approximately 75 MVA with limited ability to transfer the approximately 7,300 customers served from the station elsewhere. The distribution load at Amlin Station has historically peaked at 20 MVA, but the station is also the sole transmission source into the adjacent Sumac station, which provides service to a large data center customer who has communicated their intent to increase demand to upwards of 185MW.

Failure to implement the proposed project in the specified period of time will likely result in PJM implementing operational controls which may include preemptive shedding of a significant amount of load served from the area transmission and distribution network in order to alleviate the thermal issues associated with the scenario identified above. Although load shedding is an approved PJM operational procedure to control thermal overloads, load shedding is not acceptable from AEP Ohio's perspective and directly impacts both large commercial and residential customers in the area. The proposed solution for this baseline identified need is necessary for AEP Ohio to continue to provide safe, reliable service to their customers.

B(3) Project Location

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

Exhibit 1 in Appendix A shows the proposed Project relative to existing electrical transmission and distribution lines.

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B(4) Alternatives Considered

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

Refer to Section 4 in Appendix C, the Siting Study, for information on alternatives considered for the Project.

Based on desktop, field examination, and stakeholder input, the Company concluded that the Proposed Route, shown in Appendix A, was the most feasible and appropriate route for the Project. The goal in selecting a suitable route for the Project was to minimize impacts on land use and natural and cultural resources while avoiding circuitous routes, significantly higher costs, and non-standard design requirements. The selection of the Proposed Route was based on siting decisions made throughout the process, the knowledge of subject matter experts from the Company and the Company's consultant, comments from the public and regulatory agencies, and the comparative analysis of potential impacts.

The Proposed Route is the shortest of the routing alternatives examined for the Project and its alignment takes into consideration comments received from the public and uses an alignment adjacent to a new road, University Boulevard, which is planned to be a multi-lane thoroughfare. This route was identified in coordination with the City of Dublin and would not limit additional future development in this area. As noted, this alignment avoids the existing residential area while preserving buildable area for future land uses identified in the City of Dublin's West Innovation District Master Plan. The Proposed Route also avoids impacts to Darree Fields and other recreational assets in the area.

B(5) Public Information Program

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

The Company hosted two public open houses for the Project. The first public open house was hosted on July 17, 2017, where forty-three people attended and twenty-five comments were received. A second public open house was held on September 23, 2019, where forty-six people attended and an additional twenty-five comment cards were received.

In addition, the Company will inform affected property owners and tenants within seven days of filing this LON, by issuing a public notice in a newspaper of general circulation in the project area. The notice will comply with all requirements under O.A.C. Section 4906-6-08(A)(1-6). Further, the Company will mail a letter, via first class mail, to affected landowners, tenants, contiguous owners, and any other landowner the Company approached for an easement necessary for the construction, operation, or maintenance of the Project.

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The Company also maintains a website (<http://aeptransmission.com/ohio/>) on which an electronic copy of this LON is available. An electronic copy of the LON will be served to the public library in each political subdivision affected by this Project. Lastly, the Company retains right-of-way land agents who discuss project timelines, construction and restoration activities with affected owners and tenants.

B(6) Construction Schedule

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

Construction of the Project is planned to start in the first quarter of 2022 with a proposed in-service date of May 2022.

B(7) Area Map

The applicant shall provide a map of at least 1:24,000 scale clearly depicting the facility with clearly marked streets, roads, and highways, and an aerial image.

Exhibit 2 in Appendix A shows the proposed alignment of the transmission line on an aerial image with clearly marked streets, roads, and highways.

To visit the Project from Columbus, take I-70 W/I-71 S to the I-270 N exit. Take I-270 N for 7 miles, then take exit 15 for Tuttle Crossing Boulevard. Turn left onto Tuttle Crossing Boulevard, then take the first right onto Emerald Parkway. Continue for 1.5 miles to Shier Rings Road. Turn left onto Shier Rings Road and the entrance to the Dublin Substation will be on the left. The approximate address of the Dublin Substation is 5721 Shier Rings Rd, Dublin, OH 43016 at latitude 40.09347, longitude -83.14238. The approximate address for the entrance to the Amlin Substation is 6751-6731 Crosby Ct Plain City, OH 43064 at latitude 40.10226, longitude -83.196010.

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B(8) Property Agreements

The applicant shall provide a list of properties for which the applicant has obtained easements, options, and/or land use agreements necessary to construct and operate the facility and a list of the additional properties for which such agreements have not been obtained.

A list of properties the Company will need to obtain easements/options on is provided in Appendix D. No easements/options have been obtained to date.

B(9) Technical Features

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

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

The transmission line construction is estimated to include the following:

Voltage: 138kV
Conductors: 1033.5 ACSR Curlew 54/7
Static Wire: 48 Fiber OPGW
Insulators: Polymer
ROW Width: 80 Feet
Structure Type: Sixty Three (63) single circuit, steel monopole

B(9)(b) Electric and Magnetic Fields

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

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

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

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Amlin – Dublin 138 kV Line				
Condition	Amlin – Dublin 138 kV Load (A)	Ground Clearance (feet)	Electric Field (kV/m)*	Magnetic Field (mG)*
(1) Normal Max. Loading[^]	238.47	35.0	0.41/0.78/0.28	7.54/17.27/7.32
(2) Emergency Line Loading^{^^}	686.13	33.2	0.42/0.85/0.29	22.88/55.10/22.01
(3) Winter Conductor Rating^{^^^}	1568.89	35.0	0.41/0.78/0.28	50.29/113.62/48.14
*EMF levels (left ROW edge/maximum/right ROW edge) computed one meter above ground at the point of minimum ground clearance, assuming balanced phase currents and 1.0 P.U. Voltages. ROW width is 40 feet (left) and 40 feet (right) of centerline, respectively. [^]Peak line flow expected with all system facilities in service. ^{^^}Maximum flow during a critical system contingency ^{^^^}Maximum continuous flow that the line, including its terminal equipment, can withstand during winter conditions.				

The above EMF levels are well within the limits specified in IEEE Standard C95.6TM-2002. Those limits have been established to "prevent harmful effects in human beings exposed to electromagnetic fields in the frequency range of 0-3 kHz."

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

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

Design alternatives were not considered due to EMF strength levels. Transmission lines, when energized, generate EMF. Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. However, some people are concerned that EMF have impacts on human health. Due to these concerns, EMF associated with the new circuits was calculated and set forth in the table above. The EMF was computed assuming the highest possible EMF values that could exist along the proposed transmission line. Normal daily EMF levels will operate below these maximum load conditions. Based on studies from the National Institutes of Health, the magnetic field (measured in milliGauss, or mG) associated with emergency loading at the highest EMF value for this transmission line is lower than those associated with normal household appliances like microwaves, electric shavers and hair dryers, shavers and hair dryers. For additional information regarding EMF, the National Institutes of Health has posted information on their website: <http://www.niehs.nih.gov/health/topics/agents/emf/>. Additionally, information on electric and magnetic fields is available on AEP Ohio's website: <https://www.aepohio.com/info/projects/emf/OurPosition.aspx>. The information found on AEP Ohio's website describes the basics of electromagnetic field theory, scientific research activities, and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities for this Project.

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B(9)(b)(ii)(c) Project Costs

The estimated capital cost of the project.

The capital cost estimate for the proposed 3.4-mile Project, which is comprised of applicable tangible and capital costs, is approximately \$27,000,000 (Class 4 estimate).

B(10) Social and Economic Impacts

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

B(10)(a) Provide a brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.

The Project is located within Washington Township, Franklin County, Ohio, and partially within the west side of the City of Dublin. Vegetative communities and land use within the Project Area include cultivated crops, open space/low intensity development, medium/high intensity development, deciduous forest, hay/pasture, and herbaceous. Onsite investigation indicates the Project primarily consists of agricultural and maintained lawn habitat, which can be characterized as routinely disturbed (mowed or cleared).

A large portion of the Project is within the City of Dublin's West Innovation District which includes a Master Plan to guide future development. The West Innovation District was created by the City of Dublin in recognition of the growth potential in the area that would result from existing and proposed technology and academic developments. One of the first planned developments within West Innovation District is the Ohio State University's Wexner Medical Center proposed ambulatory care facility north of Shier Rings Road and east of Eiterman Road. As part of this development, a new road (University Boulevard) would be built in the area running northwest to southeast which the Project alignment is proposed to parallel. Other primary developments in the vicinity of the proposed Project include the Fishel Industrial Park, a Citgo gas storage facility, the Northwest Dublin Commerce Park comprising recreational and commercial uses, the Avery Road Industrial Park, and small commercial/industrial developments along Shier Rings Road.

There are no cemeteries or airports within 1,000 feet of the project alignment. There are six NRHP structures, one school, and two churches within 1,000 feet of the project alignment.

B(10)(b) Agricultural Land Information

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

The Franklin County Auditor was contacted in March 2020 to obtain information about Agricultural District Lands and received the requested data via email on April 1, 2020. No Agricultural District Lands are within the potential disturbance area of the Project.

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B(10)(c) Archaeological and Cultural Resources

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

A cultural resource survey was completed for part of the proposed project alignment in 2017. Additional surveys for the Project were completed in May 2020. Consultation with the State Historic Preservation Office ("SHPO") is occurring and will be coordinated directly with the OPSB once complete.

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

Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

A Notice of Intent will be filed with the Ohio Environmental Protection Agency for authorization of construction storm water discharges under General Permit OHC000004, and AEP Ohio Transco will implement and maintain best management practices (BMPs), as outlined in the project-specific Storm Water Pollution Prevention Plan (SWPPP), to minimize erosion and control sediment to protect surface water quality during storm events.

Three palustrine emergent wetlands, 2 perennial streams, and 3 ephemeral streams were identified within the Project Area (see Appendix E). Project construction activities are anticipated to require a Nationwide Permit from the Army Corps of Engineers. However, a Section 401 Water Quality Certification from the Ohio Environmental Protection Agency is not anticipated.

The Project crosses a Federal Emergency Management Agency (FEMA) 100-year floodplain area (Exhibit 2 in Appendix A). Once access roads and the SWPPP have been finalized, the Company will coordinate with the appropriate local agency with jurisdiction and will provide to OPSB once complete.

There are no other known local, state or federal requirements that must be met prior to commencement of the Project.

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

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

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A coordination letter was submitted to the Ohio Department of Natural Resources (ODNR) Division of Wildlife (DOW) to obtain Ohio Natural Heritage Database (NHD) records within a 1-mile buffer area around the Project. The November 6, 2017 response (included in Appendix F) indicated that the NHD had no records at or within a one-mile radius of the Project Area. According to the ODNR-DOW, the Project Area is within range of the Indiana bat (*Myotis sodalis*). The ODNR-DOW recommends trees be conserved where possible. If tree clearing is not avoidable, the ODNR-DOW recommends tree clearing between October 1 and March 31 to avoid adverse effects to Indiana bats. The Project Area is within the range of five federally and state-endangered, six state-endangered, and four state-threatened mussels, as well as one federally and state-endangered, four state-endangered and three state-threatened fish. No in-water work is proposed; therefore, the Project is not likely to impact these or other aquatic species. Finally, the ODNR-DOW indicated that the Project is in the range of the state-endangered upland sandpiper (*Bartramia longicauda*), which utilizes dry grasslands. Most of the open areas within the Study Area appear to be used for agricultural purposes or mowed for recreational use; therefore, no impact on this species is anticipated.

As part of the ecological study completed for the Project, a coordination letter was submitted to the U.S. Fish and Wildlife Service (USFWS) Ohio Ecological Services Field Office seeking technical assistance on the Project for potential impacts to threatened or endangered species. The September 18, 2017 email response letter from USFWS (included in Appendix F) indicated that the proposed Project is within the range of the Indiana bat and northern long-eared bat in Ohio, but not within known Indiana bat buffers. If tree clearing occurs between October 1 and March 31, USFWS does not anticipate the Project having any adverse effects to these species or any other federally listed endangered, threatened, proposed, or candidate species. The USFWS letter did not include comments specific to the other federally listed species.

Based on the nature of the proposed project activities and habitat characteristics of the surrounding vicinity, construction impacts to protected species are not anticipated. Tree clearing is anticipated between October 1 and March 31, in order to avoid impacts to the Indiana bat or northern long-eared bat.

B(10)(f) Areas of Ecological Concern

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

Wetland and stream delineation field surveys were completed for the Project by the Company's consultant in 2017 and May 2020 (see Appendix E). Three palustrine emergent wetlands, 2 perennial streams, and 3 ephemeral streams were identified within the Project Area.

No wildlife management areas or nature preserve lands are located within 1,000 feet of the Project. Correspondence received from the USFWS (Appendix F) indicates that there are no federal wilderness areas, wildlife refuges, or designated critical habitat within the vicinity of the project area.

AEP Ohio Transmission Company, Inc.
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No properties identified in the National Conservation Easement Database (<http://www.conservationeasement.us>) were identified in the project vicinity.

The FEMA Flood Insurance Rate Map (FIRM) was consulted to identify any floodplains/flood hazard areas that have been mapped in the Project Area. Based on this map, the project alignment crosses a FEMA-designated floodplain and floodway; however, this area can be spanned by the proposed transmission line and therefore will not be impacted. Therefore, no floodplain permits will be required for this Project.

B(10)(g) Unusual Conditions

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

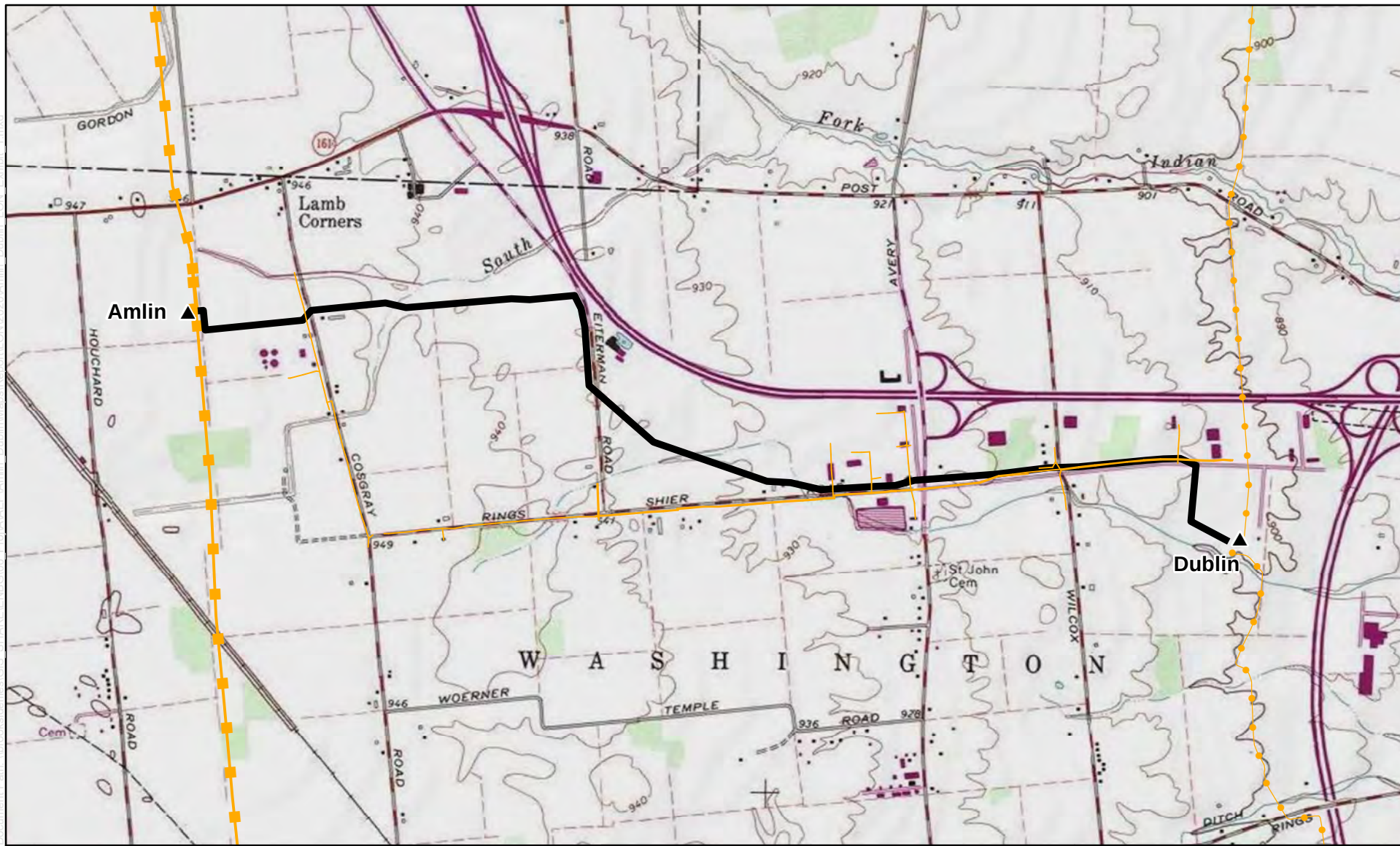
To the best of the Company's knowledge, no unusual conditions exist that would result in significant environmental, social, health, or safety impacts.

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May 26, 2020

Appendix A Project Maps

Document Path: \\nrcsdc\files\GIS - SHARE\ENR\G00 - Proj\AEP\AEP\AEP - Dublin\Map\Report\CON\2020\Amlin - Dublin - Exhibit 1.mxd



Legend

- ▲ Project Substation
- Preferred Route
- Existing Distribution Line
- Existing 138 kV Transmission Line
- Existing 345 kV Transmission Line

Data Sources or Notes
USGS 7.5' Series Topographic
Quadrangle: Hilliard
Transmission Lines: AEP
Substations Penwell

Coordinate System
and Datum: NAD 1983
State Plane Ohio South



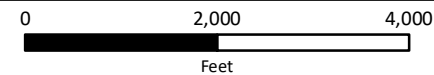
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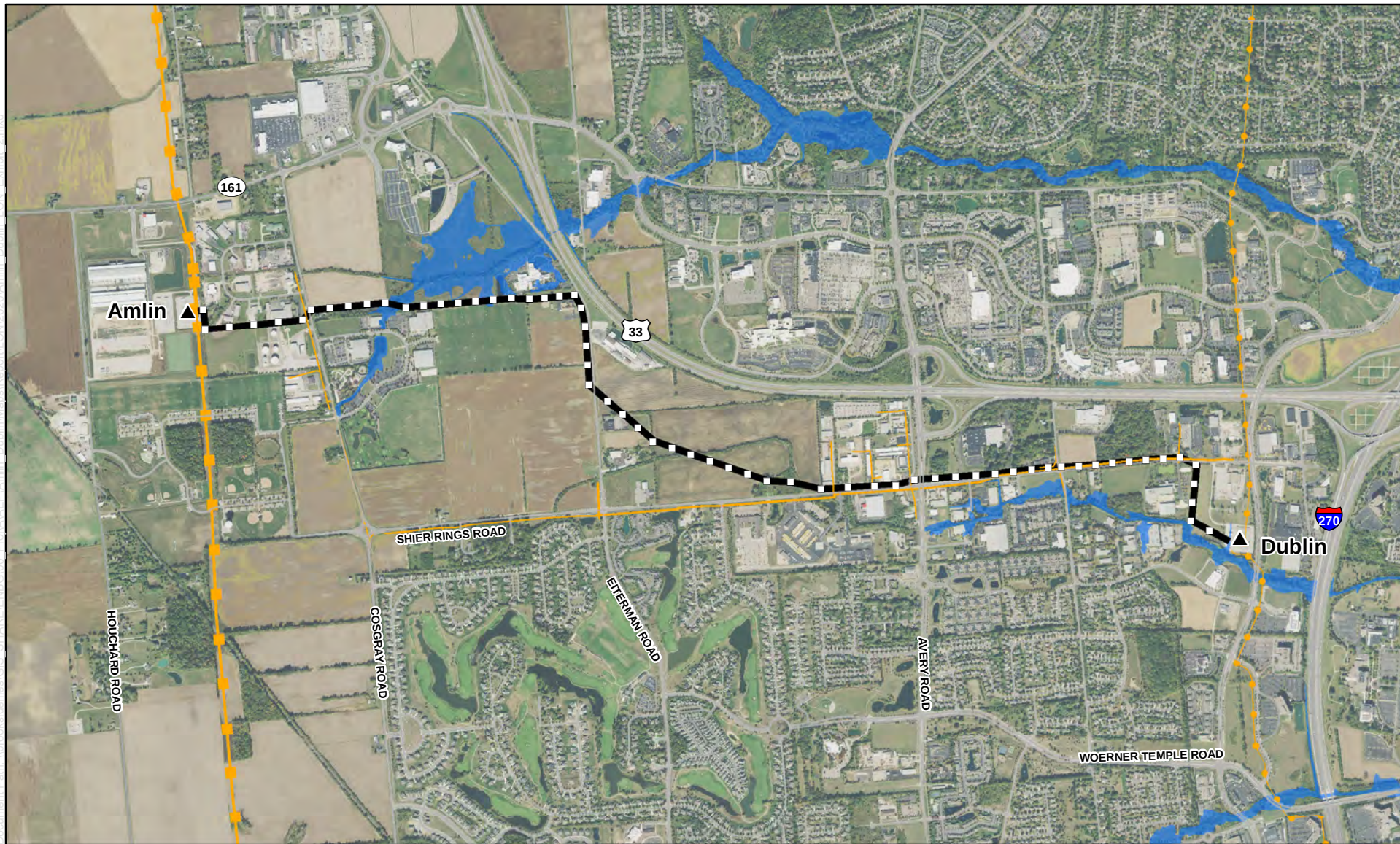


Exhibit 1 USGS Topographic Overview Map



Dublin West Innovation
District Improvements
138 kV Transmission Line Project





Legend

- ▲ Project Substation
- Structure
- Preferred Route
- Existing Distribution Line
- Existing 138 kV Transmission Line
- Existing 345 kV Transmission Line
- Street
- FEMA 100 year Floodplain

Data Sources or Notes
Aerial Imagery: NAIP 2019
Transmission Lines: AEP
Substations Penwell

Coordinate System
and Datum: NAD 1983
State Plane Ohio South



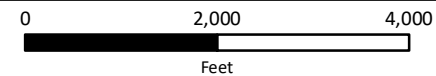
May 20, 2020



Exhibit 2 Aerial Overview Map



Dublin West Innovation
District Improvements
138 kV Transmission Line Project



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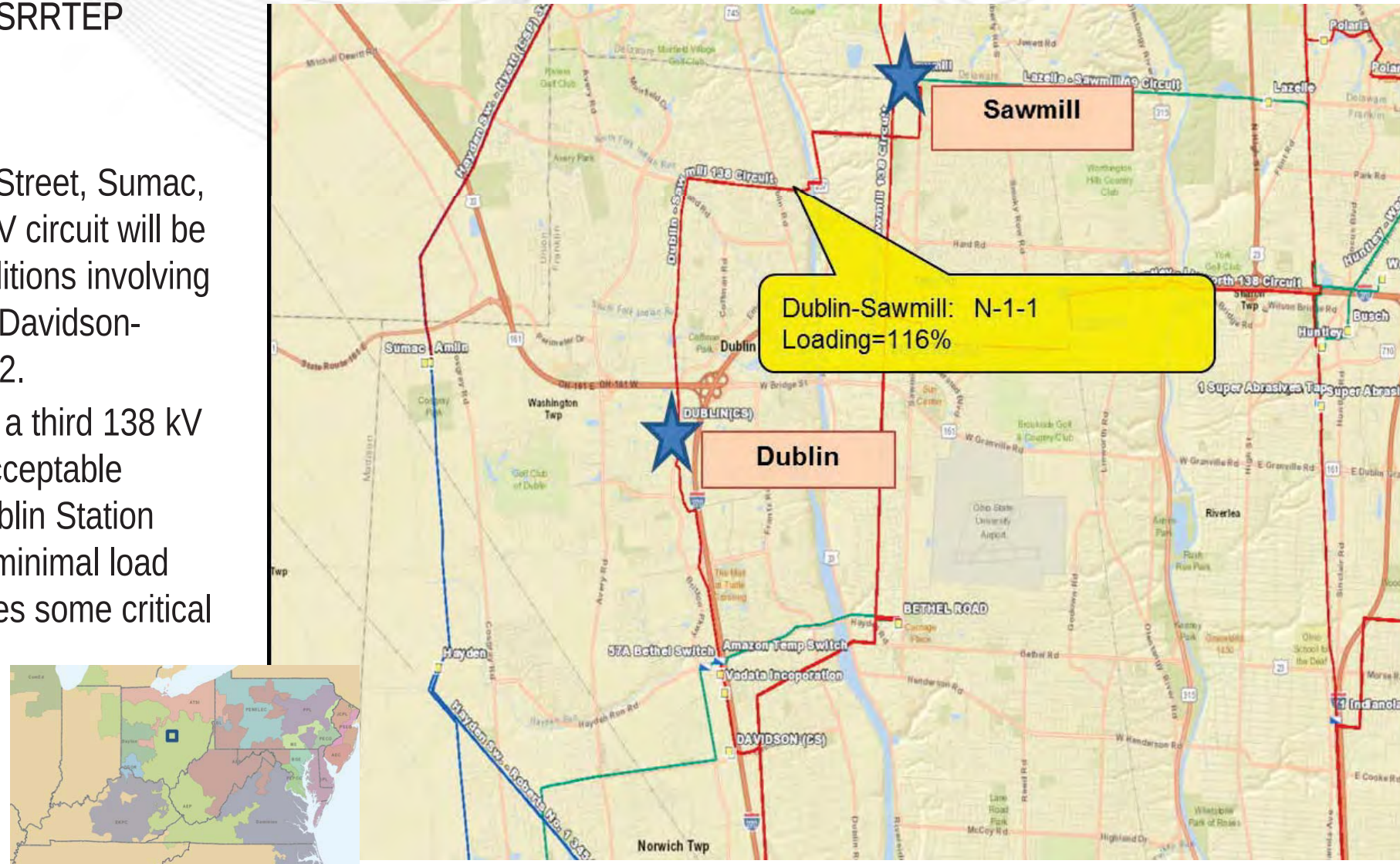
Appendix B PJM Submittal and 2020 Long Term Forecast Report

Previously Presented on 2/20/2019 SRRTEP
TO Criteria Violation

Problem Statement:

Due to load increase in the area (Jug Street, Sumac, and Britton), the Dublin-Sawmill 138 kV circuit will be overloaded to 116% under N-1-1 conditions involving the loss of Bethel-Davidson 138 kV & Davidson-Roberts 138 kV circuits starting in 2022.

Additionally, AEP-Ohio has requested a third 138 kV source to Dublin station to maintain acceptable reliability levels for the load at risk. Dublin Station serves 75 MVA of peak demand with minimal load transfer capability. Dublin station serves some critical loads.



Selected Solution:

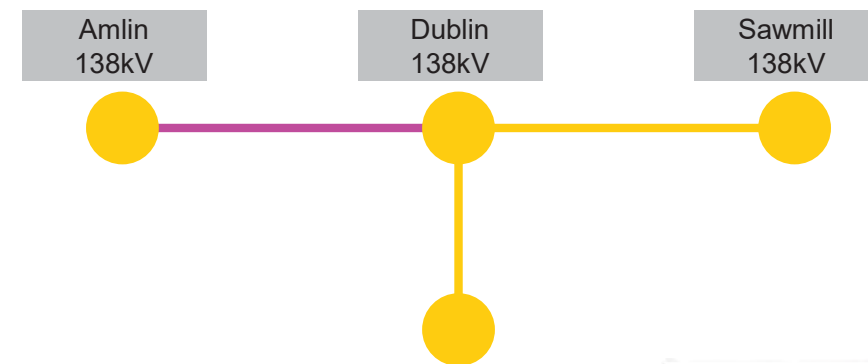
Construct a single circuit 138 kV line (~3.5 miles) from Amlin to Dublin using 1033 ACSR Curlew (296 MVA SN), convert Dublin Station into a ring configuration, and re-terminating the Britton UG cable to Dublin Station. (B3112)

Total Estimated Transmission Cost: \$39.29M

Required IS Date: 6/1/2022

Projected IS Date: 6/1/2020

Project Status: Scoping/Engineering



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

PUCO FORM FE-T9
AEP OHIO TRANSMISSION COMPANY
SPECIFICATIONS OF PLANNED TRANSMISSION LINES

1.	LINE NAME AND NUMBER:	Amlin - Dublin 138kV (b3112)
2.	POINTS OF ORIGIN AND TERMINATION	Amlin, Dublin; INTERMEDIATE STATION - N/A
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	3.7 miles / 100 ft / 1 circuit
4.	VOLTAGE: DESIGN / OPERATE	138kV / 138kV
5.	APPLICATION FOR CERTIFICATE:	Certificate 2019-2020
6.	CONSTRUCTION:	2019-2022
7.	CAPITAL INVESTMENT:	\$37M
8.	PLANNED SUBSTATION:	NAME - N/A; TRANSMISSION VOLTAGE - N/A; ACREAGE - N/A; LOCATION - N/A
9.	SUPPORTING STRUCTURES:	Steel
10.	PARTICIPATION WITH OTHER UTILITIES	N/A
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	Mitigate anticipated thermal violations due to increase customer load.
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Thermal violations would arise and go unmitigated.
13.	MISCELLANEOUS:	N/A

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Appendix C Siting Study

Siting Study

Dublin West Innovation District Improvements 138 kV Transmission Line Project

Prepared for:



Prepared by:

Jacobs Engineering Group Inc.
2 Crowne Point Court
Cincinnati, Ohio 45241

Jacobs

May 2020

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Attachments

Attachment A: Maps

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- Map 2. Conceptual Routes
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- Map 4. Alternative Routes
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- Map 8. Cultural Resources

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Attachment C: Agency Correspondence

Attachment D: Threatened and Endangered Species

Key Terminology

Alternative Routes	Assemblage of Study Segments that form routes for analysis and comparison
Constraints	Specific areas that should be avoided to the extent reasonably practical during the route development and site selection process
Opportunity Feature	Areas where the transmission line may have less disruption to area land uses and the natural and cultural environment
Project Endpoint	The project starting and ending point(s), which may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers
Proposed Route	The alignment on which the applicant/Siting Team proposes to construct a transmission line. The Proposed Route (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated in a timely, safe and reliable manner.
Siting Team	A multidisciplinary team of experts in transmission line routing, impact assessment for a wide variety of natural resources and the human environment, impact mitigation, engineering, and construction management
Study Area	The territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental impacts and Project costs
Study Segments	Study Segments are partial alignments that when combined form a complete route
Substation	Substations are facilities that transform electric power from high to low, or the reverse an enclosed assemblage of equipment, e.g., switches, circuit breakers, buses, and transformers, through which electric energy is passed for the purpose of switching or modifying its characteristics
Transmission Line	An electric line that moves bulk electric power from a generating plant to a substation or between substations

ACRONYMS

AEP	American Electric Power
FEMA	Federal Emergency and Management Agency
GIS	geographic information system
kV	kilovolt
LON	Letter of Notification
NERC	North American Electric Reliability Corporation
NHD	National Hydrography Dataset
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OAI	Ohio Archaeological Inventory
ODNR	Ohio Department of Natural Resources
OHI	Ohio Historic Inventory
OPSB	Ohio Power and Siting Board
Project	Dublin West Innovation District Improvements 138 kV Transmission Line Project
ROW	right-of-way
Transco	Transmission Company
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 PROJECT OVERVIEW

1.1 Project Description

American Electric Power (AEP) Ohio Transmission Company (Transco) is proposing to construct approximately 3.3 miles of new 138-kilovolt (kV) electric transmission line from the existing Amlin Substation to the existing Dublin Substation. The Project is located partially in the City of Dublin and partially in an unincorporated area of Washington Township in Franklin County, Ohio (**Figure 1**) and is referred to as the Dublin West Innovation District Improvements 138 kV Transmission Line Project (Project).

The Project is required to address baseline thermal criteria violations identified on the existing Dublin – Sawmill 138 kV circuit due to bulk load additions for existing customers in the surrounding area.

The Dublin – Sawmill 138 kV circuit will load to 107 percent of its emergency rating in PJM’s 2024 Summer RTEP case for loss of the Bethel – Davidson & Roberts – Davidson 138 kV circuits. Based upon projected load ramp schedules provided by a large customer in the area, it is anticipated that the scenario will become an issue in real time beginning in 2022. The identified thermal violation will continue worsen as the customer continues to build out their facilities to their projected full demand levels. In addition to alleviating the thermal issues on the Dublin – Sawmill 138 kV circuit, the new Amlin – Dublin 138 kV line will provide a third 138 kV source into both Amlin and Dublin stations. Dublin station has historically seen a peak load of approximately 75 MVA with limited ability to transfer the ~7,300 customers served from the station elsewhere. The distribution load at Amlin has historically peaked at 20 MVA, but the station is also the sole transmission source into Sumac station, which is located adjacent to Amlin and provides service to a large data center customer whom has communicated their intent to build out to upwards of 185 MW of demand.

Failure to move forward with the proposed project will result in reduced reliability over time and potential preemptive shedding of a significant amount of load served from the area transmission and distribution network in order to alleviate the thermal issues associated with the scenario identified above.

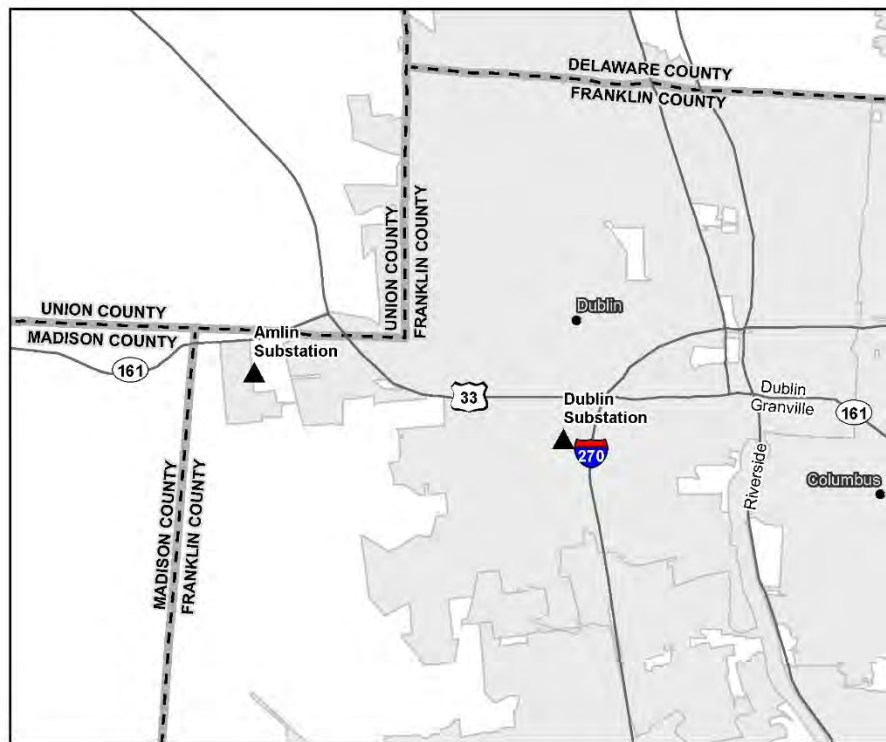


Figure 1. Project Location Map

1.2 Project Characteristics

1.2.1 Project Endpoints

Amlin Substation, approximately 0.3 mile west of the intersection of Cosgray Road and Fishel Drive South, is the western endpoint of the Project as shown in **Map 1** in **Attachment A**. The existing Dublin Substation, approximately 0.2 mile south of the intersection of Emerald Parkway and Shier Rings Road, is the eastern endpoint of the Project. The Project is partially within the City of Dublin and wholly within Washington Township.

1.2.2 Transmission Line and Substation Design and Right-of-Way Requirements

The Project will be constructed as a single circuit 138 kV line within an approximately 80-foot-wide permanent right-of-way (ROW). The Project will primarily use steel, single-pole structures with an estimated aboveground height of approximately 65 feet, except where taller poles are necessary for distribution underbuild or to meet clearance requirements (**Figure 2**).¹

AEP will need to acquire new ROW to accommodate the transmission line. AEP ROW agents will work with individual landowners to acquire the ROW needed for the Project. No new substations are required for

¹ Subject to final engineering.

the Project, but the existing Amlin Substation and existing Dublin Substation will be upgraded to incorporate the new transmission line.



Figure 2. Typical Transmission Structure without Distribution Underbuild

1.2.3 Construction and Maintenance Considerations

The proposed Project will require land surveying, ROW vegetation clearing, access road installation, foundation installation, structure assembly and erection, conductor and shield wire installation, and vegetative restoration² at completion. Construction operations will be conducted with attention to preserving and enhancing the natural habitat and conserving natural resources where practical. Construction activities will be conducted in accordance with local, state, and/or federal permits that are necessary for the Project.

1.3 Project Timeline and Overview of Regulatory Approvals

Timeline

The siting phase of the Project began in June of 2017 with the purpose of providing a 138 kV transmission line source between the Amlin Substation and the Dublin Substation to support a specific economic development project. The Siting Team developed a study segment network and alternative routes in June and July of 2017.

AEP hosted a public open house at the Fellowship Baptist Church on July 11, 2017 and presented a study segment network consisting of 30 study segments and a preferred route for public comment. The Siting Team continued to evaluate study segments until June of 2018 when AEP put the Project on a temporary hold while new information on future land use in the area was examined.

² Vegetative restoration and rehabilitation will be completed as needed based on the construction methods used for the Project.

In January of 2019, AEP reengaged the Project based on new information on land use changes in the Study Area, including the proposed location of the new Ohio State's Wexner Medical Center outpatient facility. Between January 2019 and September 2019, AEP continued to gather information and meet with stakeholders for feedback on the study segments.

On September 23, 2019, AEP held a second public open house at the Dublin Community Center and presented a refined study segment network for public review and comment. The network consisted of seven study segments. Between September 2019 and December 2019, the Siting Team evaluated the public feedback on the refined study segment network, developed Alternative Routes, and selected a Proposed Route for the Project.

Regulatory Process Requirements

The Project will require AEP to file a Letter of Notification (LON) with the Ohio Power and Siting Board (OPSB) because the Project involves a transmission line greater than 100 kV and is intended to serve a specific customer. The requirement for a LON for this Project is pursuant to Item (1)(a) of 4906-1-01 *Appendix A Application Requirement Matrix For Electric Power Transmission Lines*. The applicable sections of this statute as it relates to this Project are: *(1) New construction, extension, or relocation of single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows: (d) Line(s) primarily needed to attract or meet the requirements of a specific customer or customers, as follows: (ii) Any portion of the line is on property owned by someone other than the specific customer or applicant.* AEP plans to submit the LON to the OPSB in May 2020.

Once the Project has received LON approval, AEP will pursue the required state and federal environmental permitting, as well as access permitting as needed. Construction is planned to begin in the third quarter of 2021 once all requisite permitting has been approved.

1.4 Goal of the Siting Study

The goal of this siting study is to gain an understanding of the opportunities and constraints in the Study Area to facilitate the development of study segments, evaluate potential impacts associated with the study segments, compile one or more Alternative Routes, and identify a Proposed Route. The Proposed Route is the route that (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated in a timely, safe, and reliable manner.

2.0 ROUTE AND SITE DEVELOPMENT PROCESS

2.1 Route Development Process Summary/Methodology

The route development process is inherently iterative. Routes are frequently modified throughout the study as new constraints are identified, and agencies, landowners, and other stakeholders provide input. This leads to periodic re-assessment of routes with respect to the siting criteria and adjustments to the

overall route network. As a result of the evolving nature of the route development process, the Siting Team (see **Section 2.2**) uses specific vocabulary to describe the routes at different stages of development.

Initial route development efforts start by identifying large area constraints and opportunity features within the **Study Area**, which encompasses the endpoints of the Project and areas in between (**Figure 3, Step 1**). These areas are typically identified using a combination of readily available public data sources.

The Siting Team uses this information to first develop an array of **Conceptual Routes** for the Project adhering to a series of general siting and technical guidelines (**Step 2**).

Where two or more of these conceptual routes intersect, **Study Segments** are formed between two common points of inter-section. Together, the assemblage of study segments are referred to as the **Study Segment Network (Step 3)**.

As the route development process progresses, the Siting Team continues to evaluate new data and modifies, if necessary, the study segments included in the network to develop a **Refined Study Segment Network (Step 4)**. Eventually, formal **Alternative Routes** are developed by assembling the study segments that best meet the siting guidelines into individual routes for analysis (**Step 5**). The Alternative Routes are assessed and compared with respect to area land uses, natural and cultural resources, and engineering and construction concerns. Ultimately, through a quantitative and qualitative analysis and comparison of the Alternative Routes, the Siting Team identifies a **Proposed Route (Step 6)**.

2.2 Siting Team Members

A multi-disciplinary Siting Team performed the siting study. Team members were selected to bring broad experience to the siting study and achieve a thorough review of siting and development decisions. Siting Team members have experience in transmission line siting, impact assessment for a wide variety of

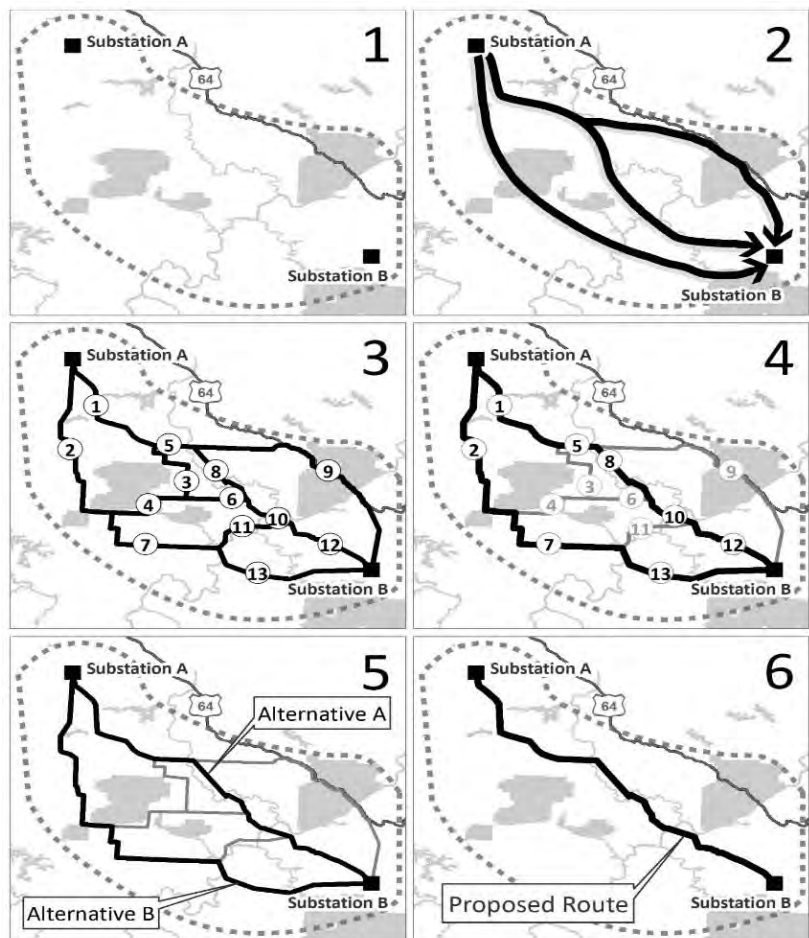


Figure 3. Siting Process

natural resources and the human environment, impact mitigation, engineering, and construction management.

The team worked together during the siting study to define the Study Area, develop siting criteria, identify siting constraints and opportunities, collect and analyze environmental and design data, solicit public input and concerns, consult with natural resource and permitting agencies, develop and revise the siting alternatives, and analyze and report on the selection of a Proposed Route.

2.3 Data Collection

The following sources of information were used to develop data for the siting study. A detailed table of data sources is provided in **Attachment B**.

2.3.1 Geographic Information System Data Collection

Aerial photography is an important tool for route selection. The primary sources of aerial imagery used in the route identification, analysis, and selection effort for the Project included the following:

- National Agricultural Imagery Program, 2019
- Google Earth

Updated information, such as the location of new residences and other constraints, was annotated to the photography by either paper maps (at the public meetings) and transferred into the geographic information system (GIS) or digitized directly into the GIS as identified during field inspections. Electronic maps were obtained for the Study Area and examined as part of the siting process. These included U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps.

The study made extensive use of information in existing GIS data sets that were obtained from many sources, including federal, state, and local governments. Much of this information was obtained through official agency GIS data access websites, some was provided directly by government agencies, and the Siting Team created some by digitizing information from paper-based maps, aerial photo interpretation, interviews with stakeholders and field inspections.

GIS data sources vary with respect to their accuracy and precision. For this reason, GIS-based calculations and maps presented throughout this study should be considered reasonable approximations of the resource or geographic feature they represent and not absolute measures or counts. The data and calculations presented in this study allow for relative comparisons among project alternatives, with the assumption that any inherent errors or inaccuracies would be generally equal across all alternatives. Field reconnaissance was conducted to verify certain features (e.g., locations of residential, commercial and industrial buildings).

2.3.2 Field Reconnaissance

Siting Team members conducted field inspections throughout the Study Area periodically throughout the duration of the Project. The team members examined study segments by automobile from public roads and other points of public access and correlated observed features to information shown on aerial photography, USGS 7.5-minute topographic maps, road maps, and previously compiled GIS sources. Prior to fieldwork, some key features such as residences, outbuildings, places of worship, cemeteries, and commercial and industrial areas were identified and mapped in GIS. These features were then field-verified and added to the GIS database during field reconnaissance efforts, using laptops/tablets running GIS software supported by real-time Global Positioning System (GPS).

2.3.3 Federal, State, and Local Government Coordination

The Siting Team obtained information directly from various federal, state, and local agencies' online databases. AEP also contacted the following agencies directly to inform them of the Project and request data for the route planning process. The agencies contacted are listed below. Copies of agency correspondence are included as **Attachment C**.

Federal Agencies

- U.S. Fish and Wildlife Services (USFWS)

State Agencies

- Ohio Department of Natural Resources – Division of Wildlife (ODNR)
- Ohio Historic Preservation Office

Local Agencies and/or Officials

The Siting Team coordinated with local government agencies/officials to aid the route development process. These entities included:

- City of Dublin, Ohio
- Ohio State University

2.3.4 Other Stakeholders

The Siting Team coordinated with several local stakeholders to aid the route development process. These included:

- Citgo Petroleum Corporation
- Nestlé
- Residential and commercial developers with defined development plans

2.4 Siting Guidelines

2.4.1 General Guidelines

The primary goal for this siting effort was to develop a route for a new 138 kV transmission line between the Amlin Substation and Dublin Substation that (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated in a timely, safe and reliable manner. Although no Proposed Route can optimally minimize impacts across all area resources, the Siting Team used a series of general siting guidelines to direct the development, evaluation, and selection of routes toward this overall goal.

The following guidelines were considered for this effort:

- Consider parallel alignments along existing ROWs, other linear utility, or public roadway infrastructure.
- Maximize the separation distance from and/or minimize impact on dwellings, schools, daycare facilities, hospitals, and other community facilities.
- Consider stakeholder input to the extent practical.
- Avoid or minimize visibility from more populated areas.
- Minimize interference with economic development activities.
- Avoid or minimize conflict with existing land use with a proposed plan, schedule and permitting process in progress.
- Minimize environmental impact and construction/maintenance cost by selecting shorter, more direct routes; route corridors through terrain where economical construction and environmental best management practices can be employed, and where future line operation and maintenance is most feasible (e.g., use existing access roads where practicable).

2.4.2 Technical Guidelines

Technical guidelines are driven by the physical characteristics and engineering limitations of the structures and lines themselves, and the design criteria necessary to meet AEP design standards, North American Electric Reliability Corporation (NERC) reliability standards, National Electric Safety Code (NESC), and industry best practices for construction. The technical guidelines were informed by (1) the technical expertise of engineers and other industry professionals responsible for the reliable, safe and economical construction, operation, and maintenance of electric system facilities, (2) NERC reliability standards as implemented by PJM, and (3) industry best practices.

The Siting Team considered the following technical guidelines during the development, evaluation, and comparison of routes:

- Avoid multiple crossings of controlled access highways (U.S. Route 33 and Interstate 270).

- Utilize colocation opportunities with major roads.
- Minimize heavy turn angles greater than 30 degrees.
- Minimize route length.

2.5 Public Involvement Process

2.5.1 Public Open House

Two public information meetings were conducted for the Project. The first meeting took place on July 11, 2017 at Fellowship Baptist Church in Dublin Ohio, and the second meeting took place on September 23, 2019 at the Dublin Community Center in Dublin, Ohio. The Siting Team set up stations at the meetings and provided information related to engineering and design of the structures, project need, real estate and ROW issues, and the siting process. The community was notified about the time and location of the meeting through the following means:

1. All property owners having land crossed by the proposed ROW of the study segments, as well as immediately adjacent landowners, were sent letters notifying them of the initial public information meeting on July 11, 2017. Meeting information was also posted on the Project website (see Section 2.5.2).
2. All property owners having land crossed by the ROW of the proposed route segments, as well as immediately adjacent landowners, were sent letters notifying them of the second public information meeting on September 23, 2019. Meeting information was also posted on the Project website (see Section 2.5.2).

Printed maps at a scale of 1 inch = 200 feet were provided at the open houses for the public to review and were used to record written comments concerning sensitive resources in their local environment. Members of the Siting Team greeted meeting attendees, answered questions about the Project, and aided attendees in locating their property or other features of concern on aerial maps the study segments under consideration. At the first open house, 12 study segments comprised of 30 segments from the study segment network were presented for review and input by the public. These study segments were then refined based on input received from the public, field reviews, and input from local stakeholders, resulting in seven study segments comprised of 21 segments from the study segment network that were subsequently presented at a second open house. Participants were encouraged to document the location of their houses, places of business, property of concern, or other sensitive resources on the printed maps. After the public open house, handwritten comments were digitized and entered into a GIS database.

Comment forms were distributed to all meeting attendees. Attendees were asked to complete the forms including contact information. The Siting Team reviewed all comments and have electronically stored them in the Project database as a record of meeting attendance and public comments. At the July 2017 open house there were 43 attendees and 25 comments were collected; at the September 2019 open house there were 46 attendees and 25 comments were collected.

2.5.2 Project Website

A website was created for the Project (<https://www.aeptransmission.com/ohio/WestDublin/>) which provides a description, map, fact sheet, and timeline of the Project. The website also provides an online form to submit comments about the Project and a contact number for AEP Ohio Transco's Project Outreach Specialist. As of April 8, 2020, the project website has been viewed 2,269 times and 18 comments have been submitted.

2.5.3 Consideration of Public Input

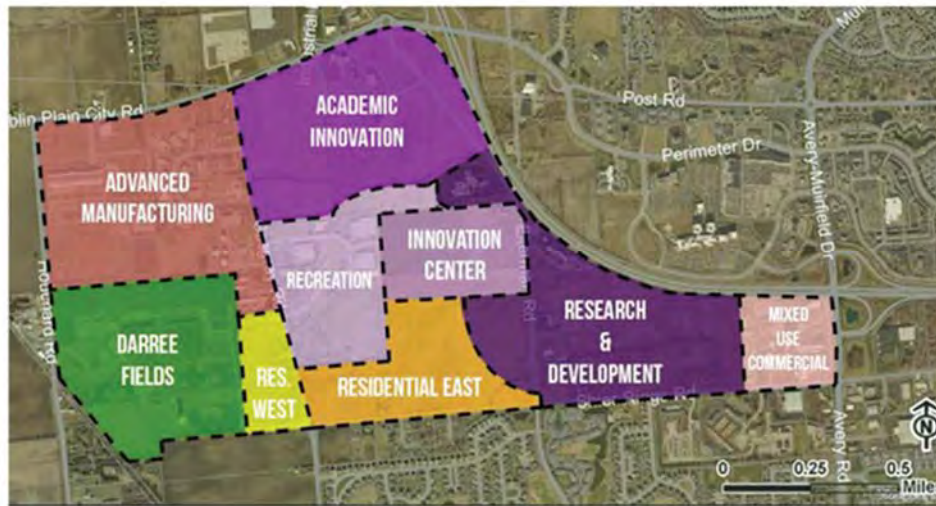
Comments from the public information meetings, and comments that AEP Ohio Transco has received via phone calls, U.S. mail, email, and the Project website were cataloged and reviewed. Meeting attendees indicated that the most important factors were maximizing distance from homes and public facilities, maximizing length along roadways, and minimizing the number of parcels crossed. Comments included concern about the Project's impacts on property value, visual impacts, preference to avoid Shier Rings Road near residences, preference to parallel proposed roads for future development, and preference to consider building underground. The Siting Team staff reviewed all comments and, where applicable, incorporated the information when reviewing, revising, and comparing Alternative Routes.

3.0 ALTERNATIVE ROUTE IDENTIFICATION

3.1 Study Area Description

The boundaries of the Study Area were determined by the geographic area encompassing the Amlin Substation and Dublin Substation. The Study Area was intended to encompass all reasonable Conceptual Routes between these connection points. Given these considerations, the Siting Team identified a Study Area encompassing approximately 1,372 acres (2.1 square miles) in Franklin County, Ohio (see **Map 1**). The Study Area is generally bounded by State Route 161 (Plain City Dublin Road), Franklin/Union County border and U.S. Route 33 to the north, Interstate 270 to the east, Innovation Drive and approximately 250 feet south of Shier Rings Road to the south, and Houchard Road to the west.

The Study Area is located in a suburban area within the City of Dublin in northwestern Franklin County. The eastern portion of the Study Area is populated with commercial development. The western portion of the Study Area currently has more vacant lots and less development, but a large portion of the area is located within the City of Dublin's West Innovation District (Innovation District) (**Figure 4**) which includes a Master Plan to guide future development. The Innovation District was created by the City of Dublin in recognition of the growth potential in the area that would result from existing and proposed technology and academic developments. Other primary developments in the area include the Northwest Dublin Commerce Park which includes both recreational and commercial uses, the Fishel, Cosgray, and Avery Road industrial parks, Darree Fields which is a large city park, and a Citgo gas storage facility.



Source: City of Dublin, 2017

Figure 4. Dublin West Innovation District

3.2 Siting Constraints and Opportunities

After the Siting Team identified a reasonable Study Area for the Project, the Siting Team identified and mapped siting constraints and opportunities within the Study Area that could affect potential routing corridor development. The opportunities and constraints identified in the Project Study Area are discussed in the following subsections.

Siting Constraints

Constraints are specific areas that should be avoided to the extent practical during the route development and selection process. The Siting Team initially identified larger constraints during the conceptual siting process. The following is a list of large constraints identified within the Study Area:

- Dense residential development, specifically south of Shier Rings Road: including concentrations of residential, commercial, and industrial development areas
- City of Dublin's Western Innovation District
- U.S. Route 33 Recreational sites, facilities, and trails (Darree Fields, Northwest Dublin Commerce Park)
- Ohio State's Wexner Medical Center outpatient facility

As the Siting Team developed specific siting alignments, smaller constraints were identified and avoided where practicable. These constraints encompassed other feature types found within smaller geographic areas, or site-specific locations. Through the iterative process of route development described above, the routes were adjusted to avoid the following constraints where feasible:

- Individual houses, mobile homes, and multi-family buildings
- Commercial and industrial buildings

- Ancillary structures (outbuildings, sheds, barns, and other non-habitable structures)
- Churches (First Apostolic Church and Fellowship Baptist Church)
- Schools (Ohio University Dublin Campus)
- Historic buildings and sites on the National Register of Historic Places
- Small wetlands and ponds
- Radio and communications towers

The Study Area also included several areas that are under consideration for development. The Project is located in a high-profile area of the City of Dublin where local officials are targeting extensive economic development. Though there were large open areas that would normally be suitable for electric transmission line development, many of these areas were planned for future development, with significant time, effort, and permitting efforts underway in support of the development process. When possible and practical the developer's plans were considered in the route development process. However, given that these developments have varying probabilities of success, potential impacts to existing development was always given greater consideration in the siting process.

Siting Opportunity Features

The Siting Team defined siting opportunities as locations where the proposed transmission line might be located while reasonably minimizing adverse impacts. Siting opportunities typically include other linear infrastructure and utility corridors, such as the existing electric and gas transmission network, rail lines, and roads, but may also include reclaimed mine lands, or unused portions of industrial or commercial areas. The following siting opportunities were identified within the Study Area and are presented on **Map 1**.

- The existing 345 kV electric transmission corridor along the western boundary of the Study Area
- The existing 138 kV electric transmission line along the eastern boundary of the Study Area
- U.S. Route 33
- Local roads – Cosgray Road, Shier Rings Road, and Eiterman Road

The Study Area presented only a few siting opportunities due to the existing and proposed land uses. Existing roads such as U.S. Route 33, Shier Rings Road, and Eiterman Road presented the best siting opportunities to parallel existing infrastructure. The existing 345 kV transmission line located in the western edge of the Study Area also presented a siting opportunity to parallel existing infrastructure. Although the study segment network included segments in undeveloped areas, these areas are not robust siting opportunities due to the proposed development plans and future land use identified in these areas (Innovation District and proposed Ohio State's Wexner Medical Center outpatient facility as described above).

3.3 Routing Concepts

The Project Study Area is in a suburban area experiencing both residential and commercial growth. Large portions of the Study Area are part of future land use plans that include plans for a major health care

facility, high tech industrial facilities, and additional commercial growth. The Siting Team developed a Study Area (**Map 1**) that was sufficiently large enough to logically support preliminary conceptual routes and a study segment network. The opportunities and constraints were identified and marked within the Study Area.

When the Project began in 2017, the future land use plans for the Study Area were still in the planning stages. Thus, the Siting Team proposed conceptual routes and developed a study segment network that largely avoided existing residential and commercial development areas and used the open spaces available within the Study Area. As the future land use plans progressed, the Siting Team evaluated the viability of study segments to account for the solidifying development plans. Those study segments that interfered with future development were not included in the route alternatives developed for the Project. The preliminary routing concepts considered are shown on **Map 2 (Conceptual Routes)**, and **Map 3 (Study Segment Network)**.

3.4 Study Segment Development

3.4.1 Description of Study Segments

The Siting Team developed a series of 46 study segments based on the siting process and criteria developed in Section 2.0. As the siting effort evolved, study segments were revised, removed, or added. These eliminations or adjustments were based on the likelihood of impacts on residential, commercial, industrial, and agricultural areas; planned and future development; and natural areas. **Map 3** shows the resulting network of study segments evaluated by the Siting Team.

3.4.2 Study Segment Evaluation Summary

The Siting Team evaluated study segments through the duration of the siting study. Overall, the Siting Team evaluated 46 total study segments for the Project as shown on **Map 3**. Evaluations of the study segment network were conducted as new information arose through the siting process.

In the western part of the study area between the Amlin Substation and Cosgray Road, study segments were evaluated and many were eventually eliminated due to several reasons, but mainly due to crossing Darree Field and Sports Ohio and running through active industrial areas. Study segments 3 and 6 were retained as these segments paralleled the existing 345 kV transmission line, Study Segment 2 runs along the southern edge of Fishel Industrial Park and Study Segment 11 avoided crossing the Darree Field baseball diamonds.

The area between Eiterman Road and Cosgray Road provided a large area for study segment development. Study segments in this area were evaluated but many were eliminated in large part because they ran through agricultural fields that will eventually be developed as part of the Innovation District. Study segments 7, 25, 29, 31 and 32 were retained because these segments avoided crossing agricultural fields by running along the edge of the Northwest Dublin Commerce Park, Nestle Quality Assurance Center and Eiterman Road, resulting in fewer potential impacts to future development planned within the Innovation District.

Between Eiterman Road and Avery Road, the study segment network used the open space area north of the residences along Shier Rings Road. Though this area was available to evaluate study segments when the Project commenced in 2017, as time progressed, the Siting Team learned more details about the proposed Innovation District planned for this area. Study segments in this area were eliminated in large part, due to the planned location of the Wexner Medical Center outpatient facility, and because they ran directly through the Avery Road Industrial Park which is congested with existing land uses. Study Segment 35 was retained because it runs along the north side of Shier Rings Road, across the street maximizing the distance from the residences to the south. The location of this study segment along Shier Rings Road limits impacts and avoids the planned Wexner Medical Center outpatient facility.

East of Avery Road, study segments were limited because of existing industrial, commercial and single/multi-family residential structures located on either side of Shier Rings Road. Study Segment 44 was eliminated due to proximity to existing commercial/industrial buildings. Study Segment 45, on the south side of Shier Rings Road, was also eliminated because of its proximity to existing commercial development. The existing development on the northern side of Shier Rings Road along Study Segment 42 has larger setbacks than the development on the south side of the road, thereby allowing more space for the proposed electric transmission ROW. In addition, there is a cluster of existing development on the south side of Shier Rings Road at the intersection of Shier Rings and Avery Roads that could potentially constrain the proposed ROW. Ultimately, the alignment north of Shier Rings Road was found to mitigate impacts to existing land use and reduce challenges to technical design and was therefore retained for further evaluation.

3.4.3 Study Segment Refinements

The Siting Team continually evaluated the study segment network throughout the siting process. When the Project began in 2017, the Siting Team evaluated a study segment network that included 41 study segments. For the first public open house in July 2017, the Siting Team presented 30 of those study segments to the local community. These 30 study segments were selected because they avoided being located adjacent to existing residential development and used vacant land and existing infrastructure corridors such as U.S. Route 33 and other public roads where available. At the time, the future land use plan for the Innovation District was not as developed; therefore, the vacant land adjacent to U.S. Route 33 between Avery Road and Eiterman Road presented the best routing opportunities to avoid the existing residential development. After the 2017 public open house, the entire study segment network was reevaluated and adjusted with the addition of study segments 10, 14, 18, and 19. The addition of these study segments allowed for options in this area to accommodate future development if needed.

The Siting Team also revised the original 41 study segments to take into account engineering requirements and public comments. The adjustments included shifting study segments 12, 13, 15, and 16 outside of the traffic circle at Shier Rings Road and Cosgray Road, and shifting study segments 35, 38, and 41 closer to Shier Rings Road. Moving the study segments outside of the traffic circle would lead to less impact during

construction and avoid potential safety implications. Moving the study segments closer to Shier Rings Road would preserve vacant land for future land uses proposed between Avery and Eiterman Roads.

The most notable refinement to the study segment network was the addition of Study Segment 35A. The Siting Team learned of the proposed alignment of a new road, University Boulevard, in September 2019 that would bisect the open space between Avery and Eiterman Roads. University Boulevard is planned to be a multi-lane road that would serve the planned Wexner Medical Center outpatient facility. Study Segment 35A was developed through coordination with the City of Dublin and presented to Dublin City Council on December 2, 2019. At this public meeting, the City identified the alignment of Study Segment 35 A as their preferred routing for the transmission line in this area. Study Segment 35A is adjacent to the proposed University Boulevard and would not limit additional future development in this area. Because of the aforementioned benefits to accommodating the future land use, and because of the City's preference for Study Segment 35A's alignment, the Siting Team included Study Segment 35A as part of its evaluation of Alternative Routes for the Project.

3.5 Additional Study Segments Considered but Not Evaluated in Detail

As noted in Section 3.4.2, the Siting Team considered 46 study segments for the development of alternative routes for the Project. However, other alignments and designs were considered that were ultimately not included in the 46-segment-network due to obvious limitations or "fatal flaws" after initial consideration.

Immediately west of the intersection of Shier Rings Road and Avery Road, the Siting Team initially developed other preliminary study segments (in addition to Study Segments 38 and 41) along the south side of Shier Rings Road, however, review of the development in this area showed that any alignment along the south side of the road would ultimately need to shift back to the northside of the road to avoid development close to the roadside, adding road crossings and angles to the route. Therefore, the Siting Team only retained one study segment, Study Segment 45, on the south side of the road as part of the formal study segment network.

The City of Dublin asked AEP to investigate the feasibility of undergrounding the transmission line. AEP reviewed the project for underground consideration and determined that there was no electrical or operational need for the new circuit to be constructed underground. Additionally, during the Company's review, it was determined that multiple viable and reasonable overhead routes were available and under consideration. As a result, and as a measure of prudence for rate payers, AEP determined the cost differential between the most reasonable above ground alternative and a potential underground design would need to be borne by the City of Dublin to warrant any detailed consideration in the siting process. To that end, multiple underground scenarios and their associated preliminary cost differentials were presented to the City of Dublin for consideration at City Council meetings in 2017 and, most recently, in the fall of 2019. After review and discussion of several underground scenarios, the City of Dublin did not further pursue its request for underground design consideration for this project.

4.0 ALTERNATIVE ROUTES

The Siting Team met frequently throughout the route identification and review process, continually reviewing, modifying, and eliminating the Study Segments based on new field analysis and stakeholder input. After consideration of the information gathered during the siting process, the Siting Team narrowed the siting network down to 22 study segments and compiled them into four Alternative Routes for analysis and comparison. These Alternative Routes are described in the following sections and are shown in more detail on **Map 4** in **Attachment A**.

4.1 Alternative Route A

Alternative Route A (Study Segments 2-4-7-25-29-31-32-35-38-41-42-43) is approximately 3.6 miles long. This route uses the edge of agricultural fields in the northwestern part of the Study Area and parallels existing roads in the southeast part of the Study Area. Alternative Route A's western endpoint is the Amlin Substation and runs east along the southern edge of the Fishel Industrial Park, crossing Cosgray Road, and continuing east through agricultural fields north of the Northwest Dublin Commerce Park and south of the Nestle Quality Assurance Center. The route then turns south and parallels Eiterman Road until it meets Shier Ring Road. At the intersection of Eiterman Road and Shier Rings Road, Alternative Route A turns east and runs along the north side of Shier Ring Road, crossing Avery Road, before turning south and running into the Dublin Substation.

4.2 Alternative Route B

Alternative Route B (Study Segments 3-6-10-14-19-24-35-38-41-42-43) is approximately 3.6 miles long. This route uses the existing 345 kV transmission corridor in the western part of the Study Area and parallels existing roads through the central and eastern part of the Study Area. Alternative Route B begins south from the Amlin Substation and runs south, paralleling the 345 kV transmission corridor. The route then turns east and runs along the north side of Shier Rings Road, crossing through the south end of Darree Fields, and crossing Cosgray Road, Eiterman Road, and Avery Road before turning south and entering the Dublin Substation.

4.3 Alternative Route C

Alternative Route C (Study Segments 3-6-11-15-18-24-35-38-41-42-43) is approximately 3.7 miles long. This route is similar to Alternative Route B except it avoids crossing through the south end of Darree Fields. Alternative Route C begins south from the Amlin Substation and runs south, paralleling the 345 kV transmission corridor. Alternative Route C then turns east and runs along the southern end of Darree Fields then along the north side of Shier Rings Road, crossing Cosgray Road, Eiterman Road, and Avery Road before turning south and entering the Dublin Substation.

4.4 Alternative Route D

Alternative Route D (Study Segments 2-4-7-25-29-31-35A-38-41-42-43) is approximately 3.3 miles long. This route is similar to Alternative Route A except it parallels the proposed alignment of a new road, University Boulevard, that bisects the open space between Avery and Eiterman Roads. Alternative Route D begins east from the Amlin Substation and runs along the southern edge of the Fishel Industrial Park, crossing Cosgray Road, and continuing east through agricultural fields north of the Northwest Dublin Commerce Park and south of the Nestle Quality Assurance Center. The route then turns south, paralleling Eiterman Road, then runs southeast along the proposed University Boulevard until it reaches Shier Rings Road near the southwest corner of the Avery Road Industrial Park. Alternative Route D then turns east and runs along the north side of Shier Ring Road, crossing Avery Road, for before turning south and entering the Dublin Substation.

5.0 ALTERNATIVE ROUTE COMPARISON

This section further discusses the Alternative Routes and provides a quantitative and qualitative analysis of potential impacts to local communities, the environment and cultural resources. The Alternative Routes were reviewed in detail and compared using a combination of information collected in the field, GIS data sources, public input, supporting documents, and the collective knowledge and experience of the Siting Team.

5.1 Natural Resources

Natural resource impacts include potential impacts to vegetation and habitat, surface waters, threatened and endangered species, and conservation and recreation lands. Potential impacts discussed in this section are based on publicly available maps and data and consultation with federal and state agencies. A comparison of the natural resource impacts for the four Alternative Routes is presented in **Table 1**.

5.1.1 Soil and Water Resources

Resource Characteristics

The Study Area is characterized by relatively flat terrain that gently slopes down towards the Scioto River, located approximately 1.5 miles east of the Study Area. Elevation generally ranges between 890 feet to 950 feet above mean sea level. The Study Area is located within the Upper Scioto watershed. Three streams are located within the Study Area: Cosgray Ditch, South Fork Indian Run, and an unnamed tributary to South Fork Indian Run.

A Federal Emergency and Management Agency (FEMA) designated floodway and floodplain is along Cosgray Ditch and South Fork Indian Run. Wetlands are scattered throughout the Study Area. National Wetlands Inventory (NWI) and National Hydrography Dataset (NHD) were the only data sources used in the Route Alternative assessment. According to the Soil Survey for Franklin County, four soil map units

(Crosby silt loam, Kokomo silty clay loam, Lewisburg-Crosby complex, and Udorthents-Urban land complex) are located within the Study Area. These four soil map units are classified as hydric on the Natural Resources Conservation Service (NRCS) Hydric Soils List for Ohio and rated as either prime farmland or prime farmland if drained. Karst topography is present throughout the entire study area and would likely have to be considered during geotechnical investigations during engineering design. No caves or mines are known within the Study Area. Water Resources are identified in **Map 5**.

Table 1. Natural Resource Impacts					
Evaluation Criteria	Unit	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D
General					
Length	miles	3.6	3.6	3.7	3.3
Water Resources					
Total streams crossed (NHD)	count	3	3	3	3
Exceptional streams crossed	count	0	0	0	0
Forested wetlands in the ROW (NWI)	acres	0.2	0.2	0.2	0.2
PEM/PSS wetlands in the ROW (NWI)	acres	0	0	0	0
FEMA-designated floodplain crossed by ROW	acres	1.0	0.0	0.0	1.0
FEMA-designated floodway crossed by ROW	acres	0.1	0.0	0.0	0.1
<i>No waterbodies identified within the Study Area.</i>					
Geological, Topographical, and Soil Resources					
Karst topography in the ROW	acres	34.8	35.1	35.5	32.5
Known caves or mines in the ROW	count	0	0	0	0
Wildlife and Habitat					
Tree clearing required in the ROW (digitized based on aerial photography)	acres	5.7	3.5	4.1	6.5
Federal or state endangered and/or threatened species records within ROW	count	2	2	2	2
Federal or state endangered and/or threatened species records between ROW and 1,000 feet	count	2	2	2	2

PEM/PSS = palustrine emergent/palustrine shrub-scrub

Alternative Route Comparison

Based on desktop reviews, no major differences in water resources exist among the four Alternative Routes. All Alternative Routes cross the same number of NHD streams (three) and have roughly the same area of forested wetlands within the ROW (0.2 acre). Alternative Routes A and D cross FEMA-designated floodplain and floodway; however, these areas can be spanned by the proposed transmission line and therefore are not considered a constraint on these routes.

5.1.2 Wildlife Habitat and Sensitive Species

Resource Characteristics

General habitat in the Study Area includes agricultural pasture land, residential and commercial landscaped areas, several smaller forested areas, scrub-shrub fields or slopes, and stream and/or wetland areas. Based on consultation with the USFWS and ODNR, 8 federal-listed and 18 state-listed wildlife species are known to occur, or have the potential to occur, within the Study Area (**Attachment D**). Wildlife and habitat resources are identified in **Map 5**.

Alternative Route Comparison

According to the USFWS, the Indiana bat (*Myotis sodalist*) and northern long-eared bat (*Myotis septentrionalis*) are assumed to be present throughout the state of Ohio wherever suitable habitat occurs unless presence/absence surveys have been performed to document absence. The USFWS recommends trees greater than or equal to 3 inches in diameter at breast height be saved where possible. If tree clearing is not avoidable, the USFWS recommends tree clearing between October 1 and March 31 to avoid adverse effects to Indiana bats and northern long-eared bats.

According to the ODNR, the Study Area is within the range of five federally and state-endangered, six state-endangered, and four state-threatened mussels (**Attachment D**). No in-water work is proposed for the Project; therefore, the Alternative Routes are not likely to affect these species.

Other aquatic species that are within the range of the Study Area include one federally and state-endangered, four state-endangered and three state-threatened fish (**Attachment D**). ODNR recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. As stated above, no in-water work is proposed; therefore, no impacts on these species are anticipated.

Habitat for the state-endangered upland sandpiper (*Bartramia longicauda*) may be found within the Study Area. This species utilizes dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands. The ODNR indicates that if grassland habitat will be impacted by the Project, construction should be performed outside of the species' nesting period (April 15 to July 31) to minimize impacts to the upland sandpiper. Most of the open areas within the Study Area appear to

be used for agricultural purposes or mowed for recreational use; therefore, no impact on this species is anticipated.

Potential impacts on wildlife habitat and sensitive species within the Study Area can generally be assessed by comparing anticipated impacts on forest habitat associated with each alternative route. Based on a review of aerial imagery, Alternative Routes A and D would have more tree clearing (5.7 and 6.5 acres, respectively) within the ROW compared to Alternative Routes B and C (3.5 and 4.1 acres, respectively). Although these differences are relatively minor, Alternative Routes A and D may have a slightly higher potential to affect Indiana and northern long-eared bats than with Alternative Routes B and C, if it were determined that any bat roost trees are present. No caves or mines are known within the Study Area, so winter habitat for the Indiana and northern long-eared bats would not be affected by the Project.

5.2 Land Use

Land use impacts include direct and indirect impacts to residential, commercial and industrial development, institutional uses (e.g., schools, places of worship, cemeteries, and hospitals), cultural resources, and land use. Construction of a new transmission line can result in changes in land use and aesthetic impacts to residents, commuters, travelers, employees, and recreational users. A comparison of the land use impacts for the Alternative Routes is presented at the end of this section in **Table 5**. Land use within the Study Area are shown on **Map 6**.

5.2.1 Developed Land Use

Resource Characteristics

The eastern portion of the Study Area is a mix of commercial development, larger corporate campuses, and industrial parks. The western portion of the Study Area has less development with some recreational areas (e.g., Northwest Dublin Commerce Park, and Darree Fields), industrial facilities (e.g., Citgo facility), and industrial parks (e.g., Fishel Industrial Park). The less developed western portion of the Study Area still has active agricultural areas and vacant land. For this reason, the Siting Team initially viewed the western portion of the Study Area as a siting opportunity, because there appeared to be more available space to route an electric transmission line in these open areas and away from existing residential development to the south of the Study Area.

The City of Dublin Community Plan, Adopted July 1, 2013, includes a Future Land Use Plan map. Communities are required by law to *make plans and maps of any portion of the city, and the lands outside it, which relate to the planning of the city*³. The future land use plan identifies the vacant land and agricultural areas in the Study Area as a combination of designations including: Research and Development facilities, Innovation facilities, and medium-density residential. These designations indicate the city's desire to have these open areas developed with high tech office and industrial uses as well as higher density residential development. The City further expressed its desire to capture those uses in this

³ Ohio Revised Code §713.02

area by establishing the Innovation District. This district was created in addition to the future land plan, to create a “world-class innovation and research district” which includes areas proposed for mixed use commercial, research and development, residential, recreation, innovation, advanced manufacturing, and academic innovation associated with the Ohio University (City of Dublin, 2017). Additionally, the Innovation District sets design standards for buildings, and streetscapes, and included a proposed road network to serve new developments.

One of the first developments within the Innovation District is the Ohio State’s Wexner Medical Center proposed ambulatory care facility. Ohio State University plans to purchase approximately 34 acres of land to construct a new ambulatory care facility north of Shier Rings Road and east of Eiterman Road. As part of this development, a new road (University Boulevard) would be built in the area running northwest to southeast. AEP Ohio Transco met with the City of Dublin on December 12, 2019 to discuss the proposed development and identify possible opportunities for siting the transmission line in this area. Upon learning of these plans, in coordination with the City of Dublin, the Siting Team created study segment 35A which was included in Alternative D.

Alternative Route Comparison

The primary differences between the Alternative Routes is how and where they are located in relation to the existing and proposed land uses in the Study Area. The Study Area consists of many different types of land uses including: agricultural, residential, commercial, recreational, and industrial, as well as planned healthcare, commercial, and residential uses.

Alternative Routes B and C parallel an existing transmission corridor, run through Darree Park and run east along Shier Rings Road near existing residential areas before connecting with Alternative Routes A and D and continuing along Shier Rings Road to the Dublin Substation. Because of the Alternative Routes’ B and C alignment near existing residential areas, which was unpopular at the public meetings, these routes have the most residences within 250 feet of centerline (30 residences) and within 1,000 feet of centerline (196 and 198 residences, respectively). These routes also cross more recreation land than Alternative Routes A and D.

Alternative Routes A and D run east along the southern edge of the Fishel Industrial Park then through agricultural land north of the Northwest Dublin Commerce Park and Sports Ohio and west to Eiterman Road. This alignment avoids much of the existing development in the area and maximizes the area of open space. Alternative Route A continues south along Eiterman Road to Shier Rings Road where it joins Alternative Routes B and C before continues east on Shier Rings Road to the Dublin Substation. Because Alternative Route A continues south on Eiterman Road to Shier Rings Road, it also runs near existing residential areas resulting in more residences within 250 feet and 1,000 feet of centerline compared to Alternative Route D. Instead of continuing south along Eiterman Road, Alternative D follows Study Segment 35A through the open space area east of Eiterman Road and north of Shier Rings Road before connecting with the other three routes. This alignment was coordinated with the City of Dublin to follow adjacent to the proposed alignment of University Boulevard. Though this alignment bisects the open

space area resulting in the most agricultural land crossed between the four routes, it is planned adjacent to a future road and preserves buildable lots on either side of the planned University Boulevard thoroughfare.

Overall, Alternative D is the best route for the Project from a land use perspective because it avoids the existing residential areas and is located along a corridor in the open space east of Eiterman road that still allows for future development in that area.

5.2.2 Agricultural and Forestry Resources

Resource Characteristics

Though much of the Study Area can be classified as suburban commercial development with agricultural areas north of Shier Rings Road. Approximately 41 percent (563 acres) of the Study Area is agricultural land used for cultivated crops (corn and soybeans) while 1 percent (14 acres) is forested. Information regarding Ohio Agricultural District Lands within the Study Area was requested and received from the Franklin County Auditor's office. Land listed as Agricultural District Lands provides protection for farmers from nuisance lawsuits, defers expensive development assessments until the land is changed to a non-agriculture use, and offers state scrutiny of local eminent domain acquisitions in certain cases (Ohio Department of Agriculture, 2018). Based on the information provided by the auditor, no Ohio Agricultural District Lands are within the Study Area. Agricultural land is located in the north and western portion of the Study Area while several smaller forested areas are scattered throughout the Study Area.

Much of the agricultural land is located in areas that are proposed for future development within the Innovation District. As noted in Section 4.2.1, the City of Dublin is planning to develop the agricultural areas in the Study Area to higher density commercial and industrial uses.

Alternative Comparison

All Alternative Routes cross areas of agricultural and forest resources. Alternative Routes A and D would require the most tree clearing within the ROW, and Alternative Routes B and C would require the least tree clearing. Alternative Route D crosses the most cropland (13.1 acres) compared to the other routes (6.3 to 9.5 acres), however, most of the crop land crossed is planned for future development as part of the City of Dublin's Community Plan and West Innovation District Plan.

Alternative Route A crosses the least amount of prime and unique farmland. Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops. Most of this land has been designated by the City of Dublin for future residential, healthcare, and commercial development within the Innovation District; therefore, impacts on this resource were not considered a constraint on the routes.

5.2.3 Recreation and Conservation Lands

Resource Characteristics

Local recreational areas in the Study Area include a golf course and two large multi-sport complexes. No conservation land, federal/state forests, parks, designated wilderness areas, or game land/public hunting areas are located within the Study Area. Recreational resources within the Study Area are summarized in **Table 2** and shown on **Map 7**.

Table 2. Recreational Resources within the Study Area		
Name	Description	Proximity to Alternative Routes
Darree Fields	A 151-acre park that includes 7 baseball diamonds, 18 soccer fields, 4 shelter houses, a dog park, and the Miracle League Field and playground.	Area crossed by Alternative Routes B (0.7 mile) and Alternative Route C (0.5 mile).
Sports Ohio	A 100-acre indoor and outdoor sports facility in Dublin, Ohio. Includes indoor and outdoor soccer fields, a multi-sport field house, a 9-hole par 3 golf course and practice facilities, go karts, miniature golf, and batting cages.	Not crossed by the Alternative Routes. Alternative Routes A and D run east to west, north of the indoor and outdoor soccer fields.
The Golf Club of Dublin	18-hole golf course and clubhouse	Not crossed by the Alternative Routes.

Alternative Route Comparison

Alternative Routes B and C both cross Darree Fields in the western part of the Study Area. Both routes run north to south through the middle of Darree Fields while paralleling the existing 345 kV transmission corridor in the area. At the south end of Darree Fields, Alternative Route B turns east and crosses over two baseball diamonds while Alternative Route C continues further south before turning east and running south of the baseball diamonds. Alternative Routes A and D do not cross any recreational lands but do run adjacent to the indoor and outdoor soccer fields associated with Sports Ohio. Although impacts to these recreation areas have been minimized through the siting process, it is likely that Alternative Routes B and C would be less preferred from a recreational perspective due to the likelihood of some conflicts with park operations during the construction phase. No impacts to the Sports Ohio soccer fields are anticipated along Alternative Routes A and D.

5.2.4 Historic and Archeological Resources

Resource Characteristics

The Ohio Historic Preservation Office Online Mapping System was reviewed for historical and archaeological resources within the Study Area. Ohio Historic Inventory (OHI)-listed resources within 1,000 feet of centerline of the Alternative Routes are identified in **Table 3** and **Map 8**. Ohio Archaeological Inventory (OAI)-listed archeological resources within 250 feet of centerline of the Alternative Routes are

identified in **Table 4** but are excluded from the figure to protect those resources. No historic districts are present within the Study Area.

Table 3. Historic Architecture Resources within 1,000 Feet of Centerline						
Resource No.	Resource Name	Distance from Alternative A	Distance from Alternative B	Distance from Alternative C	Distance from Alternative D	NRHP Status
NR: 79002765; OHI: FRA001681	Rings, Louis, Residence	251	251	251	835	Listed
NR: 79002767; OHI: FRA060511	Rings, Louis, Barn #2	340	340	340	984	Listed
NR: 79002769; OHI: FRA060521	Rings, Louis, Barn #1	340	340	340	984	Listed
NR: 79002865; OHI: FRA073581	Shier, Carl H, House	-	62	62	-	Listed
NR: 79002868	Shier, Carl H, Chicken House	-	62	62	-	Listed
NR: 79002873; OHI: FRA060541	Shier, Carl H, Barn	-	62	62	-	Listed
OHI: FRA0016801	Bowman House	285	285	285	862	Eligible
OHI: FRA0605101	Bowman Milk/Washhouse	328	328	328	897	Eligible
OHI: FRA0605201	Thomas Bowman Barn	342	342	342	-	Eligible
OHI: FRA0605401	Carl H. Shier Barn	-	56	56	-	Eligible
OHI: FRA0735801	-	-	32	32	-	Eligible

Table 4. Archaeological Resources within 250 Feet of Centerline						
Resource No.	Resource Name	Distance from Alternative A	Distance from Alternative B	Distance from Alternative C	Distance from Alternative D	NRHP Status
FR2760	-	170	170	170	134	Not Evaluated
FR2761	-	-	-	-	184	Not Evaluated
FR2762	-	106	106	106	86	Not Evaluated
FR1180	D. Bowman Site	115	197	197	-	Not Evaluated
FR1181	Ertman Road Site	0	-	-	-	Not Evaluated

Table 4. Archaeological Resources within 250 Feet of Centerline

Resource No.	Resource Name	Distance from Alternative A	Distance from Alternative B	Distance from Alternative C	Distance from Alternative D	NRHP Status
FR1735	-	147	147	147	-	Not Evaluated
FR1781	-	98	98	98	-	Not Evaluated
FR1807	-	-	96	96	-	Not Evaluated
FR2015	Louis Ring Farmstead	170	170	170	-	Not Evaluated
FR2384	Likens Site I	-	-	-	119	Not Evaluated

Alternative Route Comparison

Cultural resources were examined within the ROW and within 250 feet of centerline of the Alternative Routes. These distances were based on reporting requirements for the LON filing to the OPSB⁴ as well as to provide additional cultural resources information outside the potential disturbance area of the Project. Alternative Route D has no archaeological sites within the ROW and no NRHP-listed or eligible resources within 250 feet of centerline. Alternatives B and C cross directly in front of the Carl H. Shier NRHP-listed site and could directly impact that property. Alternative A avoids the Carl H. Shier site but has an archeological site (FR1181) located within the proposed ROW that has not been evaluated for inclusion in the NRHP.

5.2.5 Scenic Resources

Resource Characteristics

Aesthetics are defined as a mix of landscape visual character, the context in which the landscape is viewed (view/user groups), and the scenic integrity of the landscape. This study reviewed the potential visibility and visual impact of the Alternative Routes through a landscape character assessment.

Visual character encompasses the patterns of landform (topography), vegetation, land use, and aquatic resources (i.e., lakes, streams, and wetlands). Multiple elements influence visual character, such as natural systems, human interactions, and land use. In natural settings, the visual character attributes are natural elements such as forested mountains or scenic rivers and lakes, whereas rural or pastoral/agricultural settings may include manmade elements such as fences, walls, barns, outbuildings, and occasional residences. In a more developed setting, the visual character may include commercial or industrial buildings, manicured lawns, pavement, and other infrastructure.

⁴ Chapter 4906-6-05 (10)(c)

The Siting Team observed distinctive landscapes within the Study Area: flat to gently rolling topography with agricultural development (Figure 5), medium density residential development (Figure 6), industrial development (Figure 7), and commercial development (Figure 8). Flat to gently rolling topography with agricultural development is the most common landscape in the north and western portion of the Study Area. Medium density residential development is found south of Shier Rings Road in the Study Area. Industrial and commercial development is common in the eastern portion and northwest corner of the Study Area. No scenic resources (byways, large rivers, lookout points, vistas) are within the Study Area.



Figure 5. Typical Agricultural Land Present in the Western Portion of the Study Area



Figure 6. Typical Medium Density Residential Development Present south of Shier Rings Road



Figure 7. Typical Industrial Development Present in the East and Northwest Portions of the Study Area



Figure 8. Typical Commercial Development Present in the Eastern Portion of the Study Area

Alternative Route Comparison

Alternative Routes B and C parallel the 345 kV transmission line corridor, run through Darree Fields, and along Shier Rings Road north of existing residential communities. Along the existing 345 kV transmission line corridor, Alternative Routes B and C would have minimal visual impacts because adding additional transmission line structures would not result in a significant change to the visual character of the area. Across the south end of Darree Fields and along Shier Rings Road between Cosgray Road and Eiterman Road, Alternative Routes B and C would have a visual impact as transmission structures would be taller than the surrounding landscape, impacting residential views and altering the visual character of the area. Although the type of recreation at Darree Fields (ballfields) would not be impacted by the visual presence of the new structures, the structures would be more visible to patrons of the park.

Alternative Routes A and D run through areas proposed for future commercial development and along Shier Rings Road near commercial and industrial development. Alternative A also runs near existing

residential communities along Shier Rings Road near Eiterman Road. Alternative Route D would have minimal visual impacts because the transmission line would be in areas where the visual character already includes larger commercial and industrial buildings, distribution lines, pavement, and other infrastructure or areas planned to have this visual character once developed. Alternative Route A would have minimal visual impacts in areas where the visual character includes or is planned to include larger commercial and industrial buildings, but will alter the visual character along Shier Rings Road near the residential communities due to similar reasons explained for Alternative Routes B and C.

As part of discussions with the City of Dublin to reduce visual impacts in the Project area, transmission structures will be approximately 65 feet tall except for where taller structures are necessary to meet span or clearance requirements. Structures will also be single steel poles with landscaping and a select array of permitted low growing trees will be allowed under the transmission lines. With the shorter transmission structures and landscaping under the transmission line, as well as being located within areas planned for commercial development, Alternative Route D would have the least overall visual impact.

Table 5. Land Use Impacts					
Evaluation Criteria	Unit	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D
General					
Length	miles	3.6	3.6	3.7	3.3
Number of parcels ^a crossed by the ROW	count	38	30	29	39
Landowners within ROW	count	33	23	24	32
Municipalities, Counties, and Townships Crossed					
City of Dublin	miles	2.3	1.6	1.6	2.4
Washington Township	miles	3.6	3.6	3.7	3.3
Franklin County	miles	3.6	3.6	3.7	3.3
Residential					
Residences within ROW	count	0	0	0	0
Residences within 100 feet of centerline	count	2	2	2	2
Residences within 250 feet of centerline	count	15	30	30	3
Residences within 1,000 feet of centerline	count	118	196	198	15
Non-Residential (barns, outbuildings, sheds, garages, silos, etc.)					
Non-residences within the ROW	count	0	1	1	0
Non-residences within 100 feet of the centerline	count	1	3	3	1
Non-residences within 250 feet of the centerline	count	11	18	17	9
Non-residences within 1,000 feet of the centerline	count	44	63	63	42
Commercial/Industrial					
Businesses/commercial buildings ^b within the ROW	count	0	0	0	0
Businesses/commercial buildings within 100 feet of the centerline	count	8	4	4	7

Table 5. Land Use Impacts					
Evaluation Criteria	Unit	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D
Businesses/commercial buildings within 250 feet of the centerline	count	39	23	23	36
Businesses/commercial buildings within 1,000 feet of the centerline	count	142	108	108	142
<i>No mines or quarries were identified within the Study Area.</i>					
Agricultural					
Pasture/rangeland crossed in ROW (based on NLCD data)	acres	0.9	0.1	0.1	0.1
Cropland crossed in ROW (based on NLCD data)	acres	9.5	8.1	6.3	13.1
Prime farmland in the ROW*	acres	3.6	8.2	8.1	8.6
<i>No tree farms/orchards or Ohio Agricultural District Lands were identified within the Study Area.</i>					
Community/Recreational Facilities					
Schools within 1,000 feet of centerline	count	1	0	0	1
Designated places of worship within 1,000 feet of centerline	count	2	1	1	2
Cemeteries within 100 feet of centerline	count	0	0	0	0
Parks and recreation areas crossed by the ROW	count	0	1	1	0
Parks and recreation areas crossed by the ROW	Acres	0	6.4	4.4	0
<i>No hospitals or scenic byways identified within the Study Area.</i>					
Protected Land					
<i>No federal/state lands, conservation easements, or public lands identified within the Study Area.</i>					
Cultural Resources					
OAI-listed archaeological sites within ROW	count	1	0	0	0
OAI-listed archaeological sites within 250 feet of centerline	count	7	7	7	4
NRHP-listed resources within ROW	count	0	0	0	0

Table 5. Land Use Impacts					
Evaluation Criteria	Unit	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D
NRHP-listed resources within 250 feet of centerline	count	0	3	3	0
NRHP-eligible resources within 250 feet of centerline	count	0	1	1	0
OHI-listed Resources within 1,000 feet of centerline	count	7	10	9	4

^a The number of parcels crossed refers to the number of individual plots of owned land recorded by each County. The number of landowners within the ROW represent the number of individual landowners, who each may own one or more parcels.

^b Commercial development includes retail, service, office, restaurants, and lodging establishments.

NLCD = National Land Cover Database

* Prime farmland is soil type hat has the best combination of physical and chemical characteristics for producing crops.

5.3 Constructability

This section discusses the feasibility of a proposed transmission line, as it relates to engineering and construction concerns. Constructability evaluates the use of existing transmission corridors, engineering challenges, and accessibility issues of a Proposed Route. Major factors that affect constructability include, but are not limited to, steep topography, condensed ROWs, heavy angles, proximity to major highways, accessibility, safety, and cost. A comparison of the engineering and construction considerations for the four Alternative Routes is presented at the end of this section in **Table 6**.

5.3.1 Engineering Design Considerations

Engineering and Construction Considerations

Potential engineering and construction challenges are important to consider when siting a transmission line. Within the Study Area, the Siting Team considered heavy angles (angles greater than 30 degrees), access road placement, and potential for narrow ROW alignments as elements that could ultimately require extensive or non-standard engineering and lead to increases in impacts and overall cost for the Project.

Within the Study Area, the primary constructability challenges involved siting study segments adjacent to existing roads, and other linear infrastructure. There were no natural constructability challenges such as varying topography, large river or waterbodies, or steep slopes. Given the built environment of the Study Area, and the planned land use in the area, there were not very many viable cross country (i.e. away from roads or other utility corridors) options. The proximity to existing roadway, transmission, and gas pipeline infrastructure could also pose potential engineering and construction challenges, including incorporating distribution underbuild and access. Access during construction for corridors adjacent to roads could require lane closures and segmented construction methods. Additionally, crossing over transmission lines and gas pipelines may require specialized construction techniques and transmission crossings may require outages.

5.3.2 Access Roads

Access roads will be finalized at a later date and will use existing improved roads and unimproved roads to minimize impacts. Access roads will generally require 30 feet of clearing for road base construction and cut-and-fill construction as needed.

5.3.3 Alternative Route Comparison

Between the Amlin Substation and Eiterman Road, Alternatives A and D take a cross country route; whereas Alternatives A and B are located adjacent to an existing ROW and Shier Rings Road in the same area. There is no major difference between the number of heavy angles that are required by either set of routes; however, access along the cross country routes (Alternatives A and D) may be more challenging and require the construction of more linear feet of access road when compared to Alternatives B and C that are located adjacent the existing ROW and existing roads. Locating adjacent to existing roads may not require the construction of access roads but will require maintenance of traffic plans and permitting

to work within road ROW. The acquisition of these permits may limit the amount of lane closures allowed which may slow the construction process.

In the area between Eiterman Road and Avery Road, Alternatives A, B, and C are located adjacent to existing roads, and Alternative D takes a cross country approach. As previously noted, alternatives adjacent to the existing roads would require less linear feet of access road but could have more challenging permitting requirements than a cross country route, which would require the construction of a temporary access road but would not be confined by lane closure limitations or ROW permitting.

Alternatives A, B, C, and D are adjacent to Shier Rings Road between Avery Road and the Dublin substation; therefore, there is no difference in the challenge of constructability between the alternative routes along within this area of the Study Area. Overall, all four of the Alternative Routes have generally the same types of constructability constraints including distribution underbuild, multiple heavy angle structures, and using corridors adjacent to roads. Because the topography is flat, and there are no large waterbodies in the Study Area, there is not a significant difference in constructability challenges among the four Alternative Routes.

Table 6. Constructability Concerns					
Evaluation Criteria	Unit	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D
General					
Length	miles	3.6	3.6	3.7	3.3
Transportation Resources					
Interstate highways crossed	count	0	0	0	0
U.S. highways crossed	count	0	0	0	0
State highways crossed	count	0	0	0	0
Local roads and streets crossed	count	6	9	9	6
Railroads crossed	count	0	0	0	0
Airports within one mile of the centerline	count	0	0	0	0
Utility Resources					
Oil and gas pipelines crossed	count	0	1	1	0
Communication towers within 1,000 feet of the centerline	count	1	1	1	1
Existing electric transmission lines crossed	count	0	1	1	0
<i>No oil and gas wells identified within the Study Area.</i>					
Engineering and Construction Considerations					
Steep slopes crossed by ROW (>20%), percent of total length	miles	0	0	0	0
Heavy angles, greater than 30 degrees	count	8	5	5	8
Rights-of-Way Parallel and/or Overbuild					
Parallel existing electric transmission lines	miles	0	0.5	0.6	0
Parallel or overbuild existing distribution lines	miles	0.7	0.6	0.6	0.6
Parallel oil and gas pipeline	miles	0	0	0	0

Table 6. Constructability Concerns					
Evaluation Criteria	Unit	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D
Parallel Interstate highways, U.S. highways, State highways, and local roads	miles	1.0	1.2	1.2	0.5
Parallel railroad	miles	0	0	0	0

6.0 IDENTIFICATION OF THE PROPOSED ROUTE(S)

As stated in the introductory chapters, the goal in selecting a suitable route for the Project is to minimize impacts on land use and natural and cultural resources while avoiding circuitous routes, significantly higher costs, and non-standard design requirements. In practice, it is not usually possible to optimally minimize all potential impacts at all times. There are often inherent tradeoffs in every siting decision. For example, in this Study Area, using vacant land for the routing alternatives would avoid locating the transmission line near existing residential development but could hinder the future development of those areas. Thus, an underlying goal of a siting study is to reach a reasonable balance between minimizing potential impacts on one resource versus increasing the potential impacts on another.

The following summarizes the reason for selecting the Proposed Route, and thus, the route that the Siting Team considered best to minimize the overall impacts of the Project. The selection is based on siting decisions made throughout the process, the knowledge and experience of the Siting Team, comments from the public and regulatory agencies, and the comparative analysis of potential impacts presented in Chapter 4. The Siting Team evaluated four alternatives for this Project. These alternatives were selected because they provided the most flexibility for siting in areas that avoided existing development, while retaining open areas planned for future development. **Ultimately, the Siting Team chose Alternative Route D as the Proposed Route for the Project.**

6.1 Conclusion

Alternative Route D was selected because it took advantage of the siting opportunities in the area while minimizing impacts to the local community, land use, and resources. The Proposed Route was selected in coordination with the City of Dublin and its alignment was generally favored by external stakeholders through information gleaned at the public open houses. The Proposed Route uses study segment 35A which is located between Avery Road and Eiterman Road. This study segment is proposed to be located adjacent to the future University Boulevard. The benefits of using this study segment set Alternative Route D apart from the other alternatives examined during the siting process because it was located away from the existing residential development while being located in an area within the open space that would not prohibit future growth planned for the area.

Alternative Route D is also the shortest of the routing alternatives examined for the Project, has the least number of residences in close proximity, avoids potential impacts to a National Register Historic Site, and avoids potential impacts to recreational uses in the area (Darree Fields). Collectively, the Siting Team believes that the Proposed Route meets the goal of minimizing impacts on land use, and the natural and cultural resources along the route, while avoiding circuitous routes and non-standard design requirements that can result in significantly higher costs.

Following selection of Proposed Route, minor adjustments and refinements were made to Alternative Route D during detailed engineering.

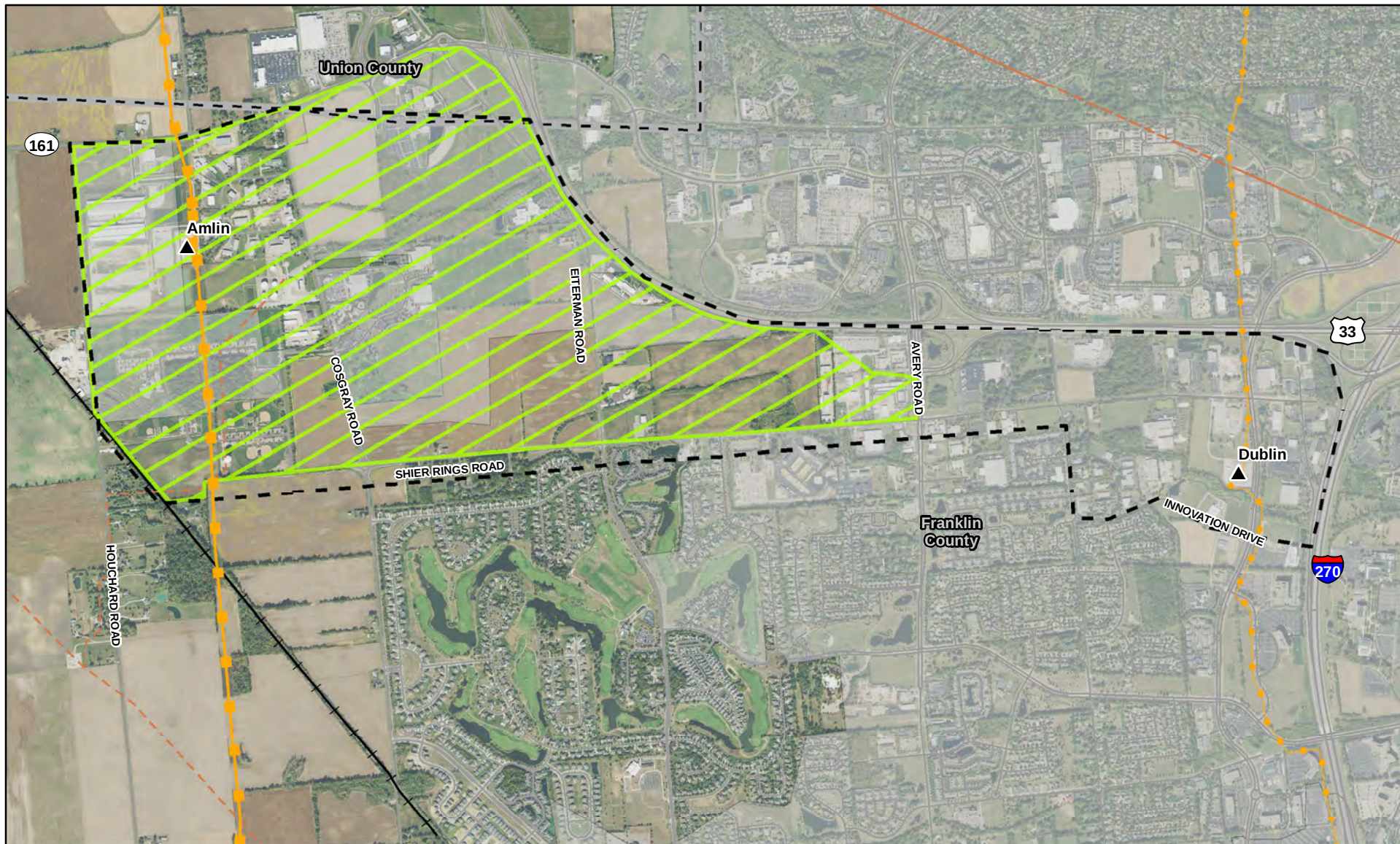
7.0 REFERENCES

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<https://dublinohiousa.gov/dev/dev/wp-content/uploads/2019/03/WID-Special-Area-Plan-Final-Report-Revised-August-2019.pdf>. Accessed 2019.

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Attachment A: Maps



Legend

- ▲ Project Substation
- Existing 138 kV Transmission Line
- Existing 345 kV Transmission Line
- - - Existing Pipeline
- Railroads
- Study Area
- West Innovation District
- City of Dublin
- County Boundary

Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet

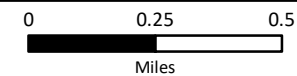
May 13, 2020



Map 1 Study Area



Dublin West Innovation
District Improvements
138 kV Transmission Line Project





Legend

- ▲ Project Substation
- ➡ Conceptual Route
- Existing 138 kV Transmission Line
- Existing 345 kV Transmission Line
- Street
- Existing Pipeline
- ✚ Railroads
- ▬ Study Area
- ▭ County Boundary

Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet

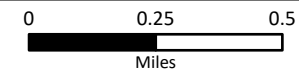
May 13, 2020

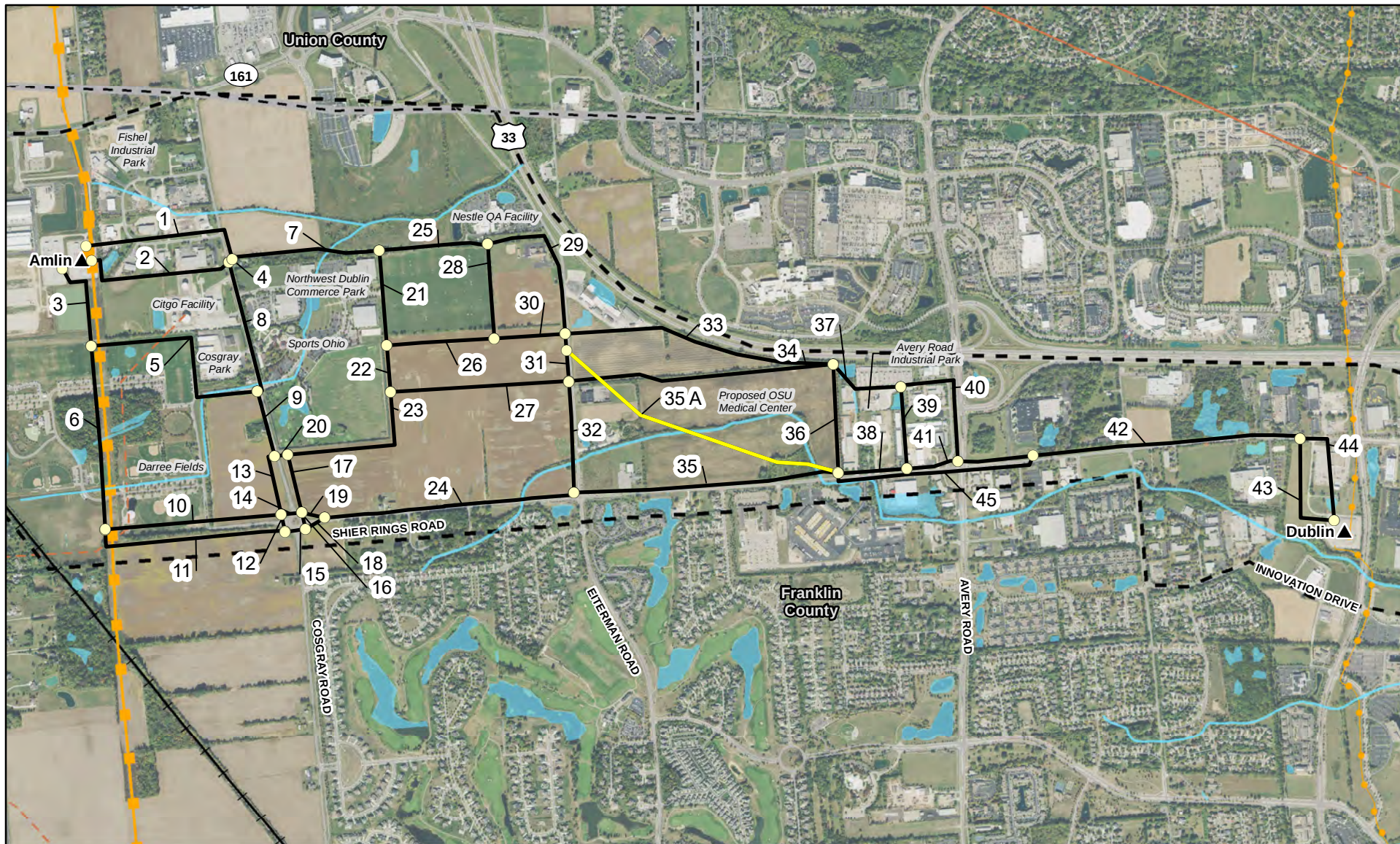


Map 2 Conceptual Routes



Dublin West Innovation
District Improvements
138 kV Transmission Line Project





Legend

- ▲ Project Substation
- Segment Endpoint
- Study Segment
- Study Segment – see note below
- Railroad
- Existing 138 kV Transmission Line
- Existing 345 kV Transmission Line
- Existing Pipeline
- Street
- Wetlands (NWI) and Waterbodies (NHD)
- Study Area
- County Boundary

Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet

May 13, 2020



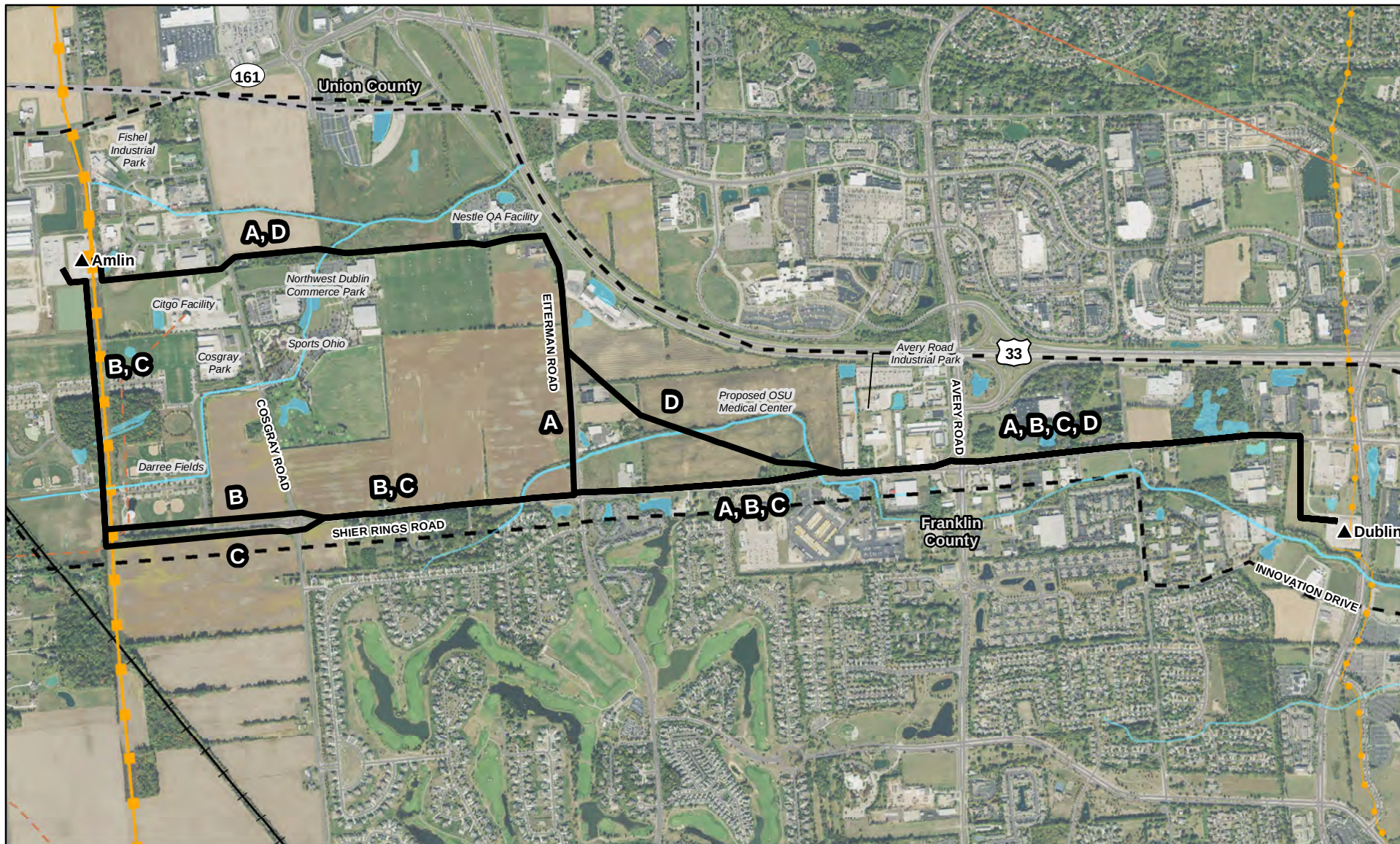
Map 3 Potential Route Network



Dublin West Innovation
District Improvements
138 kV Transmission Line Project



Note: Study Segment 35A is shown in a different color to illustrate how it crosses other parts of the study segment network.



Legend

- ▲ Project Substation
- Alternative Routes A,B,C,D
- Railroad
- Existing 138 kV Transmission Line
- Existing 345 kV Transmission Line
- Existing Pipeline
- Street
- Wetlands (NW) and Waterbodies (NHD)

 Study Area
County Boundary

Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet

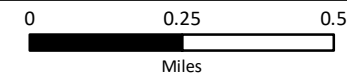
May 13, 2020

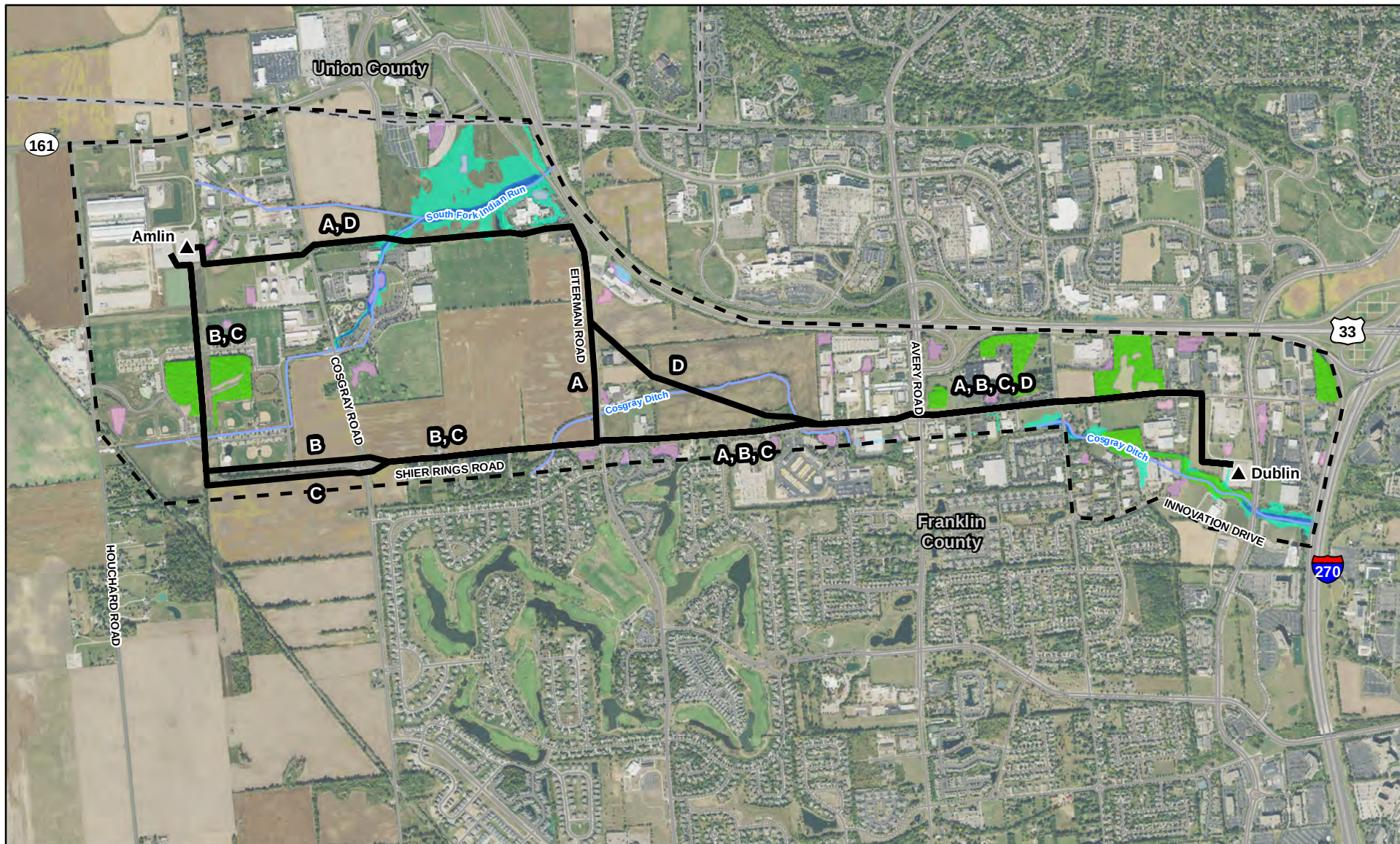


Map 4 Alternative Routes



Dublin West Innovation
District Improvements
138 kV Transmission Line Project





Legend

-  Project Substation
-  Stream (NHD)
-  Alternative Routes A,B,C,D
-  Waterbody (NHD)
-  Wetland (NWI)
-  Floodplain
-  Floodway
-  Forest Habitat
-  Study Area
-  County Boundary

Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet

May 13, 2020

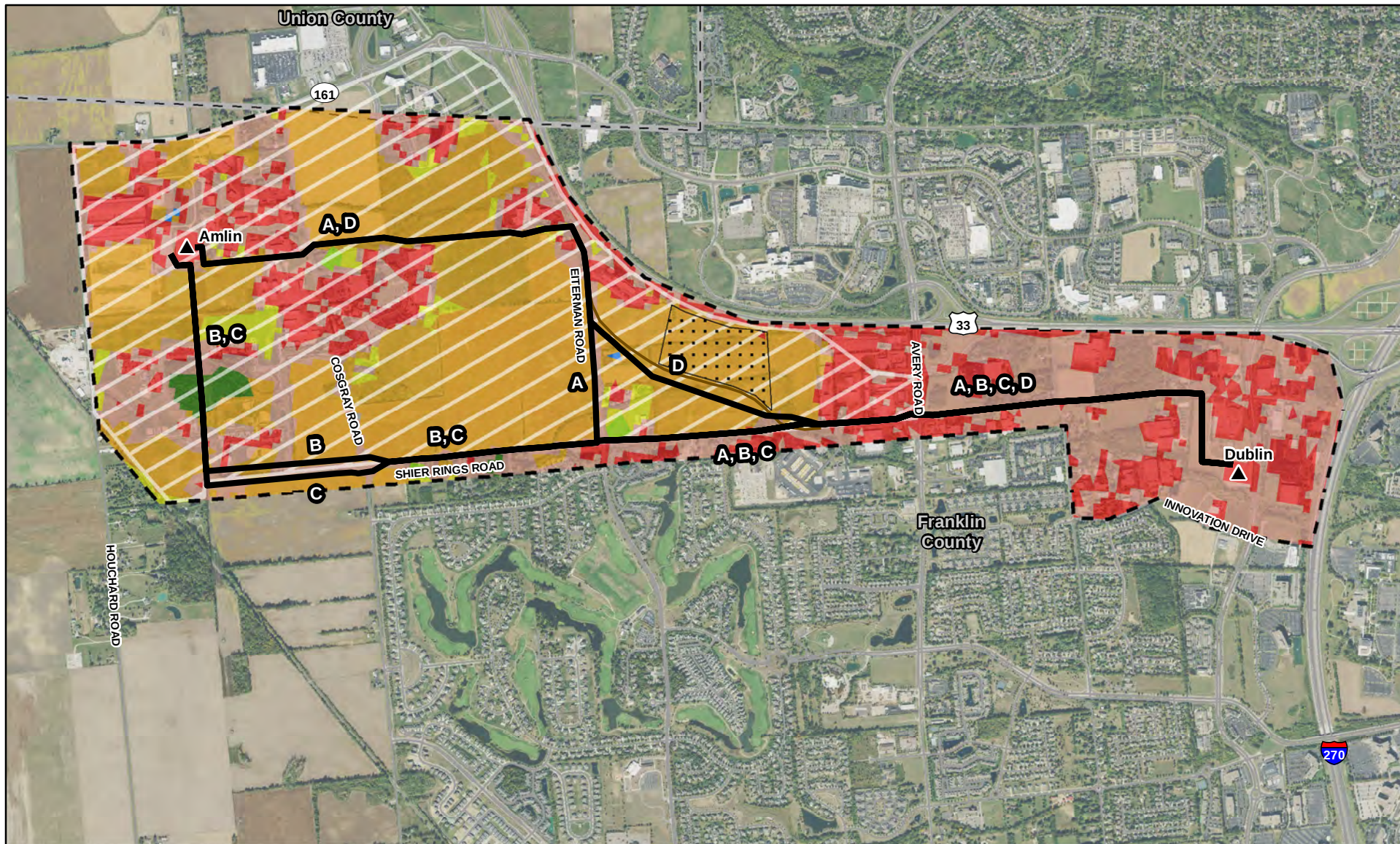


Map 5 Water Resources and Wildlife Habitat



Dublin West Innovation
District Improvements
138 kV Transmission Line Project





Legend

- Project Substation
- Alternative Routes A,B,C,D
- Proposed University Blvd
- Study Area
- Proposed OSU Medical Center
- West Innovation District
- County Boundary

Land Use NLCD

- Barren Land
- Cultivated Crops
- Deciduous Forest
- Developed, Open Space/Low Intensity
- Developed, Medium/High Intensity
- Hay/Pasture
- Herbaceous
- Open Water

Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet

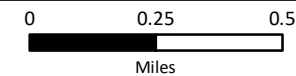
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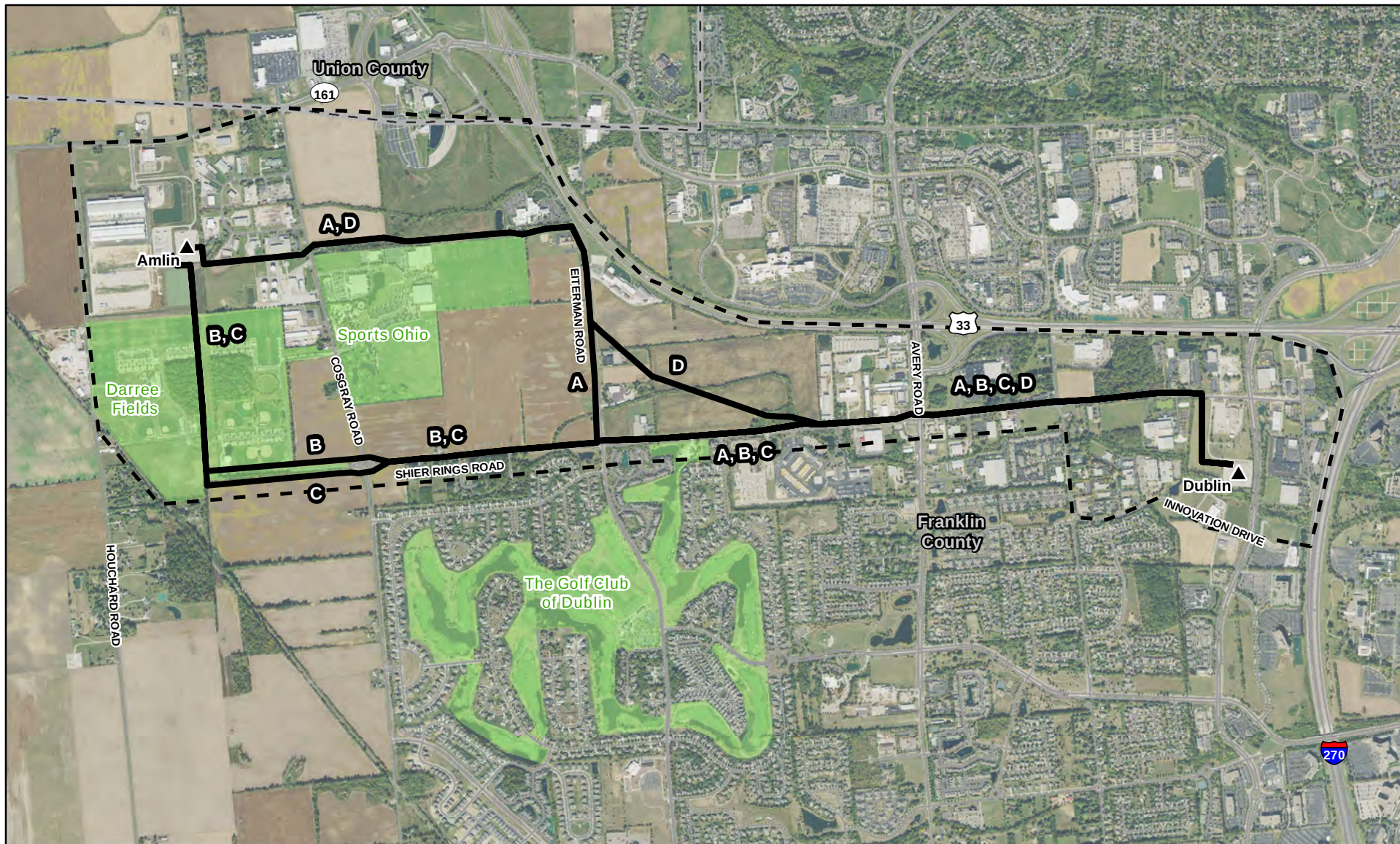


Map 6 Land Use



Dublin West Innovation
District Improvements
138 kV Transmission Line Project





Legend

- ▲ Project Substation
- Alternative Routes A,B,C,D
- Street
- Study Area
- Park/Recreation Area
- County Boundary

Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet

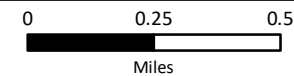
May 13, 2020

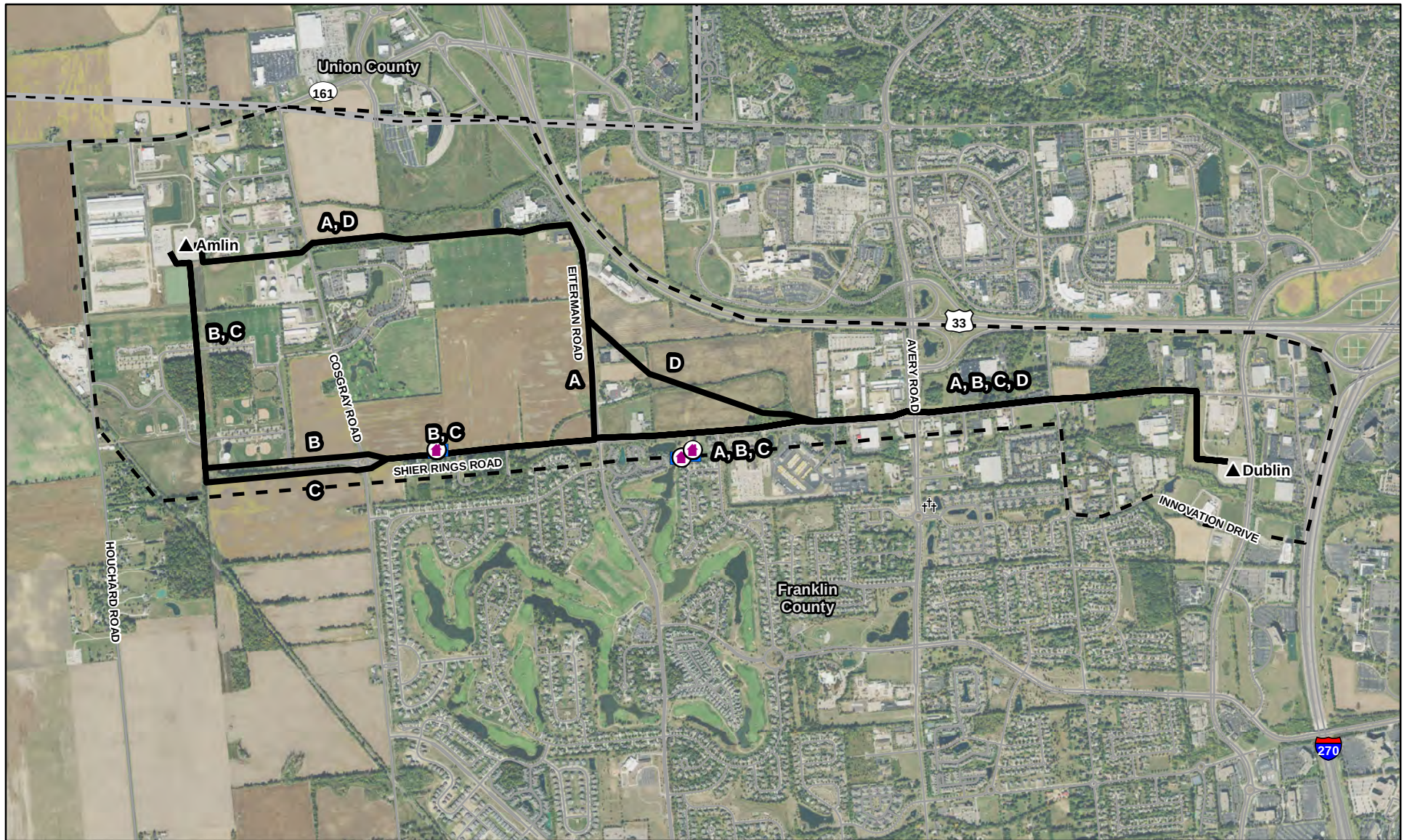


Map 7 Park/Recreation Area



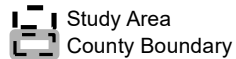
Dublin West Innovation
District Improvements
138 kV Transmission Line Project





Legend

- ▲ Project Substation
- Historic Structure
- ⛦ Cemetery
- National Register of Historic Places
- Alternative Routes A,B,C,D
- Street



Basemap Source:
NAIP 2019

NAD 1983 State Plane
Ohio South FIPS 3402 Feet



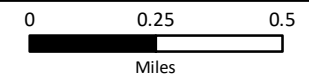
May 13, 2020



Map 8 Cultural Resources



Dublin West Innovation
District Improvements
138 kV Transmission Line Project



Attachment B: GIS Data Sources

Attachment B. GIS Data Sources		
Siting Criteria	Source	Description
Natural Environment		
Forest clearing within the ROW	Digitized based on <i>National Agriculture Imagery Program</i> -NAIP 2019 and ESRI World Imagery 2019	Acres of forest within the ROW
Number of National hydrography dataset (NHD) stream and waterbody crossings within the ROW	USGS (March 2012)	The NHD is a comprehensive set of digital spatial data prepared by the USGS that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells
Acres of National Wetland Inventory (NWI) wetland crossings within the ROW	U.S. Fish and Wildlife Service (USFWS) (October 2019)	The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats
Acres of 100-year floodplain crossing within the ROW	U.S. Federal Emergency and Management Agency (FEMA) (Updated April 2015, Website Accessed April 2020)	Acres of 100-year floodplain within the ROW
Miles of public lands crossed by the route	The Protected Areas Database of the United States (PAD-US) (May 2016)	Miles of federal, state and local lands crossed by the ROW
Threatened, endangered, rare or sensitive species occurrence within the Project vicinity	U.S. Fish and Wildlife Service (USFWS) (2017), Ohio Department of Natural Resources (ODNR) (2017)	Known occurrences; locations of potential habitat based on land use
Percent of hydric soils within the ROW	United States Department of Agriculture (USDA-NRCS), Natural Resources Conservation Service Soil Survey Geographic (SSURGO) Database (2019)	Percent of soil associations crossed by the ROW characterized as hydric, predominantly hydric, partially hydric and non-hydric
Percent of prime farmland soils and soils of statewide importance within the ROW	USDA-NRCS SSURGO Database (2019)	Percent of soil associations crossed by the ROW characterized as prime farmland or farmland of statewide importance
Land Use		
Number of parcels crossed by the ROW	Parcel data updated February 2020, downloaded from Franklin County Auditor Website April 2020.	Count of the number of parcels crossed by the ROW
Number of residences within 1,000 feet of the route centerline	Digitized from NAIP 2019 and ESRI World Imagery 2019 and field verified from points of public access	Count of the number of residences within the ROW and within 1,000 feet of potential routes
Number of commercial buildings within 1,000 feet of the route centerline	Digitized from NAIP 2019 and ESRI World Imagery 2019 and field verified from points of public access	Count of the number of commercial buildings within the ROW and within 1,000 feet of potential routes
Land use acreage and distance crossed by the ROW	National Land use Dataset (NLCD) (2016)	The NLCD (2016) compiled by the Multi-Resolution Land Characteristics (MRLC) Consortium includes 15 classes of land cover from Landsat satellite imagery

Attachment B. GIS Data Sources		
Siting Criteria	Source	Description
Acres of conservation easements crossed	National Conservation Easement Database (NCED) (May 2013) and The Protected Areas Database of the United States (PAD-US) (May 2016)	Private conservation easements crossed by the routes from the NCED which is comprised of voluntarily reported conservation easement information from land trusts and public agencies
Acres of agricultural district land crossed	Parcel data downloaded from Franklin County Auditor Website, list of agricultural district land provided by Deputy Auditor/CAUV Coordinator (April 2020)	Protected land that is devoted exclusively to agricultural production or devoted to and qualified for compensation under a federal land retirement or conservation program that is at least 10 acres in size, or produces an average yearly gross income of at least \$2,500 during a 3-year period
Number of archeological resources within the ROW and within 250 feet of the route centerline	Ohio Historic Preservation Office (OHPO), Online Mapping System Access 3/26/2020	Previously identified archeological resources listed or eligible on the National Register of Historic Places (NRHP) acquired through Ohio Historic Preservation Office (OHPO)
Number of historic architectural resources within the ROW, within 1,000 feet of the route centerline	Ohio Historic Preservation Office (OHPO), Online Mapping System Access 3/26/2020	Previously identified historic architectural resource sites and districts listed or eligible on the NRHP acquired through Ohio Historic Preservation Office (OHPO)
Number of cemeteries within the ROW, within 1,000 feet of the route centerline	Ohio Historic Preservation Office (OHPO), Online Mapping System Access 3/26/2020	Previously identified cemeteries through Ohio Historic Preservation Office (OHPO)
Community/Recreational Facilities (schools, places of worship, hospitals, parks) within 1,000 feet of the route centerline	ESRI Dataset (2013), City of Dublin Webmap, Google Earth, ESRI World Imagery (2019)	These datasets include the locations of churches, places of worship, hospitals, medical clinics, assisted living facilities, parks, recreation areas and schools. Features within 1,000 feet of potential routes.
Technical		
Route length	Measured in GIS	Length of route in miles
Number and severity of angled structures	Developed in GIS	Anticipated number of angled structures < 3 degrees, 3 to 45 degrees and over 45 degrees based on preliminary design
Number of road crossings	City of Dublin road file (acquired September 2019)	Count of federal, state and local roadway crossings
Airfield and heliports within 1 mile of the route centerline	Aerial Imagery Review (NAIP 2019)	Distance from airfields and heliports
Number of pipeline crossings	PenWell Database (2014)	Number of known pipelines crossed by the transmission ROW
Number of transmission line crossings	AEP Ohio Transco	Number of high voltage (100 kV or greater) transmission lines crossed by the ROW
Distance of steep slopes crossed	Derived USDA-NRCS SSURGO Database (2019)	Miles of slope greater than 20 percent crossed by the routes
Length of transmission line parallel	AEP Ohio Transco	Miles of the route parallel to existing high voltage transmission lines

Attachment B. GIS Data Sources		
Siting Criteria	Source	Description
Length of pipeline parallel	PenWell Database (2014)	Miles of the route parallel to existing pipelines
Length of road parallel	City of Dublin road file (acquired September 2019)	Miles of the route parallel to existing roadways

Attachment C: Agency Correspondence

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Monday, September 18, 2017 1:42 PM
To: Hall, Mia; Geho, Robert
Cc: nathan.reardon@dnr.state.oh.us; kate.parsons@dnr.state.oh.us
Subject: CEC No. 172-616 - AEP Amlin-Dublin 138 kV Transmission Line Project, Franklin Co.



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# 03E15000-2017-TA-1938

Dear Ms. Hall,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

FEDERALLY LISTED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these

structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves and abandoned mines.

Should the proposed site contain trees ≥ 3 inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend that removal of any trees ≥ 3 inches dbh only occur between October 1 and March 31. Seasonal clearing is being recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

If implementation of this seasonal tree cutting recommendation is not possible, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the project area during the summer. If a summer survey documents probable absence of Indiana bats, the 4(d) rule for the northern long-eared bat could be applied. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office. Surveyors must have a valid federal permit. Please note that summer surveys may only be conducted between June 1 and August 15.

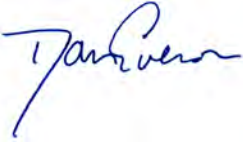
If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend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

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at john.kessler@dnr.state.oh.us.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Dan Everson". The signature is fluid and cursive, with the first name "Dan" being more prominent than the last name "Everson".

Dan Everson

Field Supervisor

cc: Nathan Reardon, ODNR-DOW

Kate Parsons, ODNR-DOW



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

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

November 6, 2017

Mia Hall
Civil & Environmental Consultants, Inc.
250 Old Wilson Bridge road, Suite 250
Worthington, Ohio 43085

Re: 17-673; ODNR Environmental Review Request, Amlin - Dublin 138Kv Transmission Line, CEC Project 172-616

Project: The proposed project involves the construction of the Amlin-Dublin 138 kV transmission line.

Location: The proposed project is located in the City of Dublin, Franklin County, Ohio.

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

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

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

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

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

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

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

The project is within the range of the purple cat's paw (*Epioblasma o. obliquata*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel species, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federal endangered mussel, the long solid (*Fusconaia maculata maculata*), a state endangered mussel, the Ohio pigtoe (*Pleurobema cordatum*), a state endangered mussel, the pocketbook (*Lampsilis ovata*), a state endangered mussel, the washboard (*Megaloniais nervosa*), a state endangered mussel, the elephant-ear (*Elliptio crassidens crassidens*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel, the pondhorn (*Unio merus tetralasmus*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, the popeye shiner (*Notropis ariommus*), a state endangered fish, the northern brook lamprey (*Ichthyomyzon fossor*), a state endangered fish, the spotted darter (*Etheostoma maculatum*), a state endangered fish, the shortnose gar (*Lepisosteus platostomus*), a state endangered fish, the tonguetied minnow (*Exoglossum laurae*), a state threatened fish, the paddlefish (*Polyodon spathula*) a state threatened fish, and the Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, this project is not likely to impact these or other aquatic 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.

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

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

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

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

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler
ODNR Office of Real Estate
2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693
John.Kessler@dnr.state.oh.us

Attachment D: Threatened and Endangered Species

Attachment D. Threatened and Endangered Species			
Species Name	Status	Habitat Type	Note
Mammals^{a, d}			
Indiana Bat (<i>Myotis sodalis</i>)	Federally and state endangered	Hibernacula are caves and mines; maternity and foraging habitat comprise small stream corridors with well-developed riparian woods and upland forests.	Habitat present and species likely in the Study Area.
Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	Federally threatened	Hibernates in caves and mines; swarms in surrounding wooded areas in autumn; during late spring and summer, roosts and forages in upland forests.	Habitat present and species likely in the Study Area.
Birds^a			
Upland Sandpiper (<i>Bartramia longicauda</i>)	State endangered	Nesting habitats include grasslands, pastures, and unused agricultural land and they make their nests on the ground lined with grass. 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.	Marginal habitat may be present in the Study Area. Construction will occur outside of nesting and fledging season; therefore, project is not likely to adversely affect this species.
Fish^a			
Scioto Madtom (<i>Noturus trautmani</i>)	Federally and state endangered	Habitat includes stream riffles of moderate current over gravel bottoms. Water must be of high quality and free of suspended sediments.	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Popeye Shiner (<i>Notropis ariommus</i>)	State endangered	Habitat includes extremely clear waters in moderate sized streams. These streams usually have slow to moderate flow and many long slow pools.	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Spotted Darter (<i>Etheostoma maculatum</i>)	State endangered	Habitat includes medium sized rivers and streams in areas with swift currents; this species is an indicator of high-quality stream habitats.	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Northern Brook Lamprey (<i>Ichthyomyzon fossor</i>)	State endangered	Habitat includes free flowing streams that are free of dams with either sand or gravel bottoms.	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.

Attachment D. Threatened and Endangered Species			
Species Name	Status	Habitat Type	Note
Shortnose Gar (<i>Lepisosteus platostomus</i>)	State endangered	Habitat includes large rivers with overflow ponds and backwaters.	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Tonguetied Minnow (<i>Exoglossum laurae</i>)	State threatened	Habitat includes cool, clear rivers with clean gravel and pebble stream bottom.	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Tippecanoe Darter (<i>Etheostoma Tippecanoe</i>)	State threatened	Habitat includes medium to large streams and rivers with either gravel or small cobble size rock bottoms where they hide in the crevices.	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Paddlefish (<i>Polyodon spathula</i>)	State threatened	Slow-moving large- and medium-sized rivers, river-margin lakes, channels, oxbows, backwaters, and impoundments with access to spawning areas. ^b	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Mussels			
Northern Riffleshell (<i>Epioblasma rangiana</i>)	Federally and state endangered	Found in a large to small streams; buries itself in bottoms of firmly packed sand or gravel. ^d	Habitat may be present in Study Area, but no in-water work proposed; Project not likely to affect species.
Purple Cat's Paw (<i>Epioblasma o. obliquata</i>)	Federally and state endangered	Gravel riffles of medium to large rivers. ^d	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Snuffbox (<i>Epioblasma triquetra</i>)	Federally and state endangered	Found in small- to medium-sized creeks, associated with areas with swift currents; buries itself in sand, gravel, or cobble substrates ^e	Habitat may be present in Study Area, but no in-water work proposed; Project not likely to affect species.
Clubshell (<i>Pleurobema clava</i>)	Federally and state endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers. ^d	Habitat may be present in Study Area, but no in-water work proposed; Project not likely to affect species.
Rayed Bean (<i>Villosa fabalis</i>)	Federally and state endangered	Generally known to occur in small headwater creeks, but can exist in large rivers; found in or near shoal or riffle areas and in shallow wave-washed areas of glacial lakes ^b	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.

Attachment D. Threatened and Endangered Species			
Species Name	Status	Habitat Type	Note
Rabbitsfoot (<i>Quadrula cylindrica</i>)	State endangered	Habitat includes headwater and small inland streams; is known to occur in Lake Erie tributaries and Ohio River tributaries. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Elephant-ear (<i>Elliptio crassidens crassidens</i>)	State endangered	Inhabits muddy sand, sand, and rocky substrates in moderate currents; most common in large creeks to rivers with moderate to swift currents ^b	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Long-solid (<i>Fusconaia subrotunda</i>)	State endangered	Is known to occur in the Ohio River, Lake Erie tributaries and Ohio River tributaries. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Ohio Pigtoe (<i>Pleurobema cordatum</i>)	State endangered	Is limited to the lower Muskingum River, Big Darby Creek, and a few sites in the Ohio River. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Pocketbook (<i>Lampsilis ovata</i>)	State endangered	Is known to occur in the Ohio River and Ohio River tributaries. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Washboard (<i>Megaloniaias nervosa</i>)	State endangered	Large river species, inhabits slow current areas with sand, gravel, and mud substrates. ^c	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Black Sandshell (<i>Ligumia recta</i>)	State threatened	Habitat includes headwater and small inland streams; is known to occur in Lake Erie tributaries and Ohio River tributaries. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Threehorn Wartyback (<i>Obliquaria reflexa</i>)	State threatened	Typical of large rivers with moderately strong currents and gravel, sand, and mud substrates. ^b Is known to occur in man-made lakes and ponds and in the Ohio River, Lake Erie, Lake Erie tributaries and Ohio River tributaries. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.

Attachment D. Threatened and Endangered Species			
Species Name	Status	Habitat Type	Note
Fawnsfoot (<i>Truncilla donaciformis</i>)	State threatened	Occurs in medium- and large-sized rivers with moderate currents; found in varying depths from less than 3 feet to 18 feet; preferred substrates include sand or mud. ^b Is known to occur in man-made lakes and ponds and in the Ohio River, Lake Erie, Lake Erie tributaries and Ohio River tributaries. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
Pondhorn (<i>Unio merus tetralasmus</i>)	State threatened	Habitat includes headwater and small inland streams and is known to occur in Lake Erie. ^e	Habitat is not present in Study Area. No in-water work proposed; Project not likely to affect species.
^a ODNR (2012a) ^b NatureServe Explorer (2018) ^c Minnesota Department of Natural Resources (2018) ^d USFWS (2020) ^e ODNR (2012b)			

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LETTER OF NOTIFICATION FOR AMLIN-DUBLIN 138 KV TRANSMISSION LINE PROJECT

May 26, 2020

Appendix D Easement/Options List

Appendix D - Easement/Options List

Property Parcel ID	Easement/Options Obtained
275-000007-00	No
275-000005-00	No
272-000592-00	No
272-000125-00	No
272-000603-00	No
272-000604-00	No
274-012226-00	No
272-000606-00	No
272-000243-00	No
274-012228-00	No
274-000010-00	No
273-011342-00	No
274-000133-00	No
273-011256-00	No
273-005939-00	No
273-013078-00	No
273-004516-00	No
270-000139-00	No
270-000758-00	No
270-000759-00	No
272-000130-00	No
273-008174-00	No
274-001113-00	No
274-001112-00	No
274-001114-00	No
274-001115-00	No
274-000130-00	No
273-000304-00	No
273-000317-00	No
273-009727-00	No
273-000316-00	No
273-000302-00	No

Appendix D - Easement/Options List

273-001049-00	No
273-005584-00	No
273-005586-00	No
273-005587-00	No
273-000297-00	No
273-000176-00	No
273-000175-00	No
273-001585-00	No
273-005320-00	No
273-001532-00	No

LETTER OF NOTIFICATION FOR AMLIN-DUBLIN 138 KV TRANSMISSION LINE PROJECT

May 26, 2020

Appendix E Wetland Delineation Report



**Amlin – Dublin 138 kV
Transmission Line Rebuild Project
Franklin County, Ohio**

**Ecological Resources Inventory
Report**

Prepared for:

AEP Ohio Transmission Company, Inc.
8600 Smiths Mill Road
New Albany, OH 43054

Prepared by:

Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, OH 43204

May 15, 2020

Sign-off Sheet

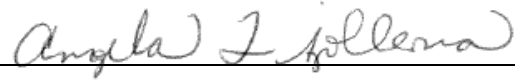
This document entitled Amlin – Dublin 138 kV Transmission Line Rebuild Project, Franklin County, Ohio, Ecological Resources Inventory Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of AEP Ohio Transmission Company, Inc. (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 
(signature)

Charlie Allen


Reviewed by _____
(signature)

Matt Teitt

Reviewed by 
(signature)

Angela Sjollema

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RESOURCES INVENTORY REPORT**

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AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL RESOURCES INVENTORY REPORT

Introduction
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1.0 INTRODUCTION

AEP Ohio Transmission Company, Inc. (AEP) is proposing to build approximately 3.4 miles of 138 kV transmission line between AEP's Dublin and Amlin stations in Franklin County, Ohio, the Project (Figure 1, Appendix A). The Project starts at Crosby Court and runs east to the intersection of Shier Rings Road and Emerald Parkway in the City of Dublin, Franklin County, Ohio (Project area). An 80-foot study corridor and associated access roads were surveyed for wetlands, waterbodies, open water features, and potential threatened, endangered, and rare species habitat by Stantec Consulting Services Inc. (Stantec) biologists on April 28 and 29, and May 1 and 14, 2020. The approximate location of features located up to 50 feet outside of the Project area were also recorded during the field surveys, where landowner access was permitted. However, no data forms were collected on features that did not extend into the Project area. The approximate locations of these features are shown on the Figure 2 maps in Appendix A as "approximate" wetlands and stream (waterways) features adjacent to the Project area.

Methods
May 15, 2020

2.0 METHODS

2.1 WETLAND DELINEATION

Prior to completing the field surveys, a desktop review of the Project area was conducted using U.S. Geological Survey (USGS) topographic maps, National Wetlands Inventory (NWI) maps, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey data for Franklin County, and aerial imagery mapping. Stantec completed a wetland delineation study in accordance with the Corps of Engineers Wetlands Delineation Manual (USACE Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE 2010). Wetland categories were classified using the Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001).

2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project area, per the protocols outlined in the USACE's Guidance on Ordinary High Water Mark Identification (Regulatory Guidance Letter, No. 05-05) (USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definitions in the Federal Register/Vol. 67, No. 10 (USACE 2002). Functional assessment of streams within the Project area was based on completion of the Ohio Environmental Protection Agency's (OEPA) Headwater Habitat Evaluation Index (HHEI; OEPA 2018) and/or Qualitative Habitat Evaluation Index (QHEI; OEPA 2006). The centerline and/or the OHWM locations of each waterway were identified and surveyed using a handheld sub-meter accuracy GPS unit and mapped with GIS software. Additionally, the locations of upland drainage features (which lacked a continuously defined bed and bank/OHWM) identified within the Project area were also recorded with a sub-meter accuracy GPS unit during the field surveys.

2.3 RARE SPECIES

Prior to conducting the field surveys, Stantec contacted the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) for information regarding rare, threatened, or endangered species and their habitats of concern within the vicinity of the Project area (Appendix B – Agency Correspondence). To assess potential impacts to rare, threatened, or endangered species, Stantec scientists conducted a pedestrian reconnaissance of the proposed Project area, collected information on existing habitats within the Project area, and assessed the potential for these habitats to be used by these species.

Results
May 15, 2020

3.0 RESULTS

3.1 TERRESTRIAL HABITAT

Stantec completed field surveys within the Project area on August 28 and 29, and May 1 and 14, 2020, for potentially suitable habitats for threatened and endangered species. Figure 3 (Appendix A) shows the land cover, vegetation communities, and any identified rare, threatened, or endangered species habitat observed within the Project area during the habitat assessment surveys. Representative photographs of the vegetative communities/habitats identified within the Project area are included in Appendix C of this report (photo locations are shown on Figure 3 in Appendix A). Information regarding the vegetation communities/habitats identified within the Project area is provided in Table 1.

Table 1. Vegetation Communities and Land Cover Found within the Amlin – Dublin 138 kV Transmission Line Rebuild Project Area, Franklin County, Ohio

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Old Field	Moderate to Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa). Dominant plant species included Canada goldenrod (<i>Solidago canadensis</i>), common dandelion (<i>Taraxacum officinale</i>), horseweed (<i>Erigeron canadensis</i>), common thistle (<i>Cirsium vulgare</i>), wild parsnip (<i>Pastinaca sativa</i>), yellow foxtail (<i>Setaria glauca</i>), heal-all (<i>Prunella vulgaris</i>), and broom grass (<i>Thysanolaena maxima</i>).	No	4.49
Early Successional Deciduous Forest	Moderate to Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa). Dominant plant species included Morrow's honeysuckle (<i>Lonicera morrowii</i>), Callery pear (<i>Pyrus calleryana</i>), red maple (<i>Acer rubrum</i>), black locust (<i>Robinia pseudoacacia</i>), raspberry (<i>Rubus idaeus</i>) common dandelion, hooded blue violet (<i>Viola sororia</i>), and Queen Ann's Lace (<i>Daucus carota</i>).	No	4.43
Second Growth Deciduous Forest	Intermediate Disturbance/Native Community (dominated by native woody and herbaceous species and opportunistic invaders). Dominant canopy species included common hackberry	No	5.43

AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL RESOURCES INVENTORY REPORT

Results

May 15, 2020

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
	(<i>Celtis occidentalis</i>), black cherry (<i>Prunus serotina</i>), and red oak (<i>Quercus rubra</i>). In the shrub layer, dominant plant species were Morrow's honeysuckle. The herbaceous layer was dominated by wild grape (<i>Vitis aestivalis</i>), and Morrow's honeysuckle.		
Maintained Lawn	Moderate to Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa). Dominant plant species include red clover (<i>Trifolium pratense</i>), English plantain (<i>Plantago lanceolata</i>), common plantain (<i>Plantago major</i>), and Kentucky bluegrass (<i>Poa pratensis</i>).	No	11.44
Agricultural Field	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa). Fields consisted of tilled soil at time of site visits.	No	4.63
Maintained Road Right-of-Way	Moderate to Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders, planted non-native species, and native highly tolerant taxa). Dominant plant species included Kentucky bluegrass, common plantain, and red clover.	No	2.54
Existing Paved Surface	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa).	No	0.24
Existing Roadway	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa).	No	1.09
Commercial	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa).	No	1.80
Industrial Land	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa).	No	0.32
Total			36.41

AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL RESOURCES INVENTORY REPORT

Results
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3.2 WETLANDS

Stantec completed field surveys for wetlands within the Project area on April 28 and 29, and May 1 and 14, 2020. Figure 2 (Appendix A) shows three wetlands identified by Stantec within the Project area. Representative wetland photographs are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). Completed wetland determination and ORAM data forms are included in Appendix D. Information regarding the Cowardin classification and ORAM categories of wetlands is provided in Table 2.

Table 2. Summary of Wetland Resources Found within the Amlin – Dublin 138 kV Transmission Line Rebuild Project Area, Franklin County, Ohio

Wetland Name	Photo Location Number¹	Isolated?	Wetland Classification²	ORAM Score⁴	ORAM Category⁴	Delineated Area (acre) within Project Area
Wetland 1	2	No	PEM ³	24	1	0.44
Wetland 2	3	No	PEM ³	14	1	0.02
Wetland 3	12	No	PEM ³	16	1	0.01
					TOTAL	0.47
¹ Appendix C – Representative Photographs						
² Wetland classification is based on Cowardin et al. (1979).						
³ PEM= Palustrine Emergent Wetland						
⁴ ORAM Score and Category are based on the Ohio Rapid Assessment Method for Wetlands v. 5.0 (Mack 2001).						

3.3 STREAMS

Stantec completed field surveys for streams within the Project area on April 28 and 29, and May 1 and 14, 2020. Figure 2 (Appendix A) shows the location of five streams identified by Stantec within the Project area. Representative photographs of the streams are included in Appendix C of this report (photo locations are shown on Figure 2 in Appendix A). Completed QHEI and HHEI data forms are included in Appendix D. Information regarding the five streams identified within the Project area is provided in Table 3.

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Table 3. Summary of Stream Resources Found within the Amlin – Dublin 138 kV Transmission Line Rebuild Project Area, Franklin County, Ohio

Stream Name	Photo Location Number ¹	Receiving Waters	Stream Flow Regime ²	Stream Evaluation Method	Stream Evaluation Score	OHWM ³ Width (feet)	Delineated Length (feet) within Project Area
Stream 1 (South Fork Indian Run)	4	Scioto River	Perennial	QHEI	46	11	95
Stream 2	6	Scioto River	Ephemeral	HHEI	24	1	160
Stream 3 (Cosgray Ditch)	7	Scioto River	Perennial	QHEI	44.5	6	290
Stream 4	8	Scioto River	Ephemeral	HHEI	26	2	71
Stream 5	9	Scioto River	Ephemeral	HHEI	23	1.5	35
Total							651
¹ Appendix C – Representative photographs as shown on Figure 2 (Appendix A)							
² Stream classification is based on Federal Register/Vol. 67, No. 10 (USACE 2002)							
³ OHWM = Ordinary High Water Mark							

3.4 OPEN WATERS

Stantec completed field surveys for waterbodies within the Project area on April 28 and 29, and May 1 and 14, 2020. Figure 2 (Appendix A) shows the location of three waterbodies (open water) identified by Stantec within the Project area. Representative photographs of the open water features are included in Appendix C of this report (photo locations are shown on Figure 2 in Appendix A).

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3.5 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 4. Summary of Potential Ohio State-Listed Species within the Amlin – Dublin 138 kV Transmission Line Rebuild Project Area, Franklin County, Ohio

Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Invertebrates								
Caddisfly	<i>Chimarra socia</i>	E	Yes	ODNR response pending.	This species is found in aquatic habitats with their nests attached to gravel, cobble, and boulder slab substrates (NatureServe 2020).	Yes	Suitable habitat was observed within the Project area. However, no in-water work is proposed to occur in perennial streams by AEP. Therefore, impacts are not anticipated.	ODNR response is pending.
Birds								
Upland Sandpiper	<i>Bartramia longicauda</i>	E	Yes	ODNR response pending.	Upland sandpipers breed in grasslands, pastures, and unkempt agricultural land with a mosaic of old fields and crop lands, and sometimes the grassy expanses of airports (ODNR Division of Wildlife 2020b). Large areas of grassland/lightly-moderately grazed pasture habitats (>20 acres) are required to be suitable nesting habitat for the upland sandpiper (WDNR 2014).	No	Old field habitat occupied less than 5 acres within the Project area. Therefore, no suitable habitat was observed, and impacts are not anticipated.	ODNR response is pending.
American Bittern	<i>Botaurus lentiginosus</i>	E	Yes	ODNR response pending.	Nesting bitterns are very secretive and prefer large undisturbed wetlands that have scattered small pools amongst the dense vegetation. They occasionally occupy bogs, large wet meadows, and dense, shrubby swamps (ODNR Division of Wildlife 2020b)	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.
Cattle Egret	<i>Bubulcus ibis</i>	E	Yes	ODNR response pending.	Cattle egrets often forage in dry pastures and fields in addition to open wetlands. They build nests out of sticks and other materials wherever it can be supported (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.
Lark Sparrow	<i>Chondestes grammacus</i>	E	Yes	ODNR response pending.	This species nests in grassland type of habitats with moderately distributed shrubs or disturbed areas with areas of bare soil. In Ohio, they are known to nest in open grass and shrubby fields along sandy beach areas (ODNR Division of Wildlife 2020b)	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.

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Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Northern Harrier	<i>Circus hudsonius</i>	E	Yes	ODNR response pending.	Harriers hunt low over grasslands, with wings held in a distinctive dihedral (V-shape). This is a common migrant and winter species; nesters are much rarer, although they occasionally breed in large marshes and grasslands (ODNR Division of Wildlife 2020b).	No	Old field habitat occupied less than 5 acres within the Project area. Therefore, no suitable habitat was observed, and impacts are not anticipated.	ODNR response is pending.
Sandhill Crane	<i>Grus canadensis</i>	T	Yes	ODNR response pending.	Sandhill cranes are primarily a wetland dependent species. They will utilize agricultural fields for their wintering grounds. However, they roost in shallow, standing water or moist bottomlands. They require rather large tracts of wet meadows, shallow march or bog for breeding and nesting. Sandhill cranes are seasonal residents (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.
Least Bittern	<i>Ixobrychus exilis</i>	T	Yes	ODNR response pending.	This species prefers to nest in marshes or swamps with dense emergent vegetation, especially cattails (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	T	Yes	ODNR response pending.	These largely nocturnal herons are likely more common than suspected but tend to hide in thick vegetation during the day. They are often found roosting in thick vegetation along streams, lakes, and wetlands (ODNR Division of Wildlife 2020b)	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.
Barn Owl	<i>Tyto alba</i>	T	Yes	ODNR response pending.	This species depends on open grassland over which to hunt. However, because of the way much of Ohio is farmed today, there is little of this kind of habitat around (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.
Amphibians/Reptiles								
Smooth Greensnake	<i>Opheodrys vernalis</i>	E	Yes	ODNR response pending.	This species is found in a variety of habitats, blackberry bushes, grapevines, shrubs, roadside ditches, open grassy meadows and marshy grass. Majority of species sightings have been in the extreme southwest Ohio. However, wherever prairie remnants are found this species has a potential to occur (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area. Therefore, impacts are not anticipated.	ODNR response is pending.

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Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Fishes								
Popeye Shiner	<i>Notropis ariommus</i>	E	Yes	ODNR response pending.	This fish is found in extremely clear waters in moderate sized streams. These streams usually have slow to moderate flow and many long slow pools (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Spotted Darter	<i>Etheostoma maculatum</i>	E	Yes	ODNR response pending.	This fish is found in medium sized rivers and streams. They are typically found in areas of swift current at the top or bottom end of a riffle where there are many very large boulders or flat slabs or rock. They spend most of their time hiding under the upstream edge of these large rocks with their heads sticking out watching for food (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Shortnose Gar	<i>Lepisosteus platostomus</i>	E	Yes	ODNR response pending.	This fish is found in large rivers and associated overflow ponds and backwaters (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Scioto Madtom	<i>Noturus trautmani</i>	E	No	ODNR response pending.	Only 18 individuals of the Scioto madtom have ever been found. Of those, 14 were found in the fall of 1957 and none have been seen since. No other fish has been searched for more persistently by researchers in Ohio than this species. This fish has never been found outside of Ohio and all 18 individuals were found in a small area of Big Darby Creek. They were found in the tail end of riffles over a sand and gravel substrate. Since all of the individuals were found in the fall it has been speculated that they may spend the remainder of the year further upstream. They likely eat various aquatic invertebrates like most other madtom species (ODNR Division of Wildlife 2019b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	E	Yes	ODNR response pending.	Adult lampreys are found in clear brooks with fast flowing water and sand or gravel bottoms. Juveniles are found in slow moving water buried in soft substrate in medium to large streams (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.

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Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Iowa Darter	<i>Estheostoma exile</i>	E	Yes	ODNR response pending.	This fish is found in natural lakes and very sluggish streams or marshes with dense to moderate aquatic vegetation and clear waters often over a sandy substrate. Species are known to occur in Portage Lakes and other smaller natural lakes in both west central and northeast Ohio (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Goldeye	<i>Hiodon alosoides</i>	E	Yes	ODNR response pending.	This fish is found in large rivers and are rather tolerant of turbid waters from clay silts. They do not, however, tolerate industrial chemical pollutants. They are often found in areas with swift currents, often below dams. This fish is found in the Ohio River and its larger tributaries, particularly the Scioto River (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Tippecanoe Darter	<i>Etheostoma tippecanoe</i>	T	Yes	ODNR response pending.	This fish prefers medium to large streams in the Ohio River drainage system and are found in riffles of moderate current with substrate of gravel or cobble sized rocks (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Tonguetied Minnow	<i>Exoglossum laurae</i>	E	Yes	ODNR response pending.	Habitat for this fish includes rocky pools and runs of cool to warm water. They prefer clear creeks and small to medium sized rivers of moderate gradient with unsilted bottoms of gravel, cobble, and/or boulder. Spawning occurs in gravel nests in slow to moderate current (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Paddlefish	<i>Polyodon spathula</i>	T	Yes	ODNR response pending.	This fish is found in the Ohio River and its larger tributaries, preferring sluggish pools and backwater areas (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Lake Chubsucker	<i>Erimyzon sucetta</i>	T	Yes	ODNR response pending.	This fish is found in natural lakes and very sluggish streams or marshes with dense aquatic vegetation and clear waters primarily found in glacially formed natural lakes often referred to as pothole or kettle lakes. This species is found in the group of lakes between Bellefontaine and Urbana, and three slow moving stream systems that have interconnected wetland complexes which include Killbuck Marsh, the upper Cuyahoga River, and the Black Fork of Symmes Creek including Jackson Lake ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.

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Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Mussels								
Rayed Bean	<i>Villosa fabalis</i>	E	Yes	ODNR response pending.	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increase substrate stability (Butler 2002, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Butterfly	<i>Ellipsaria lineolata</i>	E	Yes	ODNR response pending.	This mussel is found in large rivers and stretches with pronounced current and substrate of coarse sand and gravel. It can also be found in deep impoundment areas (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Elephant-ear	<i>Elliptio crassidens crassidens</i>	E	Yes	ODNR response pending.	This mussel is found in muddy sand, sand, and rocky substrates in moderate currents. In some areas, it is common in large creeks to rivers with moderate to swift currents primarily on sand and limestone or rock substrates (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Purple Cat's Paw	<i>Epioblasma obliquata obliquata</i>	E	Yes	ODNR response pending.	This mussel can be found in medium to large rivers with moderate gradient and riffles. Substrates can be sand to gravel (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Northern Riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Yes	ODNR response pending	This mussel is found in a wide variety of streams from small to large (USFWS 2020c). Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Snuffbox	<i>Epioblasma triquetra</i>	E	Yes	ODNR response pending.	Snuffbox is commonly found buried in the substrate. It is found in a wide range of particle sized substrates, however, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998, Watters et al. 2009).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.

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Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Long-Solid	<i>Fusconaia subrotunda</i>	E	Yes	ODNR response pending.	This species is found in medium to large rivers in gravel with a strong current (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Pocketbook	<i>Lampsilis ovata</i>	E	Yes	ODNR response pending.	This mussel is a generalist, occurring in different sized streams/rivers. Typically occurs in moderate to strong current with substrates of gravel and coarse sand (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Washboard	<i>Megaloniaias nervosa</i>	E	Yes	ODNR response pending.	Occurs in large rivers, typically in main channel or overbank areas of reservoirs. It is found in areas of slow current with muddy to coarse gravel substrates and water can be up to 50 feet (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Clubshell	<i>Pleurobema clava</i>	E	Yes	ODNR response pending.	Clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra (2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Ohio Pigtoe	<i>Pleurobema cordatum</i>	E	Yes	ODNR response pending.	Occurs in medium to large rivers directly above riffles of gravel, cobble, and boulder, but occasionally in muddy or sandy or gravel habitats at great depths (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	E	Yes	ODNR response pending.	The typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Found in medium to large rivers in sand and gravel shoals (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.

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Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Pink Mucket	<i>Lampsilis abrupta</i>	E	Yes	ODNR response pending.	This species is found in large rivers, most commonly in fast-flowing waters with rocky or boulder substrates, but area also found in deeper waters with slower currents with sand and gravel substrates (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Threehorn Wartyback	<i>Obliquaria reflexa</i>	T	Yes	ODNR response pending.	Habitat includes large rivers with moderately strong current and stable substrate of gravel, sand, and mud (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Black Sandshell	<i>Ligumia recta</i>	T	Yes	ODNR response pending.	Typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobbles in water depths from several inches to six feet or more (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Fawnsfoot	<i>Truncilla donaciformis</i>	T	Yes	ODNR response pending.	This species occurs in both large and medium-sized rivers at normal depths varying from less than three feet up to 15 to 18 feet in big rivers such as the Tennessee. A substrate of either sand or mud is suitable and although it is typically found in moderate current, it can adapt to a lake or embayment environment lacking current (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR response is pending.
Pondhorn	<i>Uniomereus tetralasmus</i>	T	Yes	ODNR response pending.	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2020).	Yes	Potentially suitable habitat (Stream 1 – South Fork Indian Run and Stream 3 - Cosgray Ditch) was observed within the Project area. However, no in-water work is proposed to occur in perennial stream by AEP. Therefore, no impacts to this species are anticipated.	ODNR response is pending.

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Common Name	Scientific Name	State ¹ Listing	Known to Occur in Franklin County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Mammals								
Indiana Bat	<i>Myotis sodalis</i>	E	Yes	ODNR response pending.	The Indiana bat is likely distributed over the entire state of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas. Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2020b). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	No suitable winter hibernacula habitat was observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. AEP intends to avoid areas with summer foraging and roosting habitat to the extent possible. AEP will determine if any summer tree clearing is necessary in areas containing suitable summer foraging and roosting habitat and will proceed accordingly.	ODNR response is pending.
Black Bear	<i>Ursus americanus</i>	E	Yes	ODNR response pending.	This species prefers heavily wooded habitats, ranging from swamps and wetlands to dry upland hardwood and coniferous forests. Black bears have a large home range and travel a great deal (ODNR Division of Wildlife 2020b).	No	Minimal suitable habitat was observed within the Project area. However, the forested habitat is surrounded by high residential community. Therefore, no impacts to this species are anticipated.	ODNR response is pending.
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	T	Yes	ODNR response pending.	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2019a). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	Yes	No suitable winter hibernacula habitat was observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. AEP intends to avoid areas with summer foraging and roosting habitat to the extent possible. AEP will determine if any summer tree clearing is necessary in areas containing suitable summer foraging and roosting habitat and will proceed accordingly.	ODNR response is pending.
¹ E=Endangered; T=Threatened ² According to Ohio Department of Natural Resources, State Listed Wildlife Species by County (ODNR Division of Wildlife 2020a). ³ According to Ohio Natural Heritage Program (Appendix B)								

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Table 5. Summary of Potential Federally-Listed Species within the Amlin – Dublin 138 kV Transmission Line Rebuild Project Area, Franklin County, Ohio

Common Name	Scientific Name	Federal Listing ¹	Known to Occur in Franklin County?	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	USFWS Comments/ Recommendations
Mammals							
Indiana Bat	<i>Myotis sodalis</i>	E	Yes	The Indiana bat is likely distributed over the entire state of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas; Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2020b). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. AEP intends to avoid areas with summer foraging and roosting habitat to the extent possible. AEP will determine if any summer tree clearing is necessary in areas containing suitable summer foraging and roosting habitat and will proceed accordingly.	If no caves or abandoned mines may be disturbed and tree removal is unavoidable, seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) is recommended to avoid adverse effects to Indiana bats. If seasonal tree clearing is not possible, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the Project area during the summer.
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	T	Yes	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2020a). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	Yes	No suitable winter hibernacula were observed in the Project area. However, suitable summer foraging and roosting habitat was observed in the Project area. AEP intends to avoid areas with summer foraging and roosting habitat to the extent possible. AEP will determine if any summer tree clearing is necessary in areas containing suitable summer foraging and roosting habitat and will proceed accordingly.	If no caves or abandoned mines may be disturbed and tree removal is unavoidable, seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) is recommended to avoid adverse effects to northern long-eared bats. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule.
Mussels							
Clubshell	<i>Pleurobema clava</i>	E	Yes	Clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra (2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location, USFWS does not anticipate adverse effects to this species.

Results
 May 15, 2020

Common Name	Scientific Name	Federal Listing ¹	Known to Occur in Franklin County?	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	USFWS Comments/ Recommendations
Northern Riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Yes	This mussel is found in a wide variety of streams from small to large. Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (USFWS 2020c).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location, USFWS does not anticipate adverse effects to this species.
Rayed Bean	<i>Villosa fabalis</i>	E	Yes	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increase substrate stability (Butler 2002, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location, USFWS does not anticipate adverse effects to this species.
Snuffbox	<i>Epioblasma triquetra</i>	E	Yes	Snuffbox is commonly found buried in the substrate. It is found in a wide range of particle sized substrates, however, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998, Watters et al. 2009).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location, USFWS does not anticipate adverse effects to this species.
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	T	Yes	The typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Found in medium to large rivers in sand and gravel shoals (NatureServe 2020).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location, USFWS does not anticipate adverse effects to this species.
Fish							
Scioto Madtom	<i>Noturus trautmani</i>	E	Yes	This fish prefers tail end of riffles with sand and gravel substrate (ODNR Division of Wildlife 2020b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	Due to the project type, size, and location, USFWS does not anticipate adverse effects to this species.
Plants							
Running Buffalo Clover	<i>Trifolium stoloniferum</i>	E	Yes	Mesic habitats with partial to filtered sunlight including woodlands and mowed lawn (USFWS 2020d).	No	No suitable habitat was observed within the Project area. Therefore, no impacts are anticipated.	Due to the Project type, size, and location, the USFWS does not anticipate adverse effects to this species.
¹ E=Endangered; T=Threatened ² According to USFWS (2018).							

Conclusions and Recommendations
May 15, 2020

4.0 CONCLUSIONS AND RECOMMENDATIONS

Stantec conducted a wetland and waterbodies delineation and a preliminary habitat assessment for threatened and endangered species within the Project area on April 28 and 29, and May 1 and 14, 2020. During the field surveys, two perennial streams, totaling approximately 385 linear feet in length, three ephemeral streams totaling approximately 266 linear feet, and three PEM Category 1 wetlands, totaling approximately 0.47 acre in size, were delineated within the Project area.

The information provided by Stantec regarding wetland and stream boundaries is based on an analysis of the wetland and upland conditions present within the Project Area at the time of the field work. The delineations were performed by experienced and qualified professionals using regulatory agency-accepted practices and sound professional judgment.

An ODNR Ohio Natural Heritage Program data request and environmental review request letter was sent to the ODNR Office of Real Estate on April 28, 2020. As of May 15, 2020, Stantec has not received a response letter in reference to the Amlin – Dublin 138 kV Transmission Line Rebuild Project.

A technical assistance request letter was also submitted to the USFWS on April 28, 2020. The USFWS response letter dated May 4, 2020, states that the USFWS recommends that proposed developments avoid and minimize impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. Best management practices be utilized to minimize erosion, especially on slopes (Appendix B).

According to the USFWS response (Appendix B), all projects in the State of Ohio lie within range of the federally endangered Indiana bat and the federally threatened northern long-eared bat. In Ohio, the presence of these species is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. No hibernacula for these species were observed within the Project area. The Project area does contain potentially suitable foraging and roosting habitat for the Indiana bat and northern long-eared bat. The USFWS response letter stated that should the project site contain trees ≥ 3 inches diameter at breast height, dbh, the USFWS recommends trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination is requested. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, the USFWS recommends that removal of trees ≥ 3 inches dbh only occur between October 1 and March 31 in order to avoid adverse effects to these species. If implementation of seasonal tree clearing is not possible, the USFWS recommends summer presence/absence surveys be conducted between June 1 and August 15.

**AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL
RESOURCES INVENTORY REPORT**

Conclusions and Recommendations
May 15, 2020

The USFWS (Appendix A) stated that they do not anticipate adverse effects to any other federally endangered, threatened, or proposed species or their critical habitat due to the project type, size, and location (Appendix B).

AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL RESOURCES INVENTORY REPORT

References
May 15, 2020

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AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL RESOURCES INVENTORY REPORT

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Figures
May 15, 2020

Appendix A **FIGURES**

A.1 **FIGURE 1 – PROJECT LOCATION MAP**

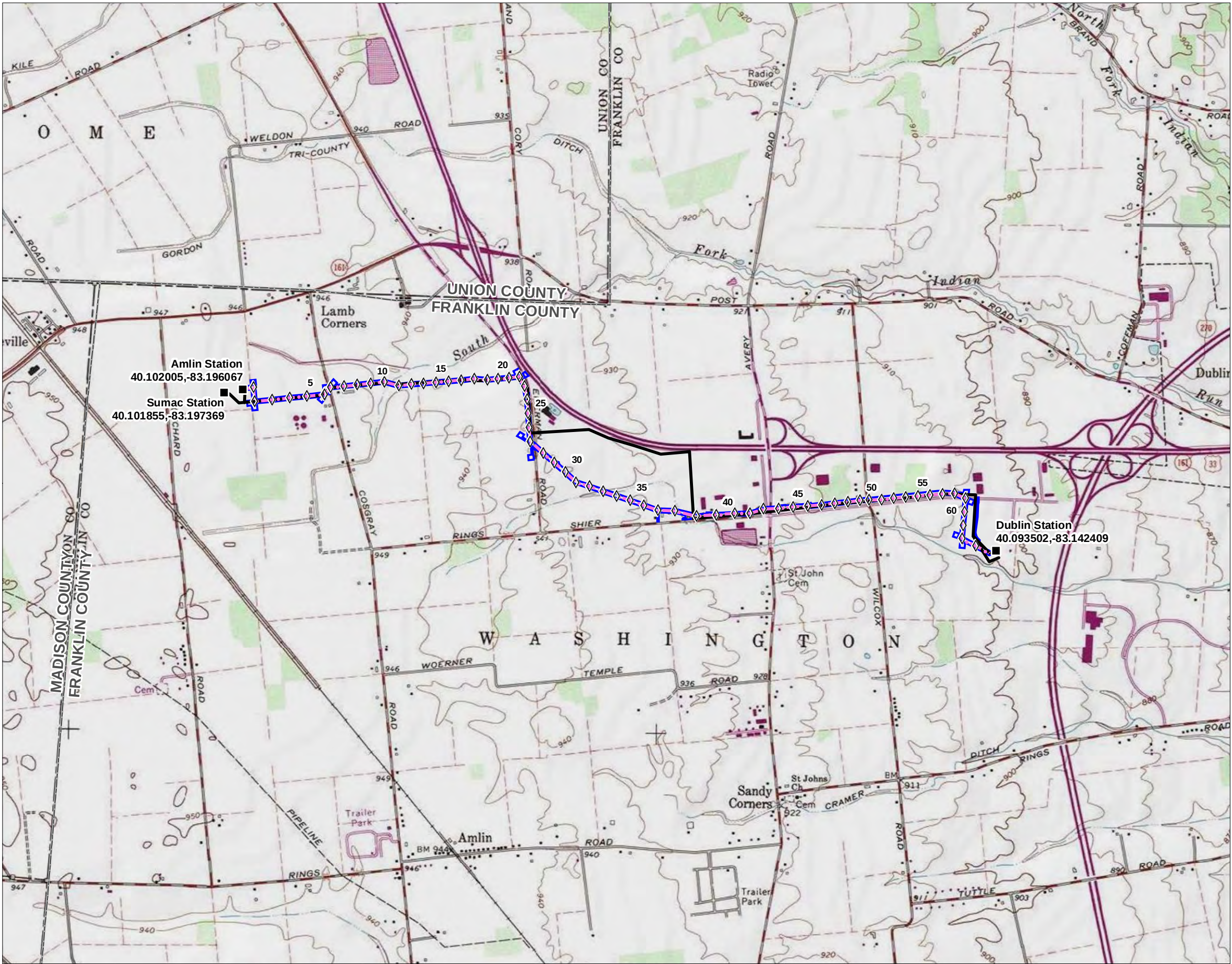
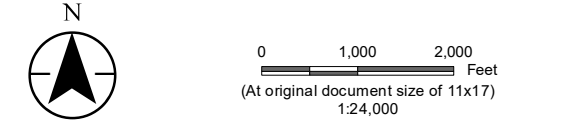


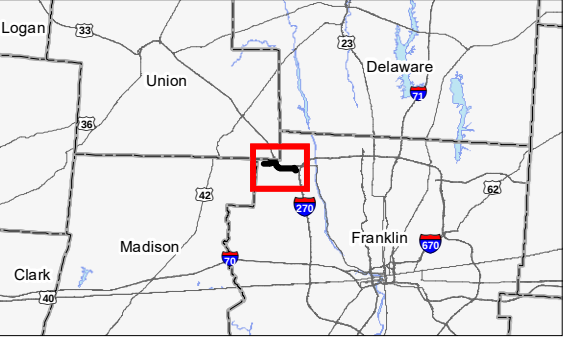
Figure No. **1**
Title
Project Location Map

Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project
193705573

Project Location
Franklin County, Ohio
Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
IR Review by AS on 2020-05-15



- Legend
- AEP Substation
 - ◇ Proposed Structure
 - Existing 138 kV Transmission Line to be Rebuilt
 - - - Proposed 138 kV Transmission Line
 - Project Area



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, NADS
3. Background: USGS 7.5' Topographic Quadrangle: Hillard, OH (1980), Northwest Columbus, OH (1984), Powell, OH (1908), Shawnee Hills, OH (1980)



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Figures
May 15, 2020

A.2 FIGURE 2 – WETLAND AND WATERBODY DELINEATION MAP

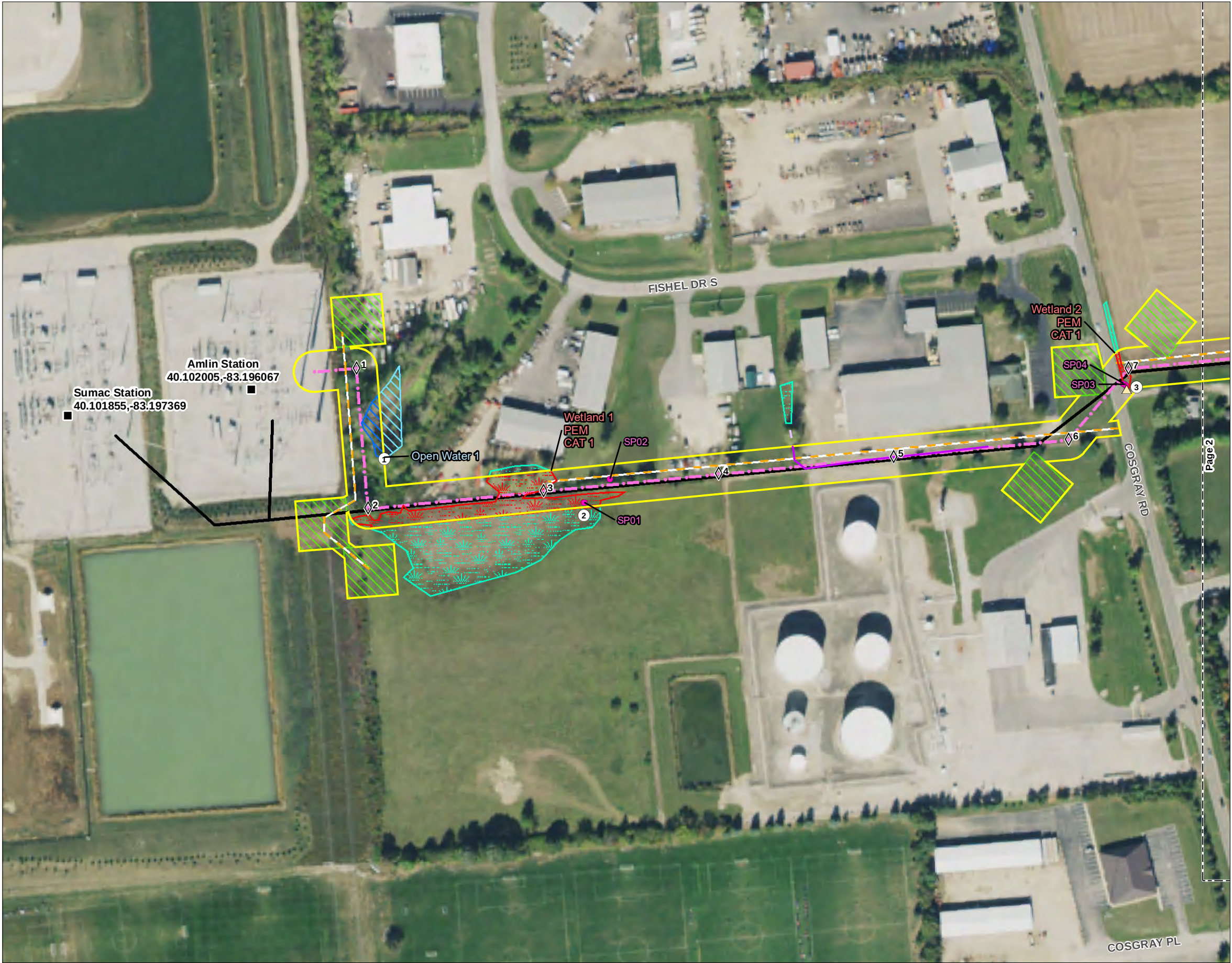


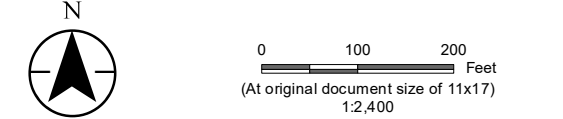
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Title
**Wetland and Waterbody
Delineation Map**

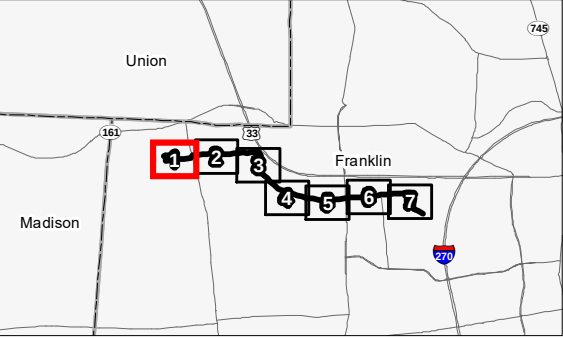
Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project

Project Location
Franklin County, Ohio

Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
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 - Proposed Access Road
 - Project Area
 - Pulling/Tensioning Pad
 - Photo Location
 - △ Culvert
 - Storm Drain
 - Wetland Determination Sample Point
 - Upland Drainage Feature
 - Approximate Upland Drainage Feature
 - Field Delineated Waterway
 - Approximate Waterway
 - Field Delineated Waterway Area
 - Field Delineated Open Water
 - Approximate Open Water
 - Field Delineated Emergent Wetland
 - Approximate Wetland
 - FEMA Flood Hazard Area
 - 100-year Flood Zone
 - 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, FEMA, NADS, OGRIP
3. Orthophotography: 2019 NAIP





Figure No.
2

Title
Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project

Project Location
Franklin County, Ohio

193705573

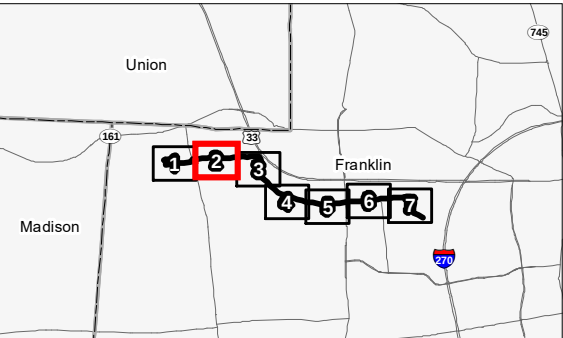
Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
IR Review by AS on 2020-05-15

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Legend

- AEP Substation
- Proposed Structure
- Existing 138 kV Transmission Line to be Rebuilt
- Proposed 138 kV Transmission Line
- Proposed Access Road
- Project Area
- Pulling/Tensioning Pad
- Photo Location
- Culvert
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- 100-year Floodway



Notes

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- Data Sources: Stantec, AEP, USGS, FEMA, NADS, OGRIP
- Orthophotography: 2019 NAIP



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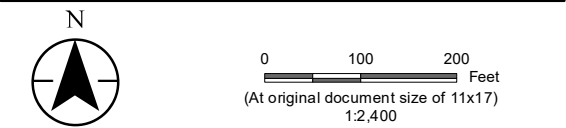
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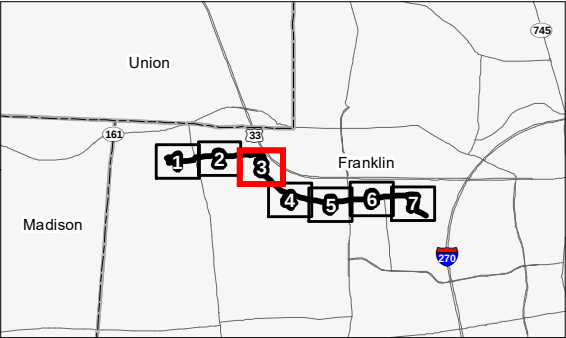
Client/Project
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Rebuild Project

Project Location
Franklin County, Ohio

Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
IR Review by AS on 2020-05-15



- Legend
- AEP Substation
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 - Upland Drainage Feature
 - Approximate Upland Drainage Feature
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Notes

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2. Data Sources: Stantec, AEP, USGS, FEMA, NADS, OGRIP
3. Orthophotography: 2019 NAIP





Figure No.
2

Title
Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project

Project Location
Franklin County, Ohio

193705573

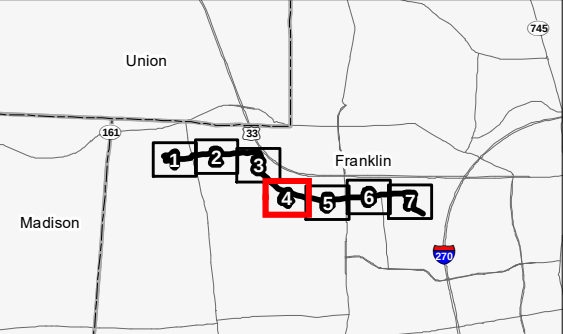
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TR by MT on 2020-05-14
IR Review by AS on 2020-05-15

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Legend

- AEP Substation
- ◇ Proposed Structure
- Existing 138 kV Transmission Line to be Rebuilt
- Proposed 138 kV Transmission Line
- Proposed Access Road
- Project Area
- Pulling/Tensioning Pad
- Photo Location
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- Upland Drainage Feature
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Notes

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2. Data Sources: Stantec, AEP, USGS, FEMA, NADS, OGRIP
3. Orthophotography: 2019 NAIP



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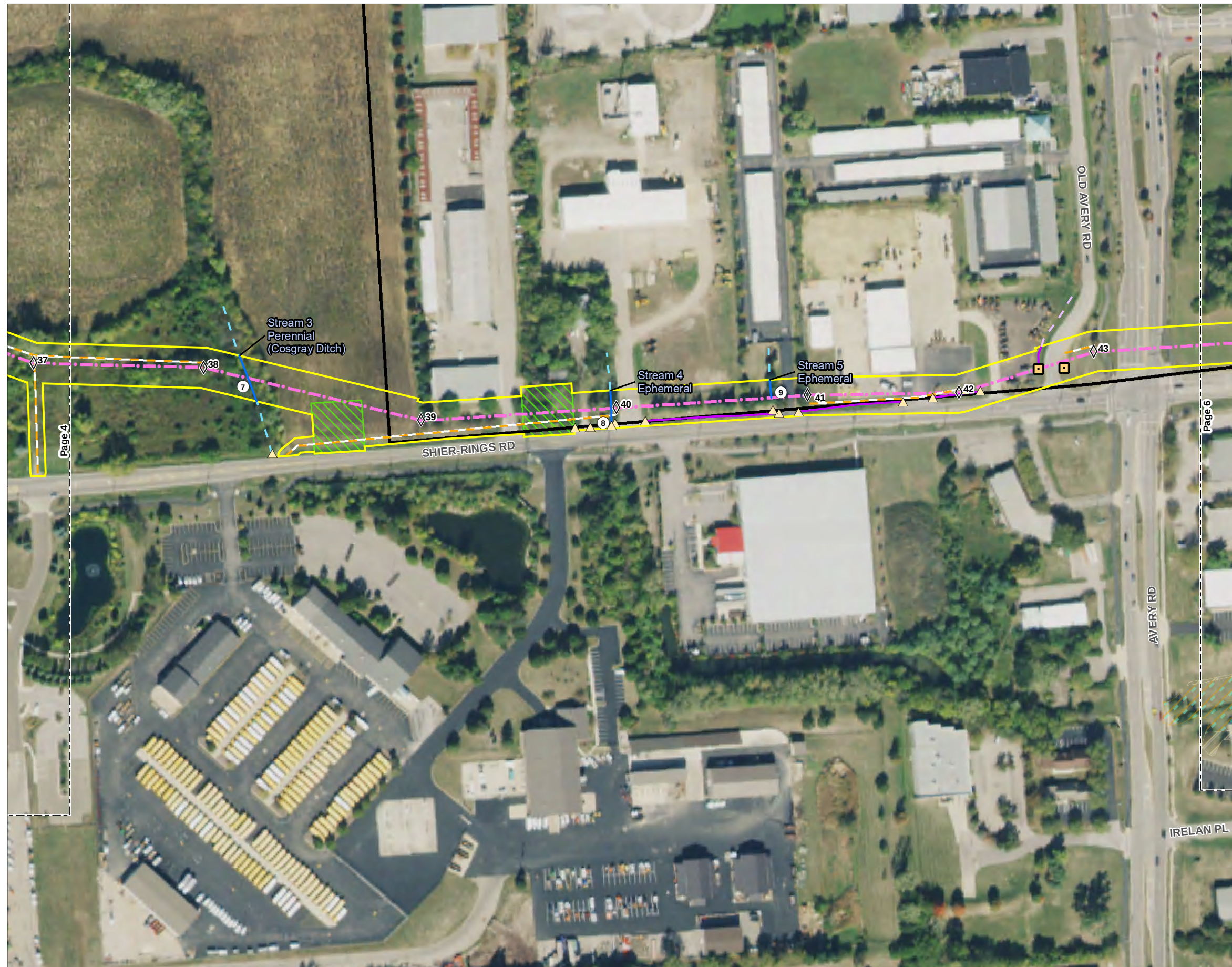


Figure No.

2

Wetland and Waterbody Delineation Map

<i>Client/Project</i>	193705573
AEP Ohio Transmission Company, Inc. Amlin-Dublin 138 kV Transmission Line Rebuild Project	

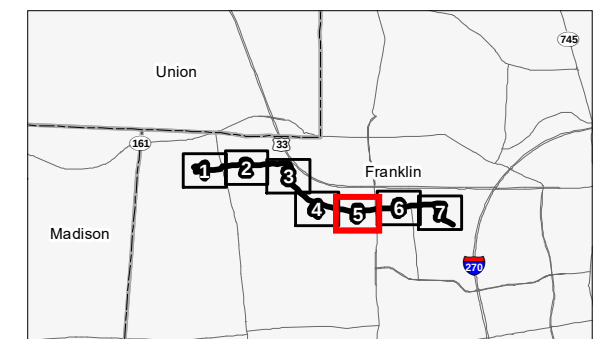
Project Location Franklin County, Ohio	Prepared by JLH on 2020-05-04 TR by MT on 2020-05-14 IR Review by AS on 2020-05-15
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Legend

-  AEP Substation
-  Proposed Structure
-  Existing 138 kV Transmission Line to be Rebuilt
-  Proposed 138 kV Transmission Line
-  Proposed Access Road
-  Project Area
-  Pulling/Tensioning Pad
-  Photo Location
-  Culvert
-  Storm Drain
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-  Approximate Waterway
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-  Approximate Wetland
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-  100-year Floodway



Notes

- Notes**
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
 2. Data Sources: Stantec, AEP, USGS, FEMA, NADS, OGRIP
 3. Orthophotography: 2019 NAIP





Figure No.
2

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Wetland and Waterbody Delineation Map

Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project

Project Location
Franklin County, Ohio

193705573

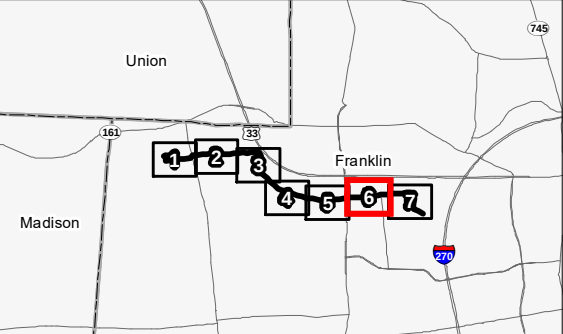
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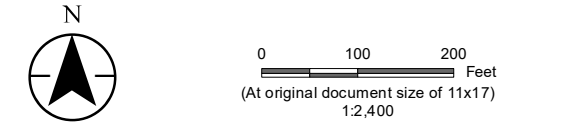


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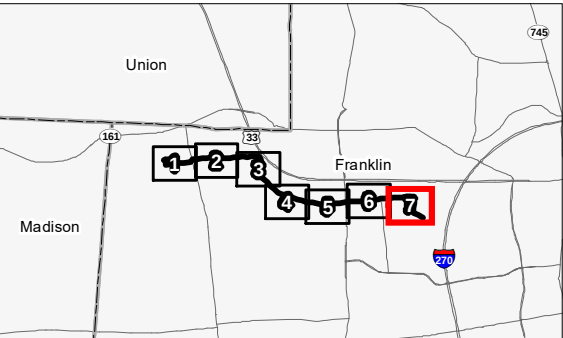


Figure No.
2
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**Wetland and Waterbody
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3. Orthophotography: 2019 NAIP



Figures
May 15, 2020

A.3 FIGURE 3 – HABITAT ASSESSMENT MAP

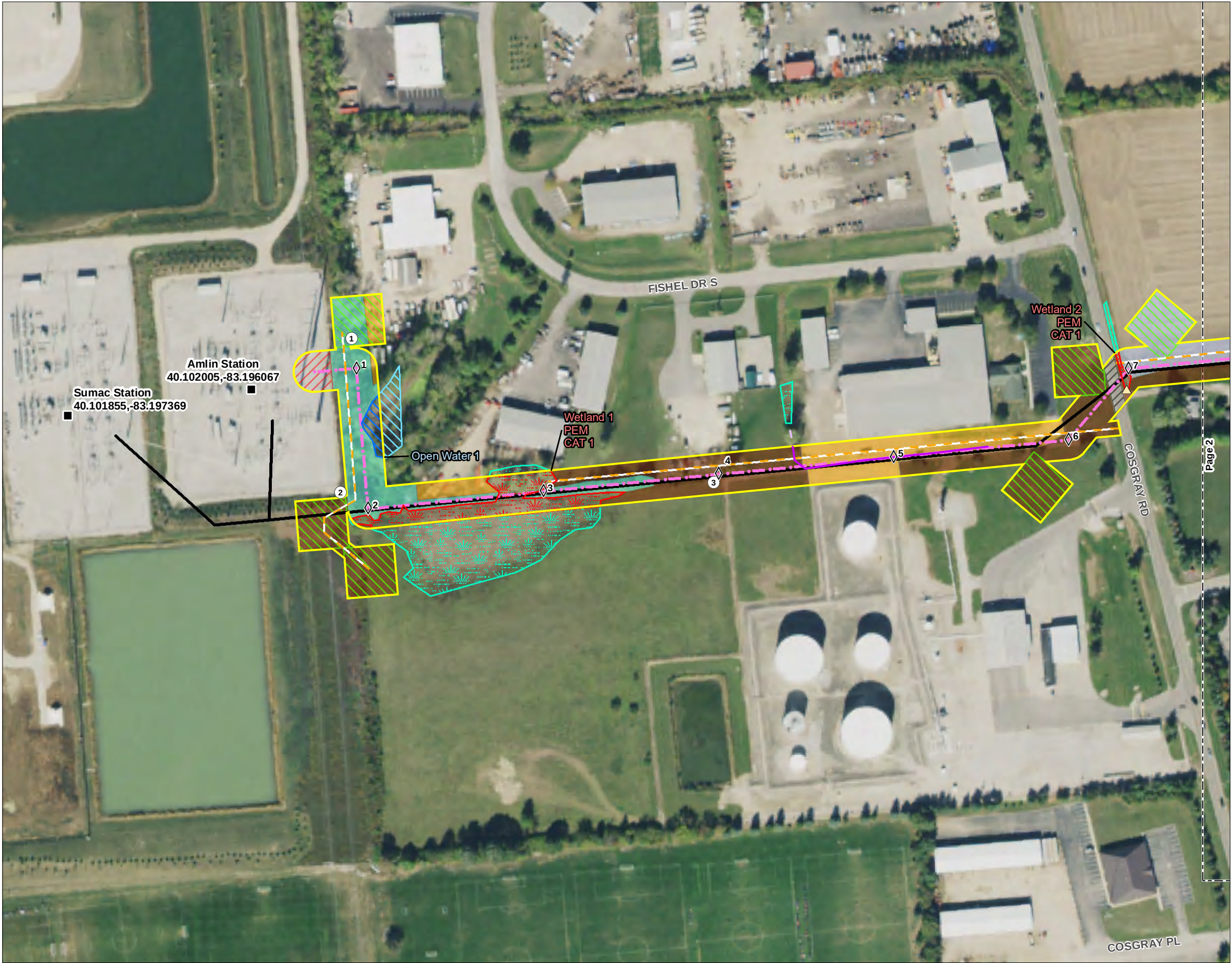
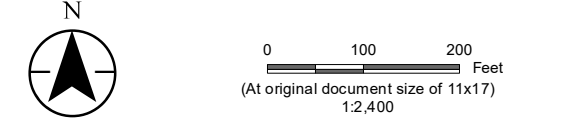


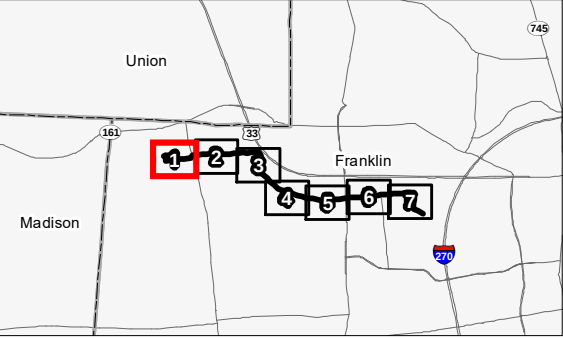
Figure No.
3
Title
Habitat Assessment Map

Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project
193705573

Project Location
Franklin County, Ohio
Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
IR Review by AS on 2020-05-15



- Legend
- AEP Substation
 - Proposed Structure
 - Existing 138 kV Transmission Line to be Rebuilt
 - Proposed 138 kV Transmission Line
 - Proposed Access Road
 - Project Area
 - Pulling/Tensioning Pad
 - Photo Location
 - Culvert
 - Storm Drain
 - Upland Drainage Feature
 - Approximate Upland Drainage Feature
 - Field Delineated Waterway
 - Approximate Waterway
 - Field Delineated Waterway Area
 - Field Delineated Open Water
 - Approximate Open Water
 - Field Delineated Emergent Wetland
 - Approximate Wetland
 - Habitat Area
 - Agricultural Field
 - Old Field
 - Maintained Lawn
 - Early Successional Deciduous Forest
 - Second Growth Deciduous Forest
 - Maintained Road ROW
 - Commercial
 - Industrial
 - Existing Roadway
 - Existing Paved Surface Area



Notes

- Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
- Data Sources: Stantec, AEP, USGS, NADS, OGRIP
- Orthophotography: 2019 NAIP



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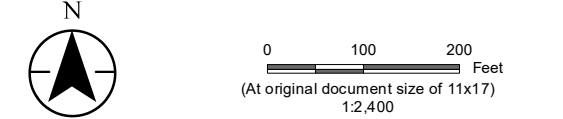
Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



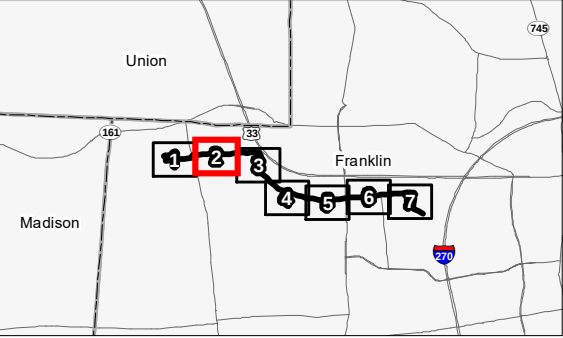
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193705573

Project Location
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- Legend
- | | |
|---|-------------------------------------|
| ■ AEP Substation | Field Delineated Open Water |
| ◇ Proposed Structure | Approximate Open Water |
| Existing 138 kV Transmission Line to be Rebuilt | Field Delineated Emergent Wetland |
| Proposed 138 kV Transmission Line | Approximate Wetland |
| Proposed Access Road | Habitat Area |
| Project Area | Agricultural Field |
| Pulling/Tensioning Pad | Old Field |
| Photo Location | Maintained Lawn |
| Culvert | Early Successional Deciduous Forest |
| Storm Drain | Second Growth Deciduous Forest |
| Upland Drainage Feature | Maintained Road ROW |
| Approximate Upland Drainage Feature | Commercial |
| Field Delineated Waterway | Industrial |
| Approximate Waterway | Existing Roadway |
| Field Delineated Waterway Area | Existing Paved Surface |



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources: Stantec, AEP, USGS, NADS, OGRIP
3. Orthophotography: 2019 NAIP



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Figure No.
3

Title
Habitat Assessment Map

Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project

Project Location
Franklin County, Ohio

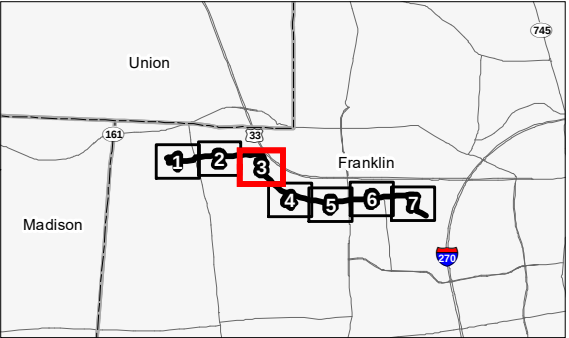
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TR by MT on 2020-05-14
IR Review by AS on 2020-05-15

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Legend

■ AEP Substation	Field Delineated Open Water
◇ Proposed Structure	Approximate Open Water
Existing 138 kV Transmission Line to be Rebuilt	Field Delineated Emergent Wetland
Proposed 138 kV Transmission Line	Approximate Wetland
Proposed Access Road	Habitat Area
Project Area	Agricultural Field
Pulling/Tensioning Pad	Old Field
Photo Location	Maintained Lawn
Culvert	Early Successional Deciduous Forest
Storm Drain	Second Growth Deciduous Forest
Upland Drainage Feature	Maintained Road ROW
Approximate Upland Drainage Feature	Commercial
Field Delineated Waterway	Industrial
Approximate Waterway	Existing Roadway
Field Delineated Waterway Area	Existing Paved Surface



Notes

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2. Data Sources: Stantec, AEP, USGS, NADS, OGRIP

3. Orthophotography: 2019 NAIP



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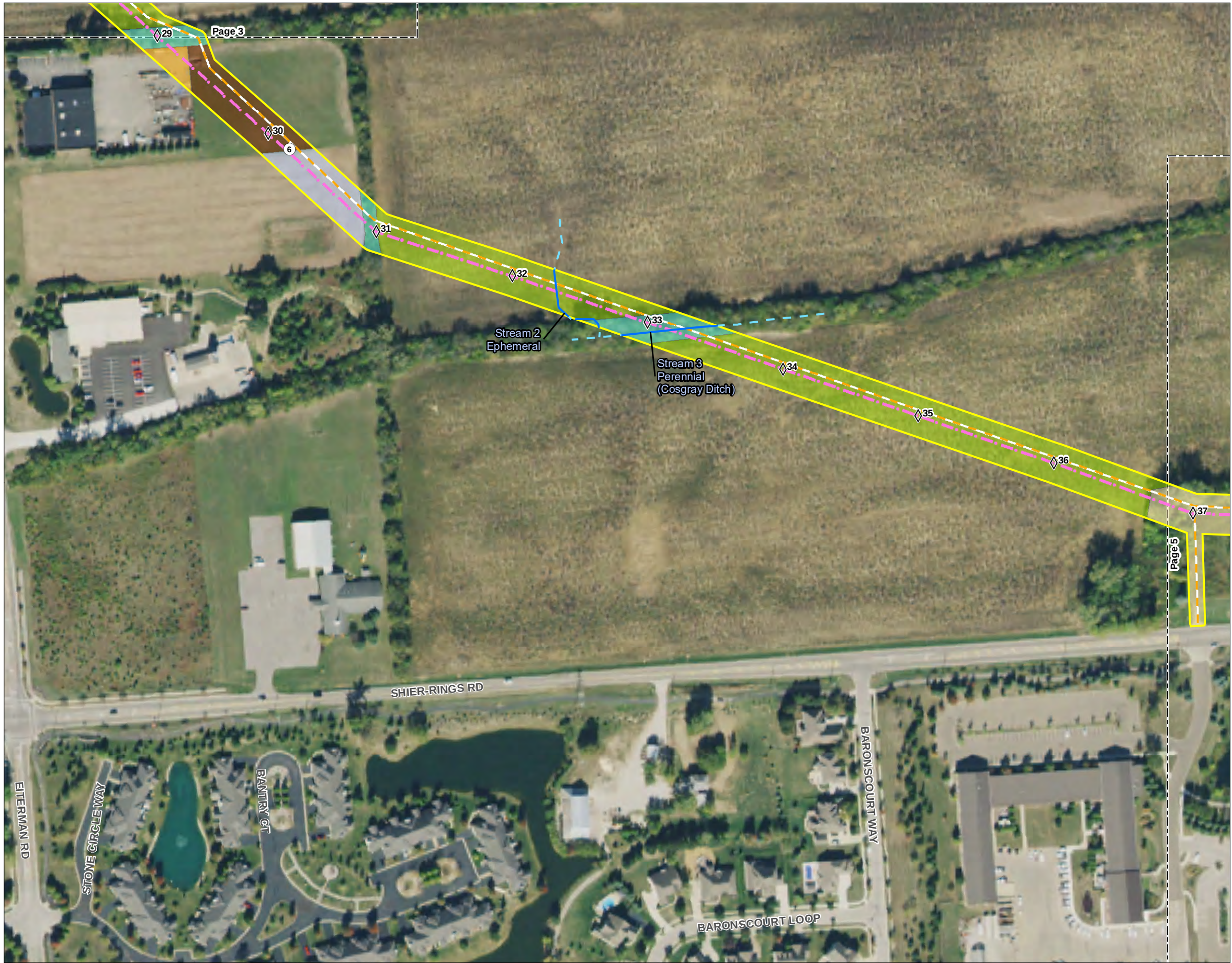


Figure No.
3

Title
Habitat Assessment Map

Client/Project
AEP Ohio Transmission Company, Inc.
Amlin-Dublin 138 kV Transmission Line
Rebuild Project

Project Location
Franklin County, Ohio

Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
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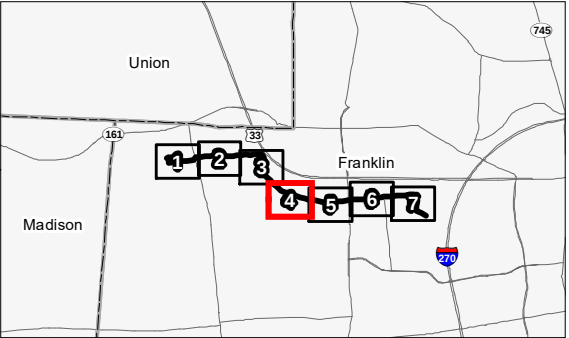
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Legend

■ AEP Substation	Field Delineated Open Water
◇ Proposed Structure	Approximate Open Water
Existing 138 kV Transmission Line to be Rebuilt	Field Delineated Emergent Wetland
Proposed 138 kV Transmission Line	Approximate Wetland
Proposed Access Road	Habitat Area
Project Area	Agricultural Field
Pulling/Tensioning Pad	Old Field
Photo Location	Maintained Lawn
Culvert	Early Successional Deciduous Forest
Storm Drain	Second Growth Deciduous Forest
Upland Drainage Feature	Maintained Road ROW
Approximate Upland Drainage Feature	Commercial
Field Delineated Waterway	Industrial
Approximate Waterway	Existing Roadway
Field Delineated Waterway Area	Existing Paved Surface



Notes

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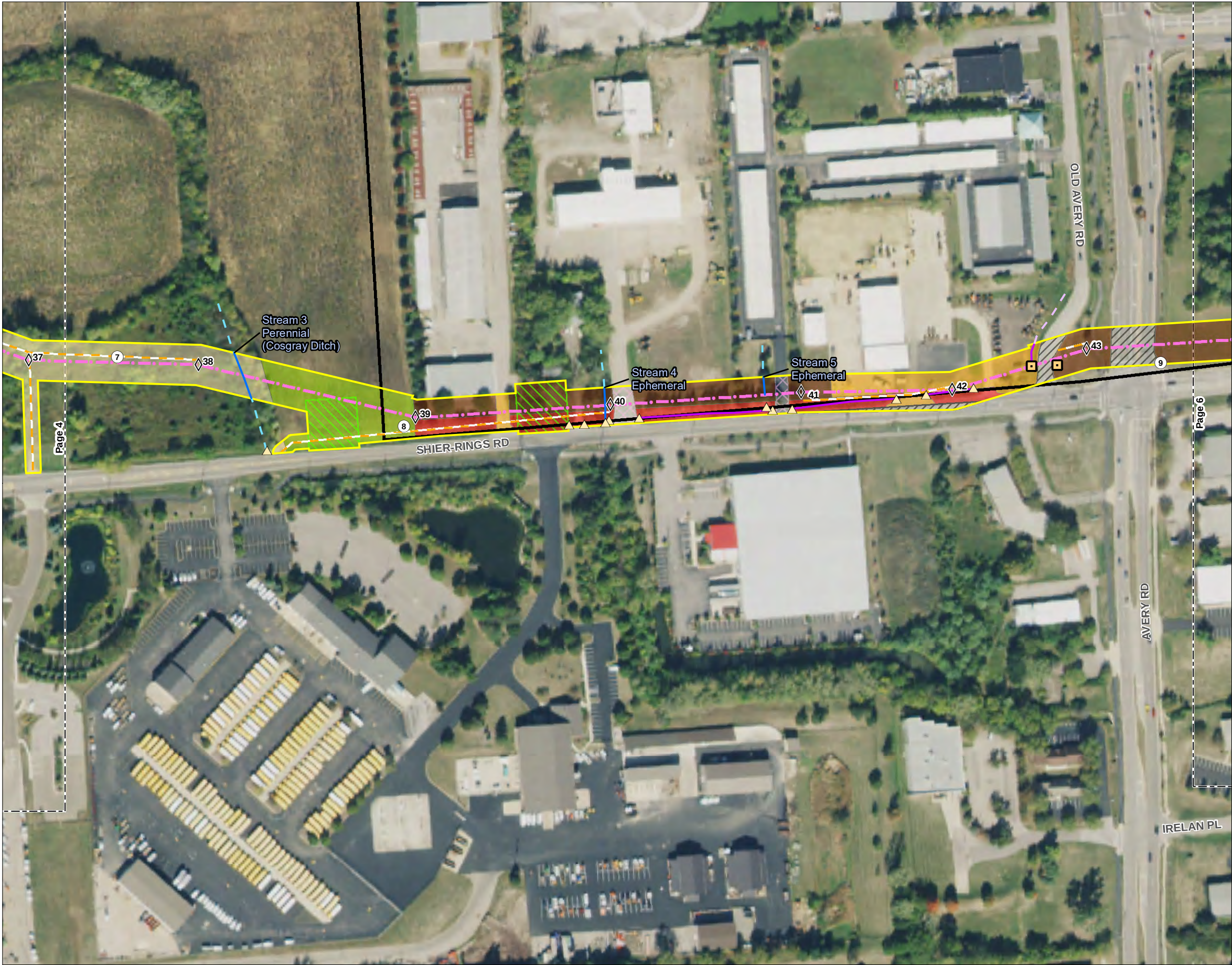


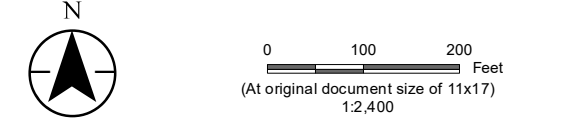
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Client/Project
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Amlin-Dublin 138 kV Transmission Line
Rebuild Project

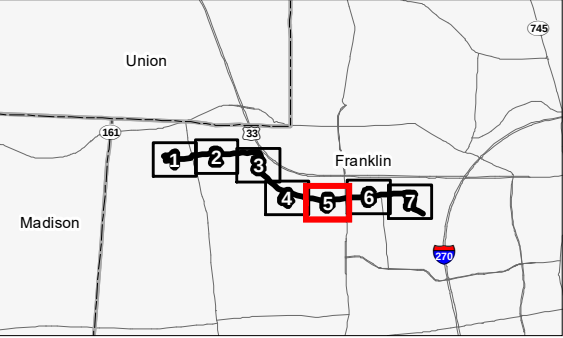
193705573

Project Location
Franklin County, Ohio

Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
IR Review by AS on 2020-05-15



- Legend**
- | | |
|---|-------------------------------------|
| ■ AEP Substation | Field Delineated Open Water |
| ◇ Proposed Structure | Approximate Open Water |
| Existing 138 kV Transmission Line to be Rebuilt | Field Delineated Emergent Wetland |
| Proposed 138 kV Transmission Line | Approximate Wetland |
| Proposed Access Road | Habitat Area |
| Project Area | Agricultural Field |
| Pulling/Tensioning Pad | Old Field |
| Photo Location | Maintained Lawn |
| Culvert | Early Successional Deciduous Forest |
| Storm Drain | Second Growth Deciduous Forest |
| Upland Drainage Feature | Maintained Road ROW |
| Approximate Upland Drainage Feature | Commercial |
| Field Delineated Waterway | Industrial |
| Approximate Waterway | Existing Roadway |
| Field Delineated Waterway Area | Existing Paved Surface |



Notes

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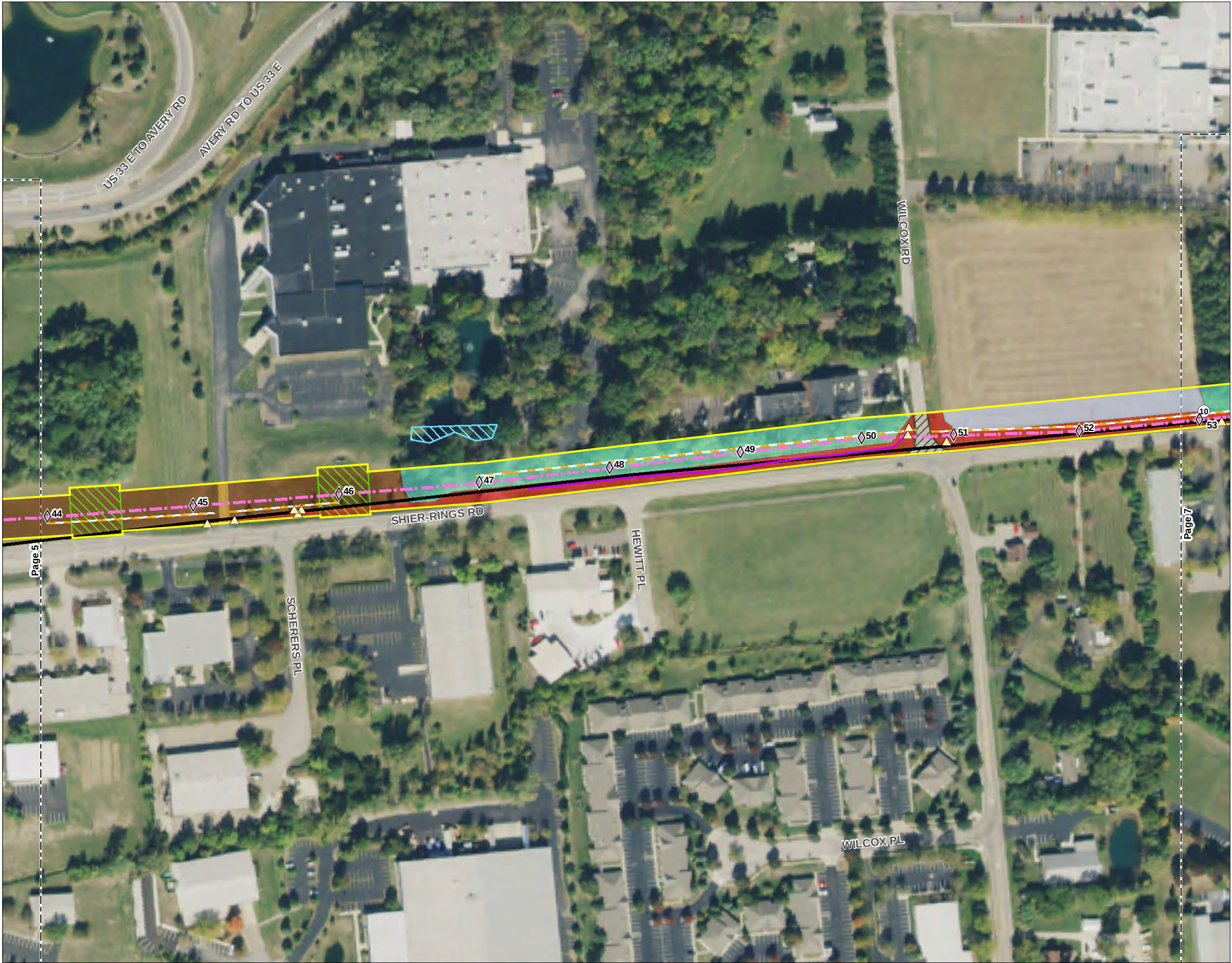
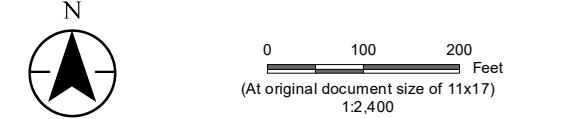


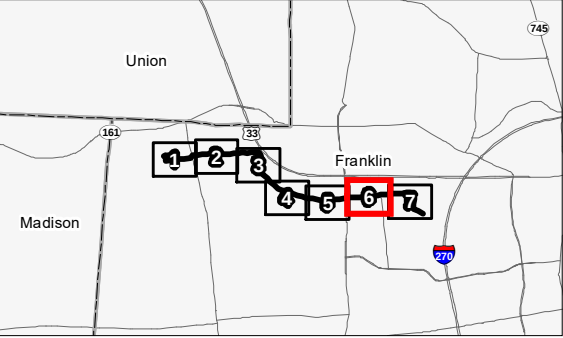
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Client/Project
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Amlin-Dublin 138 kV Transmission Line
Rebuild Project
193705573

Project Location
Franklin County, Ohio
Prepared by JLH on 2020-05-04
TR by MT on 2020-05-14
IR Review by AS on 2020-05-15



- Legend
- | | |
|---|-------------------------------------|
| ■ AEP Substation | Field Delineated Open Water |
| ◇ Proposed Structure | Approximate Open Water |
| Existing 138 kV Transmission Line to be Rebuilt | Field Delineated Emergent Wetland |
| Proposed 138 kV Transmission Line | Approximate Wetland |
| Proposed Access Road | Habitat Area |
| Project Area | Agricultural Field |
| Pulling/Tensioning Pad | Old Field |
| Photo Location | Maintained Lawn |
| Culvert | Early Successional Deciduous Forest |
| Storm Drain | Second Growth Deciduous Forest |
| Upland Drainage Feature | Maintained Road ROW |
| Approximate Upland Drainage Feature | Commercial |
| Field Delineated Waterway | Industrial |
| Approximate Waterway | Existing Roadway |
| Field Delineated Waterway Area | Existing Paved Surface |



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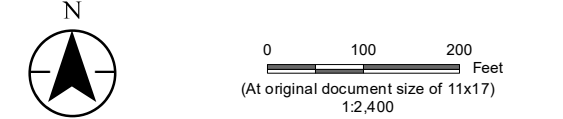
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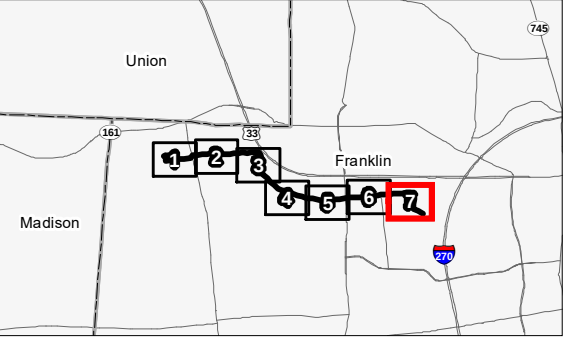
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- Legend
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|---|-------------------------------------|
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| Existing 138 kV Transmission Line to be Rebuilt | Field Delineated Emergent Wetland |
| Proposed 138 kV Transmission Line | Approximate Wetland |
| Proposed Access Road | Habitat Area |
| Project Area | Agricultural Field |
| Pulling/Tensioning Pad | Old Field |
| Photo Location | Maintained Lawn |
| Culvert | Early Successional Deciduous Forest |
| Storm Drain | Second Growth Deciduous Forest |
| Upland Drainage Feature | Maintained Road ROW |
| Approximate Upland Drainage Feature | Commercial |
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| Approximate Waterway | Existing Roadway |
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**AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL
RESOURCES INVENTORY REPORT**

Agency Correspondence
May 15, 2020

Appendix B AGENCY CORRESPONDENCE



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# 03E15000-2020-TA-1341

Dear Mr. Teitt,

The U.S Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥ 3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend removal of any trees ≥ 3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend 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. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or 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, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed 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

cc: Nathan Reardon, ODNR-DOW

Representative Photographs
May 15, 2020

Appendix C REPRESENTATIVE PHOTOGRAPHS

C.1 FIGURE 2 – WETLAND AND WATERBODY PHOTOGRAPHS

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 1. View of Open Water 1. Photograph taken facing north.



Photo Location 2. View of Wetland 1 (SP01). Photograph taken facing north.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 2. View of Wetland 1 (SP01). Photograph taken facing east.



Photo Location 2. View of Wetland 1 (SP01). Photograph taken facing south.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 2. View of Wetland 1 (SP01). Photograph taken facing west.



Photo Location 3. View of Wetland 2 (SP03). Photograph taken facing north.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 3. View of Wetland 2 (SP03). Photograph taken facing east.



Photo Location 3. View of Wetland 2 (SP03). Photograph taken facing south.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 3. View of Wetland 2 (SP03). Photograph taken facing west.



Photo Location 4. View of Stream 1, South Fork Indian Run. Photograph taken facing upstream, southwest.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Locaiton 4. View of Stream 1, South Fork Indian Run. Photograph taken facing downstream, northeast.



Photo Location 4. View of Stream 1, South Fork Indian Run, typical substrates.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 5. View of Open Water 2. Photograph taken facing north.



Photo Location 6. View of Stream 2. Photograph taken facing upstream, north.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 6. View of Stream 2. Photograph taken facing downstream, south.



Photo Location 6. View of Stream 2, typical substrates.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 7. View of Stream 3, Cosgray Ditch. Photograph taken facing upstream, north.



Photo Location 7. View of Stream 3, Cosgray Ditch. Photograph taken facing downstream, south.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 7. View of Stream 3, Cosgray Ditch, typical substrates.



Photo Location 8. View of Stream 4. Photograph taken facing upstream, north.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 8. View of Stream 4. Photograph taken facing downstream, south.



Photo Location 8. View of Stream 4, typical substrates.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 9. View of Stream 5. Photograph taken facing upstream, north.



Photo Location 9. View of Stream 5. Photograph taken facing downstream, south.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 9. View of Stream 5, typical substrates.



Photo Location 10. View of upland drainage feature, UDF. Photograph taken facing east.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo location 11. View of upland second growth deciduous forest (SP05). Photograph taken facing north.



Photo Location 12. View of Wetland 3 (SP06). Photograph taken facing north.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 12. View of Wetland 3 (SP06). Photograph taken facing east.



Photo Location 12. View of Wetland 3 (SP06). Photograph taken facing south.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV Transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 12. View of Wetland 3 (SP06). Photograph taken facing west.

**AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL
RESOURCES INVENTORY REPORT**

Representative Photographs
May 15, 2020

C.2 FIGURE 3 – HABITAT PHOTOGRAPHS

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 1. View of commercial habitat. Photograph taken facing northeast.



Photo Location 2. View of industrial habitat, Amlin Station. Photograph taken facing west.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 3. View of maintained lawn and commercial habitat. Photograph taken facing east.



Photo Location 4. View of maintained lawn and old field habitat. Photograph taken facing east.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 5. View of maintained lawn. Photograph taken facing south.



Photo Location 6. View of agricultural field habitat. Photograph taken facing southeast.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 7. View of early successional deciduous forest habitat. Photograph taken facing southeast.



Photo Location 8. View of old field habitat. Photograph taken facing northwest.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV transmission Line Rebuild Project
Franklin County, Ohio



Photo Locations 9. View of existing roadway, Avery Road. Photograph taken facing west.



Photo Location 10. View of maintained road right-of-way. Photograph taken facing west.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 11. View of second growth deciduous forest and maintained road ROW.
Photograph taken facing west.



Photo Location 12. View of maintained lawn and commercial habitat. Photograph taken facing west.

AEP Ohio Transmission Company, Inc.
Amlin – Dublin 138 kV transmission Line Rebuild Project
Franklin County, Ohio



Photo Location 13. View of maintained lawn. Photograph taken facing south.

Data Forms
May 15, 2020

Appendix D DATA FORMS

D.1 QHEI DATA FORMS

Stream & Location: Steam 1, South Fork Indian Run

RM: _ _ _ Date: 04/ 28/ 20

AEP Amlin - Dublin

Scorers Full Name & Affiliation: Michelle Kearns/Stantec

River Code: - - - STORET #: - - - Lat./ Long.: 40 . 102462 183 . 18557

Office verified location ☐1] SUBSTRATE Check ONLY Two substrate TYPE BOXES;
estimate % or note every type present

Check ONE (Or 2 & average)

BEST TYPES		OTHER TYPES		ORIGIN		QUALITY	
☐ BLDR /SLABS [10]	☐ POOL RIFFLE	☒ HARDPAN [4]	☐ POOL RIFFLE	☐ LIMESTONE [1]	☐ SILT	☐ HEAVY [-2]	Substrate 5 Maximum 20
☐ BOULDER [9]	☐	☐ DETRITUS [3]	☐	☒ TILLS [1]	☐	☒ MODERATE [-1]	
☐ COBBLE [8]	☐	☐ MUCK [2]	☐	☐ WETLANDS [0]	☐	☐ NORMAL [0]	
☐ GRAVEL [7]	☒	☒ SILT [2]	☒	☐ HARDPAN [0]	☐	☐ FREE [1]	
☐ SAND [6]	☒	☐ ARTIFICIAL [0]	☐	☐ SANDSTONE [0]	☐	☒ EXTENSIVE [-2]	
☐ BEDROCK [5]	☐	(Score natural substrates; ignore sludge from point-sources)		☐ RIP/RAP [0]	☐	☒ MODERATE [-1]	
				☐ LACUSTURINE [0]	☐ EMBEDDEDNESS	☐ NORMAL [0]	
				☐ SHALE [-1]		☐ NONE [1]	
				☐ COAL FINES [-2]			

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments

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

AMOUNT

Check ONE (Or 2 & average)

☐ UNDERCUT BANKS [1]	☐ POOLS > 70cm [2]	☐ OXBOWS, BACKWATERS [1]	☐ EXTENSIVE >75% [11]
☐ OVERHANGING VEGETATION [1]	☐ ROOTWADS [1]	☐ AQUATIC MACROPHYTES [1]	☒ MODERATE 25-75% [7]
☐ SHALLOWS (IN SLOW WATER) [1]	☐ BOULDERS [1]	☐ LOGS OR WOODY DEBRIS [1]	☐ SPARSE 5-<25% [3]
☐ ROOTMATS [1]			☐ NEARLY ABSENT <5% [1]

Comments

Cover
Maximum 20

13

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☒ RECOVERED [4]	☒ MODERATE [2]
☒ LOW [2]	☒ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ 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		CONSERVATION TILLAGE	
☐ NONE / LITTLE [3]	☒ MODERATE [2]	☒ WIDE > 50m [4]	☐ MODERATE 10-50m [3]	☐ FOREST, SWAMP [3]	☐ SHRUB OR OLD FIELD [2]	☐ CONSERVATION TILLAGE [1]	☐ URBAN OR INDUSTRIAL [0]
☒ MODERATE [2]	☐ HEAVY / SEVERE [1]	☐ NARROW 5-10m [2]	☐ VERY NARROW < 5m [1]	☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ FENCED PASTURE [1]	☐ MINING / CONSTRUCTION [0]	
☐ HEAVY / SEVERE [1]		☐ NONE [0]		☐ OPEN PASTURE, ROWCROP [0]			

Comments

Indicate predominant land use(s)
past 100m riparian.**Riparian**
Maximum 10

7

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

4

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
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run
Maximum 8

0

6] GRADIENT (7.73 ft/mi)
DRAINAGE AREA (1.07 mi²)

- ☐ VERY LOW - LOW [2-4]
☒ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 15 %GLIDE: 0
%RUN: 85 %RIFFLE: 0**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

29

meters

CANOPY

- ☐ > 85%- OPEN
☒ 55%<-85%
☐ 30%<-55%
☐ 10%<-30%
☐ <10%- CLOSED

1st _____ cm

pass

2nd _____ cm

C] RECREATION

AREA DEPTH

POOL: $\square > 100\text{ft}^2$ $\square > 3\text{ft}$

B] 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

Circle some & COMMENT

EJ ISSUES

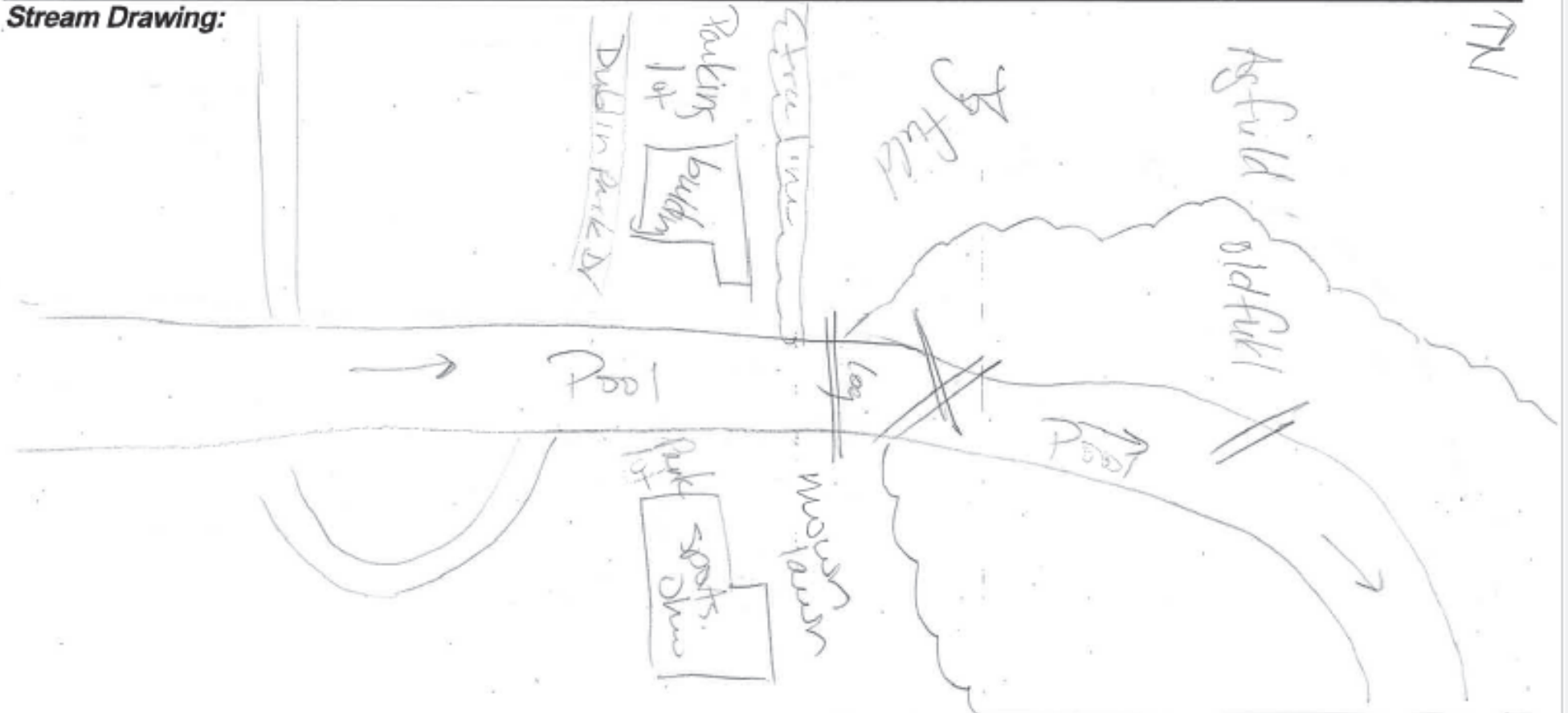
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H₂O / TILE / H₂O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN /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

F] MEASUREMENTS

$\bar{x}$ width 15'
 $\bar{x}$ depth 1.5'
 max. depth
 $\bar{x}$ bankfull width 18'
 bankfull $\bar{x}$ depth 2'
 W/D ratio
 bankfull max. depth
 floodprone x^2 width
 entrench. ratio

Legacy Tree:

Stream Drawing:



Stream & Location: Steam 3, Cosgray Ditch

RM: _ _ _ Date: 04/ 28/ 20

AEP Amlin - Dublin

Scorers Full Name & Affiliation: Michelle Kearns/Stantec

River Code: - - - STORET #: - - - Lat./ Long.: 40 . 095475 183 . 16496 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 9 Maximum 20
☐	BLDR /SLABS [10]			☒	HARDPAN [4]	x	x	☐	LIMESTONE [1]	☐	HEAVY [-2]	
☐	BOULDER [9]			☐	DETRITUS [3]			☒	TILLS [1]	☒	MODERATE [-1]	
☐	COBBLE [8]	x	x	☐	MUCK [2]			☐	WETLANDS [0]	☐	NORMAL [0]	
☐	GRAVEL [7]	x	x	☐	SILT [2]	x		☐	HARDPAN [0]	☐	FREE [1]	
☒	SAND [6]	x	x	☐	ARTIFICIAL [0]			☐	SANDSTONE [0]	☐	EXTENSIVE [-2]	
☐	BEDROCK [5]							☐	RIP/RAP [0]	☒	MODERATE [-1]	
(Score natural substrates; ignore sludge from point-sources)								☐	LACUSTURINE [0]	☐	NORMAL [0]	
								☐	SHALE [-1]	☐	NONE [1]	
								☐	COAL FINES [-2]			

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments

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

AMOUNT

Check ONE (Or 2 & average)

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]	☐	EXTENSIVE >75% [11]
0	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]	☐	MODERATE 25-75% [7]
1	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]	☒	SPARSE 5-<25% [3]
0	ROOTMATS [1]					☐	NEARLY ABSENT <5% [1]

Comments

Cover
Maximum
20

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☒ MODERATE [2]
☒ LOW [2]	☒ FAIR [3]	☒ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel
Maximum
204] **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	
☐ NONE / LITTLE [3]	☒ MODERATE [2]	☒ WIDE > 50m [4]	☐ MODERATE 10-50m [3]	☒ FOREST, SWAMP [3]	☐ SHRUB OR OLD FIELD [2]	☐ CONSERVATION TILLAGE [1]	☐ URBAN OR INDUSTRIAL [0]
☒ MODERATE [2]	☐ HEAVY / SEVERE [1]	☐ NARROW 5-10m [2]	☐ VERY NARROW < 5m [1]	☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ FENCED PASTURE [1]	☐ MINING / CONSTRUCTION [0]	
☐ HEAVY / SEVERE [1]		☐ NONE [0]		☐ OPEN PASTURE, ROWCROP [0]			

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian
Maximum
10

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)

Pool /
Current
Maximum
12

Comments

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
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☒ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☒ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☒ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☒ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle /
Run
Maximum
8

6] **GRADIENT** (8.21 ft/mi) ☐ VERY LOW - LOW [2-4]
DRAINAGE AREA ☒ MODERATE [6-10]
 (1.69 mi²) ☐ HIGH - VERY HIGH [10-6]%POOL: 10 %GLIDE: 0
 %RUN: 85 %RIFFLE: 5Gradient
Maximum
10

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

29

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

1st _____ cm

2nd _____ cm

CJ RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >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

Circle some & COMMENT

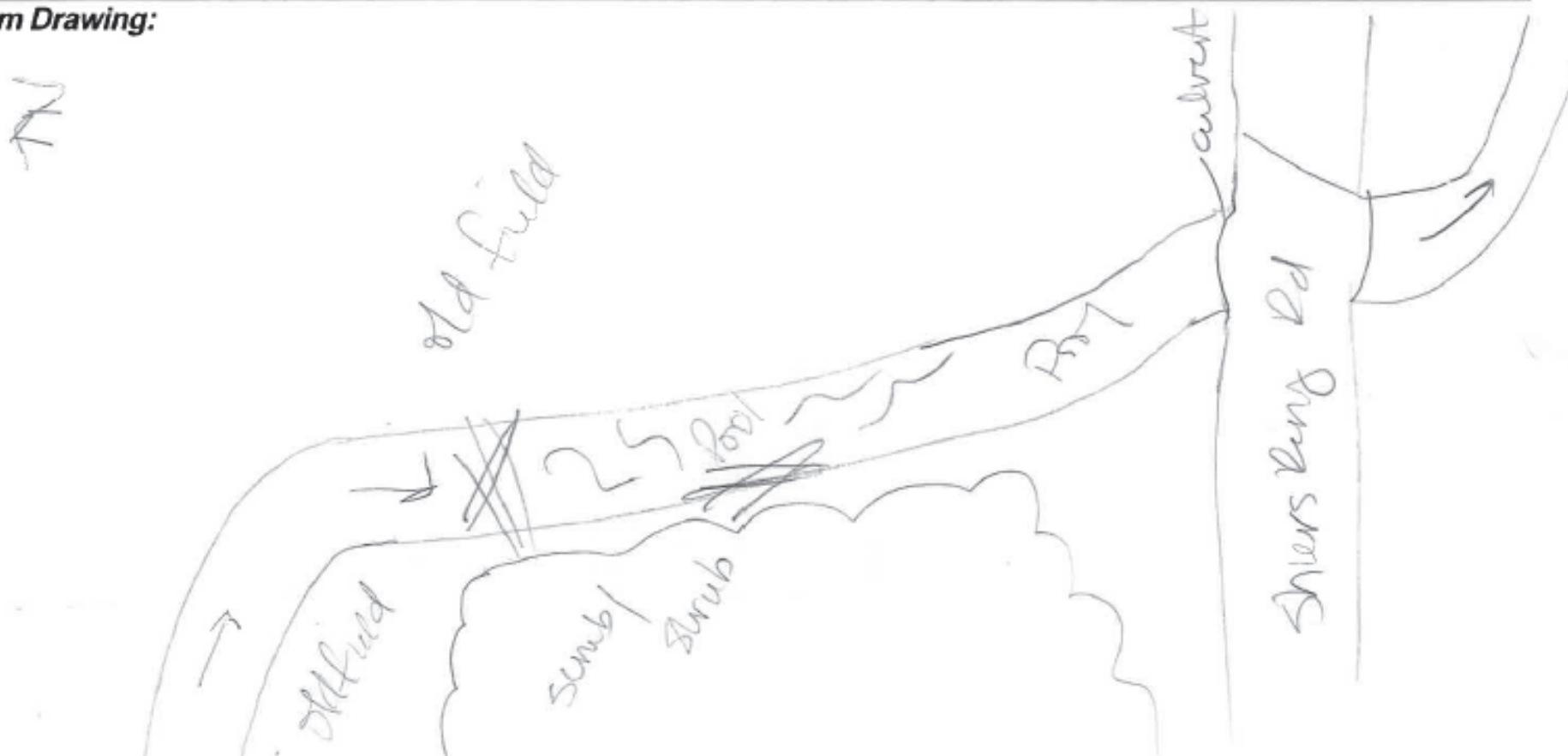
EJ ISSUES

- 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 6'
 $\bar{x}$ depth 0.5'
 max. depth
 $\bar{x}$ bankfull width 8'
 bankfull $\bar{x}$ depth 1.5'
 W/D ratio
 bankfull max. depth
 floodprone x² width
 entrench. ratio

Legacy Tree:

Stream Drawing:

**AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL
RESOURCES INVENTORY REPORT**

Data Forms
May 15, 2020

D.2 HHEI DATA FORMS



Primary Headwater Habitat Evaluation Form

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

24

SITE NAME/LOCATION **Stream 2 Amlin - Dublin**

SITE NUMBER **Stream 2** RIVER BASIN DRAINAGE AREA (mi²) **< 1**

LENGTH OF STREAM REACH (ft) **160** LAT. **40.09681** LONG. **-83.17105** RIVER CODE RIVER MILE

DATE **04/28/20** SCORER **M.Kearns** COMMENTS **Ephemeral**

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
☐ BLDR SLABS [16 pts]	0%	☐ SILT [3 pt]	90%
☐ BOULDER (>256 mm) [16 pts]	0%	☐ LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐ BEDROCK [16 pt]	0%	☐ FINE DETRITUS [3 pts]	0%
☐ COBBLE (65-256 mm) [12 pts]	0%	☐ CLAY or HARDPAN [0 pt]	0%
☒ GRAVEL (2-64 mm) [9 pts]	10%	☐ MUCK [0 pts]	0%
☐ SAND (<2 mm) [6 pts]	0%	☐ ARTIFICIAL [3 pts]	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: **2**

HHEI Metric Points

Substrate Max = 40

14

A + B

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

☐ > 30 centimeters [20 pts]	☐ > 5 cm - 10 cm [15 pts]
☐ > 22.5 - 30 cm [30 pts]	☒ < 5 cm [5 pts]
☐ > 10 - 22.5 cm [25 pts]	☐ NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): **4**

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

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

Bankfull Width Max=30

5

COMMENTS **BFW - 2' BFD - 0.5' / OWHMW - 1' OHWMD - 2"** AVERAGE BANKFULL WIDTH (meters): **0.69**

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

COMMENTS

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

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

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

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

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: Scioto River Distance from Evaluated Stream 3.22 mi.
☐ 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: Hilliard NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Franklin Township / City: Washington / Dublin

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 04/26/20 Quantity: 0.46 in.
Photograph Information: Upstream, Downstream, Substrates
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) 18.20 Dissolved Oxygen (mg/l) pH (S.U.) 8.20 Conductivity (µmhos/cm) 0.18
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

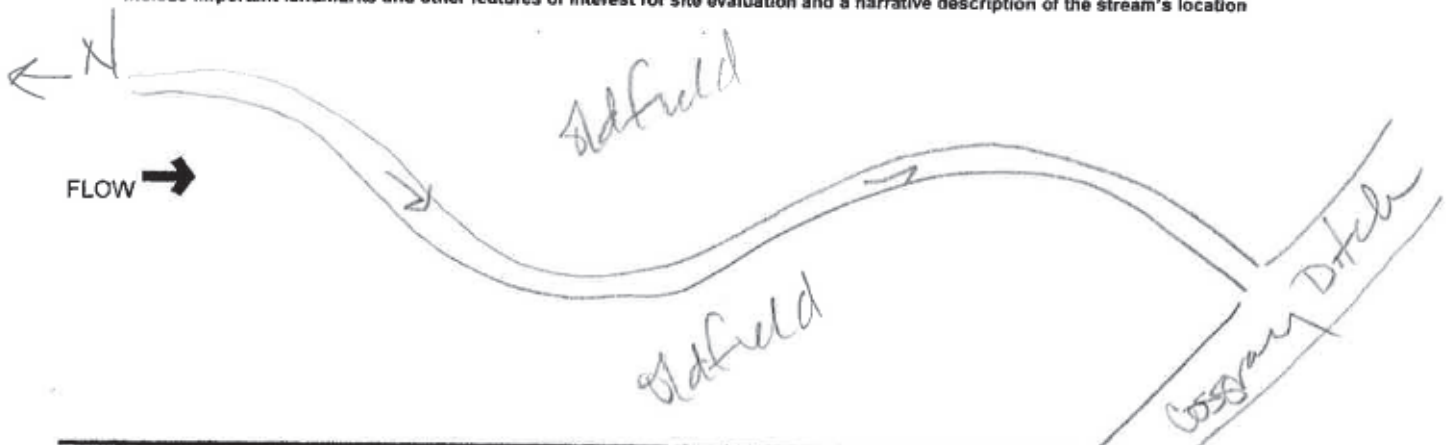
Additional comments/description of pollution impacts:

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) ☐ 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 **Stream 4 Amlin - Dublin**

SITE NUMBER **Stream 4** RIVER BASIN DRAINAGE AREA (mi²) **<1.0**

LENGTH OF STREAM REACH (ft) **71** LAT. **40.09538** LONG. **-83.16240** RIVER CODE RIVER MILE

DATE **04/28/20** SCORER **M.Kearns** COMMENTS **Ephemeral**

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

TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

6

A + B

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

☐ > 30 centimeters [20 pts]	☐ > 5 cm - 10 cm [15 pts]
☐ > 22.5 - 30 cm [30 pts]	☒ < 5 cm [5 pts]
☐ > 10 - 22.5 cm [25 pts]	☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **4**

Pool Depth Max = 30

5

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

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

COMMENTS **BFW - 4' BFD - 1' / OWHMW - 2' OHWMD - 6"** AVERAGE BANKFULL WIDTH (meters): **1.20**

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

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

RIPARIAN WIDTH

L	R	(Per Bank)
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
☐	☐	Mature Forest, Wetland
☐	☐	Immature Forest, Shrub or Old Field
☒	☒	Residential, Park, New Field
☐	☐	Fenced Pasture

L	R	
☐	☐	Conservation Tillage
☐	☐	Urban or Industrial
☐	☐	Open Pasture, Row Crop
☐	☐	Mining or Construction

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

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

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

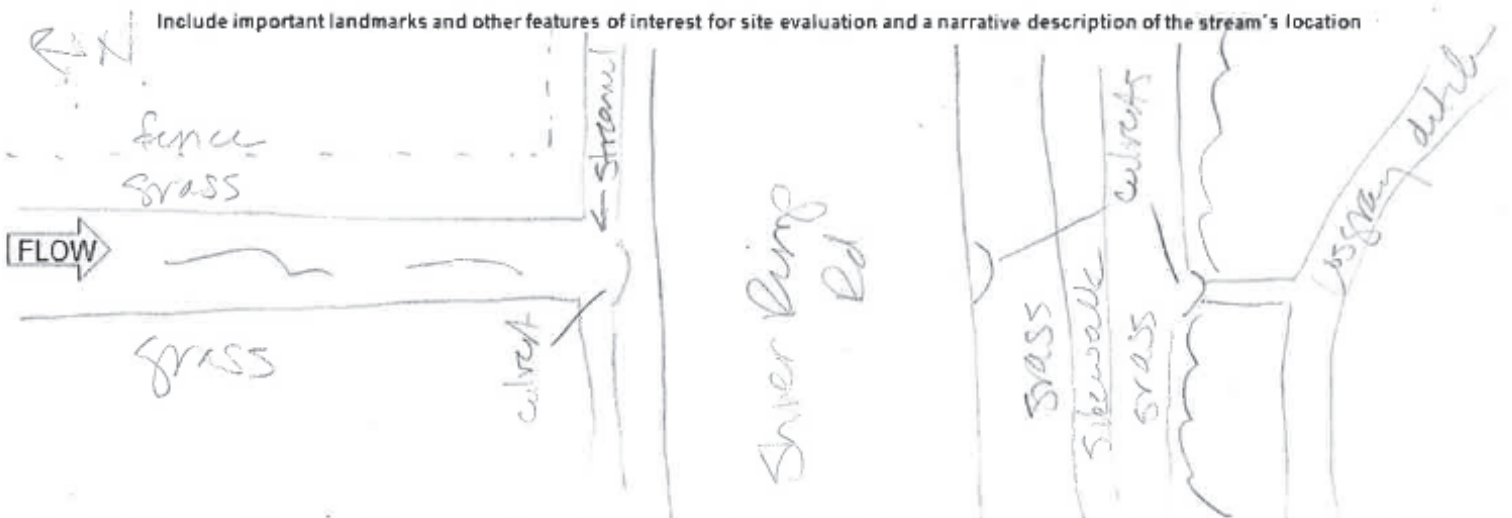
☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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: <u>Scioto River</u>	Distance from Evaluated Stream	<u>2.75 mi.</u>
☐ 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 LOCATIONUSGS Quadrangle Name: Hilliard NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Franklin Township / City: Dublin**MISCELLANEOUS**Base Flow Conditions? (Y/N): Y Date of last precipitation: 04/26/20 Quantity: 0.46 in.Photograph Information: Upstream, Downstream, SubstratesElevated Turbidity? (Y/N): Y Canopy (% open): 50%Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) 13.00 Dissolved Oxygen (mg/l) pH (S.U.) 7.10 Conductivity (µmhos/cm) 370Is 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) ☐ 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) :

23

SITE NAME/LOCATION **Stream 5 Amlin - Dublin**

SITE NUMBER **Stream 5** RIVER BASIN DRAINAGE AREA (mi²) **<1.0**

LENGTH OF STREAM REACH (ft) **35** LAT. **40.08547** LONG. **-83.16127** RIVER CODE RIVER MILE

DATE **04/29/20** SCORER **M.Kearns** COMMENTS **Ephemeral**

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
☐ BLDR SLABS [16 pts]	0%	☐ SILT [3 pt]	0%
☐ BOULDER (>256 mm) [16 pts]	0%	☐ LEAF PACK/WOODY DEBRIS [3 pts]	20%
☐ BEDROCK [16 pt]	0%	☐ FINE DETRITUS [3 pts]	0%
☐ COBBLE (65-256 mm) [12 pts]	5%	☒ CLAY or HARDPAN [0 pt]	50%
☒ GRAVEL (2-64 mm) [9 pts]	25%	☐ MUCK [0 pts]	0%
☐ SAND (<2 mm) [6 pts]	0%	☐ ARTIFICIAL [3 pts]	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):

☐ > 30 centimeters [20 pts]	☐ > 5 cm - 10 cm [15 pts]
☐ > 22.5 - 30 cm [30 pts]	☒ < 5 cm [5 pts]
☐ > 10 - 22.5 cm [25 pts]	☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **4**

Pool Depth Max = 30

5

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

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

COMMENTS **BFW - 3' BFD - 0.5' / OWHMW - 1.5' OHWMD - 2'** AVERAGE BANKFULL WIDTH (meters): **0.90**

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

COMMENTS

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

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

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

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

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: Scioto River Distance from Evaluated Stream 2.70 mi.
☐ 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: Hilliard NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Franklin Township / City: Dublin

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 04/26/20 Quantity: 0.46 in.
Photograph Information: Upstream, Downstream, Substrates
Elevated Turbidity? (Y/N): N Canopy (% open): 50%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) 15.60 Dissolved Oxygen (mg/l) pH (S.U.) 7.10 Conductivity (µmhos/cm) 320
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

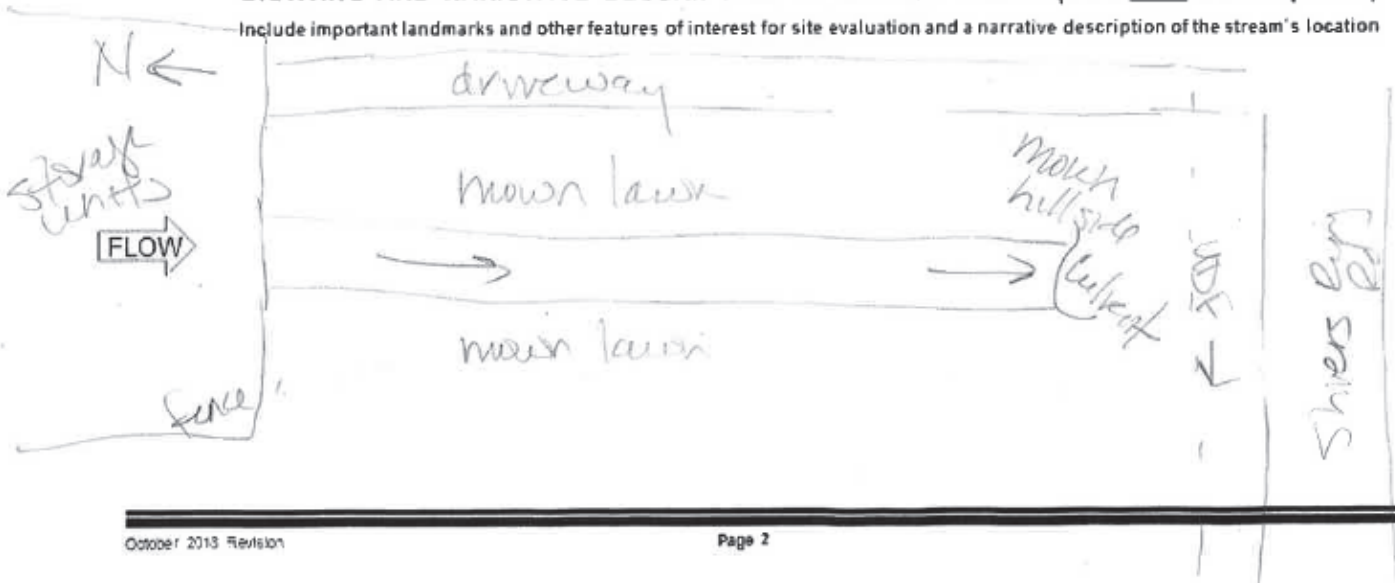
Additional comments/description of pollution impacts:

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) ☐ 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



**AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL
RESOURCES INVENTORY REPORT**

Data Forms
May 15, 2020

D.3 WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Amlin - Dublin City/County: Dublin/Franklin Co. Sampling Date: 04/29/20
 Applicant/Owner: AEP State: OH Sampling Point: SP01
 Investigator(s): Michelle Kearns, Charlie Allen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none
 Slope (%): 1 Lat: 40.101403 Long: -83.193694 Datum: _____
 Soil Map Unit Name: Ko - Kokomo silty clay loam, 0 to 2% slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____
Hydric Soil Present? Yes ☒ No _____	
Wetland Hydrology Present? Yes ☒ No _____	
Remarks: <u>Wetland point for Wetland 1</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>N/A</u>)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Present? Yes ☒ No _____
1. <u>Rumex crispus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
2. <u>Carex scoparia</u>	<u>80</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: <u>N/A</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) <u>15% open water</u>				

SOILSampling Point: SP01**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 15	10YR 4/2	95	10YR 5/6	5	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|--|--|
| ☐ Histic Epipedon (A2) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Black Histic (A3) | ☐ Sandy Redox (S5) |
| ☐ Hydrogen Sulfide (A4) | ☐ Stripped Matrix (S6) |
| ☐ Stratified Layers (A5) | ☐ Loamy Mucky Mineral (F1) |
| ☐ 2 cm Muck (A10) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Depleted Below Dark Surface (A11) | ☒ Depleted Matrix (F3) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Dark Surface (F6) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Depleted Dark Surface (F7) |
| ☐ 5 cm Mucky Peat or Peat (S3) | ☐ Redox Depressions (F8) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ Coast Prairie Redox (A16) |
| ☐ Dark Surface (S7) |
| ☐ Iron-Manganese Masses (F12) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: Refusal - Clay
 Depth (inches): 15+
Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

- | | |
|--|---|
| ☒ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☒ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☒ Saturation (A3) | ☐ True Aquatic Plants (B14) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Gauge or Well Data (D9) |
| ☐ Sparsely Vegetated Concave Surface (B8) | ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| ☐ Surface Soil Cracks (B6) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Stunted or Stressed Plants (D1) |
| ☐ Geomorphic Position (D2) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches): <u>2"</u>
Water Table Present?	Yes ☒	No ☐	Depth (inches): <u>surface</u>
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches): <u>0"</u>

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Amlin - Dublin City/County: Dublin/Franklin Co. Sampling Date: 04/29/20
 Applicant/Owner: AEP State: OH Sampling Point: SP02
 Investigator(s): Michelle Kearns, Charlie Allen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none
 Slope (%): 0 Lat: 40.101534 Long: -83.193512 Datum: _____
 Soil Map Unit Name: Ko - Kokomo silty clay loam, 0 to 2% slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes _____ No ☒
Hydric Soil Present? Yes _____ No ☒	
Wetland Hydrology Present? Yes _____ No ☒	
Remarks: <u>Upland point for Wetland 2</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</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>33%</u> (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>350</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.5</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species _____	x 5 = _____	Column Totals: <u>100</u> (A)	<u>350</u> (B)	Prevalence Index = B/A = <u>3.5</u>	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species <u>50</u>	x 3 = <u>150</u>																			
FACU species <u>50</u>	x 4 = <u>200</u>																			
UPL species _____	x 5 = _____																			
Column Totals: <u>100</u> (A)	<u>350</u> (B)																			
Prevalence Index = B/A = <u>3.5</u>																				
_____ = Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover																				
Herb Stratum (Plot size: <u>5'</u>) 1. <u>Taraxacum officinale</u> <u>10</u> <u>N</u> <u>FACU</u> 2. <u>Trifolium pratense</u> <u>20</u> <u>Y</u> <u>FACU</u> 3. <u>Poa pratensis</u> <u>50</u> <u>Y</u> <u>FAC</u> 4. <u>Plantago lanceolata</u> <u>20</u> <u>Y</u> <u>FACU</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ _____ = Total Cover																				
Woody Vine Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ _____ = Total Cover																				
100 = Total Cover Remarks: (Include photo numbers here or on a separate sheet.)																				

SOILSampling Point: SP02**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 6	10YR 3/4	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 2 cm Muck (A10) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ 5 cm Mucky Peat or Peat (S3) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ Coast Prairie Redox (A16) |
| ☐ Dark Surface (S7) |
| ☐ Iron-Manganese Masses (F12) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: Fill gravel
 Depth (inches): 6+
Hydric Soil Present? Yes ☐ No ☒

Remarks:

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

- | | |
|--|---|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☐ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☐ Saturation (A3) | ☐ True Aquatic Plants (B14) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Gauge or Well Data (D9) |
| ☐ Sparsely Vegetated Concave Surface (B8) | ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| ☐ Surface Soil Cracks (B6) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Stunted or Stressed Plants (D1) |
| ☐ Geomorphic Position (D2) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes ☐ No ☒	Depth (inches): <u>--</u>
Water Table Present?	Yes ☐ No ☒	Depth (inches): <u>--</u>
Saturation Present? (includes capillary fringe)	Yes ☐ No ☒	Depth (inches): <u>--</u>

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Amlin - Dublin City/County: Dublin/Franklin Co. Sampling Date: 04/29/20
 Applicant/Owner: AEP State: OH Sampling Point: SP03
 Investigator(s): Michelle Kearns, Charlie Allen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 1 Lat: 40.102071 Long: -83.189853 Datum: _____
 Soil Map Unit Name: Ko - Kokomo silty clay loam, 0 to 2% slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____
Hydric Soil Present? Yes ☒ No _____	
Wetland Hydrology Present? Yes ☒ No _____	
Remarks: <u>Wetland point for Wetland 2</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u>)	Absolute % Cover	Dominant Species?	Indicator Status	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%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>) 1. <u>Typha latifolia</u> 50 Y OBL 2. <u>Typha angustifolia</u> 45 Y OBL 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 100 = Total Cover				
Woody Vine Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ _____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				
Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes ☒ No _____				

[illegible]

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☒ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)	
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)	
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): <u>1-2"</u> Water Table Present? Yes ☒ No ☐ Depth (inches): <u>Surface</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>0</u> (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Amlin - Dublin City/County: Dublin/Franklin Co. Sampling Date: 04/29/20
 Applicant/Owner: AEP State: OH Sampling Point: SP04
 Investigator(s): Michelle Kearns, Charlie Allen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none
 Slope (%): 1 Lat: 40.102076 Long: -83.189867 Datum: _____
 Soil Map Unit Name: Ko - Kokomo silty clay loam, 0 to 2% slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes _____ No ☒
Hydric Soil Present? Yes _____ No ☒	
Wetland Hydrology Present? Yes _____ No ☒	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</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>50%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>65</u> x 3 = <u>195</u> FACU species <u>35</u> x 4 = <u>140</u> UPL species _____ x 5 = _____ Column Totals: <u>100</u> (A) <u>335</u> (B) Prevalence Index = B/A = <u>3.35</u>
Sapling/Shrub Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>) 1. <u>Taraxacum officinale</u> <u>5</u> <u>N</u> <u>FACU</u> 2. <u>Trifolium pratense</u> <u>20</u> <u>Y</u> <u>FACU</u> 3. <u>Poa pratensis</u> <u>65</u> <u>Y</u> <u>FAC</u> 4. <u>Plantago lanceolata</u> <u>10</u> <u>N</u> <u>FACU</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ _____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				
Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes _____ No ☒				

SOILSampling Point: SP04**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 12	10YR 4/3	100					Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 2 cm Muck (A10) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ 5 cm Mucky Peat or Peat (S3) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ Coast Prairie Redox (A16) |
| ☐ Dark Surface (S7) |
| ☐ Iron-Manganese Masses (F12) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: Refusal
 Depth (inches): 12+
Hydric Soil Present? Yes ☐ No ☒

Remarks:

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

- | | |
|--|---|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☐ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☐ Saturation (A3) | ☐ True Aquatic Plants (B14) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Gauge or Well Data (D9) |
| ☐ Sparsely Vegetated Concave Surface (B8) | ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| ☐ Surface Soil Cracks (B6) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Stunted or Stressed Plants (D1) |
| ☐ Geomorphic Position (D2) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes ☐ No ☒	Depth (inches): <u>--</u>
Water Table Present?	Yes ☐ No ☒	Depth (inches): <u>--</u>
Saturation Present? (includes capillary fringe)	Yes ☐ No ☒	Depth (inches): <u>--</u>

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Amlin - Dublin City/County: Dublin/Franklin Co. Sampling Date: 04/28/20
 Applicant/Owner: AEP State: OH Sampling Point: SP05
 Investigator(s): Michelle Kearns, Charlie Allen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 0 Lat: 40.096608 Long: -83.147253 Datum: _____
 Soil Map Unit Name: CrA - Crosby silt loam, Southern Ohio Till Plain, 0-2% slopes NWI classification: PFO1A

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

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

Hydrophytic Vegetation Present? Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes _____ No ☒
Hydric Soil Present? Yes _____ No ☒	
Wetland Hydrology Present? Yes ☒ No _____	
Remarks: <u>Upland point within NWI PFO1A</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
1. <u>Prunus serotina</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
2. <u>Carya cordiformis</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species <u>135</u> x 4 = <u>675</u> UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>35</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				
1. <u>Lonicera morrowii</u>	<u>75</u>	<u>Y</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No ☒
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>75</u> = Total Cover				
Herb Stratum (Plot size: <u>5'</u>)				
1. <u>Lonicera morrowii</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	Hydrophytic Vegetation Present? Yes _____ No ☒
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No ☒
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>20</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Present? Yes _____ No ☒
1. <u>Vitis aestivalis</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
<u>5</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) <u>80% Open ground</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 8	10YR 4/3	100					Clay Loam	
8 - 15	10YR 4/3	95	10YR 5/8	5	C	M	Clay Loam	
15 - 20	10 YR 4/3	90	10YR 5/8	10	C	M	Clay Loam	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A4) ☐ Stratified Layers (A5) ☐ 2 cm Muck (A10) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Sandy Mucky Mineral (S1) ☐ 5 cm Mucky Peat or Peat (S3)	Indicators for Problematic Hydric Soils³: ☐ Sandy Gleyed Matrix (S4) ☐ Sandy Redox (S5) ☐ Stripped Matrix (S6) ☐ Loamy Mucky Mineral (F1) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☐ Redox Depressions (F8) ☐ Coast Prairie Redox (A16) ☐ Dark Surface (S7) ☐ Iron-Manganese Masses (F12) ☐ Very Shallow Dark Surface (TF12) ☐ Other (Explain in Remarks)
---	---

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

Restrictive Layer (if observed): Type: N/A _____ Depth (inches): N/A _____	Hydric Soil Present? Yes _____ No ☒
---	--

Remarks:

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☒ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)	
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)	
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): <u>0.5</u> Water Table Present? Yes ☒ No ☐ Depth (inches): <u>Surface</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>20</u> (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Amlin - Dublin City/County: Dublin/Franklin Co. Sampling Date: 05/01/20
 Applicant/Owner: AEP State: OH Sampling Point: SP06
 Investigator(s): Michelle Kearns, Charlie Allen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 1 Lat: 40.093428 Long: -83.14324 Datum: _____
 Soil Map Unit Name: Ko - Kokomo silty clay loam, 0-2% slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____
Hydric Soil Present? Yes ☒ No _____	
Wetland Hydrology Present? Yes ☒ No _____	
Remarks: <u>Wet Point for Wetland 3</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>) 1. <u>Eleocharis acicularis</u> 85 Y OBL 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 85 = Total Cover				
Woody Vine Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ _____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) <u>15% Open ground</u>				
Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes ☒ No _____				

SOILSampling Point: SP06**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 3/2	100					Clay Loam	
3 - 15	10YR 4/2	93	10YR 5/8	7	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 2 cm Muck (A10) | ☒ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ 5 cm Mucky Peat or Peat (S3) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ Coast Prairie Redox (A16) |
| ☐ Dark Surface (S7) |
| ☐ Iron-Manganese Masses (F12) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: Refusal
 Depth (inches): 15+
Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

- | | |
|--|---|
| ☒ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☒ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☒ Saturation (A3) | ☐ True Aquatic Plants (B14) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Gauge or Well Data (D9) |
| ☐ Sparsely Vegetated Concave Surface (B8) | ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| ☐ Surface Soil Cracks (B6) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Stunted or Stressed Plants (D1) |
| ☐ Geomorphic Position (D2) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches): <u>2 - 3"</u>
Water Table Present?	Yes ☒	No ☐	Depth (inches): <u>0"</u>
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches): <u>0"</u>

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Amlin - Dublin City/County: Dublin/Franklin Co. Sampling Date: 05/01/20
 Applicant/Owner: AEP State: OH Sampling Point: SP07
 Investigator(s): Michelle Kearns, Charlie Allen Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 1 Lat: 40.093428 Long: -83.14324 Datum: _____
 Soil Map Unit Name: Ko - Kokomo silty clay loam, 0-2% slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes _____ No ☒
Hydric Soil Present? Yes _____ No ☒	
Wetland Hydrology Present? Yes _____ No ☒	
Remarks: <u>Upland point for Wetland 3</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</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>0%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>85</u> x 4 = <u>340</u> UPL species _____ x 5 = _____ Column Totals: <u>100</u> (A) <u>385</u> (B) Prevalence Index = B/A = <u>3.85</u>
Sapling/Shrub Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>) 1. <u>Trifolium partense</u> <u>20</u> <u>Y</u> <u>FACU</u> 2. <u>Plantago major</u> <u>15</u> <u>N</u> <u>FAC</u> 3. <u>Festuca rubra</u> <u>55</u> <u>Y</u> <u>FACU</u> 4. <u>Taraxacum officinale</u> <u>10</u> <u>N</u> <u>FACU</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ _____ = Total Cover				
100 = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) <u>15% Open ground</u>				

SOILSampling Point: SP07**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

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

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 2 cm Muck (A10) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ 5 cm Mucky Peat or Peat (S3) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ Coast Prairie Redox (A16) |
| ☐ Dark Surface (S7) |
| ☐ Iron-Manganese Masses (F12) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: N/A
 Depth (inches): _____
Hydric Soil Present? Yes _____ No ☒

Remarks:

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

- | | |
|--|---|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☐ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☐ Saturation (A3) | ☐ True Aquatic Plants (B14) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Gauge or Well Data (D9) |
| ☐ Sparsely Vegetated Concave Surface (B8) | ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| ☐ Surface Soil Cracks (B6) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Stunted or Stressed Plants (D1) |
| ☐ Geomorphic Position (D2) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes _____ No ☒	Depth (inches): <u>--</u>
Water Table Present?	Yes _____ No ☒	Depth (inches): <u>--</u>
Saturation Present? (includes capillary fringe)	Yes _____ No ☒	Depth (inches): <u>--</u>

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

**AMLIN – DUBLIN 138 KV TRANSMISSION LINE REBUILD PROJECT, FRANKLIN COUNTY, OHIO, ECOLOGICAL
RESOURCES INVENTORY REPORT**

Data Forms
May 15, 2020

D.4 ORAM DATA FORMS

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

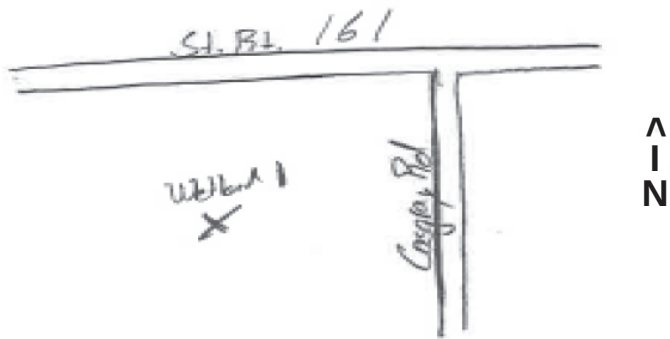
The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name:	Michelle Kearns		
Date:	4/29/20		
Affiliation:	Stantec Consulting Services Inc		
Address:	1500 Lake Shore Drive, Columbus, Ohio 43204		
Phone Number:	614 486-4383		
e-mail address:	michelle.kearns@stantec.com		
Name of Wetland:	Wetland 1		
Vegetation Communit(ies):	PEM		
HGM Class(es):	Depression		
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.			
Lat/Long or UTM Coordinate	40.10131, -83.194394		
USGS Quad Name	Hilliard		
County	Franklin		
Township	Washington		
Section and Subsection			
Hydrologic Unit Code	050600011203		
Site Visit	04/29/20		
National Wetland Inventory Map	Yes		
Ohio Wetland Inventory Map	No		
Soil Survey	Franklin County Soil Survey		
Delineation report/map	Ecological Report: Figure 2		

Name of Wetland: Wetland 1	
Wetland Size (acres, hectares): 0.54 ac. (XX ac. within the Project area)	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 24	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

Wetland 1

Michelle Kearns

4/29/20

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☒	☐
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☐	☒
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☒	☐

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

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

Wetland 1

Michelle Kearns

4/29/20

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland 1	Rater(s): Michelle Kearns	Date: 4/29/20
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2	2
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)

2	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), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

8	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	
☐ ditch ☐ tile ☐ dike ☐ weir ☐ stormwater input	☐ point source (nonstormwater) ☒ filling/grading ☐ road bed/RR track ☐ dredging ☐ 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	
☒ mowing ☐ grazing ☐ clearcutting ☐ selective cutting ☐ woody debris removal ☐ toxic pollutants	☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ sedimentation ☐ dredging ☒ farming ☐ nutrient enrichment

19
subtotal this page

Site: Wetland 1	Rater(s): Michelle Kearns	Date: 4/29/20
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19

subtotal first page

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)

5

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
- ☐ 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/tussucks
- ☐ Coarse woody debris >15cm (6in)
- ☐ 1 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

End of Quantitative Rating. Complete Categorization Worksheets.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☒ Wetland is assigned to the appropriate category based on the scoring range	NO ☐	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3
Category 1	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

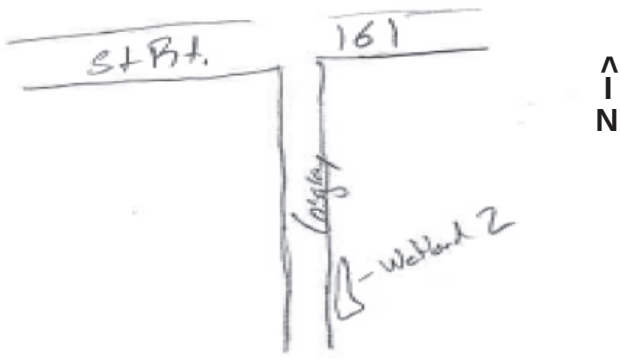
The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

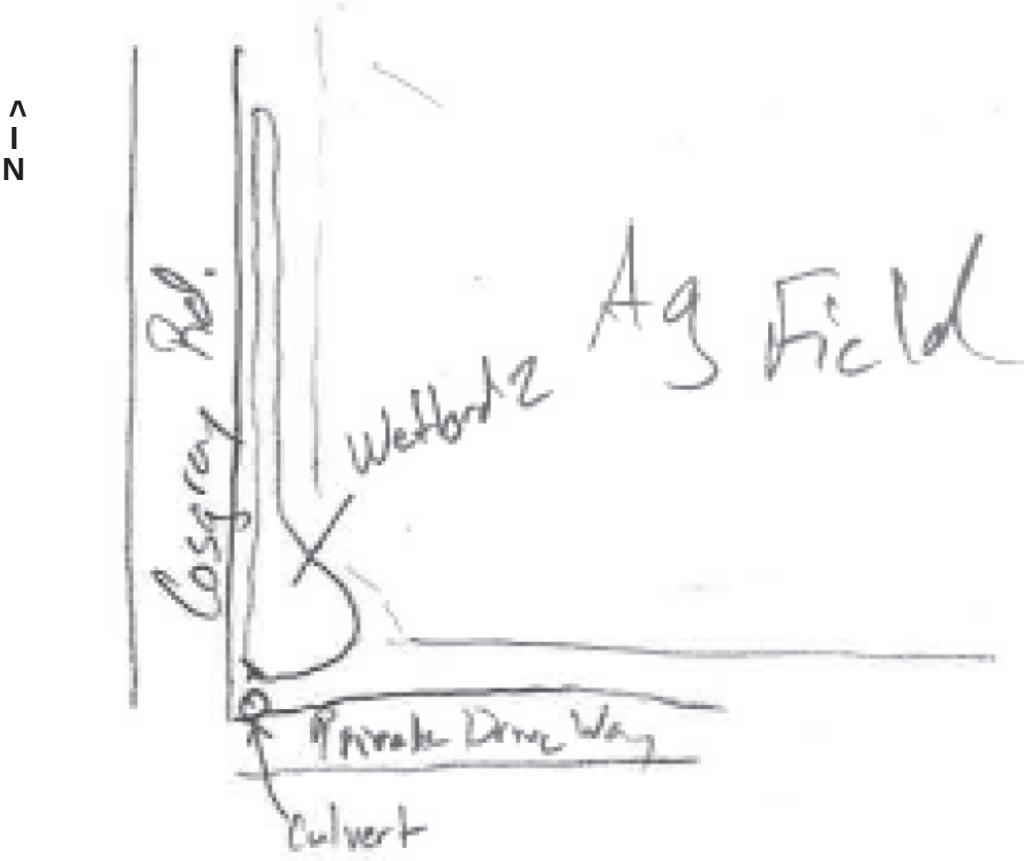
The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name:	Michelle Kearns		
Date:	4/29/20		
Affiliation:	Stantec Consulting Services Inc		
Address:	1500 Lake Shore Drive, Columbus, Ohio 43204		
Phone Number:	614-486-4383		
e-mail address:	michelle.kearns@stantec.com		
Name of Wetland:	Wetland 2		
Vegetation Communit(ies):	PEM		
HGM Class(es):	Depression		
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.			
Lat/Long or UTM Coordinate	40.102143, -83.189871		
USGS Quad Name	Hilliard		
County	Franklin		
Township	Washington		
Section and Subsection			
Hydrologic Unit Code	050600011203		
Site Visit	4/29/20		
National Wetland Inventory Map	Yes		
Ohio Wetland Inventory Map	No		
Soil Survey	Franklin County Soil Survey		
Delineation report/map	Ecological Report: Figure 2		

Name of Wetland: Wetland 2	
Wetland Size (acres, hectares): 0.02ac.	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 14	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

Wetland 2

Michelle Kearns

4/29/20

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☒	☐
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☐	☒
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☒	☐

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

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

Wetland 2

Michelle Kearns

4/29/20

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland 2	Rater(s): Michelle Kearns	Date: 4/29/20
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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)

1	1
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

7	8
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	15
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

15
subtotal this page

Site: Wetland 2	Rater(s): Michelle Kearns	Date: 4/29/20
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15

subtotal first page

0

15

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

14

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 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

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End of Quantitative Rating. Complete Categorization Worksheets.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☒ Wetland is assigned to the appropriate category based on the scoring range	NO ☐	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate</i> OR <i>superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	Category 1	Category 2	Category 3
Category 1	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

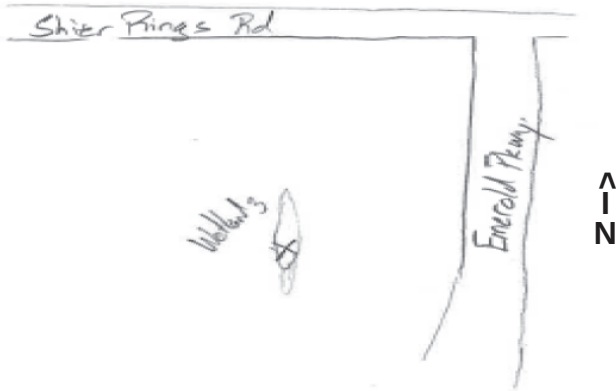
The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

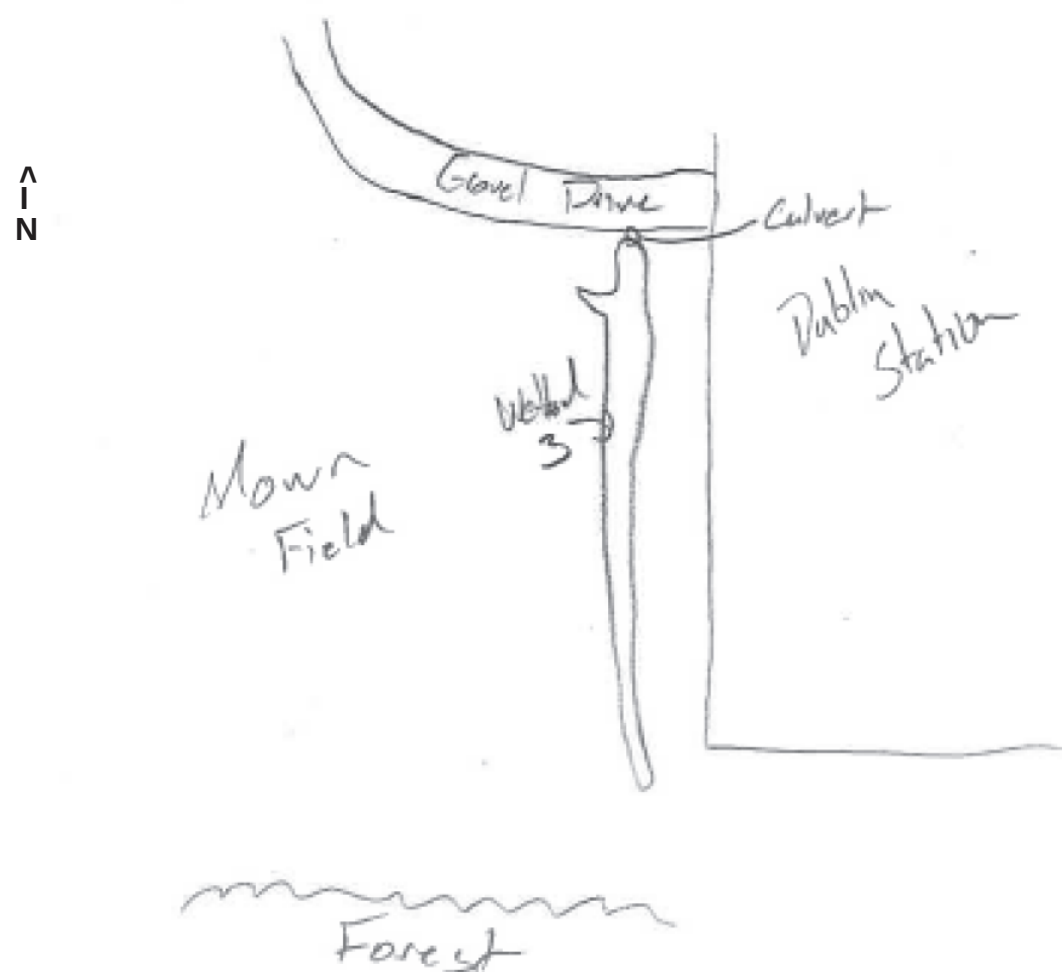
The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name:	Michelle Kearns		
Date:	05/01/20		
Affiliation:	Stantec Consulting Services Inc		
Address:	1500 Lake Shore Drive, Columbus, Ohio 43204		
Phone Number:	614-486-4383		
e-mail address:	michelle.kearns@stantec.com		
Name of Wetland:	Wetland 3		
Vegetation Communit(ies):	PEM		
HGM Class(es):	Depression		
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	 The map is a hand-drawn sketch. At the top, a horizontal line is labeled 'Shier Pines Rd'. A vertical line, labeled 'Emerald Pkwy', intersects it from below. To the left of the intersection, there is a small oval shape labeled 'Wetland 3'. To the right of the vertical line, there is a north arrow pointing upwards, labeled 'N'.		
Lat/Long or UTM Coordinate	40.093467, -83.143229		
USGS Quad Name	Hilliard		
County	Franklin		
Township	Washington		
Section and Subsection			
Hydrologic Unit Code	050600011204		
Site Visit	5/1/20		
National Wetland Inventory Map	Yes		
Ohio Wetland Inventory Map	No		
Soil Survey	Franklin County Soil Survey		
Delineation report/map	Ecological Report: Figure 2		

Name of Wetland: Wetland 3	
Wetland Size (acres, hectares): 0.01 ac.	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 16	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

Wetland 3

Michelle Kearns

05/01/20

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	☒	☐
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	☒	☐
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	☒	☐
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	☒	☐
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	☐	☒
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	☒	☐

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

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

Wetland 3

Michelle Kearns

05/01/20

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 2	NO ☒ Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES ☐ Wetland is a Category 3 wetland. Go to Question 3	NO ☒ Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES ☐ Wetland is a Category 3 wetland Go to Question 4	NO ☒ Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ☐ Wetland is a Category 3 wetland Go to Question 5	NO ☒ Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES ☐ Wetland is a Category 1 wetland Go to Question 6	NO ☒ Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 7	NO ☒ Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ☐ Wetland is a Category 3 wetland Go to Question 8a	NO ☒ Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES ☐ Wetland is a Category 3 wetland. Go to Question 8b	NO ☒ Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ Go to Question 9b	NO ☒ Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES ☐ Go to Question 9d	NO ☐ Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES ☐ Wetland is a Category 3 wetland Go to Question 10	NO ☐ Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES ☐ Wetland should be evaluated for possible Category 3 status Go to Question 10	NO ☐ Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO ☒ Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland 3	Rater(s): Michelle Kearns	Date: 05/01/20
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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)

3	3
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

7	10
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	17
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

17
subtotal this page

Site: Wetland 3	Rater(s): Michelle Kearns	Date: 05/01/20
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17

subtotal first page

0

17

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

16

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 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

16

End of Quantitative Rating. Complete Categorization Worksheets.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES ☐ Wetland is categorized as a Category 3 wetland	NO ☒	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES ☐ Wetland should be evaluated for possible Category 3 status	NO ☒	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES ☐ Wetland is categorized as a Category 1 wetland	NO ☒	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES ☒ Wetland is assigned to the appropriate category based on the scoring range	NO ☐	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES ☐ Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO ☒	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES ☐ Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO ☒ Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3
Category 1	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

LETTER OF NOTIFICATION FOR AMLIN-DUBLIN 138 KV TRANSMISSION LINE PROJECT

May 26, 2020

Appendix F 2017 Agency Correspondence



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

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

November 6, 2017

Mia Hall
Civil & Environmental Consultants, Inc.
250 Old Wilson Bridge road, Suite 250
Worthington, Ohio 43085

Re: 17-673; ODNR Environmental Review Request, Amlin - Dublin 138Kv Transmission Line, CEC Project 172-616

Project: The proposed project involves the construction of the Amlin-Dublin 138 kV transmission line.

Location: The proposed project is located in the City of Dublin, Franklin County, Ohio.

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

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

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

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

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

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

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

The project is within the range of the purple cat's paw (*Epioblasma o. obliquata*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel species, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federal endangered mussel, the long solid (*Fusconaia maculata maculata*), a state endangered mussel, the Ohio pigtoe (*Pleurobema cordatum*), a state endangered mussel, the pocketbook (*Lampsilis ovata*), a state endangered mussel, the washboard (*Megaloniais nervosa*), a state endangered mussel, the elephant-ear (*Elliptio crassidens crassidens*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel, the pondhorn (*Unio merus tetralasmus*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, the popeye shiner (*Notropis ariommus*), a state endangered fish, the northern brook lamprey (*Ichthyomyzon fossor*), a state endangered fish, the spotted darter (*Etheostoma maculatum*), a state endangered fish, the shortnose gar (*Lepisosteus platostomus*), a state endangered fish, the tonguetied minnow (*Exoglossum laurae*), a state threatened fish, the paddlefish (*Polyodon spathula*) a state threatened fish, and the Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, this project is not likely to impact these or other aquatic 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.

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

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

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

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

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler
ODNR Office of Real Estate
2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693
John.Kessler@dnr.state.oh.us

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Monday, September 18, 2017 1:42 PM
To: Hall, Mia; Geho, Robert
Cc: nathan.reardon@dnr.state.oh.us; kate.parsons@dnr.state.oh.us
Subject: CEC No. 172-616 - AEP Amlin-Dublin 138 kV Transmission Line Project, Franklin Co.



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# 03E15000-2017-TA-1938

Dear Ms. Hall,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

FEDERALLY LISTED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these

structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves and abandoned mines.

Should the proposed site contain trees ≥ 3 inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend that removal of any trees ≥ 3 inches dbh only occur between October 1 and March 31. Seasonal clearing is being recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

If implementation of this seasonal tree cutting recommendation is not possible, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the project area during the summer. If a summer survey documents probable absence of Indiana bats, the 4(d) rule for the northern long-eared bat could be applied. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office. Surveyors must have a valid federal permit. Please note that summer surveys may only be conducted between June 1 and August 15.

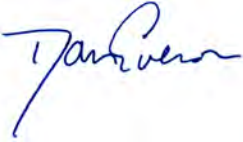
If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend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

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at john.kessler@dnr.state.oh.us.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Dan Everson". The signature is fluid and cursive, with the first name "Dan" being more prominent than the last name "Everson".

Dan Everson

Field Supervisor

cc: Nathan Reardon, ODNR-DOW

Kate Parsons, ODNR-DOW

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

5/26/2020 10:37:21 AM

in

Case No(s). 20-0946-EL-BLN

Summary: Notice Letter of Notification Application for the Amlin-Dublin 138 kV Transmission Line Project electronically filed by Tanner Wolfram on behalf of AEP Ohio Transmission Company, Inc.