Case No. 22-0857-EL-BTX

Part 1 of 4

Application for Certificate of Environmental Compatibility and Public Need

Althea - Sweetgum 138-kV Transmission Line Project

OPSB Case No. 22-0857-EL-BTX

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY™

Submitted to
Ohio Power Siting Board

January 2023

BEFORE THE OHIO POWER SITING BOARD

Certificate Application for Electric Transmission Facilities

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Acronyms and Abbreviations

ACSR	aluminum conductor, steel-reinforced cable
AEP	American Electric Power
AEP Ohio Transco	AEP Ohio Transmission Company, Inc.
BMP	best management practice
Company	Ohio Power Company
dbh	diameter at breast height
DOE	Determination of Eligibility
DOW	Division of Wildlife
ELF	extremely low frequency
EMF	electric and magnetic field
Field Survey Area	200 feet on either side of the centerline for the Preferred Route and 50-200 feet on either side of the centerline for the Alternate
GIS	geographic information system
HHEI	Headwater Habitat Evaluation Index
I-	Interstate
IARC	International Agency for Research on Cancer
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ID	identification
IEEE	Institute of Electrical and Electronics Engineers
Jacobs	Jacobs Engineering Group Inc.
kcmil	thousand circular mil
kV	kilovolt
kV/m	kilovolt per meter
mG	milligauss
MHz	megahertz
MSDS	Material Safety Data Sheet
NA	not applicable
NHD	National Hydrography Dataset
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency
OHI	Ohio Historic Inventory
OHPO	Ohio Historic Preservation Office
OHWM	ordinary high-water mark

OPSB	Ohio Power Siting Board
ORAM	Ohio Rapid Assessment Method
OSHA	Occupational Health and Safety Administration
OUPS	Ohio Utilities Protection Services
Project	Althea – Sweetgum 138-kV Transmission Line Project
QHEI	Qualitative Habitat Evaluation Index
ROW	right-of-way
SWPPP	stormwater pollution prevention plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WHO	World Health Organization

4906-5-02 PROJECT SUMMARY AND APPLICANT INFORMATION

(A) PROJECT SUMMARY

AEP Ohio Transmission Company, Inc. ("AEP Ohio Transco" or the "Company") proposes to construct a new 138-kilovolt (kV) overhead electric transmission line from the proposed, non-jurisdictional Sweetgum and Althea substations in Porter and Green Townships, Scioto County, Ohio. The Project is referred to as the Althea - Sweetgum 138-kV Transmission Line Project ("Project").

(1) General Purpose of the Facility

The Project is part of a larger area improvements project to address a baseline thermal criteria issue associated with the Millbrook Park-Franklin Furnace 69-kV Transmission Line in Scioto County, Ohio. The Project is one of several components to address the thermal overload which will operationally replace the existing Millbrook Park-Franklin Furnace 69-kV Transmission Line. Additional information regarding the purpose of this facility is provided in Section 4906-05-03 (A).

(2) General Location, Size, and Operating Characteristics

The Project is approximately two miles south of the city of Wheelersburg in Scioto County, Ohio. The northern endpoint of the Project is the Company's proposed Sweetgum Substation, located adjacent to Mill Road and approximately 0.20 mile east of SR-522. The southern endpoint of the Project is the Company's proposed Althea Substation, located on the east side of US-52/Ohio River Scenic Byway and west of OH-1/Gallia Pike. Hayport Switch is approximately halfway between the northern and southern end point. Althea Substation and Sweetgum Substation are both non-jurisdictional assets to the OPSB. The Project is approximately 3.2 miles to 3.6 miles in length, depending on the route selected. The proposed transmission line will be a single circuit 138-kV transmission line from Sweetgum Substation to the existing Hayport Road Switch, and a double circuit line with one side operating at 69-kV and the other operating at 138-kV from Hayport Road Switch to Althea Substation. Figure 2-1 shows the Project area, Sweetgum Substation, Hayport Switch, Althea Substation, and the Preferred and Alternate routes identified by the Company.

(3) Suitability of Preferred and Alternate Routes

The Company identified a Preferred and an Alternate Route (Figure 2-1 and detailed in Appendix 4-1) after conducting a comprehensive Siting Study. This study documents the route selection process and is discussed in detail in Section 4906-5-04 of this Application.

The route selection study involved the collection and evaluation of environmental, cultural, land use, engineering data, and public input to identify potential routes for the proposed transmission line. Potential routes were evaluated and compared to aid the selection of a Preferred Route and Alternate Route. The Preferred and Alternate routes are both viable for construction and were selected by the Company for consideration by the OPSB in this Application. As part of the Wheelersburg Area Improvements Project, the Company plans to remove the existing Ironton-Portsmouth Transmission Line creating an opportunity to build the Project using the existing ROW corridor as it travels south of Wheelersburg Substation to Althea Substation, located west of SR-522.

(i) Preferred Route

The Preferred Route is approximately 3.2 miles in length, extending from the proposed, non-jurisdictional Sweetgum Substation to the proposed, non-jurisdictional Althea Substation.

The 3.2-mile route exits the Sweetgum Substation to the northwest then runs down the east side of SR-522. The single circuit 138-kV transmission line then cuts east to run south along OH-1 before cutting back west along a parcel boundary of an agricultural field to International Lane. The Preferred Route then runs south along the east side of US-52 before crossing US-52 and connecting to the Hayport Road Switch. From the Hayport Road Switch, the Preferred Route is a double circuit 69/138-kV transmission line as it travels south along the east side of the Norfolk Southern railroad corridor and west side of US-52 before cutting back over US-52 and connecting to the Althea Substation.

(ii) Alternate Route

The Alternate Route is approximately 3.6 miles in length, extending from the proposed, non-jurisdictional Sweetgum Substation to the proposed, non-jurisdictional Althea Substation.

The 3.6-mile route exits the Sweetgum Substation to the northwest as a single circuit 138-kV transmission line, crossing Mill Road and SR-522 before connecting to the Company's existing Ironton-Portsmouth 69-kV Transmission Line right-of-way (ROW). From here, the Alternate Route runs south along the existing Ironton-Portsmouth Transmission Line alignment through agricultural fields until it connects to the Hayport Road Switch. At the Hayport Road Switch, the Alternate Route becomes a double circuit 69/138-kV transmission line and runs west, crossing the Norfolk Southern railroad. The route then runs south, offset into the farm fields west of the railroad corridor to provide clearance from a gas pipeline. The route cuts east to cross the railroad corridor and parallel between the railroad and US-52 to avoid impacts to a cluster of residences along Moore Road. South of this residential area, the route cuts back west, crossing the railroad corridor and paralleling the railroad on the west with an offset into the farm fields to further avoid

the gas pipeline. The route then travels east crossing the railroad and US-52 and connects to the Althea Substation.

(4) Schedule

The current Project schedule is illustrated in the diagram below.

	2021	2022	2023	2024	2025	2026
PJM Approval May 2021						
Preparation of OPSB Application September 2022 – January 2023						
Submittal of OPSB Application January 2023						
OPSB Decision Anticipated October 2023						
Final Engineering Design August 2022 - August 2023						
Transmission Line Construction February 2024- April 2026						
Project In-Service April 2026						
Land Reclamation July 2026						

(B) APPLICANT DESCRIPTION

(1) Company History

AEP Ohio Transmission company, Inc, or the Company is a subsidiary of AEP. AEP is a public utility as defined by Ohio Revised Code 4905.02 and 4905.03 and is engaged in the business of supplying electric transmission and distribution service to customers in Ohio.

(2) Current Operations and Affiliate Relationships

AEP was originally incorporated in 1906 as the American Gas and Electric Company. AEP's earliest utility properties provided electric, gas and other services in communities in New Jersey, New York, Pennsylvania, West Virginia, Ohio, Indiana, and Illinois. American Gas and Electric Company became AEP in 1958 and merged with Central and Southwest Corporation in 2000.

AEP is one of the largest electric utilities in the United States, delivering electricity to nearly 5.4 million customers through 224,000 miles of distribution lines in 11 states. AEP owns the nation's largest electricity transmission system, which is a network comprised of more than 40,000 miles and includes more 765-kilovolt extra-high voltage transmission lines than all other U.S. transmission systems combined. AEP also ranks among the nation's largest generators of electricity, owning approximately 26,000 megawatts of generating capacity in the U.S. AEP's utility units operate as AEP Ohio, AEP Texas, Appalachian Power (in Virginia and West Virginia), Wheeling Power (in West Virginia), AEP Appalachian Power (in Tennessee), Indiana Michigan Power

Company, Kentucky Power, Public Service Company of Oklahoma, and Southwestern Electric Power Company (in Arkansas, Louisiana, and east Texas). News releases and other information about AEP can be found at www.AEP.com. AEP provides electricity to nearly 1.5 million customers in Ohio. News and information about AEP Ohio can be found at www.AEPOhio.com.

4906-5-03 REVIEW OF NEED AND SCHEDULE

(A) NEED FOR PROPOSED FACILITY

The Project is part of a larger area improvements project to address a baseline thermal criteria issue associated with the Millbrook Park-Franklin Furnace 69-kV Transmission Line, in Scioto County. The Franklin-Wheelersburg 69-kV line is overloaded to 101% for the loss of the Fuller-Argentum (EKPC) 138 kV Line.

To address this, the larger area improvements project will require the following work:

- Install the new non-jurisdictional distribution stepdown Cottrell 138-12 kV Station.
- Construct Cottrell North and South 138-kV Transmission Line Extensions.
- Install structures to connect the South Point-Portsmouth 138-kV Transmission Line to the Cottrell North and South 138-kV Transmission Line Extensions, and one structure on the South Point-Portsmouth 138-kV Transmission line to prevent conductor blowout to the Cottrell North and South 138-kV Transmission Line Extensions.
- Installation of the new 3-way MOAB switch referred to as Sadiq Switch.
- Replace Wheelersburg 69-kV Station with a new non-jurisdictional distribution stepdown Sweetgum 138-12 kV Station.
- Install the new non-jurisdictional stepdown Althea 138-69 kV Station.
- Rebuild ~1.9 mile of 138-kV transmission line from East Wheelersburg Substation to Sadiq Switch.
- Build ~0.2 miles of 138-kV transmission line from Sadiq Switch to Texas Eastern.
- Build ~1.4 miles of 138-kV transmission line from Sadiq Switch to Sweetgum Station, and
- Build ~3.0 miles of new 138-kV line from Sweetgum Station to Althea Station to address baseline thermal overload issues.

In conjunction with the larger area improvements, the associated 11.3 miles of 69-kV transmission line between Millbrook Park Station and Franklin Furnace Switch will be removed, along with Sciotoville 69-kV Station and Wheelersburg Station, which are currently served from the 69-kV transmission line.

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.

(1) Purpose of the Proposed Facility

The primary purpose of the Project is to address the Company's and PJM baseline planning violations. The Project will rebuild approximately 3 miles of 69 kV transmission line to 138 kV standards to address thermal limitations of the existing Ironton-Portsmouth 69 kV transmission line.

(2) System Conditions, Local Requirements, and Other Pertinent Factors

Over time, this area has seen steady load growth since the line was constructed in 1917. This growth has outgrown the capacity of the existing Ironton-Portsmouth 69 kV transmission line. Per AEP and PJM's Transmission Planning Criteria, the 138 kV and 69 kV systems must stay within prescribed voltage and thermal loading limits under base case and various contingency scenarios. In 2014, PJM identified that the facilities in Table 3-1 would be outside these limits in future years, necessitating the proposed Project. The subject Project resolves the area planning violations by replacing the Ironton-Portsmouth 69 kV line with an Althea-Sweetgum line operated at 138 kV.

Table 3-1. PJM Identified Thermal Violations

Issue	Contingency Type	Contingency	Affected Facility	2019 Base Case
Summer Thermal Overload	P1-2	Fuller – Argentum (EKPC) 138 kV	Franklin – Wheelersburg 69 kV	101%

(3) Load Flow Studies and Contingency Analyses

Power flow analysis was performed using Siemens PTI PSS/E and PowerGEM's TARA power flow software. Load flow analysis identified contingency conditions resulting in Thermal overloads according to AEP planning criteria in the area. Table 3-2 summarizes the results of the load flow analysis depicting the summer load conditions in future years.

AEP's Transmission Planning Criteria for the PJM RTO (FERC Form 715 filing) are posted online at: https://www.aep.com/about/codeofconduct/OASIS/TransmissionStudies/. This document discusses thermal loading limits, voltage limits, and other topics. In summary, to meet AEP's planning criteria under applicable tests, transmission facilities must:

- Not reach a loading level that exceeds normal thermal limits under normal conditions
- Not reach a loading level that exceeds emergency thermal limits under contingency conditions
- Maintain voltage between 95% and 105% of nominal voltage under normal conditions
- Maintain voltage between 92% and 105% of nominal voltage under contingency conditions
- Not experience voltage deviations greater than 8% during contingency analysis

Table 3-2. Millbrook Park – Franklin Furnace Transmission System Thermal Overload Load Flow Results

Issue	Contingency Type	Contingency	Affected Facility	2019 Base Case before Improvements	2026 Case After Improvements
Summer Thermal Overload	P1-2	Fuller – Argentum (EKPC) 138 kV	Wheelersburg – KO Coal 69 kV	99%	N/a
Summer Thermal Overload	P1-2	Fuller – Argentum (EKPC) 138 kV	KO Coal – Franklin Furnace 69 kV	102%	N/a
Summer Thermal Overload	P1-2	Fuller – Argentum (EKPC) 138 kV	Sweetgum – Althea 138 kV	N/a	7%
Summer Thermal Overload	P1-2	Fuller – Argentum (EKPC) 138 kV	Althea – Franklin Furnace 69 kV	N/a	14%

(4) System Performance Transcription Diagrams

Transcription diagrams are provided below, which depict the thermal violation listed in Figures 3-1 through 3-4. The order of diagrams below is as follows:

Prior to Project:

- Base Case (no Contingencies)
- With Critical contingency (loss of the Fuller – Argentum (EKPC) 138 kV Line)

After Althea-Sweetgum 138 kV Upgrade Project:

- Base Case (no Contingencies)
- With Critical contingency (loss of the Fuller - Argentum (EKPC) 138 kV Line)

Siemens PSS/E was used to generate these diagrams.

Figure 3-1. System without proposed facility, No Contingencies

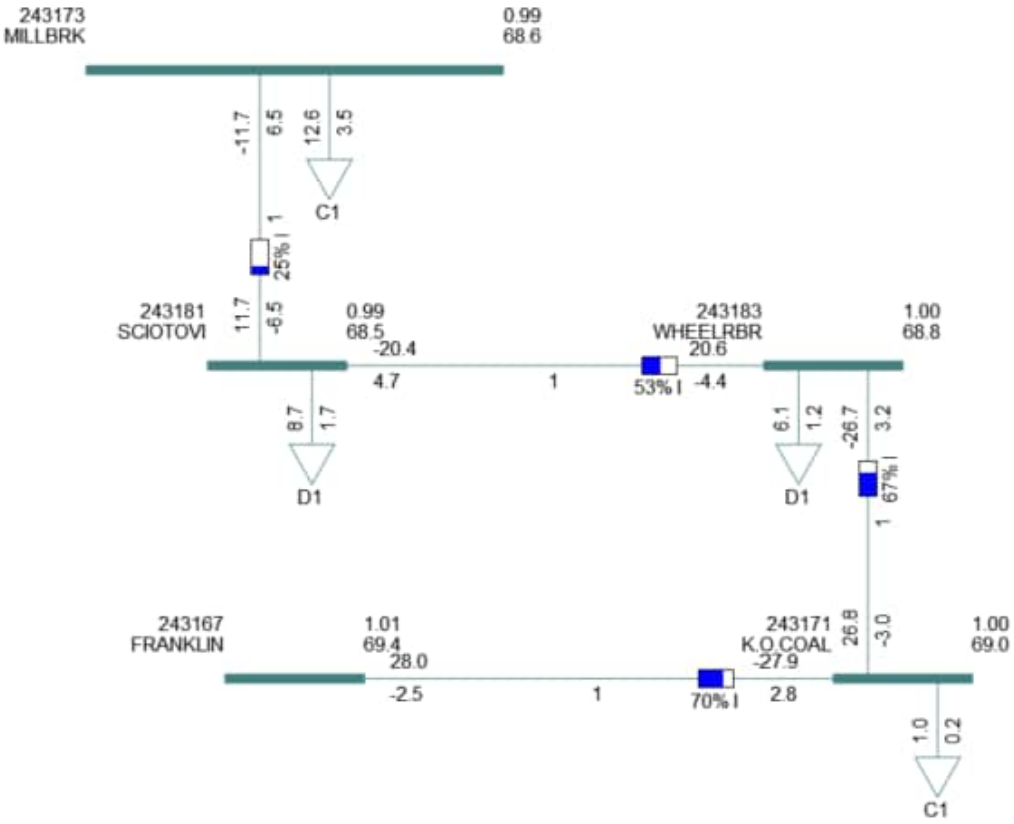


Figure 3-2. System without proposed facility, N-1 loss of Fuller-Argentum (EKPC) 138 kV line.

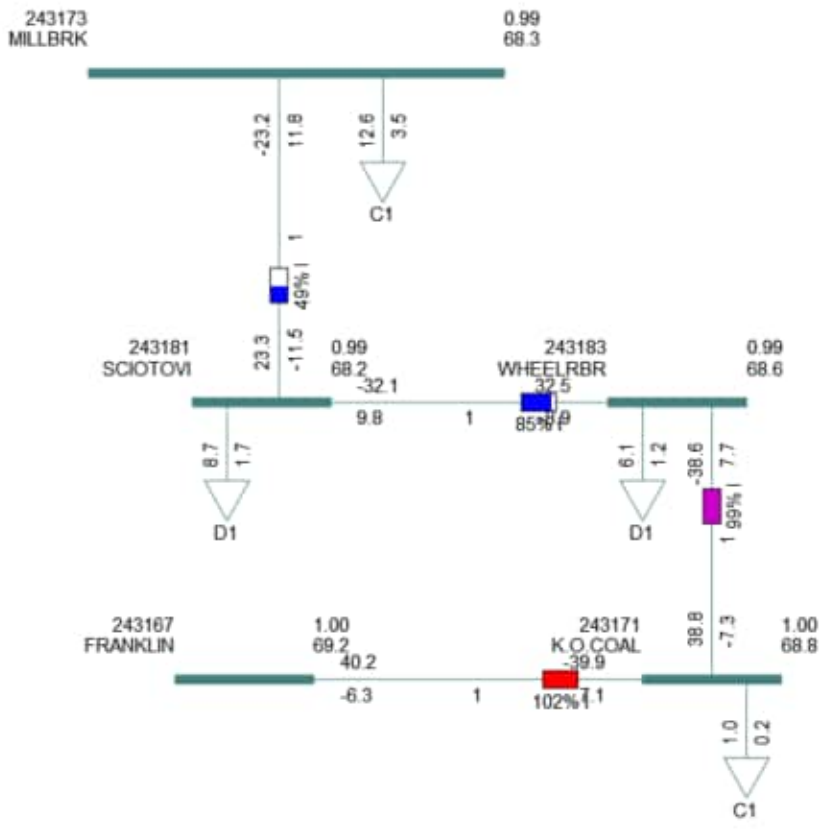


Figure 3-3. System with proposed facility, No Contingencies

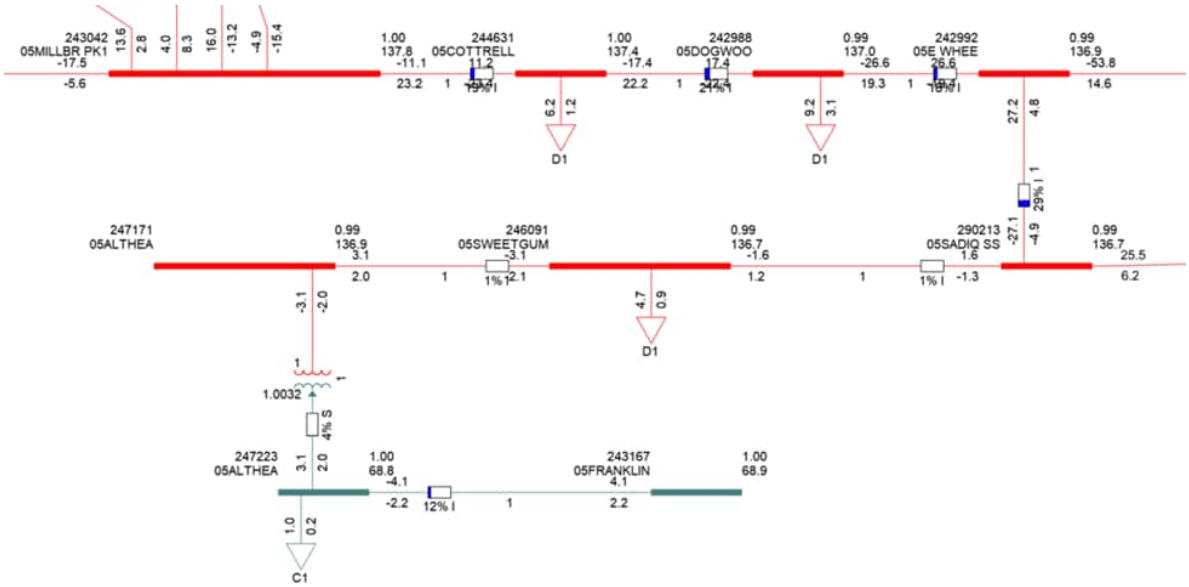
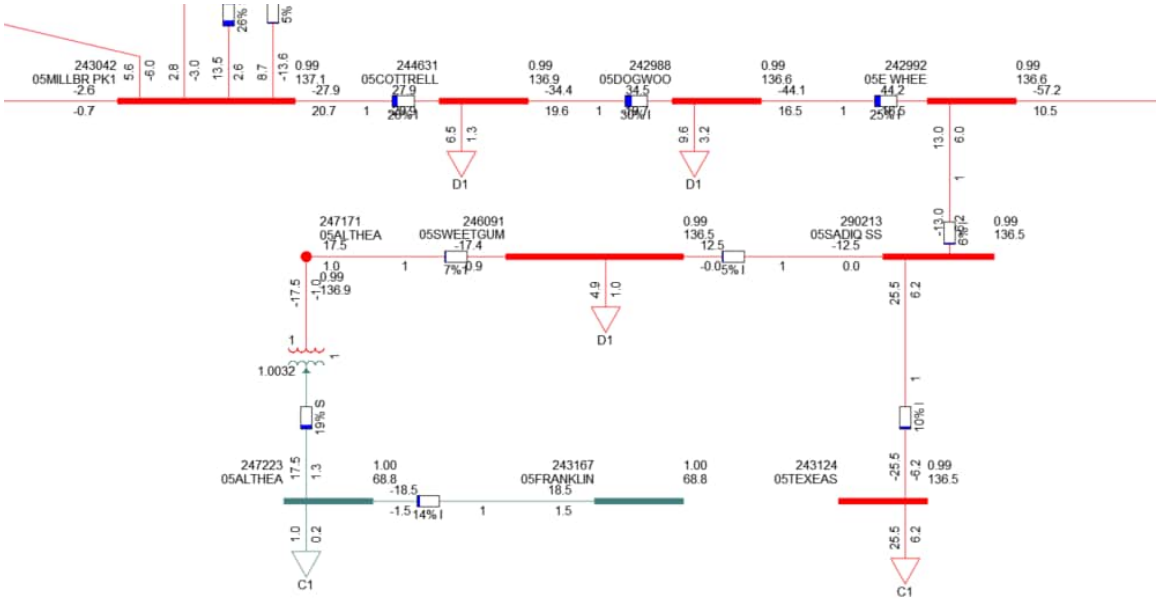


Figure 3-4. System with proposed facility, N-1 loss of Fuller – Argentum (EKPC) 138 kV line



(B) REGIONAL EXPANSION PLANS

(1) Proposed Facility in Long-Term Forecast

(a) Reference in Recent Long-Term Forecast

This Project was included in the Company's 2022 Long Term Forecast Report, and is located on pages 78 through 98 (Table FE-T9, Specifications of Planned Transmission Lines).

(b) Explanation if Not Referenced

Not applicable, see Section 4906-5-03(B)(1)(a) directly above.

(c) Reference in Regional Expansion Plans

The Project was presented at the PJM SRRTEP meetings on January 7, 2015 and February 17, 2021 and assigned PJM number b2604.

(C) SYSTEM ECONOMY AND RELIABILITY

The Project will replace aging 69 kV lines in the area to better support existing customers and load growth in the area. The Project is necessary to address baseline reliability requirements. The Project was not selected by PJM as a market efficiency Project.

(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED PROJECT

The following alternative was considered before proceeding with this Project. The proposed alternatives were not selected to meet the Project need, as explained more thoroughly in Section 4906-5-04.

Alternative 1: Rebuild the 69 kV line from Millbrook Park to Franklin Furnace. This option was not selected due to siting criteria that are discussed further in Section 4906-5-04.

(E) FACILITY SELECTION RATIONALE

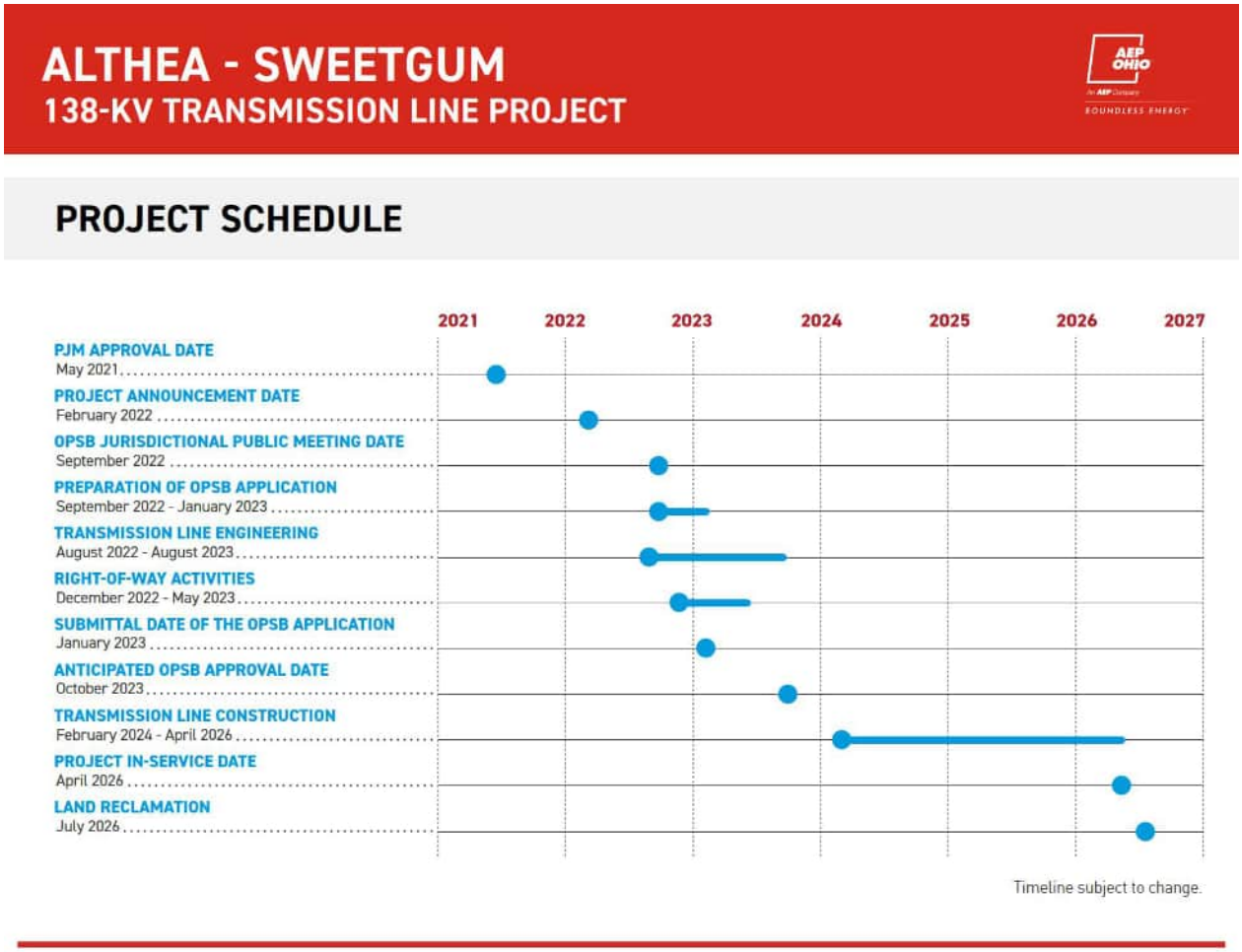
The Company's rationale to rebuilding the existing Ironton-Portsmouth 69 kV line, future Althea-Sweetgum 138 kV conversion, was due to PJM baseline selection. This Project resolves the area planning violations.

(F) PROJECT SCHEDULE

(1) Gantt Schedule Bar Chart

Figure 3-5 on the following page provides the Project schedule as a Gantt bar chart. Preparation of the site for construction is planned to begin October 2023, with the installation of foundations and other associated transmission line construction activities to begin February 2024. The anticipated in-service date is April 2026.

Figure 3-5. Project Schedule



(2) Impact of Critical Delays

The need for the Project was identified by PJM during the 2014 RTEP window and was originally assigned a required in-service date of June 1, 2019. The original solution to the Project was deemed unfeasible due to significant impacts to property owners, reduced ROW standards, and non-standard engineering requirements. The Company had to identify new electrical solutions for the Project, which has an anticipated in-service date of April 2026.

Failure to move forward with the Project would result in further delay in resolving issues to maintain system stability and reliability as well as regulatory compliance.

4906-5-04 ROUTE ALTERNATIVES ANALYSIS

(A) ROUTE SELECTION STUDY

The Company, in association with its siting consultant, Jacobs Engineering Group Inc. (Jacobs), conducted the transmission line Siting Study for the Project (Appendix 4-1). The goal of the Siting Study was to provide economically and technically feasible routes while minimizing effects to various land uses such as residences, businesses, and agricultural lands. Several alternative routes were evaluated in detail and compared to aid the selection of Preferred and Alternate routes.

Sensitive land uses evaluated in the Siting Study included residential parcels, businesses, and agricultural lands. The Preferred and Alternate routes were selected such that the Project will be routed to parallel roadways, existing utility infrastructure, or through agricultural fields to minimize impacts to areas populated by residences and businesses.

Historic and environmental resources will be minimally impacted by this Project because the proposed alignment is through areas of existing utility and roadway infrastructure or farmed agricultural fields. A Cultural Resources Report is summarized in Section 4906-5-07 (E) and will be submitted directly to the OPSB, and additional information on Environmental Resources can be found in Section 4906-5-08.

During the public engagement process, the Company presented 13 study segments as proposed options for establishing complete routes for the Project. Additional information on the public involvement process is provided in Section 4906-5-04(C). The siting team made these route selections based on quantitative (e.g., number of parcels crosses, residences in the ROW) and qualitative (such as public and landowner input, feasibility of construction, maintenance) comparative evaluations. Following the meeting, the study segments were reviewed by the siting team with respect to landowner's comments and made adjustments where feasible. Alternative Routes were developed per this review, and were then presented at the second open house to gather additional feedback from the public. All segments were retained for continued analysis such as field ecological and cultural studies following the second open house. The Siting Team compiled the study segments into four alternative routes, conducted further analyses for comparison of the alternatives, and selected a Preferred and Alternate Route.

(1) Study Area Description and Rationale

The Project is in Porter and Green Townships, Scioto County, Ohio. The boundaries of the Study Area are the geographic area encompassing the Sweetgum Substation to the north and Althea Substation to the south, as well as geographic barriers of the Ohio River to the west and steep forested slopes to the east. The Study Area primarily consists of rural agricultural/pasture areas along US-52/Ohio River Scenic Byway with forested hill slopes along the eastern edge. The built environment consists primarily of single-family residential structures on small lots within Allentown, and larger acreage lots along OH-1/Gallia Pike, as well as some commercial structures. Section 3.2 of the Siting Study report (Appendix 4-1) provides additional rationale for the selection of the Study Area.

(2) Study Area Map

Map 5 in Attachment A of the Siting Study report (Appendix 4-1) provides a map of 1:3,000-scale showing the land uses and environmental features within the Study Area boundary. Furthermore, Figure 7-1 provides a map at 1:24,000-scale showing the boundary of the Study Area and the land uses and environmental and cultural resources features on a topographic map.

(3) Map of Study Area, Routes, and Sites Evaluated

Maps 2, 3, 4a, and 4b in Attachment A of the Siting Study report (Appendix 4-1) illustrate the boundary of the Study Area, study segments, and the alternative routes that were evaluated to guide the Company in the selection of Preferred and Alternate routes.

(4) Siting Criteria

The list of all quantitative siting constraints and opportunities used in the Siting Study are presented in Section 3.3 of the Siting Study report (Appendix 4-1). Specific evaluation criteria used to assess the alternative routes are presented in Sections 4.1 (Natural Resources), 4.2 (Land Use), and 4.3 (Constructability) of the report. The quantitative siting criteria consisted of constraint and opportunity data, including but not limited to property boundaries, environmental and cultural resources, the amount of roadway and railroad crossings.

The qualitative criteria considered by the siting team in the selection of the Preferred and Alternate routes included overall constructability factors (congested ROWs, accessibility for future maintenance) and landowner feedback.

(5) Siting Process for Preferred and Alternate Routes

After identifying the Study Area, siting opportunities, and siting constraints were established, and conceptual routes were drawn. The intent when placing these conceptual routes was to maximize the use of opportunities and minimize constraints. Where two or more of these conceptual routes intersected, study segments were formed between two common nodes or points of intersection. Together, the assemblage of study segments and their intersecting nodes are referred to as the study segment network.

Various siting criteria were quantified for each study segment and study segments were compared and refined. Eventually, alternative routes were developed for analysis by assembling the study segments that best meet the siting guidelines. Alternative routes were compared and assessed using the various criteria for land use, natural and cultural resources, and engineering and construction. Ultimately, through a quantitative and qualitative analysis and comparison of the alternate routes, the Company identified a Preferred Route and an Alternate Route.

The entire siting process, methodology, and results are described in further detail in the Siting Study report in Appendix 4-1.

(6) Route Descriptions and Rationale for Selection

The Preferred Route is approximately 3.2 miles long extending from the Sweetgum Substation to the Althea Substation. The Preferred Route has the following favorable characteristics compared to other alternative routes:

- Uses the existing Ironton-Portsmouth Transmission Line alignment to be retired for the majority of the route
- Areas that divert from the Ironton-Portsmouth Transmission Line alignment are due to the consideration of property owner feedback
- Runs between Norfolk Southern railroad and US-52, as well as along other roadways in the study area where possible to co-locate with linear infrastructure
- Is not adjacent to a park or other recreational facilities
- Can be constructed entirely without residences and outbuildings within a 100-foot ROW.

The Alternate Route is approximately 3.6 miles long. This route has less than 20 percent of its length in common with the Preferred Route. The Alternate Route has the following favorable characteristics compared to other alternative routes:

- Impacts less streams and wetlands
- Provides a largely greenfield route option that is further from roadways to limit the transmission line visibility to those traveling along the Ohio River Scenic Byway (US-52).

Additional information in regard to the Project characteristics, route description, and route rationale is provided in the Siting Study report in Appendix 4-1.

(B) COMPARISON TABLE OF ROUTES, ROUTE SEGMENTS, AND SITE

Tables 1 through 3 of the Siting Study Report (Appendix 4-1) summarize the land use, environmental and cultural resources, and constructability opportunities and constraints of each alternative route.

(C) PUBLIC INVOLVEMENT

The Company conducted a public information program to communicate Project planning details and seek feedback from landowners, residents, and local elected officials. The program involved two in-person public meetings utilizing an open-house style. The open house meetings were held at the Wheelersburg Middle School gym, located at 800 Pirate Drive in Wheelersburg, Ohio, and conducted on March 10, 2022, and October 13, 2022. These meetings provided information regarding the Project to the public by displaying Project maps, and providing designated stations that educated the public on the engineering and design of structures, environmental and forestry components, real estate and ROW, and general Project components such as the Project need and schedule. A project website was also created (https://www.aeptransmission.com/ohio/Wheelersburg/) and provided a Project description, map, fact sheet, and timeline of the Project. The website also provided an online form to submit

comments regarding the Project. Additionally, a contact number for AEP Ohio Transco's Project Outreach Specialist was provided.

(1) Public Informational Meeting

The first public open house that was held on March 10, 2022, provided information for all the components of the larger Wheelersburg Area Improvements Project. Twenty-four people attended the open house. Attendees were encouraged to fill out a comment card which was provided during their entrance into the event to record any additional constraint information, opinions of the route, and any other factor they may wish to share with the Company. Fourteen comment cards were collected, and ten of the comment cards provided information specific to the Althea-Sweetgum 138-kV Transmission Line Project component. These comments were cataloged and reviewed by the Company, and the study segment network was refined, where feasible, per the information that was gathered. Information regarding this study segment refinement process is provided in Section 3.7 of the Siting Study Report (Appendix 4-1).

A second public open house specific to this Project component was held on October 13, 2022. This meeting was required per the OPSB rules for certificate applications for electric transmission facilities pursuant to O.A.C. 4906-03, which provides that an applicant must conduct a public informational meeting no more than 90 days prior to submitting a certificate application for the Project. Letters notifying the public of this open house was mailed on September 22, 2022, and a public notice was published in the Scioto County newspaper on September 29, 2022, to notify community members of this event. Two alternative routes were presented at this open house for public comment. Twenty-five community members attended the open house, and five comment cards were collected. The comments further refined the alignments under consideration as a gas pipeline on the west side of US-52 on private property, south of Hayport Road Switch, was discovered through public comments. The alignment adjustment made after this finding did not impact additional property owners who were not invited to this open house. Additional details of this modification are provided in Section 3.8 of the Siting Study Report (Appendix 4-1).

4906-5-05 PROJECT DESCRIPTION

(A) PROJECT AREA DESCRIPTION

The map included in this section provides a description of the Project area's geography, topography, population centers, major industries, and landmarks.

(1) Project Area Map

Figure 7-1 provides a map at 1:24,000-scale, showing the Preferred and Alternate routes for the Project. This map includes a 1,000-foot corridor on each side of the proposed transmission centerlines (hereafter referred to as the 2,000-foot corridor). These maps depict the Preferred and Alternate routes and non-jurisdictional substation sites; roads and railroads; major institutions, parks and recreation areas; existing gas pipeline and electric transmission line corridors; population centers and legal boundaries of cities, villages, townships, and counties; and any named lakes, reservoirs, streams, canals, and rivers, in the Project area. The map uses the Wheelersburg USGS 7.5-minute topographic quadrangles as base maps.

The information on the map was updated by reviewing digital, georeferenced aerial photography, property parcel data from the Scioto County Auditor's Office, and a field reconnaissance trip conducted in February 2021. The aerial photographs are georeferenced, ortho-corrected color images derived from ESRI ArcGIS Online.

(2) Proposed Right-of-Way, Transmission Length, and Properties Crossed

The proposed ROW width along the Preferred Route is 100 feet. However, the ROW width to be obtained along the Alternate Route may vary between 80 to 100 feet depending on the constraints of the particular area. The ROW width of the Alternate Route may be reduced through Allentown, (specifically as it crosses Park Street) due to residential structures within proximity to the alignment. The reduced ROW allows for those residential structures to remain, if the Alternate Route was selected. The ROW width for the Preferred Route may be reduced as the alignment travels south of Hayport Switch between the Norfolk Southern railroad and US-52 and Kenyon Road, due to the existing road and railroad ROW abutting the Preferred transmission line ROW. The ROW width for these constrained areas will be determined during detailed engineering phases.
Table 5-1 provides information about the Preferred and Alternate Route ROW acreage, length, and properties crossed based on the proposed centerline for a 100-foot ROW.

Table 5-1. Right-of-way Area, Length, and Number of Properties Crossed for the Preferred and Alternate Routes

	Route Alternatives	
	Preferred	**Alternate**
Proposed ROW area (in acres)	39.4	43.5
Length (in miles)	3.2	3.6

Table 5-1. Right-of-way Area, Length, and Number of Properties Crossed for the Preferred and Alternate Routes

	Route Alternatives	
	Preferred	Alternate
Number of properties crossed (by ROW)	30	44
Number of easements required (by unique property owner)	20	28

(B) ROUTE OR SITE ALTERNATIVE FACILITY LAYOUT AND INSTALLATION

(1) Site Clearing, Construction, and Reclamation

The following paragraphs provide information on the proposed site clearing, construction methods, and reclamation operations for the Project.

(a) Surveying and Soil Testing

The selected transmission line route will be surveyed to establish the centerline, ROW, and pole locations. Profile measurements of the topography will be obtained by conventional or aerial methods. Ground survey work will be required to establish control points, collect, and verify data on ground elevation, roadways, sidewalks, structures, buried and overhead utilities, property lines, and other information required for the design of the transmission line. Minimal clearing of small trees and brush may be required if the surveyor's line of sight is obstructed. Offsets will be used to survey around large tress and other large obstructions.

Soil and rock tests will be performed along portions of the final approved route, if foundations for poles are necessary. Augured test borings will be achieved using a machine-driven auger at least 4 inches in diameter. Soil samples will be obtained at approximately 2.5-foot intervals for the first 10 feet, 5-foot intervals below 10 feet, and at any change in subsurface strata. Sampling will include split barrel samples in non-cohesive soils and thin-walled tube samples in cohesive soils. Typically, the testing will be performed to a depth of 30 to 40 feet. If rock is encountered, a carbide-tipped bit will be drilled 5 to 10 feet into the rock. The centerline and ROW will be staked prior to ground-invasive survey.

(b) Grading and Excavation

Soil surface grading for the Project is not anticipated. Some laydown and set-up areas for construction equipment may require minor local leveling, but this will be restricted to the immediate area. It is anticipated that most self-supporting steel monopole structures will be installed by direct-embed methods. Due to site-specific requirements, some poles may require concrete pier foundations. The excavation for each pier foundation will be approximately 4 to 8 feet in diameter and 20 to 35 feet deep. A portion of the excavated soil will be used for backfill

around the foundation, and the excess soil material will be placed around the pole or hauled offsite to an approved spoils disposal site.

(c) Construction of Temporary and Permanent Access Roads and Trenches

Construction access will be required for installation of the pole structures and stringing of the conductor cable or wire. Access roads will require the landowner's input and approval. Preliminary access roads for the Preferred Route are presented on Figure 8-2A through 8-2C. Note these access roads cannot be fully planned and identified until after a final route is approved followed by the Company's contact with affected landowners for transmission line easements. Where access across wetlands or streams is necessary, timber mats or equivalent will be used to minimize the environmental impacts. If field conditions necessitate the modification of the finalized access road locations during construction, the concurrence of the property owner will be obtained, necessary environmental field studies will be performed, and necessary permits will be updated.

(d) Laying of Cable

During wire stringing operations, areas along the transmission line will be used as setup locations for the wire pulling equipment (such as conductor reels, groundwire reels, and the wire tensioner). Conductor installation will be accomplished using the tension stringing method. Lightweight cables or ropes will be fed through the stringing sheaves mounted on the poles. Conductors will be pulled through under sufficient tension to keep the conductor off the ground to prevent any damage to the conductor. Temporary guard or clearance poles will be used as a safety precaution at locations where the conductors could create a hazard to either crewmembers or the public. The locations and heights of clearance poles will be such that conductors are held clear of other electric distribution lines, communication cables, railroads, and roadways. The stringing operation will be under the observation of transmission line construction crewmembers at all times. The observers will be in radio or visual contact with the operator of the stringing equipment.

(e) Installation of Electric Transmission Line Poles and Structures, Including Foundations

The Project will involve the construction of steel monopole structures ranging between 75 to 105 feet in above-ground height with an approximate ROW width of generally 100 feet. The exact structure, height, and ROW widths may vary subject to final engineering design.

(f) Post-Construction Reclamation.

Topsoil at pole excavations will be stockpiled when necessary and protected from erosion. Topsoil will be redistributed over disturbed areas to foster re-vegetation following construction (except in wetland areas). Restoration, including temporary and permanent seeding, will be coordinated with the construction activities to provide re-vegetation and soil stabilization at the earliest reasonable time. Following construction, all pole locations, material storage sites, and temporary access roads will be restored and seeded with a suitable grass seed mixture that will be specified in the erosion and sediment control plan.

Re-vegetation techniques will enhance the ROW for use as possible wildlife habitat. Where stream banks are disturbed, they will be restored by planting of low-growing species, where necessary, to reduce bank erosion. Lawn or garden areas, or paved areas damaged during the construction of the transmission line, will be restored to original condition. Landscaping or landscape plantings damaged during construction will also be restored to original condition or replaced as directed by the affected property owner. After restoration is complete, the Company will periodically inspect the ROW to identify areas of erosion, sedimentation, and inadequate re-vegetation conditions, if any. If such conditions are identified, corrective actions will be implemented.

(2) Facility Layout

(a) Transmission Line Route Map

Figures 8-2A through 8-2C show maps at 1:6,000-scale of the Preferred and Alternate routes. These maps illustrate the data required by OAC 4906-5-05(A)(1) and show the proposed locations of the Preferred and Alternate routes, as also required by OAC 4906-5-05(B)(2)(a). The data and information defined in OAC 4906-5-05(B)(2)(a) also include temporary access roads, staging areas, laydown areas, and fenced-in or secured work areas. The location of these features will not be finalized until a construction contractor is onboard and the final engineering design is complete. The Company will provide final information on construction support features for this Project after their location is finalized.

(b) Proposed Layout Rationale

A detailed description of the reasons for the proposed layout (i.e., the Preferred and Alternate routes) are presented in the Siting Study (Appendix 4-1). Opportunities and constraints presented in the Study Area were in line with the siting team's experience with projects in a rural area of sparse residential and commercial developments; therefore, no unusual features are observed in the Study Area.

(c) Plans for Future Modifications

Except as otherwise described in this Application, the Company currently has no plans for future modifications of the proposed Project.

(C) DESCRIPTION OF PROPOSED TRANSMISSION LINES OR PIPELINES

(1) Electric Power Transmission Lines

(a) Design Voltage

The transmission line will be designed and operated at 138-kV.

(b) Tower Designs, Pole Structures, Conductor Size and Number per Phase, and Insulator Arrangement

The majority of the line will be composed of tangent monopole structures with alternating configuration, double circuit davit arm, delta, and running corners (Appendix 5-1) with an

estimated aboveground height of 75 feet to 105 feet. The conductor used for the new transmission line will be 1 - 795 thousand circular mil ("kcm") 26/7 strand aluminum conductor steel-reinforced cable ("ACSR") conductor per phase. This conductor has a maximum strength of approximately 31,500 pounds ("lbs"). The new line will utilize one 7#8 Alumoweld Shield Wire. The 7#8 Alumoweld has a maximum strength of 15,930 lbs. Both the phase conductors and the shield wire will be installed in accordance with the latest version of the National Electric Safety Code. The conductors will be supported by aluminum clamps which will be attached to the insulators. Aluminum suspension clamps will support the shield wires. At dead-end locations, compression dead-end clamps will be used on both the conductor and the shield wire.

(c) Base and Foundation Design

All medium to heavy angle locations may require installation of one concrete foundation with full length anchor bolt cages. The excavation for each concrete foundation will be approximately 4.0 to 8 feet in diameter and 20 to 35 feet deep.

(d) Cable Type and Size, where Underground

No underground cables are associated with this Project; therefore, this section is not applicable.

(e) Other Major Equipment or Special Structures

No other major equipment or special structures are required for the Project.

(2) Diagram of Electric Power Transmission Substations

No new electric power transmission substations that are jurisdictional to the OPSB are proposed for this Project.

4906-5-06 ECONOMIC IMPACT AND PUBLIC INTERACTION

(A) OWNERSHIP OF PROPOSED FACILITY

The Company will construct, own, operate, and maintain the proposed 138-kV transmission line.

(B) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR ELECTRIC POWER TRANSMISSION FACILITY ALTERNATIVES

The Company developed estimates of applicable capital and intangible costs for a variety of components of the Project. Each of the enumerated components is included in Table 6-1. The table also includes estimates of applicable intangible and capital costs for both the Preferred and Alternate routes of the Project.

Table 6-1. Estimates of Applicable Intangible and Capital Costs for Both the Preferred and Alternate Routes

FERC Account Number	Description	Preferred Route	Alternate Route
350	(1) Land and Land Rights	$1,037,560	$1,098,255
352	(2) Structures and Improvements	$0	$0
353	(3) Substation Equipment	$0	$0
354	(4) Towers and Fixtures	$0	$0
355	(5) Poles and Fixtures	$4,285,156	$8,008,215
356	(6) Overhead Conductors and Devices	$1,968,856	$2,683,616
357	(7) Underground Conductors and Insulation	$0	$ $0
358	(8) Underground-to-Overhead Conversion Equipment	$0	$0
359	(9) ROW Clearing and Roads, Trails or Other Access	$3,207,331	$3,906,661
	TOTAL	**$10,498,903**	**$15,696,747**

FERC = Federal Energy Regulatory Commission

(C) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR GAS TRANSMISSION FACILITY ALTERNATIVES

This Application is for an electric transmission line; therefore, this section is not applicable.

(D) PUBLIC INTERACTION AND ECONOMIC IMPACT

This section of the Application provides information regarding public interaction and the economic impact for each of the route alternatives.

(1) Counties, Townships, Villages, and Cities within 1,000 feet

Both routes, including all areas within 1,000 feet of the centerlines, are in Green Township and Porter Township. The northern portion of the Preferred and Alternate routes are within the unincorporated community of Allentown. The entirety of the Project is within Scioto County, Ohio.

(2) Public Officials Contacted

The Company contacted several local officials to discuss the Project. Appendix 6-1 provides a list of the local public officials, including their office addresses and office telephone numbers, who have been contacted to date or will be provided a digital or hard copy of the Application.

(3) Planned Public Interaction

The Company mailed letters to landowners and elected officials, issued a public notice and a news release to the local media, created a Project website (https://www.aeptransmission.com/ohio/Wheelersburg/), and hosted open house events on March 10, 2022 and October 13, 2022.

During the construction of this Project, the Company will maintain Project updates on its website, retain ROW land agents to discuss Project timelines, construction and restoration activities, and convey this information to affected owners and tenants. Copies of informational materials that were available at the public open house are included in Appendix 6-2.

Throughout the duration of this Project, the public may contact Maggie Beggs, Project Outreach Specialist, at 380-205-5178, or e-mail mrbeggs@aep.com to ask questions or provide comments. To access the Project's website, please visit http://www.aeptransmission.com/ohio/ and click the Project website link.

The public can access copies of this Application by:

- Going to the local Library
- Going to http://opsb.ohio.gov/ and search for the Project's case number (22-0857-EL-BTX)

On the Company's website, there is information on how to contact the Company to express comments or questions on the Project.

The Company is logging comments and information provided through its public interaction program.

At least seven days prior to any construction activities, a ROW agent from the Company will notify the landowner or the tenant by mail, telephone, or in person, depending on landowner preference.

(4) Liability Insurance or Compensation

The Company's insurance program for construction and operation of the proposed facility is outlined below:

- The Company maintains bodily injury and property damage liability insurance with limits of at least $1,000,000 for each occurrence.
- The Company is a qualified self-insuring employer under the State of Ohio Worker's Compensation law. AEP maintains insurance as required by the Industrial Commission of Ohio statutes.

(5) Tax Revenues

The Preferred and Alternate routes are in Scioto County. Local school districts, park districts, and fire departments will receive tax revenue from the Project. The Company will pay property taxes on utility facilities in each jurisdiction. The approximate annual property taxes associated with the Preferred Route over the first year the Project is completed is $575,400. The approximate annual property taxes associated with the Alternate Route over the first year the Project is completed is $765,100. Based on the 2022 tax rates, the following information includes preliminary estimates for these taxing authorities:

Preferred Route:

Portsmouth Public Library	$8,600
Green Township	$29,700
Scioto City Career Tech Center	$46,200
Green LSD (Scioto Co.)	$92,200
Scioto County	$94,400
Porter Township	$105,400
Wheelersburg LSD	$198,900
	TOTAL $575,400

Alternate Route:

Portsmouth Public Library	$11,500
Green Township	$39,400
Scioto City Career Tech Center	$61,400
Green LSD (Scioto Co.)	$122,600
Scioto County	$125,500
Porter Township	$140,200
Wheelersburg LSD	$264,500
	TOTAL $765,100

4906-5-07 HEALTH AND SAFETY, LAND USE, AND REGIONAL DEVELOPMENT

(A) HEALTH AND SAFETY

Health and safety considerations of the proposed Project were reviewed as part of this Application and summarized below.

(1) Compliance with Safety Regulations

The construction and operation of the Project will comply with the requirements specified in the National Electrical Safety Code ("NESC"), the Public Utilities Commission of Ohio ("PUCO"), and will meet all applicable safety standards established by the Occupational Health and Safety Administration ("OSHA").

Safety is the highest priority for the Company. Our priority towards employee and public safety is exemplified by the Company's policy as stated in the Company Safety Manual:

The Company system holds in high regard the safety and health preservation of its employees. Accidents injure people, damage equipment, destroy materials, and cause needless personal suffering, inconvenience, and expense. We believe, "No operating condition or urgency of service can ever justify endangering the life of anyone."

To this end, we will constantly work toward the following:

- *The maintenance of safe and healthful working conditions,*
- *Consistent adherence to proper operating practices and procedures designed to prevent injuries and illnesses,*
- *Conscientious observance of governmental and company safety regulations.*

The Company also administers a contractor safety program. Contractors working for the Company are required to maintain internal safety programs and to provide safety training.

(2) Electric and Magnetic Fields

In accordance with the OPSB requirements specified in O.A.C 4906-5-07(A)(2), the following subsections discuss the analysis of electric and magnetic fields (EMFs) associated with the Project.

(a) Calculated Electric and Magnetic Field Strength Levels

Three loading conditions were examined along the Preferred Route: (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 this circuit of this line would operate at its WN rating in the foreseeable future.

EMF levels were computed one meter above ground under the line and at the ROW edges (30/30 feet, left/right, of centerline). The Company's results, calculated using EPRI's EMF Workstation 2015 software, are summarized in Table 7-1.

Table 7-1. Ground Clearances, Right-of-Way, and Projected Loading

Condition	Load (A)	Phasing Arrangements	Ground Clearance (feet)	Electric Field (kV/m)[a]	Magnetic Field (mG)[a]
Normal Max. Loading^	12.14	A-B-C	34	0.11/1.15/0.11	0.35/1.02/0.35
Emergency Line Loading^^	129.01	A-B-C	33	0.10/1.20/0.10	3.83/11.36/3.83
Winter Conductor Rating^^^	1361.31	A-B-C	34	0.11/1.15/0.11	39.75/114.71/39.75

Notes:

^ 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.

a 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 30 feet (left) and 30 feet (right) of centerline, respectively.

For power-frequency EMF, Institute of Electrical and Electronics Engineers (IEEE) Standard C95.6TM-2002 recommends the following limits:

	General Public	Controlled Environment
Electric Field Limit (kV/m)	5.0	20.0
Magnetic Field Limit (mG)	9,040	27,100

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) Current State of EMF Knowledge

Electric and magnetic fields occur naturally in the environment. An electric field is present between the earth and its atmosphere, and can discharge as lightning during thunderstorms. The earth also has a magnetic field, which provides an operating basis for the magnetic compass. EMF exists wherever there is a flow of electricity, including electrical appliances and power equipment.

Electric fields are produced by voltage or electric charge. A lamp cord that is plugged in produces an electric field even if the lamp is turned off. These fields commonly are measured in kilovolts per meter (kV/m); higher voltages produce stronger electric fields. Magnetic fields are created by

the flow of current in a wire. As current increases, the magnetic field strength also increases; these fields are measured in units known as gauss, or milligauss (mG).

Electric fields are blocked by trees, shrubs, buildings, and other objects. Magnetic fields are not easily blocked; they can pass through most objects. The strength of these fields decreases rapidly with distance from the source.

Possible health effects from exposure to EMF have been studied for several decades. Initial research, focused on electric fields, found no evidence of biologic changes that could lead to adverse health effects. Subsequently, a large number of epidemiologic studies examined the possible role of magnetic fields in the development of cancer and other diseases in adults and children. While some studies have suggested an association between magnetic fields and certain types of cancer, researchers have been unable to replicate those results consistently in other studies. Similarly, inconclusive or inconsistent results have been reported in laboratory studies of animals exposed to magnetic fields that are representative of common human exposures. A summary of such exposures, found in residential settings, is provided in Table 7-2.

Table 7-2. Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
AC Adapters	3	1.4 – 863	0 -7.5	0 – 0.8
Blood Pressure Monitors	4	4.2 – 39.6	0 – 0.3	0 -0.2
Bluetooth Headsets	3	0	0	0
Coffee Grinders	3	60.9 – 779	0.3 – 6.5	0.8 – 40.9
Compact Fluorescent Bulbs	15	0 – 32.8	0 – 0.1	0 – 0.6
Compact Fluorescent Bulb Ballast	1	8.5 – 23.5	0 – 0.1	0 -0.1
Computers, Desktop	3	3.8 – 68.9	0 – 1.1	0.1 – 0.5
Computers, Laptop	4	0 – 5.1	0	0 – 0.1
Digital Cameras	3	0	0	0
Digital Photo Frames	5	0	0	0
Digital Video Recorders	4	0 – 29.6	0 – 0.2	0
Dimmer Switches	4	11.5 – 32.1	0 – 0.8	0 – 0.8
DVD Players	5	0 – 28.9	0 – 0.5	0
Electric Lawn Mower	1	1939	156	14.1
Electric Leaf Blowers	4	272 – 4642	17.1 - 155	28.3 – 61.5
Electric Toothbrushes	5	3.6 – 742	0 – 4.8	3.6 - 742

Table 7-2. Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
Electric Toothbrush Chargers	5	0 – 4.2	0	0
External Hard Drives	4	0.6 – 1.7	0	0
Gaming Consoles	10	0 – 215	0 – 0.5	0 – 0.6
GPS, Handheld	5	0 – 0.1	0	0
Hobby Tools	2	126 – 438	1.4 – 2.4	1.4 – 438
Hot Glue Guns	3	0 – 0.9	0	0
LCD Computer Monitors	4	0 – 4.5	0	0
LCD Televisions	4	1.1 – 3.9	0 – 2.5	0 – 0.6
Massagers/Massage Chairs	3	81.9 – 500	0.6 – 2.3	214 – 500
MP3 Players	5	0	0	0
Noise Cancellation Headphones	1	0	0	0
Paper Shredders	4	11.0 – 4841	0.5 – 102	0.5 – 33.4
Plasma Televisions	2	45.1 – 73.6	1.4 – 2.2	0 – 0.1
Power Tools – Corded	3	784 – 982	8.8 – 31.3	46.8 - 123
Power Tools – Cordless	6	9.0 – 227	0 – 2.2	0 – 13.7
Printers	5	0.1 – 6.2	0 – 0.3	0 – 0.3
Scanners	3	0.6 – 6.7	0 – 0.3	0
Security System Panels	3	0 – 0.3	0	0
Tankless Hot Water Heater	1	10.1 – 21.9	1.2	0.2
Track Lighting	5	0.2 – 4.0	0 – 0.3	0
Vacuum Cleaners, Personal/Car	3	75.5 – 2226	0.6 – 23.3	0.1 – 23.1
Wireless Game Controllers	11	0	0	0
Wireless Routers	4	0 – 0.5	0	0 – 0.3

Source: Electric Power Research Institute, 2010

As part of the National Energy Policy Act of 1992, U.S. Congress enacted the Electric and Magnetic Fields Research and Public Information Dissemination (EMF RAPID) program. The NIEHS was charged with overseeing the health research and conducting an EMF risk evaluation. In its final report to Congress, issued in 1999, NIEHS concluded that power-frequency "EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may

pose a leukemia hazard." Nonetheless, the report stated, "this finding is insufficient to warrant aggressive regulatory concern." (NIEHS, 1999)

In 2001, the Standing Committee on Epidemiology of International Commission on Non-Ionizing Radiation Protection (ICNIRP) wrote in its review of the epidemiologic literature on EMF and health:

> "…given the methodological uncertainties and in many cases inconsistencies of the existing epidemiologic literature, there is no chronic disease outcome for which an etiological [causal] relation to EMF exposure can be regarded as established (ICNIRP, 2001)."

In addition, in 2001, International Agency for Research on Cancer (IARC) published the results of an EMF health risk evaluation conducted by an expert scientific working group, which concluded that power frequency "magnetic fields are 'possibly carcinogenic to humans,' based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia" (IARC, 2001). IARC assigns its "possibly carcinogenic to humans" classification (Group 2B) if there is "limited evidence" of carcinogenicity in both humans and experimental animals, or if there is "sufficient evidence" in animals, but "inadequate evidence" in humans. Group 2B includes some 285 "agents" such as coffee, pickled vegetables, carpentry, textile manufacturing, and gasoline, among others.

A comprehensive assessment of the EMF health risks was published by the World Health Organization (WHO) in 2007. In its assessment, WHO wrote: "Scientific evidence suggesting that every day, chronic, low-intensity (above 0.3-0.4 □T) [3-4 mG] power-frequency magnetic field exposure poses a possible health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia" (WHO, 2007). It added, however:

> "…virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF [extremely low frequency] magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern (WHO, 2007)."

Regarding acute effects, WHO noted, "Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz [kilohertz] that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection for acute effects" (WHO, 2007).

In summary, some studies have reported an association between long-term magnetic field exposure and particular types of health effects, while other studies have not. The nature of the reported association remains uncertain as no known mechanism or laboratory animal data exist to support the cause-and-effect relationship.

In view of the scientific evidence, the IEEE and other organizations have established guidelines limiting EMF exposure for workers in a controlled environment and for the public. These guidelines focus on prevention of acute neural stimulation. No limits have been established to address potential long-term EMF effects, as the guideline organizations consider the scientific evidence insufficient to form the basis for such action. For power-frequency EMF, IEEE Standard C95.6-2002 recommends the following limits as shown in Table 7-3 (IEEE, 2002).

Table 7-3. Recommended Power Frequency EMF Limits

	General Public	Controlled Environment
Electric Field Limit (kV/m)	5.0	20.0*
Magnetic Field Limit (mG)	9040	27,100

* 10.0 kV/m within power line ROW

To address public concerns about EMF, the Government of Canada in 2012 updated its website with the latest knowledge on the subject. It contains the following statements on the EMF health-related risks: “Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELFs. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those just outside the boundaries of power line corridors” (Healthy Canadians, 2012). Similarly, in 2013, the updated website of the WHO concludes: “to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health”.

The Company has been following the EMF scientific developments worldwide, participating in and sponsoring EMF studies, and communicating with customers and employees on the subject. In addition, the Company is a member of Electric Power Research Institute, an independent, non-profit organization sponsoring and coordinating EMF epidemiological, laboratory, and exposure studies.

(c) Line Design Considerations

Design alternatives were not considered because of EMF and their strength levels. Transmission lines, when energized, generate EMF. Laboratory studies have failed to establish a material correlation between exposure to EMF and effects on human health. However, some people are concerned that EMF has impacts on human health. Because of these concerns, EMF associated with the new circuits was calculated in Table 7-1. 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 (mG) associated with emergency loading at the highest EMF value for this transmission line, is lower than those associated with normal household appliances. For additional information regarding EMF, the National Institute of Health has posted information on their website:

https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

(d) EMF Public Inquiries Policy

Information on electric and magnetic fields is available on the Company's website (https://www.aepohio.com/info/projects/emf/); it describes the basics of EMF theory, scientific research activities, and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities in this Project.

The Company occasionally receives requests from customers for EMF measurements on their properties. These measurements are provided free of charge to the customers.

(3) Estimate of Radio, Television, and Communications Interference

Radio interference can be experienced in the AM broadcast band (535-1605 kilohertz [kHz]) and FM band (88-108 megahertz [MHz]), caused by transmission line gap-type discharge (1-1000 MHz). Dielectric discharge due to air ionization, known as corona, is not a concern with 138 kV transmission planned in this Project. Gap-type discharge, such as that emitted by loose or defective transmission hardware, typically is localized and can be readily detected and corrected, or additional mitigation measures can be applied to eliminate the interference source.

Today's digital television signals react differently to interference than the pre-2009 analog signals. Common problems with analog television included ghosting of images, noise from weak signals, and other problems, which degraded the quality of the image and sound, although the programming was still watchable. With digital television, reception of the signal must be very nearly complete. Otherwise, audio and video are not usable. Television signals, which are transmitted at frequencies above 50 MHz, can be affected by gap discharged if received from air broadcasts (by "rabbit ears"). These problems have largely been addressed with the use of cable television.

(4) Noise from Construction, Operations, and Maintenance

(a) Blasting Activities

Dynamiting and blasting activities will not be necessary during construction of the Project.

(b) Operation of Earth Moving and Excavating Equipment

During the construction phase of the transmission line installation, a temporary increase in noise will result from the construction equipment used to clear portions of the transmission line ROW and install the equipment. Standard construction techniques will be used, and procedures will comply with applicable OSHA standards. Therefore, the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed Project from ROW tree clearing to reclamation is estimated to be approximately 29 months.

(c) Driving of Piles, Rock Breaking or Hammering, and Horizontal Directional Drilling

Driving of piles is not anticipated during construction of the Project. If required, there will be a temporary increase in noise during construction only.

(d) Erection of Structures

Poles will be installed by vehicle-mounted cranes or equivalent equipment. Self-supporting steel monopole structures/poles will require occasional delivery of concrete for foundation construction, including excavation work for specific foundation locations. Any increase in noise will be temporary and likely minimal.

(e) Truck Traffic

An increase in truck traffic is anticipated during the construction of the Project for equipment access and equipment delivery. No other additional traffic is anticipated for the Project beyond periodic mowing or removal of danger trees from the ROW.

(f) Installation of Equipment

The equipment will be installed using standard practices and equipment. There will be a temporary increase in noise during construction only.

(B) LAND USE

(1) Map of the Site and Route Alternatives

Maps at 1:24,000-scale, including the area one thousand feet on either side of the centerline, are presented as Figure 7-1 (refer to Section 4906-5-05) and include the following information:

- Centerline and ROW for the Preferred and Alternate routes
- Non-jurisdictional substation locations
- Land use types, road names, structures, and incorporated areas and population centers

(2) Impact on Identified Land Uses

Land use in the Project area is primarily agricultural with pockets of residential and commercial use. Rural agricultural/pasture areas are along US-52/Ohio River Scenic Byway and towards the Ohio River. Residential and commercial use consists primarily of single-family residential structures and commercial structures on small lots within Allentown, and larger acreage lots along OH-1/Gallia Pike, as well as some commercial structures along OH-1/Gallia Pike.

Comparisons of the various land use types and land use features for both routes are included in Tables 7-4 to 7-6 for the Preferred and Alternate routes. The estimates of each land use type being crossed by the transmission line, and the permanent ROW (linear feet, acreage, and percentages) were determined using GIS software calculations.

The potential disturbance area during construction activities (excavation for concrete foundations, equipment traffic, etc.) consists of the 100-foot-wide construction ROW. The construction ROW will be restored through soil grading, seeding, and mulching where vegetation

impacts occur. Thus, the permanent impact to the ROW is primarily limited to the removal of existing trees and other vegetation. Property owners may continue to use most of the ROW area for general uses that will not affect the safe and reliable operation of the transmission line, such as lawn maintenance.

Table 7-4. Length and Percent of Land Uses Crossed by Route Alternatives

Land Use	Preferred Route*		Alternate Route*	
	Linear Feet	Percent	Linear Feet	Percent
Agricultural	7,061	41%	13,322	70%
Commercial	741.36	4%	2,792	15%
Industrial	0	0%	0	0%
Institutional	0	0%	0	0%
Recreational	0	0%	0	0%
Residential	795	5%	600	3%
Road Right-of-Way	8,494	50%	2,189	12%
Vacant	0	0%	0	0%
Total	**17,092**	**100%**	**18,905**	**100%**

* Numbers in the table are for the route centerlines.

Table 7-5. Acreage and Percent of Land Uses Crossed by Route Alternatives

Land Use	Preferred Route*		Alternate Route*	
	Acreage	Percent	Acreage	Percent
Agricultural	14.6	37%	29.7	68%
Commercial	1.9	5%	5.4	12%
Industrial	0.0	0%	0.0	0%
Institutional	0.0	0%	0.0	0%
Recreational	0.0	0%	0.0	0%
Residential	2.1	5%	2.4	6%
Road Right-of-Way	20.8	53%	5.9	14%
Vacant	0	0%	0	0%
Total	**39.4**	**100%**	**43.5**	**100%**

* The potential disturbance area is a 100-foot-wide corridor centered on the route.

Table 7-6. Number of Sensitive Features Within or Near the ROW for the Route Alternatives

	Route Alternatives	
	Preferred	**Alternate**
Length (in miles)	3.2	3.6
Features within the Potential Disturbance Area of Route Alternatives*		
Historic Structures (OHI)	0	0
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	0	9
Residences	0	4
Commercial Buildings	0	0
Industrial Buildings	0	0
Schools and Hospitals	0	0
Churches and Civic Buildings	0	0
Recreational Lands	0	0
Airports	0	0
Features within 1,000 feet of Route Alternatives (centerline)		
Historic Structures (OHI)	1	1
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	25	27
Residences	83	77
Commercial Buildings	14	14
Industrial Buildings	0	0
Schools and Hospitals	1	1
Churches and Civic Buildings	1	2
Recreational Land	1	1
Airports	0	0

* The potential disturbance area is a 100-foot-wide corridor centered on the route.
OHI = Ohio Historic Inventory

(a) Residential

Preferred Route: The Preferred Route is within 1,000 feet of 83 residences, none of which are within the ROW. As shown in Table 7-5, residential land makes up 5 percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is within 1,000 feet of 77 residences, four of which are within the ROW. As shown in Table 7-5, residential land makes up 6 percent of the Alternate Route ROW.

The Alternate Route proposes a greater impact to residences as four residences are within the potential disturbance area. However, the ROW width may be reduced from 100-feet to lessen impacts to these residences.

(b) Commercial

Preferred Route: The Preferred Route is within 1,000 feet of 14 commercial buildings, none of which are within the ROW. As shown in Table 7-5, commercial land makes up 5 percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is within 1,000 feet of 14 commercial buildings, none of which are within the ROW. As shown in Table 7-5, commercial land makes up 12 percent of the Alternate Route ROW.

As there are no commercial properties within the potential disturbance area, the Company anticipates minimal impacts to commercial land uses as a result of the Project.

(c) Industrial

No industrial land occurs within the ROW or within 1,000 feet of the Preferred and Alternate routes. As shown in Table 7-5, industrial land makes up 0 percent of the Preferred and Alternate routes ROW. As such, the Company does not anticipate any adverse impacts to industrial land uses as a result of the Project.

(d) Institutional (School, Hospitals, Churches, and Civic Buildings)

Preferred Route: The Preferred Route is within 1,000 feet of one school and one church, none of which are in the ROW. As shown in Table 7-5, institutional land makes up 0 percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is within 1,000 feet of one school, one church, and one civic building, none of which are within the ROW. As shown in Table 7-5, institutional land makes up 0 percent of the Alternate Route ROW.

As there are no institutional properties within the potential disturbance area, the Company anticipates minimal impacts to institutional land uses as a result of the Project.

(e) Recreational

Preferred Route: The Preferred Route is within 1,000 feet of one recreational land, none of which are in the ROW. As shown in Table 7-5, recreational land makes up 0 percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is within 1,000 feet of 1 recreational land, none of which are within the ROW. As shown in Table 7-5, recreational land makes up 0 percent of the Alternate Route ROW.

As there are no recreational properties within the ROW, the Company anticipates minimal impacts to recreational land uses as a result of the Project.

(f) Agricultural

Preferred Route: The Preferred Route crosses 7,061 linear feet of agricultural land. As shown in Table 7-5, agricultural land makes up 14.6 acres and 37 percent of the Preferred Route ROW.

Alternate Route: The Alternate Route crosses 13,322 linear feet of agricultural land. As shown in Table 7-5, agricultural land makes up 29.7 acres 68 percent of the Alternate Route ROW.

Both routes propose to impact agricultural land uses. However, permanent impacts to agricultural land will be kept to the structure footprint. The Alternate Route proposes a greater impact to this land use as the majority of the route ROW is within agricultural lands.

(g) Vacant

No vacant land is within the ROW or within 1,000 feet of the Preferred and Alternate routes. As shown in Table 7-5, vacant land makes up 0 percent of the Preferred and Alternate routes ROW.

(3) Impact on Identified Nearby Structures

(a) Structures within 200 feet of Proposed Right-of-Way

There are eight residences within 200 feet of the Preferred Route ROW and 11 residences within 200 feet of the Alternate Route ROW. There are four commercial buildings within 200 feet of the Preferred Route and two commercial buildings within 200 feet of the Alternate Route ROW. There are no churches, civic buildings, schools, industrial structures, or recreational lands within 200 feet of the Preferred Route and Alternate Route ROW.

(b) Destroyed, Acquired, or Removed Buildings

Mitigation for the prohibition of the future installation of structures (by property owners or others) within the ROW and vegetative clearing and maintenance activities for the transmission line will be determined as part of the Company's acquisition of the ROW for this Project, as part of the negotiated settlement between the Company and the property owner, or as determined in appropriation proceedings. At this time, no structures (residences, sheds, outbuildings, etc.) are planned to be removed.

(c) Mitigation Procedures

Mitigation procedures will include properly maintained construction equipment with mufflers, construction during daylight hours, and noise-related procedures implemented according to OSHA and Scioto County requirements. No additional noise mitigation is expected to be needed

because noise impacts will be limited to construction equipment and will be temporary. Traffic plans will be coordinated with Scioto County and the Ohio Department of Transportation (ODOT).

(C) AGRICULTURAL LAND IMPACTS

The potential impacts of the Project on agricultural land use include potential damage to crops that may be present, disturbance of underground field drainage systems, compaction of soils and potential for temporary reduction of crop productivity. As observed by desktop data, agricultural land uses make up 13.6 acres of the Preferred Route ROW, and 29.3 acres of the Alternate Route ROW.

(1) Agricultural Land Map

Figure 7-1 provides a map at 1:24,000-scale, showing the Preferred and Alternate routes with agricultural land uses within 1,000 feet of either side of the centerline.

(2) Impacts to Agricultural Lands and Agricultural Districts

The Scioto County Auditor's Office was contacted to obtain information on current Agricultural District lands records. No Agricultural District parcels are within 1,000 feet of the Preferred and Alternate routes. This communication occurred on December 12, 2022. The provided data fulfills the requirement of OAC 4906-5-07(C)(1)(b), which states this data must be collected not more than 60 days prior to submittal.

(a) Acreage Impacted

Table 7-5 quantifies the affected acreage of agricultural land use based on aerial imagery and field observations.

(b) Evaluation of Construction, Operation, and Maintenance Impacts

The following subsections include an evaluation of the impact of the construction, operation, and maintenance of the proposed transmission line and the following agricultural facilities and practices within the Project area, where present.

(i) Field Operations

Field operations such as plowing, planting, cultivating, spraying, and harvesting of cultivated crops will only be interrupted for a portion of the growing season or a portion of the dormant season for agricultural operations. Property owners will be compensated for crop damages resulting from the Company's construction activities. No significant impacts to livestock operations or grazing areas are anticipated. Property owners may continue to utilize most of the ROW area for general uses after construction contingent upon the use having no adverse impact on the safe and reliable operation of the transmission line such as lawn maintenance, crop cultivation, and livestock.

(ii) Irrigation

There are no known irrigation systems within the proposed ROW for either route. The Company will identify the presence of any such systems through contact with landowners once the final

route is approved. Any system that must be relocated will be coordinated with the landowner to avoid affecting the irrigation system's operation and avoid any cost incurred by the landowner.

(iii) Field Drainage Systems

Damage to field tile systems is unlikely given the installation of mostly direct-embed steel pole structures and a relatively short construction duration, but the Company will restore damaged systems to their pre-construction condition. The Company will also work with the agricultural landowners to resolve conflicts with field drainage systems and other facilities that are crossed by the Project, where necessary.

(iv) Structures Used for Agricultural Operations

There are seven structures that are potentially used for agricultural operations within 200 feet of the Preferred Route, and 10 structures that are potentially used for agricultural operations within 200 feet of the Alternate Route. These structures are comprised of barns, sheds, and outbuildings. The exact use of these ancillary structures is unknown prior to communicating with property owners. As these structures are not within the ROW, adverse impacts are not expected by the construction and operation of the Project. Any impact to these structures will be coordinated with the property owner.

(v) Agricultural Land Viability for Agricultural Districts

The Scioto County Auditor's office has provided that there are no Agricultural District lands present within the Study Area. As observed by desktop data, the Preferred Route ROW is comprised of 13.6 acres of agricultural land, making up 35% of the ROW. The Alternate Route ROW is comprised of 29.3 acres of agricultural land, making up 68% of the ROW. As the agricultural land impacted by the ROW is not part of an Agricultural District, nor are there Agricultural Districts nearby, no significant impacts on the viability of the Agricultural District lands are anticipated.

(c) Mitigation Procedures

Mitigation for damage to existing crops and the compaction of soils is provided as compensation to the property owner as specified in the easement for the ROW. The specific terms of the easement regarding crop damage or soil compaction are determined as part of the Company's acquisition of the ROW for the Project, as part of the negotiated settlement between the Company and the property owner, or as determined in appropriation proceedings. Additionally, the Company and the contractors hired to work on the Project have extensive experience in transmission line construction. Both the Company and the selected contractors will work to minimize agricultural impacts during construction of the Project.

(i) Avoidance or Minimization of Damage

To minimize damage to agricultural land, the Company will place poles beyond or at the edges of agricultural fields and will primarily install single tangent poles to support the transmission line. This mitigation effort should limit disruption of plow patterns and minimize the creation of areas

where weeds and other non-crops can grow in relation to construction of the transmission line. In instances where there is damage in the ROW, compensation for this limited impact will be provided to the property owner.

(ii) Field Tile System Damage Repairs

Impacts and resulting repairs to irrigation or field tile drainage systems are not anticipated, but if identified, will be addressed on a case-by-case basis with the individual property owner. In general, the Company will provide mitigation for damage to underground drainage systems from construction, operation, and maintenance activities by repairing or replacing damaged sections of the drainage systems as necessary.

(iii) Segregation and Restoration of Topsoil

Excavated topsoil will be segregated and stockpiled where necessary to maintain long-term agricultural uses. Top soil will also be de-compacted and restored to original conditions, unless otherwise agreed to by the landowner.

(D) LAND USE PLANS AND REGIONAL DEVELOPMENT

This section of the Application provides information on land use plans and regional development.

(1) Impacts to Regional Development

This Project is expected to support regional development in Scioto County through increased reliability and availability of electric power to residential, commercial, institutional, and industrial users. No negative impacts on regional development are foreseen for this Project. A more detailed discussion of the need for this Project and how it will affect regional development is included in Section 4906-5-03 of this Application.

(2) Compatibility of Proposed Facility with Current Regional Land Use Plans

Representatives from Scioto County were contacted for information on the pending development plans and regional land use plans. The Company's Public Outreach staff discussed the Wheelersburg Area Improvements Project, of which the Althea-Sweetgum 138-kV Transmission Line Project is part of, with county officials. Additionally, public officials were invited to the open houses described in Section 4906-5-04 (C)(1). No information was gathered from public officials which aided in the development of the Preferred and Alternate Route.

(E) CULTURAL AND ARCHAEOLOGICAL RESOURCES

Cultural resource studies of the Project area were conducted on behalf of the Company. To date, these studies have included a background records check and literature review using data files from the Ohio Historic Preservation Office (OHPO) for the Preferred and Alternate routes and the completion of the Phase I cultural resource survey for the Preferred Route. The field reviews have been completed and results of the Preferred Route was submitted to OHPO. A summary of this effort will be provided directly to the OPSB because of the sensitive nature of the location information for archaeological sites.

Based on the desktop literature review, there are no registered landmarks of historic, religious, archaeological, scenic, natural, or other cultural significance listed on the National Register of Historic Places (NRHP) within 1,000 feet of the proposed routes. However, the Preferred and Alternate routes align along US-52, which also serves as the Ohio River Scenic Byway. As there is an existing transmission line adjacent to this byway, this Project does not introduce a new visual impact. The Company has coordinated with the SHPO and will coordinate with the ODOT to assess the impacts to this scenic byway.

Although there are no NHRP listed cultural resources, there are 25 archaeological sites and one architectural resource within 1,000 feet of the Preferred Route and 27 archaeological sites and one architectural resource within 1,000 feet of the Alternate Route. There are two cemeteries within 1,000 feet the Preferred Route, and one cemetery within 1,000 feet of the Alternate Routes. Cultural resources already in the public domain (OHI structures) are identified on Figure 7-1.

(1) Cultural Resources in Study Corridor

Cultural resources studies to date have involved background research utilizing data files from the OHPO online mapping system for both the Preferred and Alternate routes. In addition, a Phase I archaeological reconnaissance survey and an architectural history investigation were conducted for the Preferred Route.

Prior to conducting the architectural survey, a 1,000-foot buffer was used to identify previously known cultural resources and to provide information on the probability of identifying cultural resources in the potential disturbance area. The OHPO online mapping database included a review of the Ohio Archaeological Inventory (OHI), Determinations of Eligibility, the NRHP, historic cemeteries, historic bridges, national historic landmarks, and previous cultural resources surveys.

There were no previously recorded cultural resources identified within the potential disturbance area of either the Preferred Route or the Alternate Route from the desktop review. A field investigation of the potential disturbance area of the Preferred Route was conducted. To date, the Phase I archaeological reconnaissance and architectural history investigation did not result in the identification historic and prehistoric sites or resources eligible for the inclusion in the NRHP.

The above-ground resources survey for the Preferred Route confirmed that none of the OHI properties retain enough integrity or possess historic significance warranting individual NRHP nomination.

(2) Construction, Operation, and Maintenance Impacts on Cultural Resources

Based on the results of the cultural resources desktop review and architectural and historical resources survey conducted to date, no unique impacts to known significant cultural resources associated with the construction, operation, and maintenance of the proposed Project are anticipated.

(3) Mitigation Procedures

Based on the results of the desktop review and the above-ground resources survey conducted to date, no impacts to known and recorded historic properties are anticipated; therefore, no mitigation is proposed at this time.

(4) Aesthetic Impact

(a) Visibility of the Proposed Facility

The Project will be constructed on relatively flat terrain and may be visible to residences and along roadways. However, the majority of the Preferred and Alternate routes parallel other linear infrastructure, such as roadways, railroads, and other utility corridors. The addition of the Project will not have a significant impact on the overall visual landscape.

(b) Facility Effect on Site and Surrounding Area

The viewshed along both the Preferred and Alternate routes may be altered by the presence of the transmission line. The degree of visual impact may vary depending on exact viewpoint. The majority of the Preferred and Alternate routes parallel other linear infrastructure, such as roadways, railroads, and other utility corridors. Aesthetic impacts are reduced in areas where the transmission line follows or replaces similar facilities as it would create an incremental visual change in the existing visual setting.

(c) Visual Impact Minimization

The ability to minimize visual impacts of the Project is constrained by engineering requirements and the existing land use. The Company has limited the potential aesthetic impacts of the transmission line to the extent possible through the route selection process, and where practical, proposes to build within existing transmission line ROW which largely parallels other linear infrastructure.

4906-5-08 ECOLOGICAL INFORMATION AND COMPLIANCE WITH PERMITTING REQUIREMENTS

Throughout 2021 and 2022, the Company's consultant conducted a study to assess the potential effects of construction and operation of the proposed Project on the ecology of the Project area. A map and literature search was conducted for a 1,000-foot corridor on either side of the centerline of both the Preferred and Alternate routes. A field survey of ecological habitat and features was performed within 150 feet on either side of the centerline for both the Preferred and Alternate routes (hereafter referred to as the Field Survey Area). Information in the following paragraphs addresses the Company's ecological study conducted for both the Preferred and Alternate routes.

(A) ECOLOGICAL MAP

Maps at a scale of 1:6,000 (1 inch = 800 feet) including the corridor 1,000 feet either side of the centerline (referred to as the 2,000-foot corridor) of the Preferred and Alternate routes are presented as Figure 7-1. These maps depict the transmission line alignments, substation locations, and land use classifications, including vegetative cover. Features within 1,000 feet of the proposed routes were identified from published data and, where accessible, verified by the field ecological survey.

An ecological overview map is provided as Figure 8-1. More detailed maps at 1:6,000 scale depicting field-delineated waterbody and wetland features, lakes, ponds, reservoirs, slopes of 12 percent or greater, wildlife areas, nature preserves, and conservation areas within the 2,000-foot corridor are provided as Figures 8-2A through 8-2C.

(B) FIELD SURVEY REPORT FOR VEGETATION AND SURFACE WATERS

The ecological survey of both the Preferred and Alternate routes were conducted November 16-19, 2021, February 17-18, 2022, August 31, 2022, September 1, 2022, and September 12, 2022 by AEP Ohio Transco's consultant, Stantec Consulting Services (Stantec). The Ecological Survey Report is provided in Appendix 8-2. The field survey was preceded by review of published mapping, aerial photography, protected federal and state-listed species, and ecological information for at least 1,000 feet on either side of the Preferred and Alternate Route centerlines. Map sources included USGS 7.5-minute quadrangle topographic maps, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, and U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey maps.

Published information regarding existing flora and fauna was requested from the ODNR - Division of Wildlife (DOW) Ohio Natural Heritage Program. This request included available GIS shapefiles of location records of state-listed species within 1 mile of the Project. Information regarding ODNR consultation is provided below.

(1) Vegetative Communities, Wetlands, and Streams in Study Area

(a) Vegetative Communities

Vegetative communities and land use types in the Field Survey Area consist of agricultural fields, commercial/industrial land, early successional forest, maintained lawn, old field, pasture, and second growth deciduous forest, and existing railroad and roadway. A majority of Field Survey Area is located on lands adjacent to US-52/Ohio River Scenic Byway.

(i) Agricultural and Pasture Fields

Portions of both the Preferred Route and Alternate Route cross agricultural and/or pasture fields. Production of crops such as corn (*Zea mays*) and soybean (*Glycine max*) were observed in the majority of the crop fields. Additionally, dominant species of white clover (*Trifolium repens)*, annual ragweed (*Ambrosia artemisiifolia)*, and common dandelion (*Taraxacum officinale)* were found areas dedicated as pasture fields.

(ii) Old Field

Herbaceous and shrub/sapling cover exists in successional old field communities. Old-field plant communities are at the earliest stages of recolonization following disturbance. This community type is typically short-lived (less than 10 years), progressively giving way to shrub and forest communities unless periodically re-disturbed, in which case they remain as fallow fields. Old-field areas are located within some portions of the Project area, usually in inactive pastures or clear-cut areas.

Dominant herbaceous species in the old-field communities included:

- Indiangrass (Sorghastrum nutans)
- Tall fescue (Festuca arundinacea)
- Canadian goldenrod (Solidago canadensis)
- Giant ironweed (Vernonia gigantea)

Dominant shrub/sapling and tree species in the old-field communities included:

- Multiflora rose (*Rosa multiflora*)
- Japanese honeysuckle (*Lonicera japonica*)
- Common red raspberry (*Rubus idaeus*)
- American sycamore (*Platanus occidentalis*)
- Black walnut (Juglans nigra)
- Pin oak (*Quercus palustris)*
- American elm (*Ulmus americana*)
- Black locust (*Robinia pseudoacacia*)
- White mulberry (*Morus alba*)

(iii) Successional Forests

Early successional or second growth deciduous forests were present across portions of the Field Survey Area within the Preferred and Alternate routes.

Dominant canopy species within these forested areas include the following:

- Black walnut (Juglans nigra)
- American elm (*Ulmus americana*)

Dominant understory (shrub and herbaceous) species include:

- Common duckweed (*Lemna minor*)
- Deer tongue grass (*Dichanthelium clandestinum*)
- Switch grass (*Panicum virgatum*)
- Nodding foxtail (*Setaria faberi*),
- Broomsedge (*Andropogon virginicus*)
- Yellow foxtail (*Setaria pumila*)
- Amur honeysuckle (*Lonicera maackii*)
- Japanese honeysuckle (*Lonicera japonica*)
- Canadian goldenrod (*Solidago canadensis*)
- Sneezewort (*Achillea ptarmica*)
- Multiflora rose (*Rosa multiflora*)

(iv) Maintained Lawn

Maintained lawn was present across portions of the Field Survey Area within the Preferred and Alternate routes. A majority of the maintained lawn crossing is within the north extent of the Project area.

Dominant herbaceous species in the maintained lawn communities included:

- Ground ivy (Glechoma hederacea)
- Red fescue (Festuca rubra)
- Common dandelion (Taraxacum officinale)
- Chickweed (Stellaria media)
- Purple deadnettle (Lamium purpureum)
- Black medic (Medicago lupulina)
- Curly dock (Rumex crispus)
- Broadleaf plantain (Plantago major)
- Common chickory (Cichorium intybus)
- Annual fleabane (Erigeron annuus)
- Green foxtail (Setaria viridis)
- White clover (Trifolium repens)
- Alliaria spp., annual ragweed (Ambrosia artemisiifolia)
- Field pepper grass (Lepidium campestre)
- Crab grass (Digitaria sanguinalis)

Dominant shrub and tree species in the maintained lawn communities included:

- Eastern white pine (*Pinus strobus*)
- Sugar maple (*Acer saccharum*)
- Callery pear (*Pyrus calleryana*)
- American sweetgum (*Liquidambar styraciflua*)

Vegetation identified in commercial/industrial land, existing railroad, and existing roadway areas consisted of opportunistic invaders, planted non-native species, and native highly tolerant taxa.

(b) Wetlands

According to the U.S. Army Corps of Engineers (USACE), a wetland is defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytic) typically adapted for life in saturated (hydric) soil conditions.

The Company's consultant completed a wetland delineation study in accordance with the USACE Wetlands Delineation Manual (USACE, 1987) and the Regional Supplement to the USACE Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0; USACE 2012). Wetland categories were classified using the Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001). To identify whether potential wetlands exist along the Preferred and Alternate routes, a desktop study of available resources was performed prior to the field wetland delineations. Additionally, USFWS NWI maps and the NRCS soil survey (NRCS, 2016) were reviewed for areas within the 300 foot Field Survey Area of the Preferred and Alternate routes.

(i) **Summary of National Wetland Inventory Data**

According to USFWS NWI data, there are eight Riverine features and two Palustrine Emergent Wetland (PEM) features within the Field Survey Area. Field surveys conducted determined that six of the NWI features contained streams and three NWI features contained wetlands. The remaining NWI feature was in an upland area and is not considered to be a wetland or stream. The NWI-mapped areas for the Preferred and Alternate routes are shown on Figures 8-2A through Figure 8-2C.

(ii) Field-Delineated Wetlands

Seven wetlands are within the Field Survey Area of the Preferred Route. A total of 3.18 acre of wetlands were delineated within the Preferred Route ROW. Eleven wetlands were delineated with the Alternate Route Field Survey Area. A total of 1.56 acre of wetlands were delineated within the Alternate Route ROW. These field-delineated wetlands for the Preferred and Alternate routes are mapped on Figures 8-2A through 8-2C.

Detailed information on each wetland is provided in Table 8-1A and Table 8-1B. The anticipated temporary construction impacts, where unavoidable, on these wetlands are included in Table 8-1A and Table 8-1B and further discussed in Section 4906-05-08(B)(3)(b).

Table 8-1A. Delineated Wetlands within the Preferred Route Environmental Field Survey Area and ROW

Wetland Name	Crossed by Route	Figure	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Field Survey Area[b]	Acreage within the Preferred Route ROW[c]	Length Crossed by Preferred Route Centerline (feet)
Wetland 1	Preferred/Alternate	8-2C	PEM	47	2	0.19	0.09	64
Wetland 2	Preferred/Alternate	8-2C	PEM	33	2	0.12	0.04	20
Wetland 4	Preferred/Alternate	8-2C	PEM	19	1	0.02	0.01	N/A
Wetland 5	Preferred	8-2C	PSS	19	1	0.02	0.02	N/A
Wetland 5a	Preferred	8-2C	PEM	28	1	0.02	0.02	N/A
Wetland 5b	Preferred	8-2C	PEM	29	1	0.03	0.03	N/A
Wetland 6	Preferred	8-2C	PEM	20	1	0.06	0.06	N/A
Wetland 7	Preferred	8-2C	PEM	20	1	0.02	0.02	N/A
Wetland 7a	Preferred	8-2C	PEM	28	1	0.24	0.24	N/A
Wetland 8	Preferred	8-2C	PEM	24	1	0.39	0.39	N/A
Wetland 9	Preferred	8-2B	PEM	20	1	0.07	0.07	N/A
Wetland 9a	Preferred	8-2B	PEM	25	1	0.03	0.03	N/A
Wetland 10	Preferred	8-2B	PEM	35	2	1.12	1.11	1109
Wetland 11	Preferred/Alternate	8-2B	PEM	20	1	0.05	0.02	9
Wetland 12	Preferred/Alternate	8-2B	PEM	19	1	0.02	0.01	N/A
Wetland 13	Preferred/Alternate	8-2B & 8-2A	PEM	37	2	2.19	0.67	415
Wetland 14	Preferred	8-2A	PEM	34	2	0.17	0.07	N/A
Wetland 15	Preferred/Alternate	8-2A	PEM	31	2	0.09	0.04	N/A

Table 8-1A. Delineated Wetlands within the Preferred Route Environmental Field Survey Area and ROW

Wetland Name	Crossed by Route	Figure	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Field Survey Area[b]	Acreage within the Preferred Route ROW[c]	Length Crossed by Preferred Route Centerline (feet)
Wetland 16c	Preferred	8-2A	PEM	30.5	2	0.12	0.10	28
Wetland 16d	Preferred	8-2A	PEM	7	1	0.12	0.12	103
Wetland 17	Preferred/Alternate	8-2A	PEM	45	2	0.10	0.02	N/A
					Total	5.19	3.18	1747

Notes:

a Wetland Type: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested.

b The width of the Field Survey Area was 300 feet for the Preferred and Alternate Route.

c The width of the final maintained ROW is planned to be 100 feet.

Table 8-1B. Delineated Wetlands within the Alternate Route Environmental Field Survey Area and ROW

Wetland Name	Crossed by Route	Figure	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Field Survey Area[b]	Acreage within the Alternate Route ROW[c]	Length Crossed by the Alternate Route Centerline (feet)
Wetland 1	Preferred/Alternate	8-2C	PEM	47	2	0.19	0.09	64
Wetland 2	Preferred/Alternate	8-2C	PEM	33	2	0.12	0.04	20
Wetland 4	Preferred/Alternate	8-2C	PEM	19	1	0.02	0.01	4
Wetland 6a	Alternate	8-2C	PEM	15.5	1	0.02	0.019	11
Wetland 9c	Alternate	8-2B	PEM	11	1	0.01	0.01	N/A
Wetland 10a	Alternate	8-2B	PEM	12	1	0.16	0.027	11
Wetland 11	Preferred/Alternate	8-2B	PEM	20	1	0.05	0.02	9
Wetland 12	Preferred/Alternate	8-2B	PEM	19	1	0.02	0.01	N/A
Wetland 13	Preferred/Alternate	8-2A & 8-2B	PEM	37	2	2.19	0.76	124
Wetland 15	Preferred/Alternate	8-2A	PEM	31	2	0.09	0.01	7
Wetland 16	Alternate	8-2A	PEM	35	2	0.57	0.31	136
Wetland 16a	Alternate	8-2A	PEM	31	2	0.14	0.11	N/A
Wetland 17	Preferred/Alternate	8-2A	PEM	45	2	0.10	0.02	N/A
Wetland 18	Alternate	8-2A	PSS	39	2	0.10	0.08	N/A
Wetland 20	Alternate	8-2A	PFO	51	2	0.24	0.06	22
					Total	**4.02**	**1.56**	**408**

Notes:

a Wetland Type: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested.

b The width of the Field Survey Area was 300 feet for the Preferred and Alternate Route.

c The width of the final maintained ROW is planned to be 100 feet.

(c) Waterbodies

(i) Field-Delineated Streams

A total of eleven (11) streams were delineated in the Preferred Route and Alternate Route Field Survey Area. Jurisdictional streams were identified as those waters that possessed a continuously defined bed and bank, OHWM indicators, and lacked a dominance of upland vegetation in the channel. Per USACE guidance, the OHWM is defined as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE, 2005). Channels that parallel a roadway or railroad were identified as upland drainage features and were not considered to be jurisdictional unless they had an identifiable OHWM, were identified on the USGS topographic map, or represented a presumed relocation of a natural channel.

Functional stream assessments are typically performed if streams are found, which would be conducted using the methods described in the OEPA's Methods for Assessing Habitat in Flowing Waters: Using OEPA's Qualitative Habitat Evaluation Index (QHEI; OEPA, 2006) and in the OEPA's *Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams* (OEPA, 2020). The QHEI, would be used to characterize larger streams (drainage areas greater than 1 square mile), while the Primary Headwater Habitat Evaluation Index (HHEI) would be appropriate for first-order and second-order headwater streams (drainage areas less than 1 square mile).

Streams identified during the ecological survey on the Preferred and Alternate routes are shown on Figures 8-2A through 8-2C. Detailed information on each delineated stream is included in Table 8-2A and Table 8-2B.

The Preferred Route centerline has six stream crossings and approximately 1152 linear feet of stream are located within the Preferred Route ROW. The Alternate Route centerline has six stream crossings and approximately 860 linear feet are located within the Alternate Route ROW. Construction impacts on these features are included in Table 8-2A and Table 8-2B and further discussed in Section 4906-05-08(B)(3)(c).

Table 8-2A. Streams within the Preferred Route Environmental Field Survey Area and ROW

Stream ID Waterbody Name	Crossed by Route	Figure	Flow Regime	Bankfull Width (feet)	OHWM Width (feet)	Form	Score	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by the Preferred Route Centerline	Length (linear feet) within Field Survey Area [a]	Length (linear feet) within the Preferred Route ROW [b]
Stream 1 UNT to Ohio River	Preferred/ Alternate	8-2C	Ephemeral	5	3	HHEI	40	Modified Class II PHW	Y	151	101
Stream 2 UNT to Ohio River	Preferred/ Alternate	8-2C	Intermittent	8	6	QHEI	43	Fair	Y	470	44
Stream 2a UNT to Ohio River	N/A	8-2C	Ephemeral	8	3	HHEI	32	Modified Class II PHW	N/A	1163	N/A
Stream 2b UNT to Ohio River	N/A	8-2C	Ephemeral	8	3	HHEI	36	Modified Class II PHW	N/A	762	N/A
Stream 3 UNT to Ohio River	N/A	8-2C	Ephemeral	2	1	HHEI	25	Class I PHW	N/A	84	84
Stream 4 UNT to Ohio River	Preferred/ Alternate	8-2C	Intermittent	7	4.5	HHEI	65	Modified Class II PHW	Y	353	58
Stream 5 Patton Run	Preferred/ Alternate	8-2B	Perennial	20	16	QHEI	44	Fair	Y	529	103
Stream 6 UNT to Ohio River	Preferred/ Alternate	8-2B	Intermittent	10	4.5	HHEI	59	Modified Class II PHW	Y	198	86

Table 8-2A. Streams within the Preferred Route Environmental Field Survey Area and ROW

Stream ID Waterbody Name	Crossed by Route	Figure	Flow Regime	Bankfull Width (feet)	OHWM Width (feet)	Form	Score	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by the Preferred Route Centerline	Length (linear feet) within Field Survey Area [a]	Length (linear feet) within the Preferred Route ROW [b]
Stream 6a UNT to Ohio River	N/A	8-2A	Intermittent	8	3.5	HHEI	40	Modified Class II PHW		370	N/A
Stream 7 UNT to Ohio River	Preferred	8-2A	Intermittent	4	2.5	HHEI	47	Modified Class II PHW	Y	632	281
Stream 8 UNT to Ohio River	Alternate	8-2A	Intermittent	7.5	3	HHEI	47	Modified Class II PHW	N/A	2069	103
			Perennial	12	9		62				292
				12.6	13.5		87	Class III PHW			
									Total	**6781**	**1152**

Notes:

a The width of the Field Survey Area was 300 feet for Preferred and Alternate Route

b The width of the final maintained ROW is planned to be 100 feet.

UNT = unnamed tributary

Table 8-2B. Streams within the Alternate Route Environmental Field Survey Area and ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Bankfull Width (feet)	OHWM Width (feet)	Form	Score	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by the Alternate Route Centerline	Length (linear feet) within Field Survey Area [a]	Length (linear feet) within the Alternate Route ROW [b]
Stream 1 UNT to Ohio River	Preferred/ Alternate	8-2C	Ephemeral	5	3	HHEI	40	Modified Class II PHW	Y	151	101
Stream 2 UNT to Ohio River	Preferred/ Alternate	8-2C	Intermittent	8	6	QHEI	43	Fair	Y	470	117
Stream 2a UNT to Ohio River	N/A	8-2C	Ephemeral	8	3	HHEI	32	Modified Class II PHW	N/A	1163	N/A
Stream 2b UNT to Ohio River	N/A	8-2C	Ephemeral	8	3	HHEI	36	Modified Class II PHW	N/A	762	N/A
Stream 3 UNT to Ohio River	N/A	8-2C	Ephemeral	2	1	HHEI	25	Class I PHW	N/A	84	N/A
Stream 4 UNT to Ohio River	Preferred/ Alternate	8-2C	Intermittent	7	4.5	HHEI	65	Modified Class II PHW	Y	353	183
Stream 5 Patton Run	Preferred/ Alternate	8-2B	Perennial	20	16	QHEI	44	Fair	Y	529	103

Table 8-2B. Streams within the Alternate Route Environmental Field Survey Area and ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Bankfull Width (feet)	OHWM Width (feet)	Form	Score	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by the Alternate Route Centerline	Length (linear feet) within Field Survey Area [a]	Length (linear feet) within the Alternate Route ROW [b]
Stream 6 UNT to Ohio River	Preferred/ Alternate	8-2B	Intermittent	10	4.5	HHEI	59	Modified Class II PHW	Y	198	86
Stream 6a UNT to Ohio River	N/A	8-2A	Intermittent	8	3.5	HHEI	40	Modified Class II PHW		370	N/A
Stream 7 UNT to Ohio River	Preferred	8-2A	Intermittent	4	2.5	HHEI	47	Modified Class II PHW	N/A	632	33
Stream 8 UNT to Ohio River	Alternate	8-2A	Intermittent	7.5	3	HHEI	47	Modified Class II PHW	Y	2069	168
			Perennial	12	9		62				69
				12.6	13.5		87	Class III PHW			
									Total	**6781**	**860**

Notes:

a The width of the Field Survey Area was 300 feet for Preferred and Alternate Route

b The width of the final maintained ROW is planned to be 100 feet.

UNT = unnamed tributary

(ii) Lakes, Ponds, and Reservoirs

One open water feature was delineated in the Preferred Route and Alternate Route Field Survey Area. Open water features within the Field Survey Area are shown on Figures 8-2A through 8-2C, and are summarized in Table 8-3.

Impacts to open water from construction, operation, or maintenance of the proposed transmission line are not anticipated. Best management practices (BMPs) to control soil erosion and sedimentation (for example, using silt fencing and filter sock as appropriate during construction to minimize runoff siltation).

Table 8-3. Delineated Open Water Features within the Preferred Route and Alternate Route Environmental Field Survey Area

Feature Name	Route	Figure	Acreage within Field Survey Area[a]	Acreage within ROW[b]	Linear Feet Crossed by Centerline
Open Water 1	Preferred/Alternate	8-2A	0.015	N/A	N/A

Notes:

a The width of the Field Survey Area was 300 feet for Preferred and Alternate Route

b The width of the potential disturbance area and the final maintained ROW is planned to be 100 feet.

(2) Map of Facility, Right-of-Way, and Delineated Resources

Detailed maps at 1:6,00 scale depicting the Field Survey Area and proposed ROW for the Preferred and Alternate routes are provided as Figures 8-2A through 8-2C. This information is also provided in Appendix 8-2 document under its Appendix B.

(3) Construction Impacts on Vegetation and Surface Waters

(a) Construction Impacts on Vegetation

The construction impacts on woody and herbaceous vegetation along both the Preferred and Alternate routes will be limited to the initial clearing of vegetation within the 100-foot ROW for the proposed transmission line and access roads. Specific locations for access roads will be identified at the time of the Company's transmission line easement acquisition process. Trees adjacent to the proposed ROW, that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe operation of the transmission line. Vegetative wastes (such as tree limbs and trunks) generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on individual landowner requests.

(b) Construction Impacts on Wetlands

There are thirty-three (33) wetlands delineated within the Survey Area, 28 of which are crossed by either the Preferred or Alternate Route. During wetland and waterbody delineations, 21 wetlands were identified along the Preferred Route within the proposed ROW, totaling 3.18 acres. Seven of these wetlands are crossed by the Preferred Route centerline, totaling 1747 linear feet.

Sixteen (16) wetlands were identified along the Alternate Route within the proposed ROW, totaling 1.56 acres. Ten of these wetlands are crossed by the Alternate Route centerline, totaling 408 linear feet.

Wetland ORAM categories delineated in the Preferred Route ROW are detailed below:

- Category 1 wetlands: Thirteen (13) Category 1 wetlands with ORAM scores ranging from 7 to 28 were identified within the ROW, totaling 1.04 acres of the ROW. Two of these wetlands are crossed by the centerline by 112 linear feet.

- Category 2 wetlands: Eight Category 2 wetlands with ORAM scores ranging from 30.5 to 45 were identified within the ROW, totaling 2.14 acres of the ROW. Five of these wetlands are crossed by the centerline by 1,636 linear feet.

Wetland ORAM categories delineated in the Alternate Route ROW are detailed below:

- Category 1 wetlands: Six Category 1 wetlands with ORAM scores ranging from 11 to 20 were identified within the ROW, totaling 0.07 acre of the ROW. Four of these wetlands are crossed by the centerline by 35 linear feet.

- Category 2 wetlands: Ten (10) Category 2 wetlands with ORAM scores ranging from 31 to 51 were identified within the ROW, totaling 1.49 acres of the ROW. Six of these wetlands are crossed by the centerline by 373 linear feet.

The delineated wetlands are shown on Figures 8-2A through 8-2C. Detailed information about each feature can be found on Table 8-1A and Table 8-1B in Section 4906-05-08(B)(b)(ii). According to the Ecological Survey Report (Attachment 8-2), temporary and permanent impacts to wetlands are “To be Determined”. It is assumed that Best Management Practices for erosion and sediment control will be utilized by the construction operator to limit disturbances to wetlands. Consultation with U.S. Army Corps of Engineers and Ohio EPA for Clean Water Act section 404 and 401 permit requirements will occur if the Project proposes to impact wetlands.

Through appropriate planning and permitting, care will be taken near wetlands to avoid or minimize filling and sedimentation during construction. There are no current plans to place structures within wetland boundaries, and the Company will avoid the placement of poles within wetlands to the extent practical. Selective clearing will be required to remove specific types of woody vegetation in wetlands that might impede construction or interfere with operation of the transmission line. Where wooded or forested wetlands occur within the ROW, the trees will be removed.

To minimize soil erosion and sedimentation during construction, BMPs such as utilization of silt fences and construction matting will be implemented as required during construction. Sedimentation potential at wetlands is unlikely because of the plans for pole placement outside of wetlands, and the fact that construction equipment will only cross wetlands if necessary, and will do so using construction matting if wet conditions require.

Disturbance of soils in wetland areas during construction will be minimized. Placement of permanent fill material in wetland areas will be avoided to the extent practical. Although not anticipated, if it is necessary to place a pole or guy wires within a wetland, they will be accessed using construction matting if wet conditions exist at the time of construction. No excavation other than the boring or excavation of a hole for pole installation will be performed within wetland areas. If pole placement is required within a wetland, no additional fill will be placed in the wetlands beyond the placement of the pole and borehole backfill.

Wetland areas will be clearly staked prior to the commencement of any clearing to minimize incidental vehicle impacts. Other than the remote possibility of pole locations within wetlands discussed above, operation of heavy mechanized equipment is not planned within any identified wetland areas, although some construction equipment may need to cross wetland areas on construction matting if wet conditions exist at the time. Woody vegetation in wetlands will be hand-cut by chain saws or other non-mechanized techniques. When necessary, rubber-wheeled vehicles, or vehicles equipped with tracks, will be used to remove vegetation debris. The Company will perform all construction work in accordance with the conditions and requirements of regulatory permits obtained for the Project.

(c) Construction Impacts on Waterbodies

There are eleven (11) waterbodies and one (1) open water feature delineated within the Project area. The Preferred Route centerline crosses six streams. The Alternate Route centerline also crosses six streams. Detailed information about each feature can be found in Table 8-2A and Table 8-2B in Section 4906-05-08(B)(c)(i).

Approximately 1,152 linear feet of stream are located within the Preferred Route ROW, while approximately 860 linear feet are located within the Alternate Route ROW.

The Company will not conduct mechanized clearing within 25 feet of any stream, and will only clear (using hand cutting techniques) those trees in this area that are tall enough to or have the potential to interfere with safe construction and operation of the line. No streams will be filled or permanently impacted. Some streams may have to be crossed by construction vehicles. Exact pole locations have not been fully determined to date although preliminary locations have been identified. Access paths to proposed pole locations will be evaluated when more detailed engineering is completed and as landowner negotiations progress. If a new stream crossing were necessary, it would comply with one of the following three proposed methods to cross streams:

- Temporary stream ford
- Temporary culvert stream crossings
- Temporary access bridge

Temporary stream fords are not likely, but may be conducted for crossing low quality ephemeral and intermittent streams with a drainage watershed less than 1 square mile. This will involve minimum clearing necessary to gain access to the stream and for passage of construction vehicles.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting rather than grubbing.
- Sediment-laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fences will be used as needed according to local topographic conditions.
- Following completion of the work, the areas cleared for the temporary access crossing will be stabilized through plantings of woody species where appropriate. Areas of exposed soil will be stabilized in accordance with the stormwater pollution prevention plan (SWPPP) for the Project.

Culvert stream crossings may be proposed for crossing marginal quality perennial, ephemeral, and intermittent streams with a drainage watershed of less than 1 mile. These crossings may be removed or remain in place to provide maintenance access to the line (critical if service is to be reliable).

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand-cutting techniques rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.
- Sediment laden runoff controlled to minimize from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence will be used as needed according to local topographic conditions.
- Culvert pipes will be placed on the existing streambed to avoid a drop or waterfall at the downstream end of the pipe, which would be a barrier to fish migration. Crossings will be placed in shallow areas rather than pools.
- Culverts will be sized to be at least three times the depth of the normal stream flow at the crossing location.
- There will be enough culvert pipes to cross the stream completely with no more than a 12-inch space between each one.
- Stone, rock, or aggregate of ODOT number 1 as a minimum size will be placed in the channel, and between culverts. To prevent washouts, larger stone may be used with gabion mattresses. No soil will be placed in the stream channel.
- After completion of construction, some rock aggregate and structures such as culvert pipes used for the crossing will be left in place if approved by the landowner and authorized within environmental permits. Care will be taken so that aggregate does not

create an impoundment or impede fish passage. Structures such as gabion mattresses will be removed.

- Stream banks will be stabilized and revegetated as appropriate.

Temporary access bridges or culvert stream crossings may be used for high quality perennial, ephemeral, and intermittent streams and streams with a drainage watershed greater than 1 square mile (or possibly less in some cases).

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.
- Sediment laden runoff will be controlled to minimize flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence will be used as needed according to local topographic conditions.
- Bridges will be constructed to span the entire channel. If the channel width exceeds 8 feet, then a floating pier or bridge support may be placed in the channel. No more than one pier, footing, or support will be allowed for every 8 feet of span width. No footings, piers, or supports will be allowed for spans of less than 8 feet.
- No fill other than clean stone, free from soil, will be placed within the stream channel.

Stream crossings, if any, will be addressed in the Project SWPPP which will be provided to the OPSB. Some of the access routes may be left in place for maintenance activity. BMPs, including utilization of silt fence or filter sock, will be used as appropriate during construction to minimize runoff siltation.

According to the Ecological Survey Report (Attachment 8-2), temporary and permanent impacts to waterbodies are “To be Determined”. It is assumed that Best Management Practices for erosion and sediment control will be utilized by the construction operator to limit disturbance to waterbodies. Consultation with U.S. Army Corps of Engineers and Ohio EPA for Clean Water Act section 404 and 401 permit requirements will occur if the Project proposes to impact waterbodies. No impacts to waterbodies are expected as part of this Project.

(4) Operation and Maintenance Impacts on Vegetation and Surface Water

During operation of the transmission line along either of the proposed routes, the impacts on vegetation are anticipated to be minor. Undeveloped non-forested land not significantly disturbed by construction should retain its current vegetation composition. Periodic cutting along the proposed 100-foot-wide transmission line ROW is not expected to result in a significant environmental impact to the vegetation in these types of areas.

The potential impacts on woody and herbaceous vegetation along either of the proposed routes will be limited to maintenance activities along the proposed transmission line ROW and access

roads for safe and reliable operation of the transmission line. Trees adjacent to the proposed transmission line ROW, that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe operation of the transmission line. Vegetative waste (such as tree limbs and trunks) that is generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on individual landowner requests.

Once the transmission line is in operation, no significant impacts to streams or drainage channels are anticipated. Only periodic selective removal of vegetation that interferes with the operation of the transmission line will be required. No major lakes, ponds, or reservoirs should be affected by the operation or maintenance of the Preferred or Alternate Routes.

The Company does not anticipate significant wetland impacts from the operation or maintenance of the Preferred and Alternate routes. Vegetation that occurs within wetland areas may require periodic cutting. It is not anticipated that such activities would result in erosion or water quality degradation. Maintenance cutting of woody vegetation in wetland areas would be hand-cut by chain saws or other non-mechanized techniques.

(5) Mitigation Procedures

The following mitigation procedures will be used during construction, operation, and maintenance of the proposed Project to minimize the impact on vegetation and surface waters. A SWPPP will also be prepared and implemented, and will be made available onsite during Project construction.

(a) Site Restoration and Soil Stabilization

A SWPPP will be developed specifically for the Project and specified BMPs will be implemented during construction to control erosion and sedimentation. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation. Experience shows that seeding in non-wetland and non-agricultural areas is advantageous to control erosion on areas disturbed by construction activities. In lightly disturbed wetland areas, existing seed banks are quite often capable of quickly reestablishing vegetation that is compatible with the surrounding wetland. If any unanticipated significant disturbance occurs in wetlands, topsoil will be segregated and replaced so that the existing seed banks will be allowed to revegetate the areas initially. Additional seeding will only take place if the existing seed bank does not repopulate an area. These measures should preserve the aesthetic qualities along the ROW, prevent erosion, and promote habitat diversity.

Construction access routes and staging areas will be selected to minimize impacts to wetlands and streams to the extent practical. Following construction, pole locations, material storage sites, and temporary access roads will be seeded with a suitable grass seed mixture as specified in the SWPPP for restoring these disturbed areas.

(b) Contingency Plan Stream and Wetland Crossings

The Project does not include a stream or wetland crossing by horizontal direction drill; therefore, a detailed frac-out contingency plan will not be required for the Project.

(c) Demarcation and Protection Methods

Wetlands, streams, and any other environmentally sensitive areas will be clearly staked, flagged, or fenced in accordance with the SWPPP prior to the commencement of any clearing to minimize incidental impacts. BMPs such as utilization of silt fences and construction matting will be implemented as required during construction. The Company will make final determination on demarcation methods.

(d) Procedures for Inspection and Repair of Erosion Control Measures

BMPs, including silt fencing and other erosion control measures, will be inspected routinely to assure proper installation and function. Inspections will also be triggered by significant rainfall events, to evaluate the need for repairs or adjustments in erosion control strategy.

(e) Stormwater Runoff Measures

BMPs, including utilization of silt fence or filter socks, will be used as appropriate during construction to minimize runoff and sedimentation of streams and wetlands. Measures to divert stormwater runoff away from fill slopes and other exposed surfaces will be outlined in the SWPPP.

(f) Vegetation Protection Methods

Vegetation that occurs within wetland areas may require periodic cutting. Maintenance cutting of woody vegetation in wetland areas would be hand-cut by chain saws or other non-mechanized techniques. Cutting of woody vegetation in wetlands and near stream banks will be limited to removal of only the cut back required to safely perform construction and continue operation of the transmission line. The Company will adhere to regulatory permit requirements and conditions that will be obtained or authorized for the Project, including specifying that no mechanized clearing of vegetation be performed within the prescribed distance of a wetland or waterbody as discussed below.

(g) Clearing Methods

The Company will not conduct mechanized clearing within 25 feet of any stream, and will only clear (using hand cutting techniques) those trees in this area that are tall enough to or have the potential to interfere with safe and reliable construction and operation of the transmission line. Selective clearing will be required to remove woody vegetation in wetlands that might impede construction, or interfere with operation of the transmission line. Where wooded wetlands occur within the ROW, the trees will be removed. Trees adjacent to the proposed transmission line ROW that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe and reliable operation of the transmission line. Vegetative waste (such as tree limbs and trunks) that is generated during the construction phase will be windrowed or chipped and disposed of appropriately, outside of wetlands, depending on landowner requests.

(h) Expected Use of Herbicides

The Company does not anticipate the use of herbicides during the construction and operation of the Project.

(C) LITERATURE SURVEY OF PLANT AND ANIMAL LIFE POTENTIALLY AFFECTED

The Project is in an rural setting primarily comprised of agricultural land and open fields. Both the Preferred and Alternate routes have potential habitat for wildlife species. Lists of protected species are typically based on their range in Scioto County, as reported in correspondence from the ODNR-DOW and USFWS (USFWS, 2022a; ODNR-DOW, 2022a). Lists of commercial and recreational species were created using professional experience, wildlife sightings, and the ODNR-DOW 2022-2023 Hunting and Trapping Regulations (ODNR-DOW, 2022b). Details on the expected impacts of construction, operation, maintenance, and mitigation procedures can be found following the threatened and endangered, commercial, and recreational species descriptions below.

(1) Project Vicinity Species Descriptions

(a) Protected Species

Current information on species potentially in the Project area was provided through consultation with USFWS, the USFWS website (USFWS, 2020b) and the ODNR-DOW Ohio Natural Heritage Database and is summarized in Table 8-4.

A consultation request was submitted to the USFWS on December 15, 2021, and a response was received on December 20, 2021 (Appendix 8-1). USFWS stated that there are no federal wilderness areas, wildlife refuges, or designated critical habitat in the vicinity of the Project area. The USFWS confirmed that the Project area lies within the range of two federally listed bat species: the federally endangered Indiana bat (*Myotis sodalis*) and the federally endangered northern long-eared bat (*Myotis septentrionalis*).

The Project is in the vicinity of one or more confirmed records of Indiana bats, and it is recommended that trees greater-than-or-equal-to (≥) 3 inches dbh be saved wherever possible. Since Indiana bat presence in the vicinity of the Project has been confirmed, clearing of trees ≥3 inches dbh during the summer roosting season may result in direct take of individuals; therefore, the USFWS recommended tree cutting between October 1 and March 31 to prevent any significant impacts to these species. If suitable trees must be cut during summer months, summer surveys should be conducted for the Indiana bat between June 1 and August 15. If any caves or abandoned mine may be disturbed from Project activities, further consultation with the USFWS is requested.

The USFWS also stated that they do not anticipate adverse effects to any other federally endangered, threatened, proposed or candidate species due to the Project type, size, and location Attachment 8-1 (Appendix E).

A consultation request was submitted to the ODNR on December 15, 2021, and the ODNR Office of Real Estate response letter was received on January 14, 2022 (Attachment 8-1: Appendix E). Coordination with ODNR-DOW was initiated to obtain Ohio Natural Heritage Database records within a 1-mile buffer area around the Preferred and Alternate routes (ODNR-DOW, 2022a). ODNR records of state- and federally listed species, provided in January 2022, indicated that ten state-listed fish species, twelve state-listed freshwater mussels, one state-listed amphibian, and two state-listed vascular plants occur at or within a one-mile radius of the Project area. These species, any potential habitat in reference to these species within the Project area, and any potential impacts are further discussed below and in Table 8-4 below.

The ODNR-DOW recommended that impacts to streams, wetlands, and other water resources be avoided and minimized to the fullest extent possible, and that BMPs be used to minimize erosion and sedimentation. Because the Indiana bat, northern long-eared bat, little brown bat, and the tricolored bat are in the vicinity of the Project area, the ODNR-DOW recommended tree cutting between October 1 and March 31 and conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with a dbh ≥20 inches, if possible. If trees are present in the Project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting.

The DOW also recommends that a desktop habitat assessment, followed by a field assessment if needed, to determine if there are potential hibernaculum(a) present within 0.25 mile of the Project area. Stantec completed a habitat desktop assessment in accordance with the 2022 Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines (USFWS 2020) utilizing available ODNR websites, including data on known abandoned or active mines and locations of known or suspected karst geology (ODNR 2022c). The desktop assessment identified one abandoned underground mine, and one active surface mine area within a 0.5-mile buffer and an active and inactive surface mine area within a 0.5-mile and 0.25-mile buffer of the Project area.

No potential hibernacula were observed within the Project area during the field surveys; however, potentially suitable summer foraging and roosting habitat was observed within the Project area. The Company will determine if any tree clearing is necessary in areas containing suitable roost habitat and will proceed in accordance with agency requirements. Attachment 8-1 (Appendix B) details the location of the abandoned underground mine in relation to the Project area.

Other comments documented in the ODNR response letter are as follows:

- The Project is within the range of the federally-listed endangered clubshell, northern riffleshell, purple cat's paw, rayed bean, sheepnose, fanshell, pink mucket, and snuffbox, the state-listed endangered butterfly, little spectaclecase, ebonyshell, elephant-ear, long-solid, Ohio pigtoe, pyramid pigtoe, monkeyface, sharp-ridged pocketbook, washboard, yellow sandshell, and wartyback, and the state-listed threatened fawnsfoot, black sandshell, and threehorn wartyback. According to the Ohio Mussel Survey Protocol, all Group 2, 3, and 4 streams require a mussel survey if impacts may occur to the waterway. Group 1 and unlisted streams with a watershed of 5 square miles or larger above the point

of impact should be assessed using the Reconnaissance Survey for Unionid Mussels to determine mussel presence (ODNR 2022d). Two perennial streams were identified within the Project area. However, both streams have a drainage area less than 5 square miles. In addition, no in-water work is proposed to occur for this Project in perennial streams by AEP. Therefore, impacts to mussel species are not anticipated for the Project.

- The Project is within the range of the state-listed endangered bigeye shiner, gilt darter, goldeye, mountain madtom, northern brook lamprey, northern madtom, popeye shiner, shoal chub, shortnose gar, and shovelnose sturgeon and the state-listed threatened American eel, blue sucker, channel darter, paddlefish, river darter and Tippecanoe darter. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. Two perennial streams were identified within the Project area. However, the Company does not propose any in-water work in a perennial stream. Therefore, impacts to fish species are not anticipated for the Project.
- The eastern hellbender, a state-listed endangered species and a federal species of concern, is within range of the Project area. However, DOW stated due to the location, and that there is no in-water work proposed in a perennial stream, this Project is not likely to impact this species.
- The Project is within the range of the state-listed endangered and federal species of concern timber rattlesnake. However, DOW stated due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species.
- The Project is also within the range of the state-listed endangered eastern spadefoot toad. The DOW recommends that an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat is present within the Project area. If suitable habitat is determined to be present; the DOW recommends that a presence/absence survey be conducted, or an avoidance/minimization plan be developed and implemented by the approved herpetologist.
- The Project is also within the range of the state-listed endangered green salamander. However, DOW stated due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species.
- The Project is also within the range of the state-listed threatened midland mud salamander. However, DOW stated due to the location, the type of habitat within the Project area, and the type of work proposed, the Project is not likely to impact this species.
- The Project is also within the range of the state-listed endangered Allegheny woodrat. However, DOW stated due to the location, the type of habitat within the Project area, and the type of work proposed, the Project is not likely to impact this species.
- One rare plant species, the tansy mustard has been previously found within the Project area. Due to the possible disruption of this species, The Division of Natural Areas and

Preserves recommends a pre-construction survey should be conducted to ensure that this species and any other rare species within the Project area are not impacted.

Table 8-4. Current Information on Species Potentially in the Project area

Common Name (Species Name)[a, b]	State Status [a]	Federal Status [b]	General Habitat Notes	Potential Suitable Habitat Observed
Indiana bat/ *Myotis sodalis*	E	E	Hibernacula = Caves and mines Maternity and foraging habitat = small stream corridors with well-developed riparian woods and upland forests. Roosting habitat = live trees and/or snags ≥3 inches dbh that have any exfoliating bark, cracks, crevices, hollows, and/or cavities.	No potentially suitable winter hibernacula were observed within the Project area. However, summer foraging and roosting habitat (early successional forest, second growth deciduous forest) was observed in the Project area.
Northern long-eared bat/ *Myotis septentrionalis*	E	E	Hibernates in caves and mines; swarms in surrounding wooded areas in autumn. During late spring and summer, roosts and forages in upland forests.	No potentially suitable winter hibernacula were observed within the Project area. However, suitable summer foraging and roosting habitat (early successional forest, second growth deciduous forest) was observed in the Project area.
Little Brown Bat/ *Myotis lucifugus*	E	NA	Uses a wide range of habitats and man-made structures for roosting, including buildings and attics. Less frequently, they use hollows of trees. Winter hibernation sites typically consist of caves, tunnels, abandoned mines. Foraging habitat for this species generally occurs over water, along the edges of lakes and stream or in woodlands near waterbodies (NatureServe 2022).	No potentially suitable winter hibernacula were observed within the Project area. However, summer foraging and roosting habitat (early successional forest, second growth deciduous forest) was observed in the Project area.
Tricolored Bat/ *Perimyotis subflavus*	E	PE	Found throughout Ohio and is associated with forested landscapes, foraging near trees and along waterways. Maternity and summer roosts usually occur in dead or live tree foliage, or in the south, in clumps of Spanish moss. Maternity colonies may also use tree cavities or man-made structures, such as buildings or bridges. Caves, mines, and rock crevices may be used as night roosts between foraging (NatureServe 2022).	No potentially suitable winter hibernacula were observed within the Project area. However, suitable summer foraging and roosting habitat (early successional forest, second growth deciduous forest) was observed in the Project area.
Eastern Spadefoot/ *Scaphiopus holbrookii*	E	N/A	Occur in areas of sandy, gravelly, or soft, light soils in wooded or unwooded terrain. On land, they range up to at least several hundred meters from breeding sites. When inactive, they remain burrowed in the ground. Eggs and larvae develop in temporary pools formed by heavy rains. Breeding sites include temporary pools and areas flooded by heavy rains (NatureServe 2022).	Potentially suitable habitat (early successional forest, agricultural fields) was observed within the Project area.
Timber Rattlesnake/ *Crotalus horridus*	E	SC	In the central Midwest, optimum habitat is a high, dry ridge with oak-hickory forest interspersed with open areas. Hibernacula are typically located in a rocky area where underground crevices provide retreats for	No suitable habitat was observed within the Project area.

Table 8-4. Current Information on Species Potentially in the Project area

Common Name (Species Name)[a, b]	State Status [a]	Federal Status [b]	General Habitat Notes	Potential Suitable Habitat Observed
			overwintering, such as a fissure in a ledge, a crevice between ledge and ground, and fallen rock associated or unassociated with cliffs (NatureServe 2022).	
Midland Mud Salamander/ *Pseudotriton montanus diastictus*	T	N/A	Muddy springs, slow floodplain streams, and swamps along slow streams; backwater ponds and marshes created by beaver activity (NatureServe 2022).	Potentially suitable habitat (slow floodplain streams) was observed within the Project area.
Eastern Hellbender/ *Cryptobranchus alleganiensis*	E	SC	Generally found in areas with large, irregularly shaped, and intermittent rocks and swiftly moving water, while they tend to avoid wider, slow-moving waters with muddy banks and/or slab rock bottoms (NatureServe 2022).	No suitable habitat was observed within the Project area.
Green Salamander/ *Aneides aeneus*	E	N/A	Damp (but not wet) crevices in shaded rock outcrops and ledges. Also found beneath loose bark and in cracks of standing or fallen trees; sometimes in or under logs on ground (NatureServe 2022).	No suitable habitat was observed within the Project area.
Allegheny Woodrat/ *Neotoma magister*	E	N/A	Typical habitat is rocky cliffs and talus slopes. These woordrats make midden mounds and stick piles among rocks, but secluded nest sites generally are not within stick houses (NatureServe 2022).	No suitable habitat was observed within the Project area.
Sheepnose/ *Plethobasus cyphyus*	E	E	Usually found in large rivers in current on mud, sand, or gravel bottoms at depth of 1-2 meters or more (NatureServe 2022).	No suitable habitat was observed within the Project area.
Little Spectaclecase/ *Villosa lienosa*	E	N/A	Typically inhabits small creeks to medium-sized rivers, usually along the banks in slower currents (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.
Fanshell/ *Cyprogenia stegaria*	E	E	Medium to large streams and rivers with moderate to strong current in coarse sand and gravel and depth ranging from shallow to deep (NatureServe 2022).	No suitable habitat was observed within the Project area.
Pink Mucket/ *Lampsilis orbiculata*	E	E	Large rivers in habitats ranging from silt to boulders, but apparently more commonly from gravel and cobble. Collected from shallow and deep water with current velocity ranging from zero to swift, but never standing pools of water (NatureServe 2022).	No suitable habitat was observed within the Project area.

Table 8-4. Current Information on Species Potentially in the Project area

Common Name (Species Name)[a, b]	State Status [a]	Federal Status [b]	General Habitat Notes	Potential Suitable Habitat Observed
Snuffbox/ *Epioblasma triquetra*	E	E	Occurs in medium-sized streams to large rivers generally on mud, rocky, gravel, or sand substrates in flowing water. Often deeply buried in substrate and overlooked by collectors (NatureServe 2022).	No suitable habitat was observed within the Project area.
Long-solid/ *Fusconaia maculata*	E	N/A	This mussel is found in the gravel substrates of shoals and riffles of large rivers, as well as impounded areas (NatureServe 2022).	No suitable habitat was observed within the Project area.
Elephant-ear/ *Elliptio crassidens*	E	N/A	An inhabitant of channels in large creeks to rivers with moderate to swift currents, primarily on sand and limestone or rock substrates (NatureServe 2022).	No suitable habitat was observed within the Project area.
Butterfly/ *Ellipsaria lineolata*	E	N/A	This mussel prefers stable substrate containing rock, gravel and sand in swift currents of large rivers (NatureServe 2022).	No suitable habitat was observed within the Project area.
Sharp-ridged Pocketbook/ *Lampsilis ovata*	E	N/A	Usually found in moderate to strong current, it can survive in standing water. The most suitable substrate consists of a mixture of gravel and coarse sand mixed with some silt or mud (NatureServe 2022).	No suitable habitat was observed within the Project area.
Clubshell/ *Pleurobema clava*	E	E	Small to medium-sized rivers and streams. It is found mostly in sand and fine gravel, and it deeply buried. This species is generally found in clean, coarse sand gravel in runs, often just downstream of a riffle, and cannot tolerate mud or slackwater conditions (NatureServe 2022)	Potentially suitable habitat (perennial stream) was observed within the Project area.
Washboard/ *Megalonaias nervosa*	E	N/A	This species is typically a large river species, living in the main channel and in some of the overbank areas of reservoirs, but in some instances, it may also become established in medium-sized and even small rivers. It is found in areas with a slow current with muddy to coarse gravel substrates (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.
Ohio Pigtoe/ *Pleurobema cordatum*	E	N/A	This mussel prefers strong currents of large rivers with substrates of sand and gravel, though is somewhat tolerant of lentic systems (NatureServe 2022).	No suitable habitat was observed within the Project area.
Ebonyshell/ *Fusconaia (Reginaia) ebenus*	E	N/A	Inhibits large rivers and prefers swift water and stable sandy or gravely shoals. A coarse sand and gravel substrate provides the most suitable habitat, although this species thrives in rivers composed of sand, silt, and mud (NatureServe, 2022).	No suitable habitat was observed within the Project area.

Table 8-4. Current Information on Species Potentially in the Project area

Common Name (Species Name)[a, b]	State Status [a]	Federal Status [b]	General Habitat Notes	Potential Suitable Habitat Observed
Pyramid Pigtoe/ *Pleurobema rubrum*	E	N/A	This mussel is a riffle and shoal species that prefers the swift currents of coarse gravel, sand, and mud substrates within medium to large rivers (NatureServe 2022).	No suitable habitat was observed within the Project area.
Monkeyface/ *Theliderma (Quadrula) metanevra*	E	N/A	This is a species of medium to large rivers typically found in runs with a substrate or mixed sand or gravel (NatureServe 2022).	No suitable habitat was observed within the Project area.
Deertoe/ *Truncilla truncata*	SC	N/A	Usually occurring in fine gravel mixed with sand and mud. It is also considered a generalist in terms of the size of rivers it inhabits. It is more common in medium-sized rivers but may become numerous in large rivers, where it can live at depths of 12 to 18 feet. It will also establish viable populations in lakes lacking current (NatureServe, 2022).	No suitable habitat was observed within the Project area.
Wartyback/ *Cyclonaias nodulata*	E	N/A	This species can occur in medium to large rivers at depths of up to 15-18 feet on a sand and mud substrate (NatureServe 2022).	No suitable habitat was observed within the Project area.
Fawnsfoot/ *Truncilla donaciformis*	T	N/A	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 2022)	No suitable habitat was observed within the Project area.
Rayed Bean/ *Villosa fabalis*	E	E	Generally known from smaller headwater creeks, but records exist in larger rivers. They are usually found in or near shoal or riffle areas, and in the shallow wave-washed areas of glacial lakes. Substrates typically include gravel and sand (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.
Black Sandshell/ *Ligumia recta*	T	N/A	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 2022).	No suitable habitat was observed within the Project area.
Purple Cat's Paw/ *Epioblasma obliquata*	E	E	Inhabits large river systems in sand and gravel substrates in runs and riffles (NatureServe 2022).	No suitable habitat was observed within the Project area.
Yellow Sandshell/ *Lampsilis teres*	E	N/A	Occurs in medium-sized creeks to large rivers, often in slower current areas of stream borders (NatureServe 2022).	No suitable habitat was observed within the Project area.

Table 8-4. Current Information on Species Potentially in the Project area

Common Name (Species Name)[a, b]	State Status [a]	Federal Status [b]	General Habitat Notes	Potential Suitable Habitat Observed
Northern Riffleshell/ *Epioblasma torulosa rangiana*	E	E	Preferred habitat appears to require swiftly moving water. The high oxygen concentrations in swift streams may be necessary for survival. It is a species of riffle areas of smaller streams, and as such has fared better than larger river species, which have been heavily impacted by dredging and impoundment (NatureServe 2022).	No suitable habitat was observed within the Project area.
Threehorn Wartyback/ *Obliquaria reflexa*	T	N/A	This species is typical of the large rivers where there is moderately strong current and a stable substrate composed of gravel, sand, and mud (NatureServe 2022).	No suitable habitat was observed within the Project area.
Bigeye Shiner/ *Notropis boops*	E	N/A	Flowing pools of moderately clear creeks and small to medium rivers with large permanent pools over bottom of clear sand, gravel, or rock. Often at stream margin in beds of emergent vegetation (NatureServe 2022).	No suitable habitat was observed within the Project area.
Goldeye/ *Hiodon alosoides*	E	N/A	Habitat includes quiet turbid water of medium to large lowland rivers, small lakes, ponds, fringe wetlands and muddy shallows of larger lakes. Occurs in shallow firmbottomed sites in river pools or backwaters or over gravel shoals in tributary streams (NatureServe 2022).	No suitable habitat was observed within the Project area.
Shoal Chub/ *Macrhybopsis hyostoma*	E	N/A	This species is usually found in large, low gradient rivers over broad, shallow, fast riffles over firm gravel, though it is often in fast water over shifting sand. Typically found in waters with high turbidity and dissolved solids (NatureServe 2022).	No suitable habitat was observed within the Project area.
Mountain Madtom/ *Noturus alosoides*	E	N/A	Small to large rivers, in fast flowing, clear water sections over sand, gravel, and rubble, often near vegetation. Under rocks, in crevices, or under other cover by day. May move into moderate flow areas to spawn; eggs are laid under rocks (NatureServe 2022).	No suitable habitat was observed within the Project area.
Northern Madtom/ *Noturus stigmosus*	E	N/A	Typical habitat includes large creeks and small rivers with clear to turbid water and moderate current; this madtom avoids extremely silty situations; it occurs in areas with little cover other than tree limbs and debris. This species occurs in streams with shifting sand and mud bottom and in streams with swift rocky riffles (NatureServe 2022).	Potentially suitable habitat (perennial stream) was observed within the Project area.
Blue Catfish/ *Ictalurus furcatus*	SC	N/A	Deep areas of main channels and backwaters if medium to large rivers; it occurs on the bottom during daylight hours in deep areas and moves into swifter water at night to feed (NatureServe 2022).	No suitable habitat was observed within the Project area.

Table 8-4. Current Information on Species Potentially in the Project area

Common Name (Species Name)[a, b]	State Status [a]	Federal Status [b]	General Habitat Notes	Potential Suitable Habitat Observed
Shortnose Gar/ *Lepisosteus platostomus*	E	N/A	Open slow silty or clear-water rivers, wave-washed shoals of large lakes, quiet creek pools and river backwaters. Usually at water surface, often near vegetation and submerged logs. Larvae attach to vegetation or debris (NatureServe 2022).	No suitable habitat was observed within the Project area.
American Eel/ *Anguilla rostrata*	T	N/A	Found at times in any perennial stream in Ohio and in Lake Erie. They appear most often in moderate or large rivers with continuous flow and moderately clear water. While in fresh water, eels are secretive and hide in deep pools around cover, sometimes burying themselves during the day and coming out to feed at night, preferably on fish or crayfish (ODNR Division of Wildlife 2020).	No suitable habitat was observed within the Project area.
Blue Sucker/ *Cycleptus elongatus*	T	N/A	Habitat includes the largest rivers and lower portions of major tributaries. Usually occurs in channels and flowing pools with moderate current (NatureServe 2022)	No suitable habitat was observed within the Project area.
Channel Darter/ *Percina copelandi*	T	N/A	Habitat includes warm, low and moderate gradient rivers and large creeks in areas of moderate current. This darter usually is found over sand and gravel substrates; it prefers clear water and silt-free bottoms (NatureServe 2022).	No suitable habitat was observed within the Project area.
Gilt Darter/ *Percina evides*	E	N/A	Generally, in clear, small to medium rivers with clean, silt free bottoms and permanently strong flow. Usually in moderate to fast, deep riffles and pools, over gravel, rubble, and small boulders. Occupies deeper pools in winter (NatureServe 2022).	No suitable habitat was observed within the Project area.
Paddlefish/ *Polydon spathula*	T	N/A	Habitat includes slow-flowing water of large and medium sized rivers, river-margin lakes, channels, oxbows, backwaters, impoundments with access to spawning areas. This fish prefers depths greater than 1.5 m; it seeks deeper water in late fall and winter. Individuals may congregate near human-made structures that create eddies and reduce current velocity (NatureServe 2022).	No suitable habitat was observed within the Project area.
River Darter/ *Percina shumardi*	T	N/A	Large rivers and lower portions of tributaries; deep chutes and riffles where current is swift and bottom is coarse gravel or rock (NatureServe 2022).	No suitable habitat was observed within the Project area.

Table 8-4. Current Information on Species Potentially in the Project area

Common Name (Species Name)[a, b]	State Status [a]	Federal Status [b]	General Habitat Notes	Potential Suitable Habitat Observed
Tippecanoe Darter/ *Etheostoma tippecanoe*	T	N/A	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 2020).	No suitable habitat was observed within the Project area.
Popeye Shiner/ *Notropis ariommus*	E	N/A	Habitat includes warm, relatively clear flowing waters of large creeks and small to medium rivers; these shiners are closely associated with gravel substrate; typically they occur in runs, backwaters near appreciable current, and the head of pools (NatureServe 2022).	No suitable habitat was observed within the Project area.
Shovelnose Sturgeon/ *Scaphirhynchus platorynchus*	E	N/A	Deep channels and embayments of large turbid rivers; often over sand mixed with gravel or mud in areas with strong current (NatureServe 2022).	No suitable habitat was observed within the Project area.
Northern Brook Lamprey/ *Ichthyomyzon fossor platorynchus*	E	N/A	Clean, clear gravel riffles and runs of small rivers; this species usually does not occur in large rivers or small brooks. Usually it occurs over gravel or sand-silt bottoms in moderately warm water (NatureServe 2022).	No suitable habitat was observed within the Project area.
Tansy Mustard/ *Descurainia pinnata*	SC	N/A	Found in sandy or gravelly areas with soil disturbance, such as roadsides and along railroads, but can occur in less disturbed habitat as well (Minnesota Wildflowers 2022).	Potential suitable habitat (early successional forest, roadsides, industrial land) was observed within the Project area.
Riverbank Paspalum/ *Paspalum repens*	T	N/A	Found floating in sluggish streams or standing water or creeping in wet places (NatureServe 2022).	No suitable habitat was observed within the Project area.

*Status key: E=Endangered; T=Threatened; PE=Potentially Endangered; SC=Species of Concern

**The information is based on the literature review response information from ODNR and USFWS and is study area/project specific

Notes:

a ODNR-DOW, 2022a

b USFWS, 2022a

(b) Commercial Species

Commercially important species consist of those hunted or trapped for fur or other byproducts. The following are commercially important species that may be found in the Project area. This information was obtained from ODNR-DOW Mammals of Ohio field guide (ODNR-DOW, 2022e).

Coyote (*Canis latrans*): Historically, coyotes prefer open territory, but in Ohio, they have adapted to various habitat types. Coyotes are a very adaptable species that have prospered despite the expanding human impact. This species could be found near or in the Project area; however, they are diurnal and skittish animals so it is unlikely they will be impacted by construction activities.

Raccoon (*Procyon lotor*): The raccoon is widespread in Ohio, even in many suburban and urban areas. Raccoons prefer wooded areas with water nearby. This species could be found near or in the Project area; however, they are a nocturnal species so it is unlikely they will be impacted by construction activities.

Red fox (*Vulpes vulpes*): The red fox inhabits a wide range of habitats including mixed, cultivated, and wooded areas. This species could be found near or in the Project area; however, they are nocturnal animals so it is unlikely they will be impacted by construction activities.

Striped skunk (*Mephitis mephitis*): The skunk is an adaptable animal that occupies both rural and suburban areas. Their dens may be under buildings, in open fields, on hillsides, or under logs in the woods, which may have been self-created or formerly used by other animals. This species could be found near or in the Project area; however, they are nocturnal animals so it is unlikely they will be impacted by construction activities.

Virginia opossum (*Didelphis virginiana*): This marsupial's preferred habitat is an area interspersed with woods, wetlands, and farmland; however, they are an adaptable animal that can also be found in urban and suburban areas. This species could be found near or in the Project area; however, they are nocturnal animals so it is unlikely they will be impacted by construction activities.

(c) Recreational Species

Recreational terrestrial species consist of those hunted as game. Recreational species that may be found in the project area include the following. This information was obtained from ODNR-DOW Hunting and Trapping Regulations (ODNR-DOW, 2020b).

(i) Fowl

American crow (*Corvus brachyrhynchos*): The American crow is found in all Ohio counties. They prefer habitats with open fields and trees. American crows could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

Geese: Several geese species can be found in Ohio, typically during migration: snow geese (*Chen caerulescens*), greater white-fronted geese (*Anser albifrons*), cackling geese (*Branta hutchinsii*), and brant (*Branta bernicla*). The Canada goose (*Branta canadensis*) is commonly found throughout Ohio,

both as residents and migrants. Geese species could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

Mourning dove (*Zenaida macroura*): Mourning doves are found near rural and suburban residences, nesting in shrubs and trees. They are also frequently found in rural farmlands nesting in fencerows and edge habitats. Mourning doves could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

(ii) Mammals

Eastern cottontail rabbit (*Sylvilagus floridanus*): This species is found in both rural and urban areas. They prefer open areas bordered by thickets or brush areas. Rabbits could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

Gray, red, and fox squirrels (*Sciurus carolinensis, Tamiasurius hudsonicus,* and *Sciurus niger*, respectively): The fox squirrel is primarily an inhabitant of isolated woodlots, 10 to 20 acres in size with a sparse understory. The eastern gray squirrel prefers more extensive woodland areas. The red squirrel prefers coniferous and mixed forests. Squirrels could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

(iii) Game Fish

There are multiple surface water habitats that may contain diverse game fish within the Project area. Given the project type, size, and location, ODNR does not anticipate the Project will adversely impact proposed game fish species (ODNR 2022a). BMPs will be utilized near waterbodies to limit overall disturbance to game fish habitat.

(2) Construction Impacts on Identified Species

Based on the nature of the proposed Project activities and habitat characteristics of the Project area, construction impacts to protected species are not anticipated. Winter tree clearing (October 1 through March 31) will be conducted to avoid impacts to bat species and no in-water work will be conducted for this Project. The construction impact on other specific identified species (recreational and commercial) is expected to be minor because equivalent habitat that would be impacted during construction exists immediately adjacent to the construction ROW, and the identified species are mobile.

(3) Operation and Maintenance Impacts on Identified Species

Minimal impacts are anticipated to protected wildlife during operation and maintenance of the transmission line. Clearing of secondary growth vegetation will be required along some portions of the ROW. Operational activities and periodic maintenance of the ROW are not anticipated to impact wildlife significantly because of the minimal permanent ground disturbance and available adjacent habitat available.

(4) Mitigation Procedures

No areas of concern were identified during the informal consultation process with USFWS and ODNR. If the Company should conduct any tree clearing outside the approved timeframe, October 1 through March 31, the Company will coordinate with these agencies to develop appropriate mitigation measures. The mitigation measure will be implemented if the area of special concern is within the route approved by the OPSB.

(D) SITE GEOLOGY

(1) Site Geology

The Project area is within the Shawnee-Mississippian Plateau Region of the Allegheny Plateau Section of the Appalachian Plateaus Province. This Region is characterized by highly dissected plateaus of fine and coarse-grained rock sequences and high relief. It is noted that within the Project area are quaternary deposits at the surface. The bedrock of this Region is of Devonian and Mississippian-age shales, siltstones and sandstones (ODNR-DGS, 1998).

Two bedrock units underlay the Study Area (ODNR DGS, 2022):

- Logan and Cuyahoga Formations, Undivided (Unit Code Mlc) – *a gray to brown shale interbedded with minor sandstone and siltstone grading to massive sandstone (the Black hand Sandstone)*. This unit occurs in the northern and western sections of the Study Area (ODNR, 2022).
- Breathitt Group (Unit Code IPb) – *shale, siltstone, sandstone, and coal* (U.S. Department of Interior National Park Service, 2011). This unit occurs in the eastern sections of the Study Area.

Four Surficial Geology Units are of importance in the Study Area (ODNR DGS, 2022):

- Low-level valley train outwash, Late Wisconsinian age (O3); this encompasses the northern and central Study Area
- Alluvium and alluvial terraces (a); this encompasses a small area in the far southwestern corner of the Study Area
- Lacustrine Deposits (Kl); this encompasses a small part of the eastern corner of the Study Area
- Cenozoic Colluvium (Cc); recent deposits in the southern parts of the Study Area

(2) Slopes and Foundation Soil Suitability

Slopes within the Project area vary, and generally are steeper to the east. Approximately 25% of the Project area has Map Soil Units with slopes greater than 15 percent. The Map Soil Units with the highest slope percentage include Elkinsville silt loam, 25 to 40 percent slopes (EkE), Ernest silt loam, 15 to 25 percent slopes (ErD), Shelocta silt loam, 15 to 25 percent slopes (SbD), and Shelocta-Wharton-Latham association, steep (SWLZE1).

Parent material of the soils consists of alluvium, colluvium, a silty loess, residuum, and a fine-loamy colluvium. There are 18 map soil units within the Study Area, one of which is Water.

The USGS NRCS assigns numerical ratings indicating a negative impact/limitations of a particular soil. Soils with a high rating (indicating limitations) of frost action include Elkinsville silt loam, 1 to 8 percent slopes (EkB), Elkinsville silt loam, 25 to 40 percent slopes (EkE), Elkinsville-Urban land complex, 1 to 8 percent slopes (EmB), Nolin silt loam, 0 to 3 percent slopes, occasionally flooded (No), Omulga silt loam, 2 to 6 percent slopes (Omu1B1), Omulga silt loam, 6 to 12 percent slopes (Omu1C1), Peoga silt loam, rarely flooded (Pe), Sciotoville silt loam, 1 to 8 percent slopes (SacB), Shelocta-Wharton-Latham Association, steep (SQLZE1), Tilsit-Coolville Association, undulating (TcB), and Weinback silt loam, 0 to 3 percent slopes (WeA). Most other soil map units have a moderate limitation due to frost action.

Soil map units containing a member of the Elkinsville group (EkB, EkE, EmB), the Nolin Silt Loam (No), Omulga group (Omu1B1 and Omu1C1), the Peoga silt loam (Pe), Wharton group (SWLZE1), and Tilsit group (TcB) have limitations due to low strength. Slippage is a limitation of the following soil units: EkE, SWLZE1, and units areas with slope noted above have slope limitations (USDA NRCS, 2022).

To obtain further site-specific details on the suitability of the soils for foundation construction, it is recommended that detailed engineering design and geotechnical soil borings be conducted. Engineering design and geotechnical test drilling will be completed as part of final engineering design.

At a minimum, geotechnical soil borings will provide the following information to be used for developing final engineering designs as needed:

(1) Subsurface Soil Properties
(2) Static Water Level
(3) Rock Quality Description
(4) Percent Recovery
(5) Depth and Description of Bedrock Contact

The Company anticipates that foundations will only be required at some angle structures that will be ultimately determined during the engineering design. When required, foundations will be engineered based on the results of geotechnical soil borings to ensure they are in locations considered suitable based on soil and rock properties and surface slope.

(E) ENVIRONMENTAL AND AVIATION REGULATION COMPLIANCE

(1) Licenses, Permits, and Authorizations Required for the Facility

The Company anticipates submitting a Notice of Intent for coverage under the OEPA General NPDES Permit. The Company also anticipates multiple local permits will be required.

(2) Construction Debris

The site will be kept clean of debris resulting from the work. Debris associated with construction of the proposed transmission line will likely include conductor scrap, construction material packaging including cartons, crates, conductor reels and wrapping, and used stormwater erosion control materials. Conductor reels and other materials with salvage value will be removed from the construction area for reuse or salvage. Construction debris will be disposed of in accordance with state and federal requirements in an OEPA-approved landfill or other appropriately licensed and operated facility. Where vegetation must be cleared, the resulting brush will be removed or as requested by individual property owners.

(3) Stormwater and Erosion Control

A SWPPP will be prepared, BMPs implemented to minimize soil erosion and sedimentation and other pollutant discharges, and these will be made available onsite during Project construction. The SWPPP will include the following General Conditions, at a minimum:

Erosion and Sediment Controls

Implementation of erosion and sediment control practices will be based on the OEPA General Permit OHC000005 (effective April 21, 2018) using standards from the ODNR *Land Development Rainwater and Land Development Manual*, Third Edition 2006 (updated on March 3, 2014, or current edition) for the potential discharge of stormwater from construction sites.

Wetlands, streams, and other environmentally sensitive areas will be clearly marked before the start of clearing or construction. No construction or access will be permitted in these areas unless clearly specified in the SWPPP. Based on a field delineation of the construction area, there are no wetlands, streams, or other environmentally sensitive areas in the proposed construction area.

Inlet Protection: Stormwater inlets will be protected using either a filter sock barrier or a geotextile-rock barrier to prevent sediment and debris from entering the stormwater system. The following installation and maintenance guidelines will be followed:

- Inlet protection BMPs will be installed in active construction areas no earlier than 7 days prior to construction to prevent premature debris build-up.
- Inlet protection BMPs will be inspected at least once every 7 days and within 24 hours after any storm event greater than 0.5 inch of rain per 24-hour period to ensure debris and sediment does not clog the inlet and that stormwater is still able to enter the inlet. Any debris is to be removed immediately on discovery.

Soil Stabilization: Disturbed areas that were previously vegetated prior to construction that remain unworked for more than 21 days will be stabilized with seed and mulch no later than 14 days after the last construction in that area.

Maintenance and Inspection: Erosion and sediment control practices will be inspected at least once every 7 calendar days and within 24 hours after any storm event greater than 0.5 inch of rain per 24-hour period.

The Company will maintain erosion control measures in good working order. If a repair is necessary, it will be initiated within 24 hours of report. Silt fencing will be inspected for depth of sediment, tears, and assurance fabric is securely attached to the fence posts, and to ensure that the fence posts are firmly in the ground. Seeded areas will be inspected for evidence of bare spots or washouts. Permanent records of the maintenance and inspection must be maintained throughout the construction period. Records will include, at a minimum, the name of the inspector, major observations, date of inspection, certification of compliance, and corrective measures taken.

(4) Disposition of Contaminated Soil and Hazardous Materials

All materials stored onsite will be kept in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Products will be kept in their original containers with the original manufacturer's label. Manufacturer's recommendations for proper use and disposal will be followed. MSDS or Safety Data Sheets (SDS) will be retained and available onsite at all times.

The Project requires that a Spill Prevention Plan be created and available for review onsite. This Spill Prevention Plan will cover proper handling techniques for all electrical equipment, materials and construction equipment that require a MSDS. The Company also requires its employees and contractors to follow all federal and state-mandated material-handling requirements.

The following General Conditions will also be included in the SWPPP to address disposition of contaminated soil and hazardous materials generated or encountered during construction:

Spill Prevention

- The following spill prevention methods and procedures are proposed:
- All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled.
- Secondary containment will be provided for all onsite fuel storage tanks required during construction.
- All sanitary waste will be collected in portable units and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations.
- All spills will be cleaned up immediately after discovery. Manufacturer's recommended methods for spill cleanup will be followed. Materials and equipment necessary for spill cleanup will be kept in a designated storage area onsite.
- Spills will be reported to the appropriate government agency as required.

- Suspected hazardous materials encountered during construction will be reported to the regional environmental coordinator by the transmission construction representative. In addition, the Project Manager will be notified.

The Company follows an internal Spill Prevention Notification Plan that is closely aligned to the Company's Spill Response and Cleanup – Field Guide. This Spill Response and Cleanup – Field Guide covers the following procedures:

- Oil/Polychlorinated Biphenyl (PCB) Spill Response and Cleanup Procedure
- When to Report an Oil/Polychlorinated Biphenyl (PCB) Spill to the Region Environmental Coordinator
- Hazardous Substance Spill Response Procedure
- Region Environmental Coordinator Contact List

This field guide outlines spill response and cleanup procedures as well as the reporting that is required. The Spill Response and Cleanup – Field Guide will be available upon request.

(5) Maximum Height of Above Ground Structures

The height of the tallest anticipated aboveground structure and construction equipment is designed to be approximately 105 feet. The nearest airport is the Greater Portsmouth Regional Airport located approximately 10 miles north of the Preferred and Alternate routes at the point near the entry into the Sweetgum Substation. The Ashland Airport in Kentucky is also located approximately 10 miles south of the Althea Substation. There are no heliports within proximity to the Study Area.

The Federal Aviation Administration (FAA) Form 7460-1, "Notice of Proposed Construction or Alteration," is used for FAA notification. This can be filed electronically or by standard U.S. mail. A 7.5 minute quadrangle topographic map showing the proposed construction must be attached to the completed Form 7460-1. The Form 7460-1 must be submitted 45 days prior to the proposed start of construction.

Additionally, a permit from the ODOT, Office of Aviation, must be obtained prior to the start of any construction on or near airports in Ohio that are open to the public. A duplicate of the federal filing fulfills the state permit application requirements as set forth in O.A.C. 5501:1-10-06.

(6) Dusty or Muddy Conditions Plan

<u>Dust Control</u>

The site and surrounding areas will be kept free from dust nuisance resulting from site activities. During excessively dry periods of active construction, dust suppression will be implemented where necessary through irrigation, mulching, or application of tackifier resins.

Excessive Muddy Soil Conditions

Construction entrances will be established and maintained to a condition that will prevent tracking or flowing of sediment onto public ROW. Accumulated sediment spilled, dropped, washed, or tracked onto public ROWs will be removed as soon as practical.

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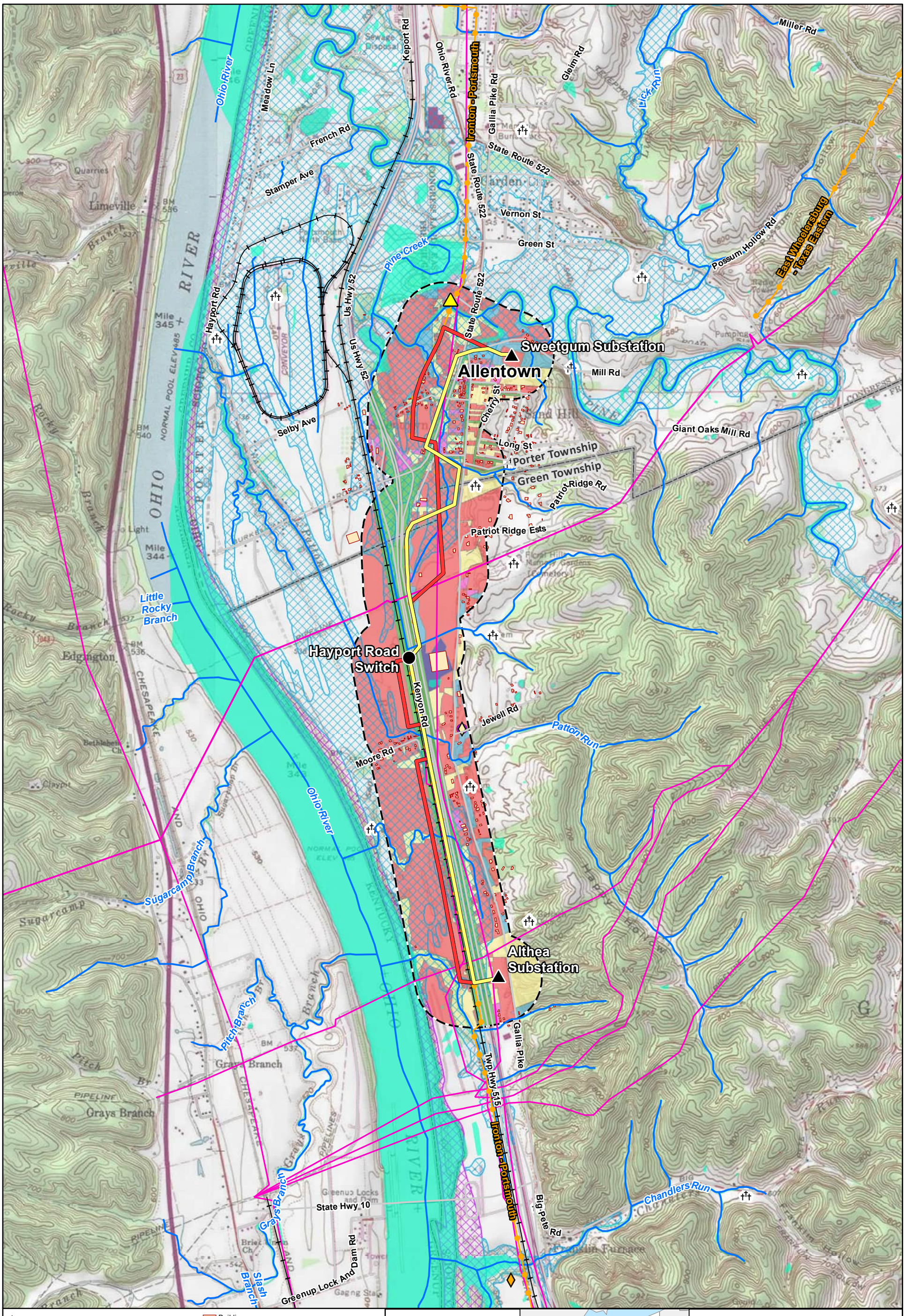
Figures


Ironton - Portsmouth
State Route 522
Sweetgum Substation
Allentown
Mill Rd
Giant Oaks Mill Rd
Cherry St
Midway Ave
Long St
Grove St
Patriot Ridge Rd
Eagle Trace Dr
Patriot Ridge Ests
State Route 522
Hayport Rd
Selby Ave
Burkes Ln
Gerlach Rd
Kenyon Rd
Hayport Road Switch
Ohio River
Gallia Pike
Jewell Rd
Moore Rd
Us Hwy 52
Us Hwy 52
Ohio River
Althea Substation
Ironton - Portsmouth
Twp Hwy 515
Proposed Substation
Existing Switch
Existing Substation
Preferred Route
Alternate Route
Existing Transmission Line
Roadway
Railroad
Base Map Source:
ESRI World Imagery
(2021)
Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
1:15,000
January 06, 2023
OHIO
Project Location
Figure 2-1
Project Overview
AEP OHIO TRANSMISSION COMPANY
Althea-Sweetgum 138-kV
Transmission Line Project
Scioto County, OH
0
1,000
2,000
Feet


Ohio River
Meadow Ln
Keport Rd
Ohio River Rd
Ironton - Portsmouth
Gallia Pike Rd
Gleim Rd
Lick Run
Miller Rd
French Rd
Stamper Ave
State Route 522
Vernon St
Green St
Pine Creek
Possum Hollow Rd
East Wheelersburg - Texas Eastern
Hayport Rd
Us Hwy 52
Selby Ave
Sweetgum Substation
Allentown
Mill Rd
Cherry St
Long St
Giant Oaks Mill Rd
Porter Township
Green Township
Patriot Ridge Rd
Patriot Ridge Ests
Little Rocky Branch
Hayport Road Switch
Kenyon Rd
Jewell Rd
Patton Run
Moore Rd
Ohio River
Sugarcamp Branch
Althea Substation
Pitch Branch
Grays Branch
Gallia Pike
Twp Hwy 515
Ironton - Portsmouth
State Hwy 10
Big Pete Rd
Chandlers Run
Slash Branch
Greenup Lock And Dam Rd
Proposed Substation
Existing Switch
Existing Substation
Historic Structures
NRHP Structure
OHI Structure
Cemetery
Preferred Route
Alternate Route
Existing Transmission Line
Pipeline
Roadway
Railroad
NWI Wetland
100-yr Floodplain
Floodway
Building
1000' Buffer
Land Cover
Agricultural
Commercial
Industrial
Institutional
Residential
Roal/Rail ROW
Base Map Source:
ESRI World Imagery
(2021)
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FIPS 3402 (US Feet)
Datum: NAD 1983
1:24,000
January 06, 2023
OHIO
Project Location
Figure 7-1
Land Use Map
AEP OHIO TRANSMISSION COMPANY
Althea-Sweetgum 138-kV
Transmission Line Project
Scioto County, OH
0
1,000
2,000
Feet

Sweetgum Substation

Allentown

8-2 a

Hayport Road Switch

8-2 b

Althea Substation

8-2 c

Legend

- Proposed Substation
- Existing Switch
- Existing Substation
- Preferred Route
- Alternate Route
- Index Page

Base Map Source:
ESRI World Imagery
United States Geological Service (USGS)

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January 06, 2023

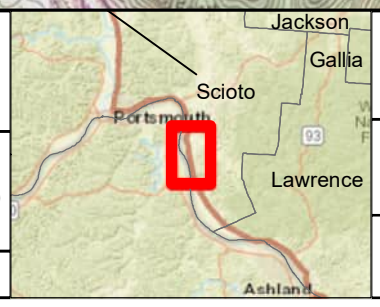

Figure 8-1
Ecological Overview Map

AEP OHIO TRANSMISSION COMPANY

Althea-Sweetgum 138-kV Transmission Line Project
Scioto County, OH

0 1,000 2,000 3,000
Feet

Ironton - Portsmouth
State Route 522
Earwood Ln
Pine Creek
Mill Rd
Sweetgum Substation
Allentown
High St
Hunt Ln
Us Hwy 52
Carter St
Midway Ave
Cherry St
Long St
County Hwy 257
Short St
Twp Hwy 515
State Route 522
Grove St
State Hwy 522
International Ln
Callia Pike
Hayport Rd
Patriot Ridge Rd
Kenyon Rd
Ironton - Portsmouth
Patriot Ridge Ests

- Proposed Substation
- Existing Substation
- Proposed Structure Location
- Preferred Route
- Alternate Route
- Preliminary Access Road
- Existing Transmission Line
- Roadway
- Railroad
- NHD Stream
- Delineated Stream Centerline
- Drainage Feature
- NWI Wetland
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated PSS Wetland
- Survey Area
- Deciduous Forest Area
- Herbaceuous Area
- Slopes Greater than 12%
- 1000' Buffer

Base Map Source:
ESRI World Imagery
United States Geological Service (USGS)

Coordinate System:
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January 06, 2023

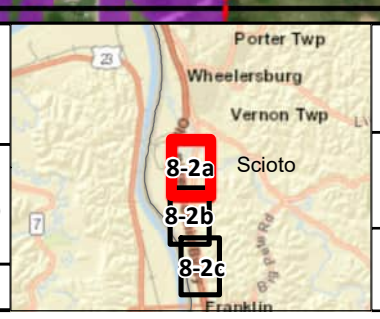

Figure 8-2 a
Delineated Wetlands and Waterbodies Map

AEP OHIO TRANSMISSION COMPANY

Althea-Sweetgum 138-kV Transmission Line Project
Scioto County, OH

0 250 500 750 1,000
Feet

Patriot Ridge Ests
Ironton-Portsmouth
Hayport Road Switch
Patton Run
Kenyon Rd
Us Hwy 52
Us Hwy 52
Gallia Pike
Jewell Rd
Moore Rd
Patton Run

Existing Switch
Proposed Structure Location
Preferred Route
Alternate Route
Preliminary Access Road
Existing Transmission Line
Roadway
Railroad
NHD Stream
Delineated Stream Centerline
Drainage Feature
NWI Wetland
Delineated PEM Wetland
Survey Area
Deciduous Forest Area
Slopes Greater than 12%
1000' Buffer

Base Map Source:
ESRI World Imagery
United States Geological Service (USGS)

Coordinate System:
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Datum: NAD 1983
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January 06, 2023

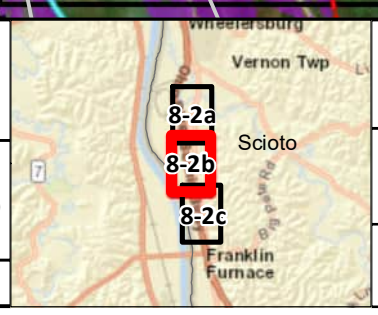

Figure 8-2 b
Delineated Wetlands and Waterbodies Map

AEP OHIO TRANSMISSION COMPANY

Althea-Sweetgum 138-kV Transmission Line Project
Scioto County, OH

0 250 500 750 1,000
Feet

Kenyon Rd
Us Hwy 52
Us Hwy 52
Callia Pike
Althea
Substation
Ironton - Portsmouth
Twp Hwy 515

Proposed Substation
Proposed Structure Location
Preferred Route
Alternate Route
Preliminary Access Road
Existing Transmission Line
Roadway
Railroad

NHD Stream
Delineated Stream Centerline
Drainage Feature
NWI Wetland
Delineated PEM Wetland
Delineated PSS Wetland
Survey Area
Deciduous Forest Area
Slopes Greater than 12%

1000' Buffer

Base Map Source:
ESRI World Imagery
United States Geological Service (USGS)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
1:6,000

January 06, 2023

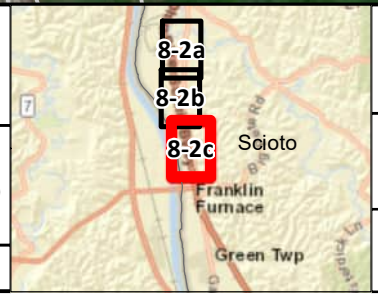

Figure 8-2 c
Delineated Wetlands and Waterbodies Map

AEP OHIO TRANSMISSION COMPANY

Althea-Sweetgum 138-kV Transmission Line Project
Scioto County, OH

0 250 500 750 1,000
Feet

Appendix 4-1
Siting Study

Siting Study

Althea-Sweetgum 138-kV Transmission Line Project

Ohio Power Siting Board
Case No. 22-0857-EL-BTX

Prepared for:

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY™

Submitted to:

American Electric Power

Prepared by:

Jacobs Engineering Group
2 Crowne Point Court
Cincinnati, Ohio 45241

Jacobs

December 2022

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Key Terminology

Alternative Routes	Assemblage of Study Segments that form routes for analysis and comparison.
Conceptual Routes	Initial routes for the project that adhere to a series of general siting and technical guidelines.
Constraints	Specific areas that should be avoided to the extent reasonably practical during the route development and site selection process.
Distribution Line	An electric line that delivers power from a substation to households and businesses.
Diversion	A minor adjustment to the existing route where no other alternative is considered.
Encroachment	Any structure or activity within an existing right-of-way that could interfere with the safe, reliable operation of transmission facilities is called an encroachment and is prohibited under the terms of a right-of-way.
Endpoints	The project starting and ending point(s) ("Project Endpoints), which may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers.
Focus Area	Areas along the existing route where rebuilding may not be feasible due to the presence of constraints.
Greenfield	New transmission line route or substation site constructed in an area or along a route where no previous substation or transmission line route existed.
Incompatible Use	Any structure or activity in close proximity to a transmission line that could interfere with the safe, reliable operation of transmission facilities.
Land Use	Describes the human use of the land and activities at a given location such as agricultural, residential, industrial, mining, commercial, and recreational uses. It differs from land cover which only describes the physical characteristics (summarized from EPA.gov).
Opportunity Feature(s)	Areas or existing linear features along which the transmission line may have less disruption to area land uses and the natural and cultural environment.
Project	The proposed transmission facilities studied in the siting report.
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 safe, timely, and reliable manner.

Segment Endpoint	The intersection of two or more Study Segments.
Siting Team	A multidisciplinary team of experts in transmission line routing, environmental impact assessment, 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.
Study Segment Network	The assemblage of study segments between project endpoints.
Substation or Station	Substations or stations are facilities that transform bulk electric voltage down to distribution levels and/or provide protection and controls for the transmission electric grid. Typical equipment includes switches, circuit breakers, buses, and transformers.
Substation Study Site	Potential substation locations.
Switching Station	A particular type of substation without transformers and cannot increase or reduce the voltage.
Tap Point	The location where power is tapped from an existing transmission line to source a substation or customer.
Transmission Line	An electric line that operates at 69 kilovolts and/or above and has the purpose of moving power from a generation facility to a substation or between substations.
Transmission Line Extension	An electric transmission line from a tap point on an existing transmission line to a substation or customer.

ACRONYMS

AEP	American Electric Power
AEP Ohio Transco	American Electric Power Ohio Transmission Company, Inc.
CECPN	Certificate of Environmental Compatibility and Public Need
the Company	American Electric Power Ohio Transmission Company, Inc.
FEMA	Federal Emergency Management Agency
GIS	geographic information system
GPS	global positioning system
kV	kilovolt
NERC	North American Electric Reliability Corporation
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
ODNR	Ohio Department of Natural Resources
OH-	Ohio Highway
OHPO	Ohio Historic Preservation Office
OPSB	Ohio Power Siting Board
Project	Althea - Sweetgum Transmission Line Project
ROW	right-of-way
SR-	State Route
US-	U.S. Highway
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 Project Description

As part of the Wheelersburg Area Improvements Project, American Electric Power (AEP) Ohio Transmission Company, Inc. (AEP Ohio Transco or the Company) is proposing to construct approximately 3 miles of new 138-kilovolt (kV) overhead electric transmission line connecting the proposed Althea Substation to Sweetgum Substation. A single circuit 138-kV line will be constructed from the planned Sweetgum Substation to the existing Hayport Road Switch. A double circuit (1-138-kV and 1-69-kV) line will be constructed from Hayport Road Switch to the planned Althea Substation. This project is in Porter and Green Townships, Scioto County, Ohio, and referred to as the Althea - Sweetgum Transmission Line Project (Project).

The Wheelersburg Area Improvements Project will address the current overload to the existing Ironton-Portsmouth 69-kV Transmission Line between AEP's Millbrook Park and Franklin Furnace substations. The Ironton-Portsmouth 69-kV Transmission Line was constructed in 1917 and needs an upgrade because of declining asset health and an increase in infrastructure development within the area. The area surrounding the Ironton-Portsmouth 69-kV Transmission Line has developed significantly since its installation, so a rebuild of this transmission line is not feasible because of multiple right-of-way (ROW) encroachments and land use impacts. To avoid impacts on surrounding land uses and provide a more robust utility infrastructure, the Company is proposing to retire approximately 11.3 miles of the existing Ironton-Portsmouth 69-kV Transmission Line between Millbrook Park and Franklin Furnace. In addition to the Project, the Company plans to complete the following:

- Upgrade equipment at the existing Millbrook Park Substation.
- Construct a new greenfield substation (referred to as the Cottrell Substation) along the existing South Point-Portsmouth 138-kV Transmission Line between the existing Millbrook Park Substation and existing East Wheelersburg Substation. Connect the planned Cottrell Substation to the South Point-Portsmouth 138-kV Transmission Line.
- Rebuild the South Point-Portsmouth 138-kV circuit from East Wheelersburg Substation to the new Sadiq Switch, located adjacent to the existing Texas Eastern Substation.
- Construct a new transmission line tap between Sadiq Switch and Texas Eastern Substation.
- Construct a new greenfield substation (referred to as the Sweetgum Substation) to replace the existing Wheelersburg Substation and construct a greenfield 138-kV line between Sadiq Switch and the planned Sweetgum Substation.

- Construct a new greenfield substation (referred to as the Althea Substation).

This report discusses the siting process, methodology, and the selection of the proposed route for the Althea - Sweetgum Transmission Line Project, as shown on **Figure 1**. Separate siting studies discussing the siting process and selection of the other components of the Wheelersburg Area Improvements Project have been prepared under separate covers.

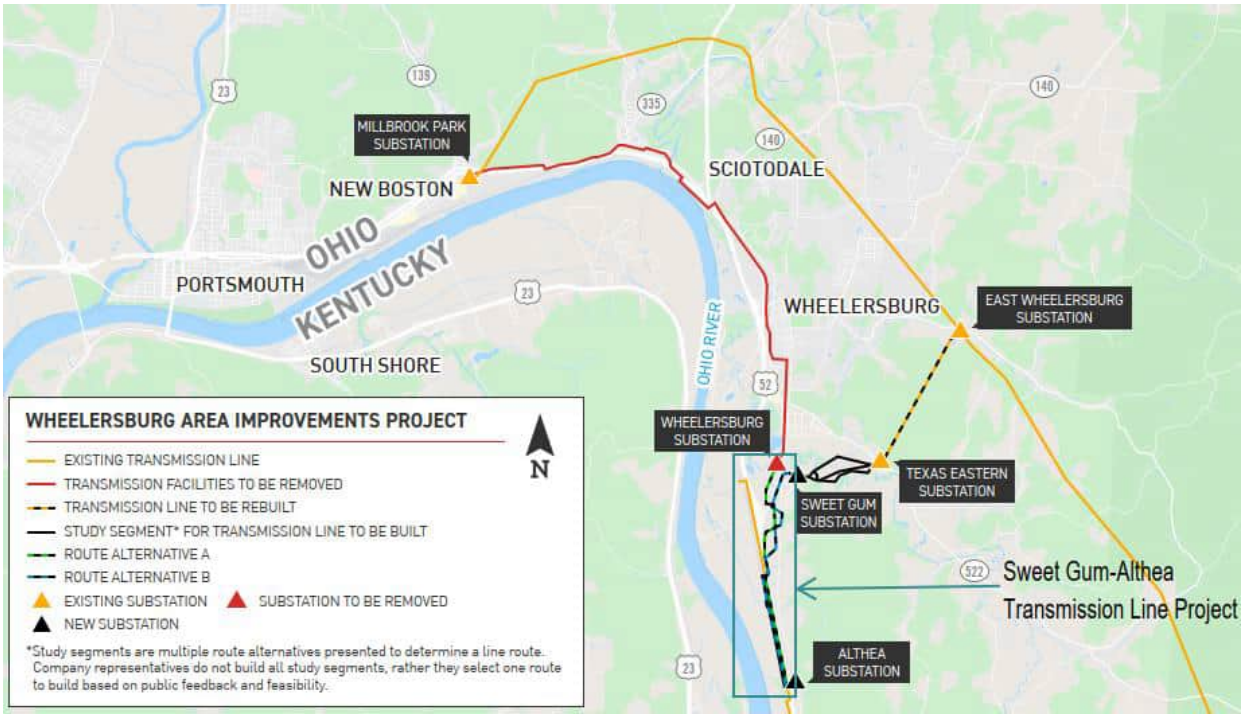


Figure 1. Project Location Map

1.2 Proposed Transmission Facilities Description

The Project includes rebuilding a transmission line between the proposed Sweetgum Substation and Althea Substation, which will operationally replace the existing Ironton-Portsmouth 69-kV Transmission Line in this area. The proposed transmission line will be a single circuit 138-kV transmission line from Sweetgum Substation to the existing Hayport Road Switch, and a double circuit line with one side operating at 69-kV and the other operating at 138-kV from Hayport Road Switch to Althea Substation. The proposed transmission line will be constructed using single steel pole structures ranging from 80 to 100 feet tall (**Figure 2**) and will occupy a ROW of 80 to 100 feet in width (where available).

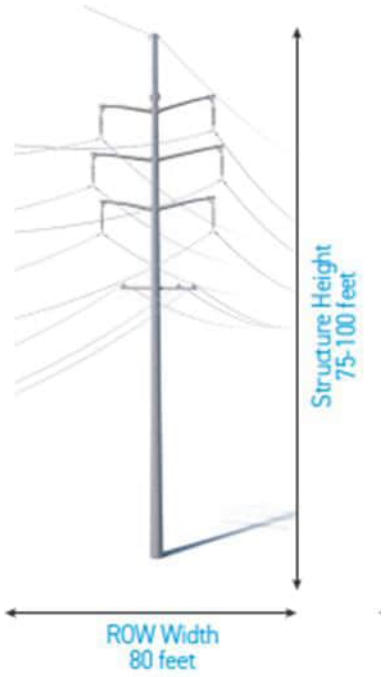


Figure 2. Typical Transmission Line Structure (Steel Monopole)

1.3 Proposed Construction Activities Description

To prepare for the transmission line construction activities, ground surveying and environmental field surveys are necessary. The typical transmission line construction activities include: ROW clearing, erosion and sediment controls installation, temporary access road construction, crane pad grading, foundation installation, structure assembly and erection, conductor and shield wire installation, and restoration upon completion. These activities can create temporary inconveniences such as traffic delays and detours, brief electrical outages to customers, increased heavy equipment traffic, dust, and temporary construction noise.

AEP will follow best management practices throughout the construction process to be mindful of the environment. Activities will be conducted in accordance with applicable federal, state, and/or local requirements. After construction, general maintenance activities include periodic right-of-way vegetative management and inspections to ensure the safe and reliable operation of the transmission line.

1.4 Project Timeline and Overview of Regulatory Approvals

The Company evaluated the project timeline and considered the steps necessary to acquire regulatory approval and meet the in-service date of spring 2026. The Company initiated the transmission siting process in February 2020. Study segments were developed and evaluated

between September 2021 and March 2022. The study segments were refined and presented to the public during an open house in March 2022. An Ohio Power Siting Board (OPSB) jurisdictional open house was held in October 2022. Following the open house meeting, the Company selected a Preferred and Alternate Route and submitted an application for the Certificate of Environmental Compatibility and Public Need (CECPN) to the OPSB. Pending approval from the OPSB, construction is expected to begin in spring 2024 to meet a spring 2026 in-service date.

1.5 Goal of the Siting Study

The goal of the Althea - Sweetgum Transmission Line Project siting study (the "**Siting Study**") is to understand the constraints and opportunity features in the study area in order to develop study segments, evaluate potential impacts associated with the study segments, and identify a Preferred and Alternate Route. The Preferred Route is the route that (1) is most consistent with the siting guidelines (see Section 2.4); (2) reasonably minimizes adverse impacts on the natural and human environments; (3) minimizes special design requirements and unreasonable costs; and (4) can be constructed and operated in a safe, timely, and reliable manner. Section 2.0 further describes the route development process to meet the goal of the Siting Study.

2.0 ROUTE DEVELOPMENT PROCESS

2.1 Siting Team

The route development process begins by assembling a multi-disciplinary team with a wide range of experiences. Team member expertise includes transmission line siting, environmental impact assessment, impact mitigation, engineering, construction management, project management, electrical system planning, and public relations (the **Siting Team**). The Siting Team includes AEP employees and outside consultants. Additional expertise is added depending on the project needs.

The Siting Team works together to develop siting criteria, identify siting constraints and opportunity features, collect and analyze environmental and design data, solicit stakeholder input, coordinate with resource and permitting agencies, develop and revise study segments and alternative routes, and analyze and report on the selection of a Preferred and Alternate Route.

2.2 Route Development Process Overview

The route development process is inherently iterative with frequent modifications made throughout the Siting Study as a result of identifying new constraints, receiving input from agencies, landowners, residents, and other stakeholders, 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 uses specific vocabulary to describe the routes at different stages of development. The following provides an overview of the route development process and related vocabulary.

Initial route development efforts start with the identification of the **Project Endpoints.** Endpoints may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers. Next, **Constraints and Opportunity Features** are identified within the **Study Area**, which encompasses the Project Endpoints and areas in between **(Figure 3, Step 1)**. The initial constraints and opportunity features are typically identified using readily available public data sources and supplemented with stakeholder input and field inspections.

Once the Project Endpoints, Study Area, and Constraints and Opportunity Features are identified, the **Siting Team** develops 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 intersection. Together, the assemblage of Study Segments is referred to as the **Study Segment Network (Step 3)**.

As the route development process progresses, the Siting Team continues to evaluate new data, such as public and stakeholder input and field inspections, and modifies, if necessary, the Study Segments included in the network to develop a **Refined Study Segment Network (Step 4)**. Eventually, **Alternative Routes** are developed by assembling the Study Segments that reasonably meet the **Siting Guidelines (see Section 2.4)** into individual routes for analysis **(Step 5)**. Alternative Routes are assessed and compared with natural and cultural resources, land uses, and engineering and construction concerns. Ultimately, through a quantitative and qualitative analysis and comparison of the Alternative Routes, the Siting Team identifies a **Preferred (Proposed) Route (Step 6),** which is the most suitable route that meets the goal of the Siting Study (see Section 1.5).

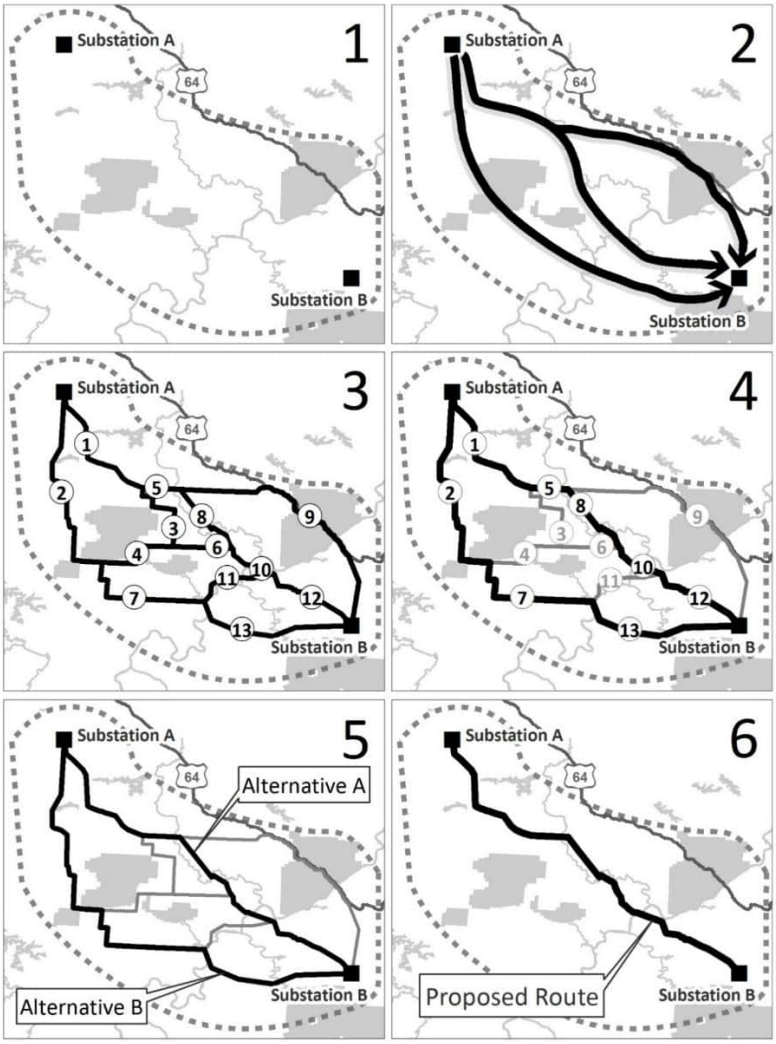


Figure 3. Route Development Steps

This figure shows the route development process and does not depict routes or segments related to this Project.

2.3 Data Collection

The following sources of information were used to develop data for the Siting Study. Data was reviewed and collected for existing and historic land uses, natural resources, cultural resources, transportation facilities, and existing utility and linear features. A detailed table of data sources used for this study is provided in **Attachment B – GIS Data Sources**. The Siting Team collected and reviewed the data, as described in the following sections, to support the Siting Study.

2.3.1 Geographic Information System (GIS) 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 include:

- Google Earth, 2022
- Environmental Systems Research Institute World Imagery (Esri, DigitalGlobe, GeoEye, i-cubed, U.S. Department of Agriculture [USDA] Farm Service Agency [FSA], U.S. Geological Survey [USGS], AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community [2021])

Additionally, relevant information identified during field inspections and at public meetings, such as the location of new residences and other constraints, was digitized directly into the GIS database.

The study used publicly available information in existing GIS data sets obtained from many sources, including federal, state, and local governments. Much of this information was obtained through official agency GIS data access websites and coordination with government agencies. The Siting Team also digitized 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. Field reconnaissance was conducted to verify certain features (e.g., locations of residential, commercial, and industrial buildings).

2.3.2 Federal, State and Local Government Coordination

The Siting Team obtained information from or contacted various federal, state, and local agencies and/or officials to inform them of the Project and request data for the route development process. The agencies contacted are listed below. Copies of agency correspondence are included in **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 (OHPO)
- Ohio Department of Transportation

Local Agencies and/or Officials

- Scioto County Engineer

2.3.3 Field Reconnaissance

Siting Team members conducted field inspections within the Study Area as part of the siting process. 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 GIS sources. Prior to field inspections, some key features such as residences, outbuildings, places of worship, cemeteries, and commercial and industrial areas were identified and mapped in GIS based on desktop review. These features are field-verified and added to the GIS database, typically by using laptops/tablets running GIS software supported by real-time global positioning system (GPS) during field inspection efforts.

2.3.4 Public and Stakeholder Input

The consideration of public and stakeholder input is critical to the route development process. Landowners and stakeholders provide valuable information and recommendations to aid the Siting Team in the development and refinement of study segments and alternative routes. Typically, a project-specific outreach plan is developed and can include open houses, websites, mailings, advertising, etc. More information on how public and stakeholder input was used for the Project can be found in Section 3.6.

2.4 Siting Guidelines

2.4.1 General Guidelines

To the extent reasonable and practical, the Siting Team used the following general siting guidelines to help develop study segments and routes:

- Avoid or minimize new crossings of large lakes, rivers and large wetland complexes, critical and protected habitats, and other unique or distinct natural resources.
- Avoid or minimize habitat fragmentation in unfragmented areas and impacts on designated areas of biodiversity concern.
- Maximize the separation distance from and/or minimize impact on dwellings and community facilities, cemeteries, schools, daycare facilities, hospitals, historic resources, and designated landmarks.
- Avoid or minimize conflict with existing land uses and future development with a proposed plan, schedule, and permitting process underway.
- Minimize interference with existing and future economic activities, natural gas activities, mining operations, and industrial facilities.
- Consider using or paralleling existing ROWs or other linear features and infrastructure when feasible. When paralleling existing facilities, however, reliability issues and mitigation requirements must be evaluated.
- Consider paralleling property lines, land use breaks, and land cover edges.
- Consider stakeholder input.
- Minimize environmental impact and construction/maintenance costs by selecting shorter, direct routes.
- Consider safety with respect to construction, maintenance, and operation of the facilities.
- Consider construction concerns such as access, road traffic control, outages, pipeline mitigations, railroad interactions, existing telecommunication line and distribution line conflicts, etc.
- Consider routes through terrain and land use where economical construction and environmental best management practices can be employed.
- Minimize environmental impact by considering routes that minimize the overall length of access roads, length on steep slopes, and waterbody crossings.
- Consider state-specific regulatory siting guidelines if available.

- The station site selection and line routes will fairly consider the environmental impacts on the surrounding community and area.

2.4.2 Technical Guidelines

Technical guidelines are driven by the physical characteristics and engineering limitations of the structures and lines themselves, design criteria necessary to meet AEP design standards, North American Electric Reliability Corporation (NERC) reliability standards, National Electric Safety Code (NESC) standards, 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 (the regional transmission organization that monitors the electric grid in 13 states), and (3) industry best practices.

The Siting Team considered the following technical guidelines during study segment and route development to the extent practical:

- Maintain a minimum of 100 feet of centerline-to-centerline separation when paralleling 138 kV or lower voltage transmission lines.
- When paralleling existing transmission lines, verify there are no reliability issues by locating lines adjacent to each other.
- Minimize structure angles greater than 65 degrees.
- Minimize structures on steep slopes (generally, this is more than 20 percent slopes for angle structures and more than 30 percent for tangent structures), particularly if guy wires are required for construction.

3.0 ALTERNATIVE ROUTE IDENTIFICATION

3.1 Project Endpoints

The northern endpoint of the Project is the Company's proposed, new Sweetgum Substation, located adjacent to Mill Road and approximately 0.2 mile east of State Route (SR-) 522. The southern endpoint of the Project is the Company's proposed, new Althea Substation, located on the east side of U.S. Highway (US-)52/Ohio River Scenic Byway and west of Ohio Highway (OH-) 1/Gallia Pike. The location of the Sweetgum Substation and Althea Substation directly affects the route development process. Therefore, the Siting Team first conducted two substation siting studies to determine the location of the proposed Sweetgum Substation and Althea Substation.

For the Sweetgum Substation, the Siting Team evaluated four potential sites and selected a proposed site based on an evaluation of impacts to the human and natural environments. The site selected offered a large relatively flat parcel of agricultural land with an existing tree line to provide visual screening of the substation. The Company has since purchased this site for the Sweetgum Substation. For the Althea Substation, the Siting Team evaluated six potential sites and selected a proposed site based on an evaluation of impacts to the natural and human environment and engineering constraints. The site selected offered a large relatively flat parcel primarily outside of the 100-year floodplain that can be accessed from a local roadway without the need for special ingress and egress designs. The Company has since purchased this site for the Althea Substation.

3.2 Study Area Description

The Siting Team identified a study area encompassing approximately 1,481 acres (2.31 square miles) in Scioto County, Ohio (the Study Area, see **Map 1, Attachment A**). The boundaries of the Study Area were determined by the geographic area encompassing the Sweetgum Substation to the north and Althea Substation to the south, as well as geographic barriers of the Ohio River to the west and steep forested slopes to the east. Residences west of the US-52 and SR-522 interchange, as well as the Scioto County Sewage Treatment Facility limited the Study Area to within 0.25 mile of US-52.

The Study Area primarily consists of rural agricultural/pasture areas along US-52/Ohio River Scenic Byway with forested hill slopes along the eastern edge. Pine Creek is along the northern boundary while Patton Run (stream) bisects the Study Area from east to west in the middle of the Study Area. The only municipality within the Study area is Allentown, which is located south of the Sweetgum Substation in the northern part of the Study Area. The built environment

consists primarily of single-family residential structures on small lots within Allentown, and larger acreage lots along OH-1/Gallia Pike, as well as some commercial structures.

3.3 Constraints and Opportunity Features

The Siting Team identified and mapped siting constraints and opportunity features within the Study Area as described below and shown on the Study Area map (**Map 1, Attachment A**).

Constraints

Constraints are specific areas that should be avoided to the extent practical during the route development process. Using readily available public data sources, the Siting Team initially identified large constraints during the beginning of the route development process including, but not limited to, the following:

- Populated areas, including Allentown
- National Register of Historic Places (NRHP; listed and eligible)
- Streams, wetlands, flood zones, including Pine Creek, Patton Run, and 100-year floodplain associated with the Ohio River
- Oil and gas pipelines and wells

Large constraints within the Study Area include the residential areas within Allentown and residences and commercial businesses located along OH-1/Gallia Pike, east of US-52. The 100-year floodplain is throughout the Study Area due to its proximity to the Ohio River.

As the Siting Team developed Study Segments, smaller site-specific constraints were identified (using readily available public data sources, stakeholder input, and field inspections). Through the iterative process of route development (described in Section 2.0), the Study Segments were adjusted to avoid small constraints where feasible, including, but not limited to, the following:

- Individual residences (houses, mobile homes, and multi-family buildings)
- Commercial and industrial buildings
- Outbuildings and barns
- Cemeteries
- Churches
- Small wetlands
- Scenic byways

Smaller constraints in the Study Area primarily consisted of single-family homes along local roads, and a few commercial/industrial buildings and cemeteries.

Opportunity Features

Opportunity features are typically existing built corridors, areas, or edges where a transmission line would be a compatible land use, or where its land use impacts would be reduced by an existing linear utility feature. Opportunity features that were typically considered include other linear infrastructure and utility corridors, rail lines, and roads, but may also include land cover edges, unused portions of industrial or commercial areas, or parcel boundaries. Siting opportunities identified within the Study Area are listed below and presented on the Study Area map (**Map 1, Attachment A**).

- Ironton-Portsmouth Transmission Line
- US-52/Ohio River Scenic Byway
- Norfolk Southern Railroad
- Local roads including SR-522 and OH-1/Gallia Pike
- Agricultural fields

As part of the Wheelersburg Area Improvements Project, the Company plans to remove the existing Ironton-Portsmouth Transmission Line creating an opportunity to build the Project using the existing ROW corridor as it travels south of Wheelersburg Substation to Althea Substation, located west of SR-522. Other linear infrastructure like local roads and the Norfolk Southern railroad on the west side of US-52 provided attractive opportunities for siting the Project as these would be compatible, shared land uses while limiting impacts on residences and land use elsewhere in the Study Area.

3.4 Routing Concepts

The Siting Team focused study segment development on two approaches. The first approach focused on utilizing the existing Ironton-Portsmouth Transmission Line ROW. The second approach focused on routing opportunities across agricultural fields on either side of US-52.

3.5 Study Segment Development

The Siting Team developed a series of study segments based on the route development process and criteria described in Section 2.0 and the routing concepts developed in Section 3.4. **Map 2, Attachment A** shows the resulting network of 13 study segments which were developed to obtain initial input from the public and stakeholders.

Segments 1, 3, 4, 8 and 9 were developed along the existing Ironton-Portsmouth Transmission Line ROW. Segment 1 exits the Sweetgum Substation to the northwest, crossing Mill Road and SR-522. The segment then runs south along the western edge of Allentown. Segment 3 runs through an open field before connecting with Segment 4 and runs west before turning south

along International Lane. Segment 4 then becomes Segment 8 and continues south along the east side of US-52 then crosses US-52 just north of a commercial/industrial building and connects to AEP's existing Hayport Road Switch. Segment 9 runs south between the Norfolk Southern railroad and US-52 and would be a double-circuit 69/138-kV line.

Segments 2, 5, 6, 7, 10, 11, and 12 were developed to provide routing options that did not involve utilizing the existing Ironton-Portsmouth Transmission Line ROW. Segment 2 exits the Sweetgum Substation to the northwest then runs down the west side of SR-522. Where Segment 4 runs west, Segment 5 continues south through an agricultural field. Segment 6 then runs southwest connecting to segments 4 and 8. Segment 7 continues south along the west side of OH-1/Gallia Pike, before crossing over the road and running south through forested areas and agricultural fields, as well as crossing Patton Run. Near the southern edge of an agricultural field, Segment 7 ends and Segment 11 runs southwest then south along the east side of US-52 before connecting to the proposed Althea Substation, while Segment 12 continues south through forested land before connecting to the Althea Substation. On the west side of US-52, Segment 10 runs south along the west side of the Norfolk Southern railroad, parallel to Segment 9, and would be a double-circuit 69/138-kV line. Segment 13 runs east-west, crossing US-52 and connecting segments 9 and 10 to the Althea Substation.

3.6 Public and Stakeholder Input

3.6.1 Public Communications and Open House

A public open house was held for the larger Wheelersburg Area Improvements Project on March 10, 2022, at the Wheelersburg Middle School Gym located at 800 Pirate Drive in Wheelersburg. The Siting Team set up stations and provided information related to engineering and design of the structures, environmental and forestry concerns, Project need, real estate and ROW issues, and the overall siting process. The community was notified about the time and location of the meeting through the following means:

- Letters notifying landowners and public officials of the public information meeting were mailed on February 21, 2022.
- Meeting information was posted on the Project website (Section 3.6.2).

Printed maps at a scale of 1 inch = 200 feet were provided at the open house for the public to review and were used to record written comments concerning sensitive resources in their local community. 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 showing the array of Study Segments under consideration. 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 sheets were distributed to meeting attendees. Attendees were asked to fill out the sheet completely, including contact information. The Siting Team reviewed the comment sheets, scanned and stored them in the Project database as a record of meeting attendance and public comments. Twenty-four people attended the open house. Fourteen comment cards were collected, including ten that were directly relevant to the Project. Other comment cards pertained to the other portions of the Wheelersburg Area Improvements project.

3.6.2 Project Website and Virtual Open House

A website was created for the Project (https://www.aeptransmission.com/ohio/Wheelersburg/) that provided a description, map, fact sheet, and timeline of the Project. The website also provided an online form to submit comments regarding the Project. Additionally, a contact number for AEP Ohio Transco's Project Outreach Specialist was provided.

3.6.3 Consideration of Public and Stakeholder Input

Comments from the public open house, and comments that the Company received via phone calls, U.S. mail, email, and Project website were cataloged and reviewed. Comments included preferences for certain segments, concerns about impacts to agricultural land and historical farms, and impacts to springs and streams. The Siting Team reviewed all comments and, where applicable, incorporated the information when reviewing and revising the Study Segments.

3.7 Study Segment Evaluation and Refinement

Using public input, engineering expertise, and the Siting Team's comprehensive review, the Study Segments were evaluated and refined in an effort to avoid or minimize impacts to resources in the Study Area. As a result, some Study Segments were removed, added, and modified as described below. **Map 3, Attachment A** shows the Refined Study Segments.

In the northern part of the Study Segment Network, Segment 2 was shifted slightly west to be outside of road ROW. Based on landowner feedback, Segment 17 was created east of Segment 3 to provide an option that does not bisect the parcel.

Based on public comments to reduce impacts on agricultural land along OH-1/Gallia Pike, the Siting Team added segments 14 and 18 within the tree line, east of the agricultural land, as well as new segments 16 and 22 to connect back to segments 11 and 12. However, comparing these newly proposed segments to existing segments west of US-52, these newly proposed segments would impact new property owners, require more tree clearing (potentially impacting bat habitat), and present access challenges for construction. There is also a risk of soil slips and

instability due to the slope within the eastern part of the Study Area. Therefore, segments 7, 11, 12, 14, 16, 18 and 22 were determined as not feasible and removed from further consideration.

West of US-52, it was determined Segment 10 was within the Norfolk Southern railroad ROW, therefore, segments 15 and 21 were developed to shift away from railroad and Segment 10 was removed. Due to residences along Lambro Lane, segments 19 and 20 were developed but because Segment 20 would require the purchase of a residence, it was removed from further consideration.

Out of the 22 study segments considered, 15 study segments were retained to develop two Alternative Routes to be presented during the OPSB Jurisdictional Open House (Section 3.8). Two Alternative Routes were chosen to be presented to meet the OPSB's requirement of showing two complete routes as part of the open house. The two Alternative Routes were presented during the OPSB jurisdictional open house to gather public feedback.

3.8 OPSB Jurisdictional Open House

An OPSB jurisdictional open house to present the two Alternative Routes was held for the Project on October 13, 2022, at the Wheelersburg Middle School Gym located at 800 Pirate Drive in Wheelersburg. Similar to the first public open house, the Siting Team set up stations and provided information related to engineering and design of the structures, environmental and forestry concerns, Project need, real estate and ROW issues, and the overall siting process. The community was notified about the time and location of the meeting through the following means:

1. Letters notifying landowners and public officials of the public information meeting were mailed on September 22, 2022.

2. Meeting information was posted on the Project website (Section 3.6.2).

3. A public notice ran in the *Newspaper* (Scioto County) on September 29, 2022.

Printed maps at a scale of 1 inch = 200 feet were provided at the open house for the public to review and were used to record written comments concerning sensitive resources in their local community. 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 showing the two Alternative Routes under consideration. 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 sheets were distributed to meeting attendees. Attendees were asked to fill out the sheet completely, including contact information. The Siting Team reviewed the comment sheets, scanned and stored them in the Project database as a record of meeting attendance and public comments. Twenty-five people attended the open house, and five comment cards were collected.

Comments from the OPSB jurisdictional open house, and comments that the Company received via phone calls, U.S. mail, email, and Project website were cataloged and reviewed. Comments included preference for certain sections of the Alternative Routes, and notification of the presence of an old gas pipeline south of Hayport Road Switch. The Siting Team reviewed all comments and, where applicable, incorporated the information when evaluating the Alternative Routes.

South of Hayport Road Switch, a alignment traveling north-south was added to offset the transmission line centerline from the gas line by 75 feet. As this shift would incur impacts to residences on Moore Road, additional alignments were created to route the 75-foot offset alignment east to segment 9 north of Moore Road, crossing the gas line and railroad. A alignment is then proposed south of Moore Road to route west, crossing the gas line and railroad, to continue the 75-foot offset alignment until turning east towards Althea Station. These added alignments were adjustments to the Alternative Routes and were retained for analysis as part of the Alternative Routes.

3.9 Alternative Routes

The Siting Team met frequently throughout the route development process, continually reviewing, modifying, and eliminating Study Segments based on field inspections, engineering requirements, and stakeholder input. At the end of the process, the Siting Team compiled the Study Segments 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 4a-4b, Attachment A**.

3.9.1 Alternative Route A

Alternative Route A exits the Sweetgum Substation to the northwest as a single circuit 138-kV transmission line, crossing Mill Road and SR-522 before connecting to the Company's existing Ironton-Portsmouth Transmission Line ROW. From here, the Ironton-Portsmouth Transmission Line would be rebuilt as a 138-kV transmission line in the existing location along the west side of US-52 and the east side of the Norfolk Southern railroad. The alignment will be a double circuit 69/138-kv transmission line from Hayport Road Switch as it travels south and cuts across US-52, connecting to the Althea Substation.

3.9.2 Alternative Route B

Alternative Route B exits the Sweetgum Substation to the northwest then runs down the east side of SR-522. Alternative Route B then cuts over to run south along OH-1 before cutting east-west through agricultural fields and crossing US-52 and the Norfolk Southern railroad. The alignment will be a single circuit 138-kV transmission line from Sweetgum to Hayport Road Switch, and become a double circuit 69/138-kV transmission line at Hayport Road Switch as it travels south along the west side of the railroad corridor before cutting back over the railroad and US-52 and connecting to the Althea Substation.

3.9.3 Alternative Route C

Alternative Route C exits the Sweetgum Substation to the northwest then runs down the east side of SR-522. This single circuit 138-kV transmission line then cuts east to run south along OH-1 before cutting back west along the parcel boundary of an agricultural field to International Lane. The alignment then runs south along the east side of US-52 before crossing US-52 and connecting to the Hayport Road Switch. From the Hayport Road Switch, Alternative Route C is a double circuit 69/138-kV transmission line as it travels south along the east side of the railroad corridor and west side of US-52 before cutting back over US-52 and connecting to the Althea Substation.

3.9.4 Alternative Route D

Alternative Route D exits the Sweetgum Substation to the northwest as a single circuit 138-kV transmission line, crossing Mill Road and SR-522 before connecting to the Company's existing Ironton-Portsmouth Transmission Line ROW. From here, the alignment runs south along the existing Ironton-Portsmouth Transmission Line alignment through agricultural fields until it connects to the Hayport Road Switch. At the Hayport Road Switch, Alternative Route D becomes a double circuit 69/138-kV transmission line and runs west, crossing the Norfolk Southern railroad. The route then runs south, offset into the farm fields west of the railroad corridor to provide clearance from the gas pipeline identified during the OPSB jurisdictional open house. The route cuts east to cross the railroad corridor and parallel between the railroad and US-52 to avoid impacts to a cluster of homes along Moore Road. South of this residential area, the route cuts back west, crossing the railroad corridor and paralleling the railroad on the west with an offset into the farm fields to further avoid the identified gas pipeline. The route then travels east crossing the railroad and US-52 to route into the Althea Substation.

4.0 ALTERNATIVE ROUTE COMPARISON

The Alternative Routes comparison provides a quantitative and qualitative analysis of potential impacts to local communities, the environment and cultural resources as well as engineering and constructability concerns. 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. As the Alternative Routes are a combination of two corridors, there are minor differences in the proposed impact of each Alternative Route. Subsections 4.1-4.3 provides a description of these differences.

4.1 Natural Environment

The natural environment includes water, soil, sensitive species, and wildlife habitat. Potential impacts are based on publicly available maps and data as well as coordination with federal, state, and local agencies. The goal of the Siting Study is to avoid or minimize impacts on the natural environment during construction, operation, and maintenance of the transmission facilities to extent practicable. A comparison of the natural environment considerations for the Alternative Routes is presented in **Table 1.** Natural resources within the Study Area are shown on **Map 4, Attachment A**.

4.1.1 Water Resources

Resource Characteristics

The area is characterized by relatively flat terrain between the Ohio River and OH-1/Gallia Pike; elevations then increase from approximately 500 feet to 750 feet above mean sea level east of OH-1/Gallia Pike. Pine Creek is along the northern edge of the Study Area while Patton Run cuts across the middle of the Study Area. The Ohio River is directly west of the Study Area. Few wetlands are found within the Study Area, but several small unnamed streams flow from the east side of the Study Area towards the Ohio River. A Federal Emergency Management Agency (FEMA) 100-year floodplain covers the majority of the western portion of the Study Area, west of OH-1/Gallia Pike. National Wetlands Inventory (NWI), National Hydrography Dataset (NHD) and FEMA were the data sources used for water resources in the Route Alternative assessment.

Alternative Route Comparison

All routes will have similar impacts to water resources in the Study Area as they cross Patton Run and other unnamed streams at or near the same location, as well as all are within the FEMA-designated floodplain. Direct impacts to water resources will be minimized or avoided by spanning wetland and streams where feasible.

4.1.2 Wildlife Habitat and Sensitive Species

Resource Characteristics

General habitat in the Study Area includes agricultural land, pasture, mature forests, and stream/wetland areas. Based on consultation with the USFWS and ODNR, two federally listed species (Indiana bat and northern long-eared bat) and numerous state-listed species are known to occur, or have the potential to occur, within the Study Area (see **Attachment C**).

Alternative Route Comparison

Potential impacts to wildlife habitat and sensitive species within the Study Area can generally be assessed by comparing each Alternative Route with respect to the anticipated impacts to forest and stream habitat. Based on review of aerial imagery, Route B proposes the greatest impact and has a higher potential to impact the Indiana bat, northern long-eared bat, and other protected bats due to the amount of tree clearing required. As discussed in Section 4.1.1, direct impacts to water resources will be minimized or avoided by spanning water resources where feasible. Therefore, there is little difference in potential impacts on federal and state-listed species between the four Alternative Routes.

Table 1. Natural Environment Evaluation Criteria

Alternative Route	Unit	A	B	C	D
General					
Length	miles	3.4	3.3	3.2	3.6
Water Resources					
Total streams crossed	count	5	6	6	6
Riparian buffers crossed	acres	4.3	4.8	4	3.5
PEM/PSS wetlands in the ROW (NWI)	acres	0	0.06	0.04	0.03
FEMA-designated floodplain crossed by ROW	acres	21.9	21.6	19.7	22
No springs, forested wetlands, or streams of High/Exceptional/Special Protection, or large waterbodies crossed by ROW.					
Wildlife and Habitat					
Tree clearing required in the ROW (digitized based on aerial photography)	acres	4.3	4.8	3.8	4.6
Length of clearing parallel to existing linear infrastructure (< 50 feet)	miles	3	0.3	2.1	1.3

PEM = palustrine emergent
PSS = palustrine scrub-shrub

4.2 Human Environment

The human use of the land and activities at a given location is comprised of agricultural, forestry, residential, industrial, mining, commercial, institutional, scenic assets, and recreational uses. The

Siting Study goal is to avoid or minimize conflicts with existing and proposed land uses that are not compatible with a new transmission line. A comparison of the human environment considerations for the Alternative Routes is presented at the end of this section in **Table 2.** Land use within the Study Area is shown on **Map 4, Attachment A.**

4.2.1 Existing Land Use

Resource Characteristics

The Study Area primarily consists of single-family residential structures on small lots within Allentown, and agricultural/pasture areas with residential homes on large acre lots along OH-1/Gallia Pike. US-52 runs through the middle of the Study Area from north to south. Norfolk Southern railroad parallels the west side of US-52. There are no known planned developments for the area.

Portions of Route A, C, and D propose to build within the existing Ironton-Portsmouth transmission line ROW. The existing transmission line currently impacts the property owners that are adjacent. Although this is seen as a benefit for building the Project within this corridor, the ROW width along this alignment will need to expand to accommodate the 138-kV transmission line asset. As a result, building along the existing transmission line may incur the need for additional ROW widths from the property owners currently impacted by the existing transmission line, furthering impacts to these property owners. Route A is the only route that proposes to build within the existing transmission line corridor in its entirety, whereas Routes B, C, and D propose greenfield segments that may lessen impacts to the property owners currently impacted by the existing route, but may incur new impacts to property owners crossed by the greenfield alignment.

Alternative Route Comparison

The Alternative Routes located either within the existing Ironton-Portsmouth Transmission Line ROW, along roadsides, or overland across agricultural fields. Route C is the only route alternative with no residences within the ROW and has the fewest residences within 250 feet of the centerline. Routes A, B, and D will have up to four residences within the proposed ROW. Portions of Route C and D, and the entirety of Route A proposes to rebuild within the existing Ironton-Portsmouth Transmission Line ROW and may require supplemental easements to expand the existing ROW to accommodate the new 138-kV asset. All route options, except for Route B, use portions of the existing Ironton—Portsmouth Transmission Line ROW.

4.2.2 Agricultural and Forestry Resources

Resource Characteristics

The western half of the Study Area primarily consists of agricultural fields while the eastern edge and areas of Allentown are forested. Agricultural fields in the Study Area are primarily used for row crops and hay production.

Alternative Comparison

All routes cross agricultural land, however, Route B and D would have a greater impact to agricultural operations as these routes would create new impacts to agricultural fields. Route A and C propose to route through more pastureland which reduces the degree of impacts on agricultural lands. Routes B and D are also located on the west side of the Norfolk Southern railroad and further away from any road in the area, therefore access for construction could potentially increase impacts to agricultural land. Route C is primarily adjacent to US-52, reducing potential impacts from access roads for construction and maintenance of the Project. No Agricultural District Lands are crossed by the route options.

All routes would impact forested areas. There is no significant difference in the forested area acreage that would be impacted by each route.

4.2.3 Historic and Archaeological Resources

Resource Characteristics

As part of the due diligence review, the Siting Team investigated the presence of historic and archaeological resources within the Study Area. The Siting Team conducted a records search using the records available through the OHPO online GIS database. The literature review focused on identifying previously inventoried archaeological sites, historic structures or resources, cemeteries, and other cultural resources. The review included a search of the National Historic Landmarks list, NRHP, previous Cultural Resources Management reports, and various Ohio databases.

There is one architectural resource, a two-story, Federal style house, within the study area. The Jewell Farmstead, SCI0070116, is a single-family dwelling which was built circa 1847 and has reached the age of historical significance but has not been evaluated for listing on the NRHP. There are 32 previously identified archaeological sites within the study area. Most of these sites are along the bank of the Ohio River, west of US-52, and have not been evaluated for the NRHP and their eligibility is currently unknown. There are six cemeteries within the study area. The cemeteries include Ball Cemetery (10807), Floral Hills Memory Gardens (10816), Gerlach-Lamb Cemetery (10817), Nurse Cemetery (10827), Salladay Cemetery (10961), and Patten-Eakman

Cemetery (14087). There are five instances of previous cultural resources investigations that have taken place within the study area. These investigations took place in 2001-2002 and in 2014 and were conducted in support of pipeline installation projects. Approximately 5.3 percent of the study area have been subject to previous surveys.

Alternative Route Comparison

Based on the prevalence of cultural resources within the study area and the general location of the Project near the bank of the Ohio River, all route alternatives have the potential to impact cultural resources. As Alternative Route A proposed to build within the existing Ironton-Portsmouth Transmission Line ROW with no greenfield sections, like Routes C and D, fewer impacts to cultural resources are expected as the entirety of this alignment has previously been disturbed by construction of the existing transmission line, as well as the railroad and US-52 on either side of the route.

Table 2. Human Environment Evaluation Criteria

Alternative Route	Unit	A	B	C	D
General					
Length	miles	3.4	3.3	3.2	3.6
Number of parcels crossed	count	18	36	30	44
Landowners within ROW	count	13	26	20	28
Residential					
Barns, outbuildings, sheds, garages, and silos in the ROW (excludes abandoned features)	count	2	1	0	2
Residences within ROW	count	4	3	0	4
Residences within 100 feet of centerline	count	8	5	1	8
Residences within 250 feet of centerline	count	16	14	10	17
Residences within 500 feet of centerline	count	38	44	48	35
Businesses/commercial buildings within 250 feet of the centerline	count	4	6	6	5
Businesses/commercial buildings within 500 feet of the centerline	count	10	12	13	8
No multifamily dwellings are found within 500 feet of the centerline. No businesses/commercial buildings are within the ROW. No mining areas or quarries are crossed by the centerline.					
Agricultural					
Pasture/rangeland crossed in ROW (based on NLCD data)	acres	22.6	11.7	14.6	12.9
Cropland crossed in ROW (based on NLCD data)	acres	0.02	13.6	0	16.3
No tree farms/orchards or agricultural easements are crossed by the ROW.					
Community/Recreational Facilities					
Designated places of worship within 1,000 feet of centerline	count	2	1	1	2
Scenic byway crossings	count	1	1	1	1

Table 2. Human Environment Evaluation Criteria					
Alternative Route	**Unit**	**A**	**B**	**C**	**D**
No schools are within 1,000 feet of the centerline. No cemeteries or hospitals and assisted living facilities are within 250 feet of the centerline. No parks or recreation areas are crossed by the ROW.					
Cultural Resources					
NRHP-listed and eligible architectural resources within 1 mile of the centerline	count	1	1	1	1
NRHP-listed and eligible archaeological sites within ROW	count	0	10	0	9
No National Historic Landmarks or NRHP-listed Historic district are within 1 mile of the centerline.					
NLCD = National Land Cover Database					

4.3 Constructability

Constructability is the ability to efficiently and cost effectively engineer, acquire ROW, construct, operate, and maintain the proposed transmission line. Major factors include safety, steep topography, condensed ROWs, non-standard pole designs (typically angles greater than 30 degrees), access, ability to parallel or use existing ROWs, features, and proximity to major highways. A comparison of the constructability considerations for the Alternative Routes is presented at the end of this section in **Table 3.**

4.3.1 Engineering

Potential engineering and construction challenges are important to consider when siting a transmission line, as these elements could ultimately require extensive or non-standard engineering and lead to increases in impacts and overall cost.

Along with the major factors listed above, the proximity to existing roadways, transmission lines, and gas pipeline infrastructure could also pose potential engineering and construction challenges. As with paralleling existing infrastructure, crossing over transmission lines, distribution lines, and pipelines may require specialized construction techniques and scheduled outages on existing lines. The Siting Team attempted to minimize engineering challenges during route development.

Within the Study Area, there were few constraints that would limit the constructability of the transmission line. Flat agricultural land generally observed throughout the Study Area is conducive to transmission line development because this landscape allows the transmission line to be sited along straight alignments with few heavy angles, or natural features that need to be avoided. US-52 and the Norfolk Southern railroad run through the Study Area and provide an opportunity to parallel with utility assets to condense linear infrastructure.

Alternative Comparison

Alternative Route A would primarily construct the line within the Company's existing easement on the existing Ironton-Portsmouth Transmission Line. Typically, the Company requires a 100-foot easement for a double circuit 69/138 kV transmission line; therefore, there may be some construction challenges having to work within the existing easements as there may be residential structures present within the narrower 69-kV ROW corridor. The proposed transmission line may be designed with additional structures along the alignment in order to reduce the area in which the conductor may sway, reducing the required ROW width in areas where the Company intends to develop within existing easements but are in close proximity to residential structures. A portion of routes A and D around Hunt Lane in the Allentown area poses this challenge.

Routes A and C are also between the Norfolk Southern railroad and US-52 for 1.40 miles. Construction within this narrow area could be challenging due to the ground disturbance from construction of the railroad embankment and highway, as well as the potential for required permits from the railroad. Concrete foundations may be needed for all transmission structures installed along this section of the route, due to the railroad embankment.

The percentage of steep slopes crossed by the ROW is similar across all the Alternative Routes. There are minimal elevation changes due to the flat terrain of this area. Routes B and D have a greater number of turn angles as the alignments travel through agricultural fields and turns to route along property lines. Route A and C have less angles as it routes largely within the Ironton-Portsmouth transmission line ROW which provides a relatively straight north-south corridor.

Gas pipelines are present throughout the Study Area and are paralleled by all route options to some extent. However, the gas pipeline that is south of Hayport Road is of a larger diameter and requires a larger buffer to the proposed transmission line. Route B proposes to route along the gas pipeline alignment, whereas Route D proposes to maintain a 75-foot buffer between the gas pipeline and transmission line centerline. As this buffer would require the transmission line to be set further into the farm fields, a 100-foot ROW clear of residential structures would not be possible as the alignment crosses Moore Road; therefore, a crossing of the railroad to join with the existing Ironton-Portsmouth Transmission Line ROW is proposed in this section. This increases the number of angles required for Route D and proposes a construction challenge of crossing the railroad in three different areas.

4.3.2 Access Roads

All access roads for the Project would be temporary. Routes that traverse agricultural fields would require the construction of new access roads. Developing these access roads would add to project development costs and have a greater impact on farming operations versus roadside

routes as these access roads would result in ongoing disturbance across farm fields during construction.

In contrast, roadside construction would not require the construction of new access roads. Challenges associated with access using existing roads are tied to traffic management and potential road closures for short periods of time. Despite these temporary disturbances to traffic flow, roadside construction would lessen the impact on farming and agricultural productivity in the area during the construction phase.

Alternative Routes Comparison

Routes A and C would require the fewest access roads as these routes are primarily adjacent to US-52 or are on the existing Ironton-Portsmouth Transmission Line ROW, avoiding the need for new access roads, limiting the footprint of construction, and reducing construction costs. Routes B and D would require more access roads, resulting in greater impacts to agricultural land.

4.3.3 Right-of-Way

In developing the route alternatives, the Company attempted to consider using existing transmission ROW, paralleling existing electric lines, or paralleling other infrastructure (i.e., roadways, railways, or gas lines).

Alternative Comparison

Alternative Route A and C are located primarily within the existing Ironton-Portsmouth Transmission Line ROW, greatly reducing the amount of new ROW that would need to be acquired as well as reducing the number of newly impacted landowners. Alternative Routes A and C also largely parallel roadways, whereas Routes B and D are routing across private property and agricultural land. All Alternative Routes have a similar measure of oil or gas pipeline and railroads paralleled.

Table 3. Constructability Evaluation Criteria

Alternative Route	Unit	A	B	C	D
General					
Length	miles	3.4	3.3	3.2	3.6
Transportation Resources					
U.S. highways crossed	count	2	2	2	2
State highways crossed	count	2	2	2	2
Local roads and streets crossed	count	5	5	5	5
Railroads crossed	count	0	2	0	2
No airports are within the Study Area. No interstate highways are crossed.					
Utility Resources					

Table 3. Constructability Evaluation Criteria					
Alternative Route	**Unit**	**A**	**B**	**C**	**D**
Oil and gas pipelines crossed	count	6	8	6	8
Oil and gas wells within 250 feet from edge of ROW	count	1	0	1	0
Existing 69 kV Transmission Lines Crossed	count	1	4	3	4
No communication towers are within 1,000 feet from the centerline.					
Utility Resources					
Engineering and Geotechnical Considerations					
Steep slopes crossed by ROW (>20%), percent of total length	percent	9.9	7.3	7.3	9.9
Heavy angles, greater than 30 degrees	count	8	15	9	12
Rights-of-Way Rebuild/Parallel					
Existing 69 kV transmission lines rebuilt	miles	2.9	0.3	2.1	1.3
Oil and Gas Pipeline paralleled	miles	0.4	0.5	0.3	0.6
Interstate highways, U.S. highways, State highways, and local roads	miles	1.7	0.2	1.9	0.4
Railroad paralleled	miles	1.4	1.4	1.4	1.4
Total length rebuilt	miles	3	0.3	2.1	1.3
Total percentage rebuilt	percent	90%	6%	66%	37%

6.0 Identification of the Proposed Route

The goal in selecting a suitable route for the Project is to minimize overall impacts on natural and human environments while avoiding indirect routes, unreasonable costs, and special design requirements. However, in practice, it is not always possible to minimize potential impacts at all times. There are often inherent tradeoffs in potential impacts to every siting decision. For example, in heavily forested study areas, the route that avoids the most developed areas will likely require the greatest amount of forest clearing, while the route that has the least impact on vegetation and wildlife habitats often impacts more residences or farmlands. 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.

Following an extensive data gathering, route development, and comparative analysis process, the Siting Team identified Alternative Route C as the Preferred Route, and Route D as the Alternate Route, as shown in **Map 5, Attachment A**. As this project is jurisdictional to the OPSB, the Siting Team selects two routes to recommend to the OPSB. The OPSB will then select and authorize the Company to construct and operate one of the routes. The following summarizes the rationale for selection of the Preferred and Alternate Route, and thus, the routes that the Siting Team considered to best minimize and balance the overall impacts of the Project. The rationale presented is derived from the accumulation of the siting decisions made throughout the process, the knowledge and experience of the Siting Team, comments from the public, and the comparative analysis of potential impacts presented in this Siting Study.

The Siting Team first identified the proposed Althea Substation and Sweetgum Substation locations. Next, a Study Area was defined, and constraint data collected (**Map 1**). Two routing concepts were developed considering roadside and overland construction. All routing concepts were carried forward and developed into a Study Segment Network, comprised of 13 Study Segments (**Map 2**), which were presented at the public open house. Using stakeholder input and engineering input, the Study Segment Network was refined (**Map 3**) to develop four Alternative Routes (**Map 4**). The Siting Team reviewed and analyzed the four Alternative Routes based on resource constraints in the Study Area and arrived at a Preferred and Alternate Route for the Project (**Map 5**).

The evaluation of all Alternative Routes made use of building within existing transmission line easements, and paralleling roadway and railroad infrastructure where possible. Route A proposes to entirely rebuild within the existing Ironton-Portsmouth Transmission Line ROW, whereas Route C proposes to rebuild the existing line where there are limited constraints to property owners and proposes greenfield alignments in constrained areas to accommodate property owner feedback. Route C provides a rebuild route that considers the property owner input gathered regarding the alignment from the first and second open house. For this reason,

Route A was eliminated because it was developed prior to public comments were received, and therefore does not take into account public input.

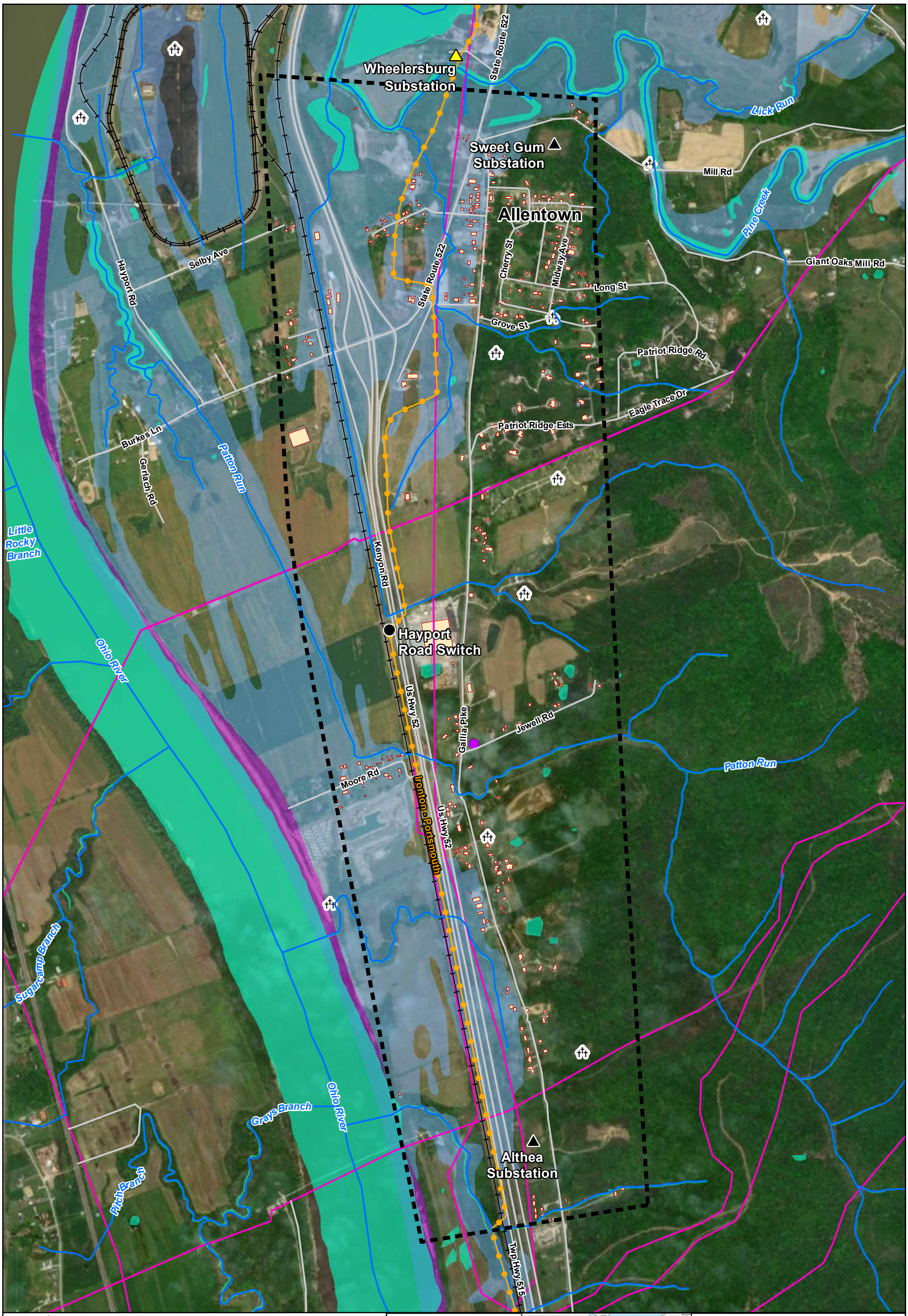
Route B provides a predominately greenfield route that would require new ROW, but still parallels the highway and railroad to condense utility infrastructure and take advantage of routing along similar land use corridors. However, Route B was determined to be too close in proximity to the gas pipeline south of Hayport Road and was eliminated from consideration due to concerns regarding the safety of operation and maintenance of the transmission line.

Route D is a combination of greenfield and rebuild alignments and provides a 75-foot offset from a gas pipeline. However, greater impacts to agricultural fields are proposed due to this offset, and the alignment requires a crossing of the railroad at three different locations providing considerable construction challenges.

After the Siting Team's extensive consideration of the key siting constraints and the potential for impacts to land use and construction, Route C was selected as the Preferred Route and Route D was selected as the Alternate Route. As this Project is jurisdictional to the OPSB as a CECPN application, the Preferred and Alternate route cannot have more than 20 percent of their alignments in common. The Preferred Route shares 18.4 percent of its alignment with the Alternate Route, thereby meeting the requirements of this rule.

Collectively, the Siting Team believes the Preferred Route is (1) most consistent with the siting guidelines; (2) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (3) minimizes special design requirements and unreasonable costs; and (4) can be constructed and operated in a safe, timely, and reliable manner. These items are also true to the Alternate Route, second to the Preferred route.

Attachment A: Maps



Legend

- Proposed Substation
- Existing Switch
- Existing Substation
- Historic Structures
- Cemetery
- Existing Transmission Line
- Pipeline
- Roadway
- Railroad
- NHD Stream
- NWI Wetland
- 100-yr Floodplain
- Floodway
- Study Area
- Building

Base Map Source:
ESRI World Imagery
(2021)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:3,000

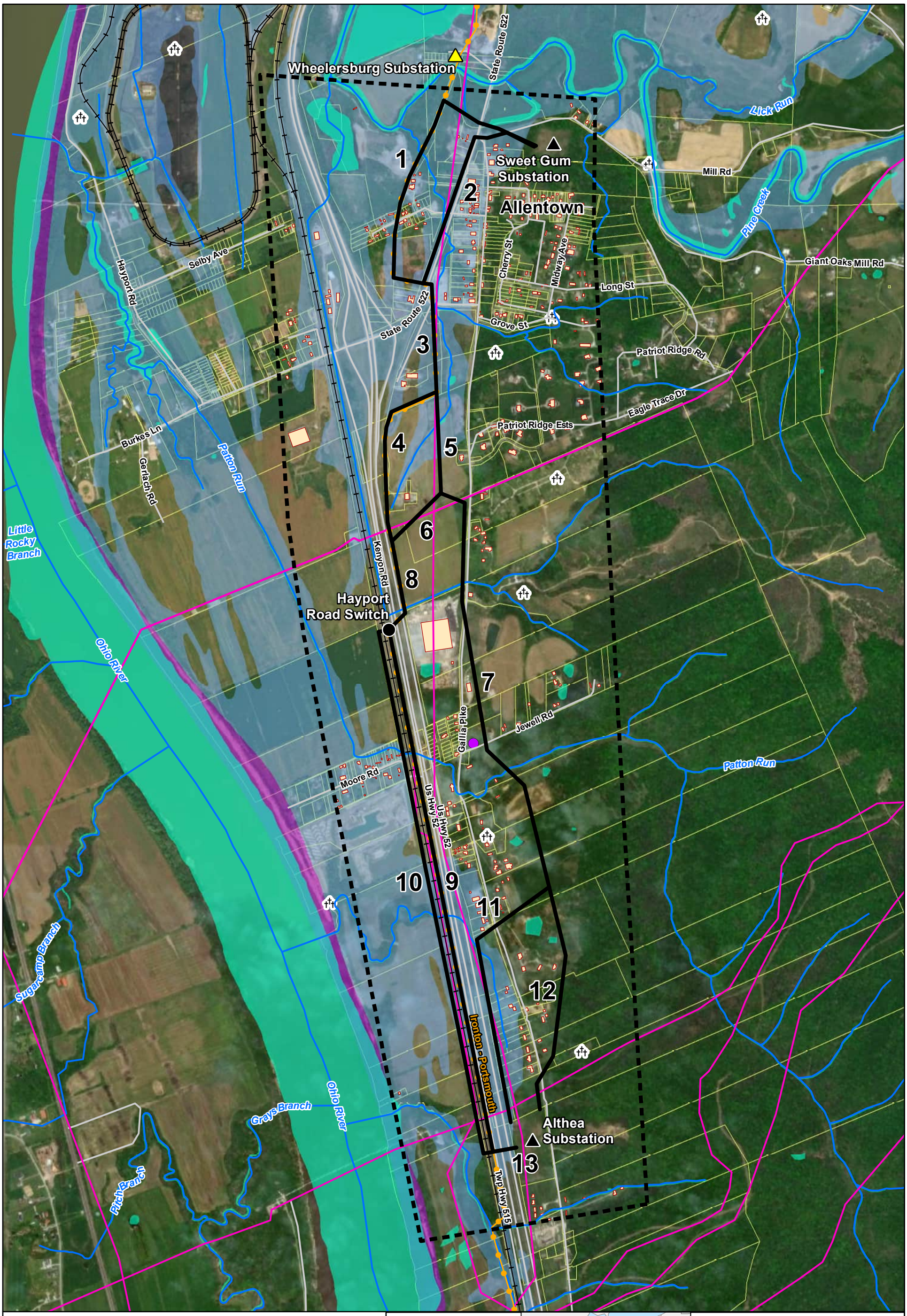
December 02, 2022

MAP 1
STUDY AREA

AEP OHIO TRANSMISSION COMPANY

Althea - Sweetgum 138-kV Transmission Line Project
Scioto County, OH

0 1,000 2,000
Feet



Legend

- Proposed Substation
- Existing Switch
- Existing Substation
- Historic Structures
- Cemetery
- Study Segments
- Existing Transmission Line
- Pipeline
- Roadway
- Railroad
- NWI Wetland
- 100-yr Floodplain
- Floodway
- Study Area
- Building
- Parcel Boundary

Base Map Source:
ESRI World Imagery
(2021)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:3,000

December 02, 2022

MAP 2
STUDY SEGMENT NETWORK

AEP OHIO TRANSMISSION COMPANY

Althea-Sweetgum 138-kV Transmission Line Project
Scioto County, OH

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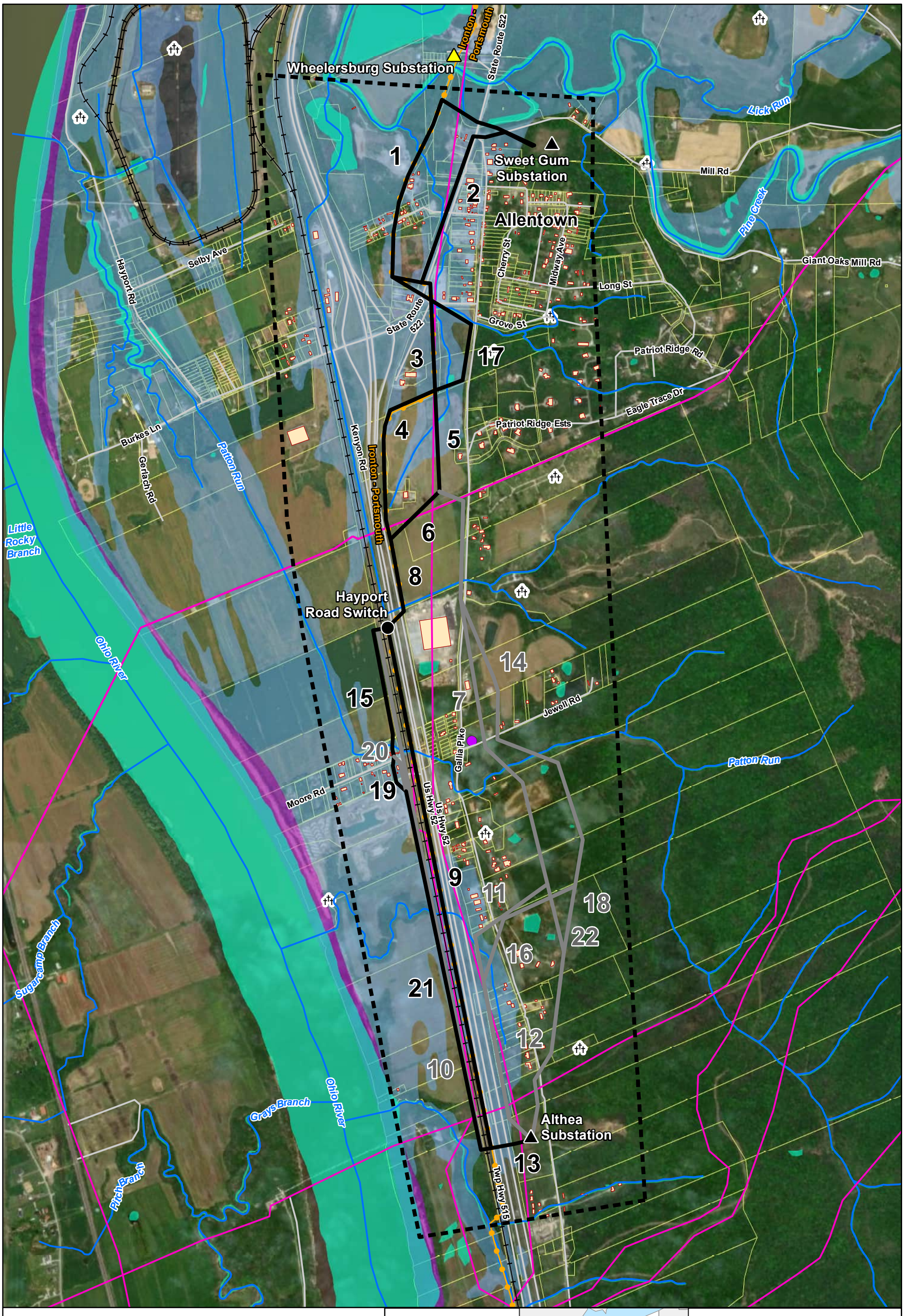
Feet


Wheelersburg Substation
Ironton - Portsmouth
State Route 522
Lick Run
Sweet Gum Substation
Mill Rd
Pine Creek
Allentown
Cherry St
Midway Ave
Giant Oaks Mill Rd
Long St
Grove St
Hayport Rd
Selby Ave
State Route 522
Patriot Ridge Rd
Eagle Trace Dr
Patriot Ridge Ests
Burkes Ln
Gerlach Rd
Patton Run
Kenyon Rd
Ironton - Portsmouth
Little Rocky Branch
Hayport Road Switch
Ohio River
Jewell Rd
Gallia Pike
Patton Run
Moore Rd
Us Hwy 52
Us Hwy 52
Sugarcamp Branch
Grays Branch
Ohio River
Althea Substation
Twp Hwy 515
Pitch Branch
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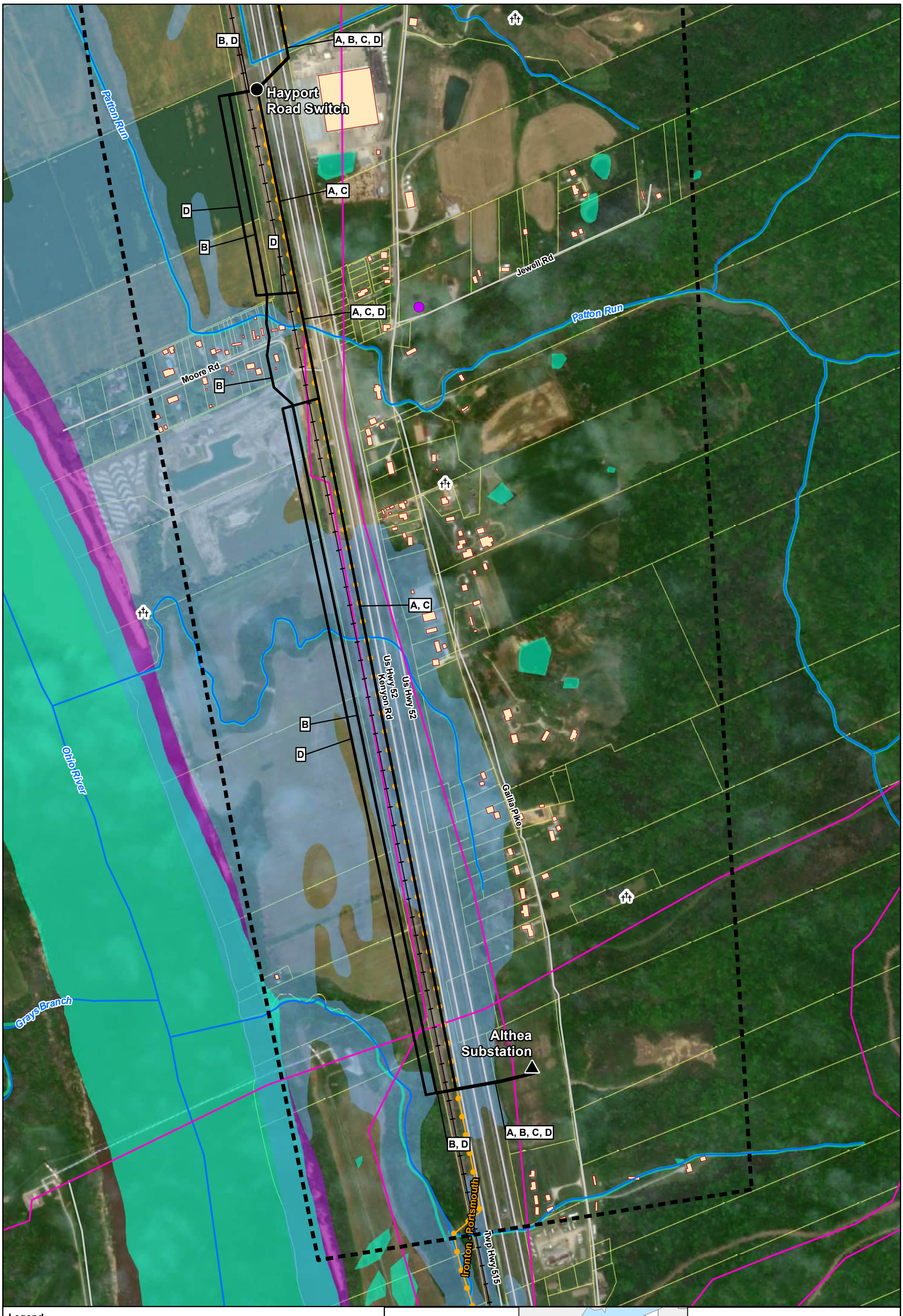
Proposed Substation
Existing Switch
Existing Substation
Historic Structures
Cemetery
Study Segment Network
Segment Removed from Consideration
Existing Transmission Line
Pipeline
Roadway
Railroad
NWI Wetland
100-yr Floodplain
Floodway
Study Area
Building
Parcel Boundary
Base Map Source:
ESRI World Imagery
(2021)
Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:3,000
December 02, 2022
OHIO
Project Location
MAP 3
REFINED STUDY SEGMENT NETWORK
AEP OHIO TRANSMISSION COMPANY
Althea - Sweetgum 138-kV
Transmission Line Project
Scioto County, OH
0
1,000
2,000
Feet


Wheelersburg Substation
Ironton - Portsmouth
Earwood Ln
Pine Creek
Mill Rd
Sweet Gum Substation
A, D
A, B, C, D
B, C
State Route 522
Allentown
High St
Giant Oaks Mill Rd
Hunt Ln
Selby Ave
Cherry St
Carter St
Midway Ave
Long St
B, C
County Hwy 257
Short St
Grove St
A, D
Twp Hwy 515
State Hwy 522
International Ln
B, C
Patriot Ridge Rd
Hayport Rd
Gallia Pike
Eagle Trace Dr
Patriot Ridge Ests
A, C
B, D
Ironton - Portsmouth
Us Hwy 52
Kenyon Rd
A, B, C, D
B, D
Hayport Road Switch
A, C
Patton Run
D
B
Legend
Proposed Substation
Existing Switch
Existing Substation
Cemetery
Alternative Routes
Existing Transmission Line
Pipeline
Roadway
Railroad
NWI Wetland
100-yr Floodplain
Floodway
Study Area
Building
Parcel Boundary
Base Map Source:
ESRI World Imagery
(2021)
Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:3,000
December 02, 2022
OHIO
Project Location
MAP 4a
ALTERNATIVE ROUTES
AEP OHIO
Althea - Sweetgum 138-kV
Transmission Line Project
Scioto County, OH
0
600
1,200
Feet



Legend

- Proposed Substation
- Existing Switch
- Historic Structures
- Cemetery
- Alternative Routes
- Existing Transmission Line
- Pipeline
- Roadway
- Railroad
- NWI Wetland
- 100-yr Floodplain
- Floodway
- Study Area
- Building
- Parcel Boundary

Base Map Source:
ESRI World Imagery
(2021)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:3,000

December 02, 2022

MAP 4b
ALTERNATIVE ROUTES

AEP OHIO TRANSMISSION COMPANY

Althea - Sweetgum 138-kV
Transmission Line Project
Scioto County, OH

0 600 1,200
Feet

Wheelersburg Substation
Ironton - Portsmouth
State Route 522
Lick Run
Sweet Gum Substation
Allentown
Mill Rd
Pine Creek
Giant Oaks Mill Rd
Hayport Rd
Selby Ave
Cherry St
Midway Ave
Long St
State Route 522
Grove St
Patriot Ridge Rd
Eagle Trace Dr
Patriot Ridge Ests
Burkes Ln
Gerlach Rd
Patton Run
Little Rocky Branch
Kenyon Rd
Hayport Road Switch
Ohio River
Gallia Pike
Jewell Rd
Patton Run
Moore Rd
Us Hwy 52
Us Hwy 52
Sugarcamp Branch
Ohio River
Grays Branch
Althea Substation
Pitch Branch
Ironton - Portsmouth
Twp Hwy 515

Legend

- Proposed Substation
- Existing Switch
- Existing Substation
- Historic Structures
- Cemetery
- Preferred Route
- Alternate Route
- Existing Transmission Line
- Pipeline
- Roadway
- Railroad
- NWI Wetland
- 100-yr Floodplain
- Floodway
- Study Area
- Building
- Parcel Boundary

Base Map Source:
ESRI World Imagery
(2021)

Coordinate System:
State Plane Ohio South
FIPS 3402 (US Feet)
Datum: NAD 1983
Scale: 1:3,000

December 02, 2022

OHIO
Project Location

MAP 5
PREFERRED AND ALTERNATE ROUTES

AEP OHIO TRANSMISSION COMPANY

Althea - Sweetgum 138-kV
Transmission Line Project
Scioto County, OH

0 1,000 2,000
Feet

Attachment B: GIS Data Sources

Attachment B. GIS Data Sources		
Siting Criteria	**Source**	**Description**
Natural Environment		
National Hydrography Dataset (NHD) stream and waterbody crossings within the ROW	USGS NHD (2022)	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
National Wetland Inventory (NWI) wetland crossings within the ROW	U.S. Fish and Wildlife Service (USFWS) (2022)	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) (Accessed 2022, Data Source 2020)	Acres of 100-year floodplain within the ROW
Tree clearing within the ROW	Digitized based on Esri World Imagery (Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community (2021)	Acres of forest within the ROW
Land Use		
Number of parcels crossed by the ROW	Core Logic parcel data provided by AEP (Assessed 2017)	Count of the number of parcels crossed by the ROW
Number of residences within 500 feet of the route centerline	Digitized from ESRI World Imagery (2021), verified with google maps (2022) and field verified from points of public access	Count of the number of residences within the ROW and within 500 feet of potential routes
Number of businesses/ commercial buildings within 500 feet of the route centerline	Digitized from ESRI World Imagery (2021), verified with google maps (2022) and field verified from points of public access	Count of the number of businesses/commercial buildings within the ROW and within 500 feet of potential routes

Attachment B. GIS Data Sources		
Siting Criteria	**Source**	**Description**
Land use acreage and distance crossed by the ROW	National Land Cover Database (NLCD)	The NLCD 2019 (NLCD 2019) compiled by the Multi-Resolution Land Characteristics (MRLC) Consortium includes 15 classes of land cover from Landsat satellite imagery
Acres of agricultural district land crossed	Scioto County Auditor's Office (2022)	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
Designated places of worship within 1,000 feet of centerline		Count of churches
Cemeteries within 250 feet of centerline		Count of cemeteries
Number of archeological and historic resources within the ROW and within 1 mile	OHPO Online Mapping System (Accessed September 2022)	Previously identified archeological and historic resources listed or eligible on the National Register of Historic Places (NRHP) acquired through OHPO
Technical		
Route length	Measured in GIS	Length of route in miles
Number of road crossings	Based on U.S. Geological Survey (USGS), U.S. Environmental Protection Agency (EPA), U.S. National Park Service (NPS), Food and Agriculture Organization of the United Nations (FAO), Department of Natural Resources Canada (NRCAN), HERE, and Esri (2021)	Count of federal, state and local roadway crossings
Number of pipeline crossings	PennWell Corporation Pipelines (2014) and verified via National Pipeline Mapping System public viewer map (Accessed 2022)	Number of known pipelines crossed by the transmission ROW

Attachment B. GIS Data Sources		
Siting Criteria	**Source**	**Description**
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	Soil Survey Geographic Database (SSURGO), Accessed (2021)	Miles of slope greater than 20 percent crossed by the routes
Number and severity of angled structures	Developed in GIS	Anticipated number of angled structures less than 3 degrees, 3 to 45 degrees and more than 45 degrees based on preliminary design
Length of 69 kV transmission line paralleled	Measured in Google Earth (2022)	Miles of the route parallel to existing 69 kV transmission lines
Length of 69 kV transmission line rebuilt	Measured in Google Earth (2022)	Miles of existing transmission line rebuilt
Length of oil and gas pipeline paralleled	Measured in Google Earth (2022)	Miles of the route parallel to existing oil and gas pipeline
Length of road parallel	Measured in Google Earth (2022)	Miles of the route parallel to existing roadways

Attachment C: Agency Correspondence

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

January 14, 2022

Michelle Kearns
Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204

Re: 21-1128; AEP Althea - Sweetgum 138 kV Line Rebuild Project

Project: The project proposes to rebuild a 138 kV transmission line.

Location: The proposed project is located in Scioto County, Ohio.

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

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

Tansy Mustard (*Descurainia pinnata*), P
Riverbank Paspalum (*Paspalum repens*), T
American Eel (*Anguilla rostrata*), T
Blue Sucker (*Cycleptus elongatus*), T
Goldeye (*Hiodon alosoides*), E
Blue Catfish (*Ictalurus furcatus*), SC
Shortnose Gar (*Lepisosteus platostomus*), E
Shoal chub (*Macrhybopsis hyostoma*), E
Channel Darter (*Percina copelandi*), T
Gilt Darter (*Percina evides*), E
River Darter (*Percina shumardi*), T
Paddlefish (*Polyodon spathula*), T
Eastern Spadefoot (*Scaphiopus holbrookii*), E
Wartyback (*Cyclonaias nodulata*), E
Butterfly (*Ellipsaria lineolata*), E
Elephant-ear (*Elliptio crassidens*), E
Pocketbook (*Lampsilis ovata*), E
Black Sandshell (*Ligumia recta*), T

Washboard (*Megalonaias nervosa*), E
Threehorn Wartyback (*Obliquaria reflexa*), T
Sheepnose (*Plethobasus cyphyus*), E, **FE**
Ohio Pigtoe (*Pleurobema cordatum*), E
Ebonyshell (*Reginaia ebenus*), E
Monkeyface (*Theliderma metanevra*), E
Deertoe (*Truncilla truncata*), SC

The review was performed on the project area specified in the request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity. Additional comments on some of the features may be found in pertinent sections below.

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

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; U = state status under review; X = presumed extirpated in Ohio; FE = federal endangered, and FT = federal threatened.

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 entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH $\geq$ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "*Range-wide Indiana Bat Survey Guidelines*." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Erin Hazelton for

project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the following listed mussel species.

Federally Endangered

clubshell (*Pleurobema clava*)
fanshell (*Cyprogenia stegaria*)
northern riffleshell (*Epioblasma torulosa rangiana*)
pink mucket (*Lampsilis orbiculata*)
purple cat's paw (*Epioblasma o. obliquata*)
rayed bean (*Villosa fabalis*)
snuffbox (*Epioblasma triquetra*)
sheepnose (*Plethobasus cyphyus*)

State Endangered

butterfly (*Ellipsaria lineolata*)
ebonyshell (*Fusconaia ebena*)
elephant-ear (*Elliptio crassidens crassidens*)
little spectaclecase (*Villosa lienosa*)
long-solid (*Fusconaia maculata maculata*)
monkeyface (*Quadrula metanevra*)
Ohio pigtoe (*Pleurobema cordatum*)
pyramid pigtoe (*Pleurobema rubrum*)
sharp-ridged pocketbook (*Lampsilis ovate*)
wartyback (*Quadrula nodulata*)
washboard (*Megalonaias nervosa*)
yellow sandshell (*Lampsilis teres*)

State Threatened

black sandshell (*Ligumia recta*)
fawnsfoot (*Truncilla donaciformis*)
threehorn wartyback (*Obliquaria reflexa*)

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2020), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2020) can be found at:
https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf

The project is within the range of the following listed fish species.

State Endangered

bigeye shiner (*Notropis boops*)
gilt darter *(Percina evides)*
goldeye (*Hiodon alosoides*)
mountain madtom (*Noturus eleutherus*)
northern brook lamprey (*Ichthyomyzon fossor*)
northern madtom (*Noturus stigmosus*)
popeye shiner (*Notropis ariommus*)
shoal chub (*Macrhybopsis hyostoma*)
shortnose gar (*Lepisosteus platostomus*)
shovelnose sturgeon (*Scaphirhynchus-platorynchus*)

State Threatened

American eel (*Anguilla rostrata*)	paddlefish (*Polyodon spathula*)
blue sucker (*Cycleptus elongatus*)	river darter (*Percina shumardi*)
channel darter (*Percina copelandi*)	Tippecanoe darter (*Etheostoma tippecanoe*)

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. This long-lived, entirely aquatic salamander inhabits perennial streams with large flat rocks. In-water work in hellbender streams can reduce availability of large cover rocks and can destroy hellbender nests and/or kill adults and juveniles. The contribution of additional sediment to hellbender streams can smother large cover rocks and gravel/cobble substrate (used by juveniles), making them unsuitable for refuge and nesting. Projects that contribute to altered flow regimes (e.g., by increasing areas of impervious surfaces or modifying the floodplain) can also adversely affect hellbender habitat. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this project is not likely to impact this species.

The project is within the range of the timber rattlesnake (*Crotalus horridus horridus*), a state endangered species, and a federal species of concern. The timber rattlesnake is a woodland species. In addition to using wooded areas, the timber rattlesnake also utilizes sunlit gaps in the canopy for basking and deep rock crevices known as den sites for overwintering. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is also within the range of the eastern spadefoot toad (*Scaphiopus holbrookii*), a state endangered species. This species is found in areas of sandy soils that are associated with river valleys. Breeding habitats may include flooded agricultural fields or other water holding depressions. The DOW recommends that an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat is present within the project area. If suitable habitat is determined to be present; the DOW recommends that a presence/absence survey be conducted, or an avoidance/minimization plan be developed and implemented by the approved herpetologist.

The project is within the range of the green salamander (*Aneides aeneus*), a state endangered amphibian. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

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

The project is within the range of the Allegheny woodrat (*Neotoma magister*), a state endangered species. The Allegheny woodrat utilizes rocky outcrops such as cliffs and caves in forested areas. To avoid impacts to this species, impacts to cliffs and rocky outcrops should be avoided. In addition, a buffer of 100 feet above and 200 feet below cliffs and rocky outcrops should be maintained. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

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

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

One rare plant species, the tansy mustard (*Descurainia pinnata*, state species of concern) has been found within the proposed AEP Althea – Sweetgum 138 kV line rebuild project footprint. Due to the possible disruption of this species, a pre-construction survey of the proposed project site should be conducted to ensure that this plant and any other rare species within the proposed construction limits are not impacted. For survey coordination, please contact the Division of Natural Areas and Preserves' Chief Botanist, Rick Gardner. Mr. Gardner can be contacted directly at richard.gardner@dnr.ohio.gov or 614/265-6419.

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

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

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

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

From:	Ohio, FW3
To:	Kearns, Michelle
Cc:	nathan.reardon@dnr.state.oh.us; Parsons, Kate; Teitt, Matthew; Grant S Stuller
Subject:	Althea - Sweetgum 138 kV Transmission Line Rebuild, Scioto County, Ohio
Date:	Monday, December 20, 2021 10:53:22 AM
Attachments:	image.png image.png

TAILS# 03E15000-2022-TA-0487

Dear Ms. Kearns,

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.

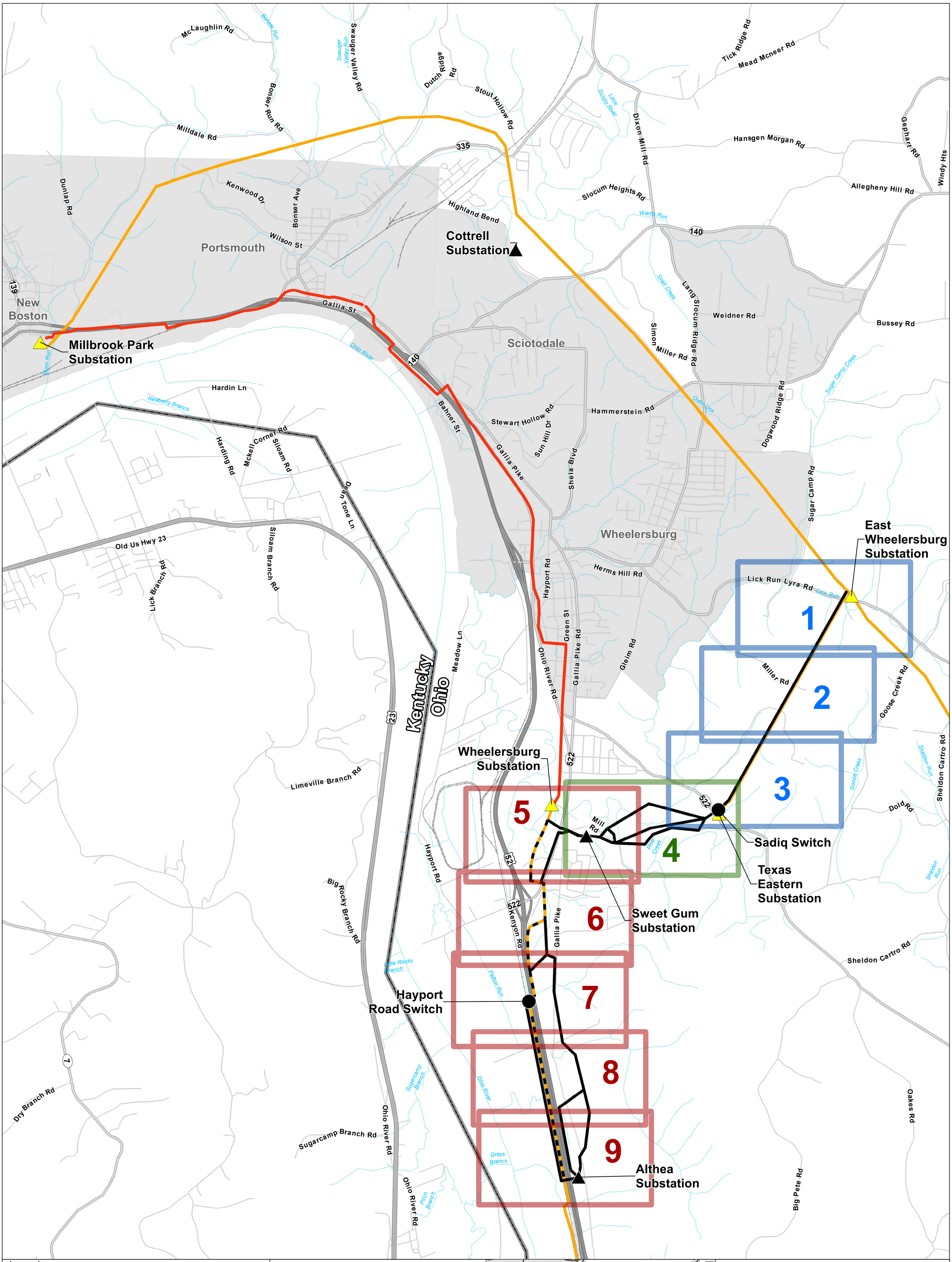
If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

Patrice Ashfield
Field Office Supervisor

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

Attachment D: Aerial Mapbook



Legend

- Proposed Substation
- Existing Substation
- Switch Structure
- Existing Transmission Line
- Study Segment For Transmission Line To Be Built
- Study Segment For Transmission Line To Be Rebuilt
- Transmission Line To be Removed
- Limits of City
- State Boundary
- East Wheelersburg - Sadiq Switch Figure Key
- Sadiq SW - Sweet Gum Figure Key
- Sweet Gum - Althea Figure Key

Transmission line routes are preliminary and subject to change

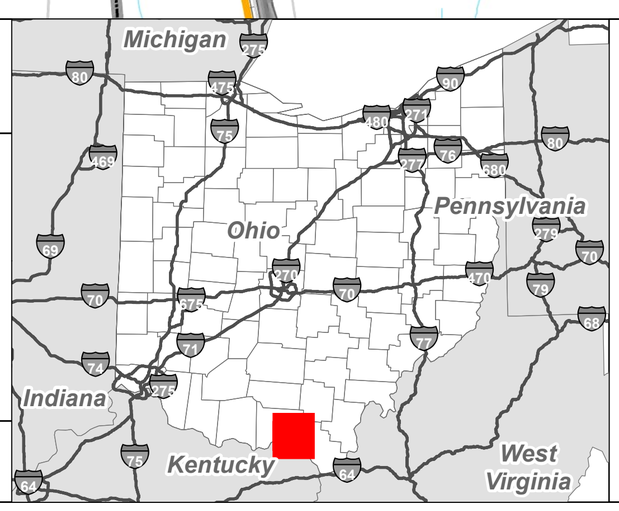
1 inch = 1,667 feet

When printed at 24x36

0 — 2,600 — 5,200 Feet

0 — 0.5 — 1 Miles

March 03, 2022



Index Overview Map

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements

Index Overview Map

Wheelersburg Area Improvements

AEP OHIO — An AEP Company — BOUNDLESS ENERGY™

Legend

- Proposed Substation
- Existing Substation
- Switch Structure
- Existing Transmission Line
- Study Segment For Transmission Line To Be Built
- Study Segment For Transmission Line To Be Rebuilt
- Transmission Line To be Removed
- Limits of City
- State Boundary
- East Wheelersburg - Sadiq Switch Figure Key
- Sadiq SW - Sweet Gum Figure Key
- Sweet Gum - Althea Figure Key

Transmission line routes are preliminary and subject to change

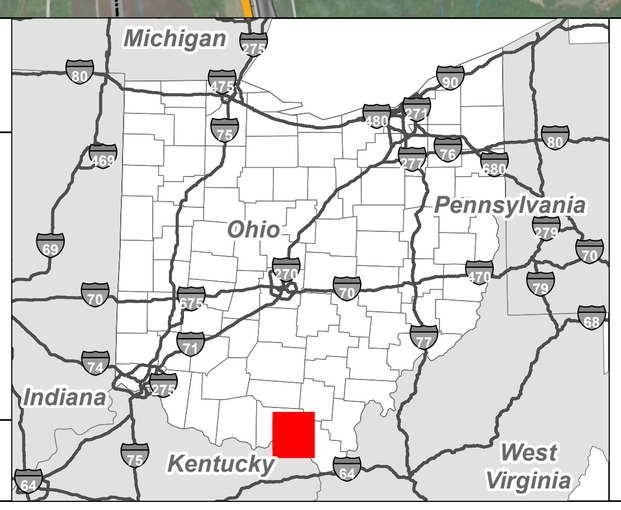
1 inch = 1,667 feet

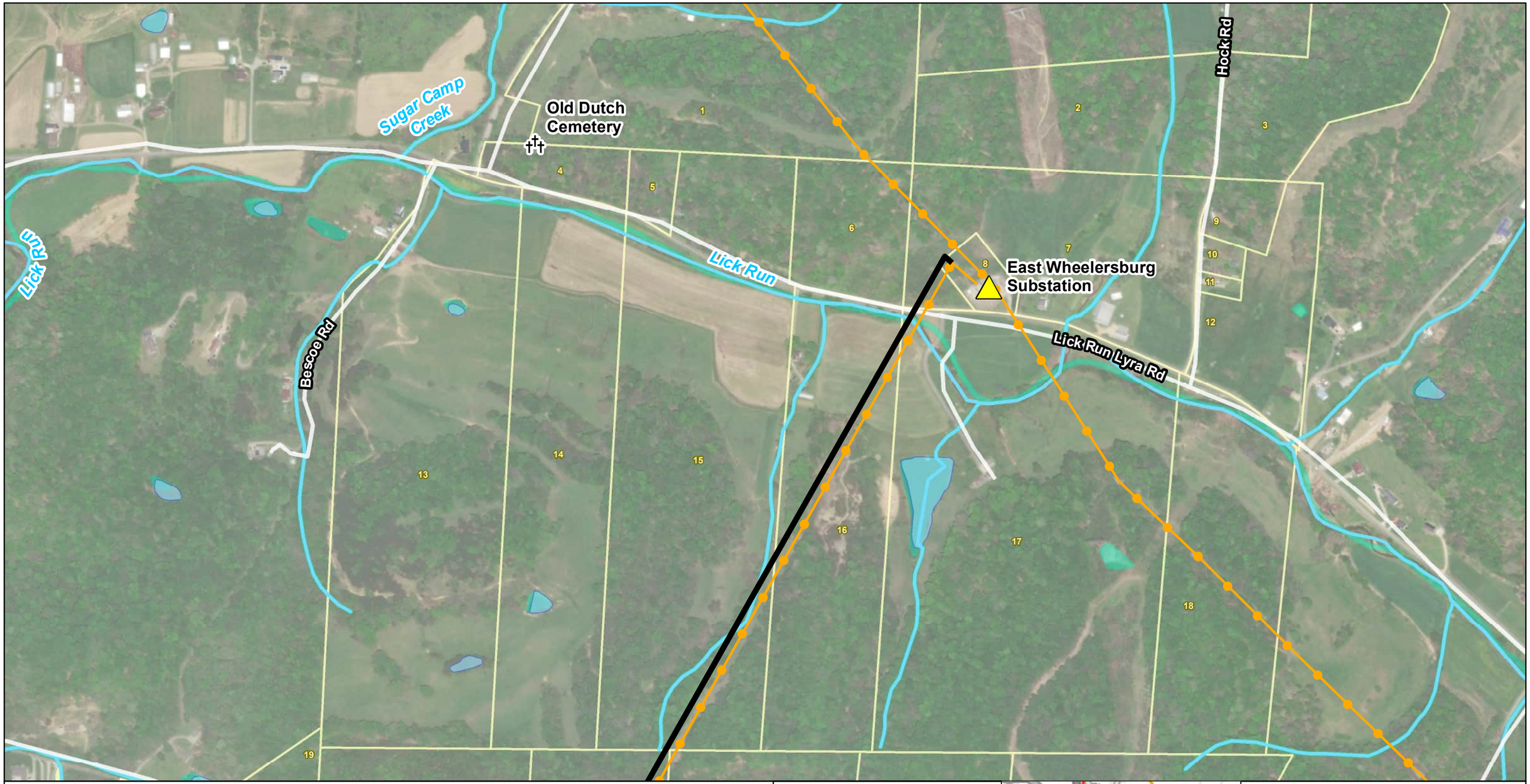
When printed at 24x36

0 — 2,600 — 5,200 Feet

0 — 0.5 — 1 Miles

March 03, 2022





Legend

- Existing Substation
- Cemetery
- Existing Transmission Line
- Study Segment For Transmission Line To Be Built
- NHD Stream
- NHD Waterbody
- NWI Wetland
- Parcel Boundary

Transmission line routes are preliminary and subject to change

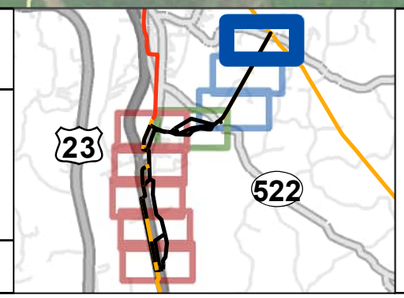
1 inch = 470 feet

When printed at 17x11

0 320 640

Feet

March 03, 2022



Aerial Map
East Wheelersburg Substation - Sadiq Switch
Page 1 of 9

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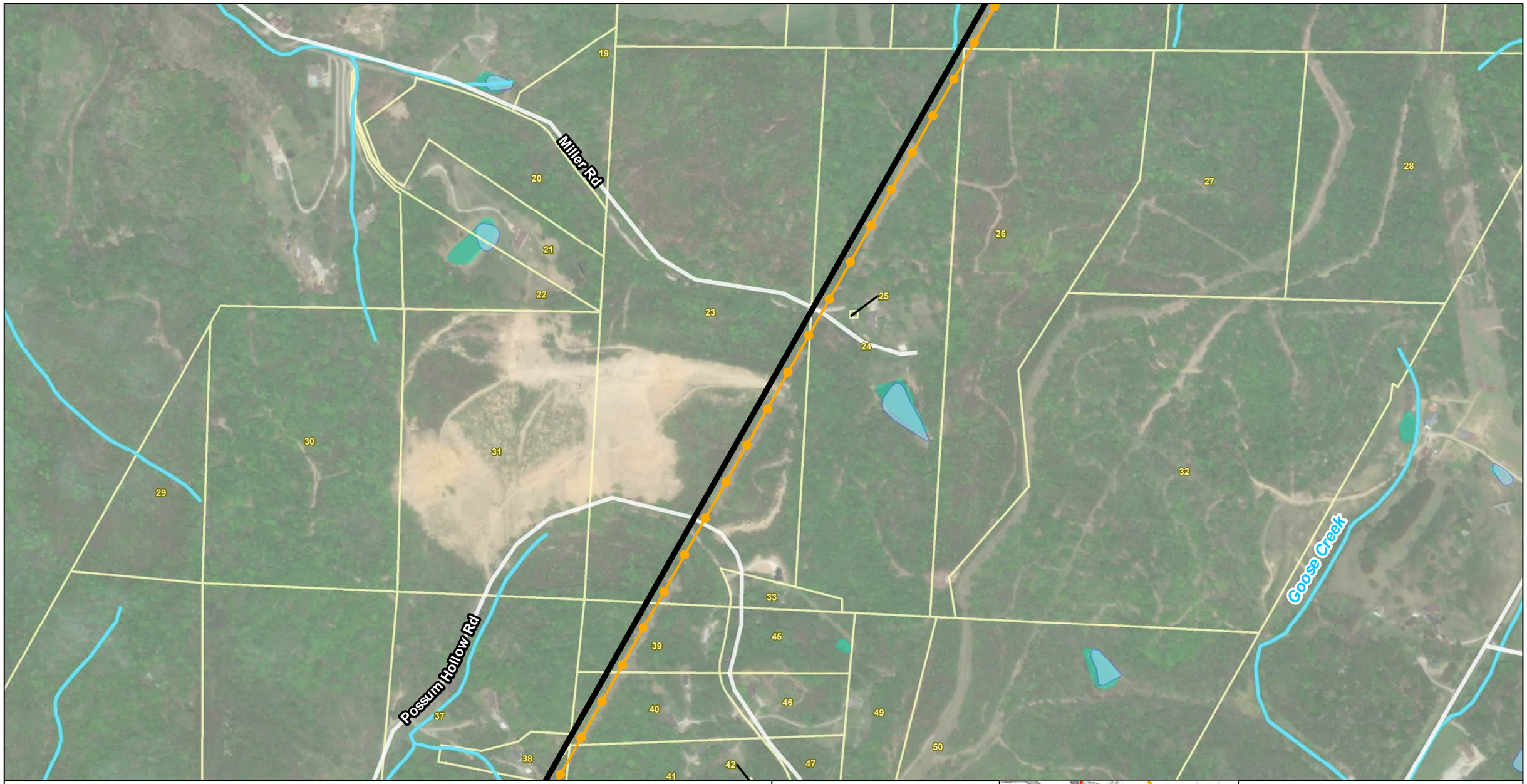
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements



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- NWI Wetland
- Parcel Boundary

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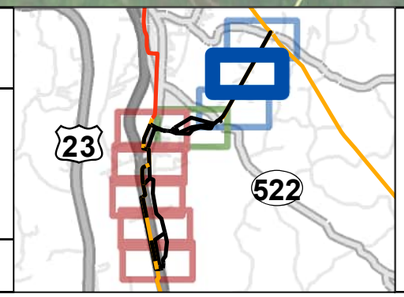
1 inch = 470 feet

When printed at 17x11

0 320 640

Feet

March 03, 2022



Aerial Map
East Wheelersburg Substation - Sadiq Switch
Page 2 of 9

AEP OHIO
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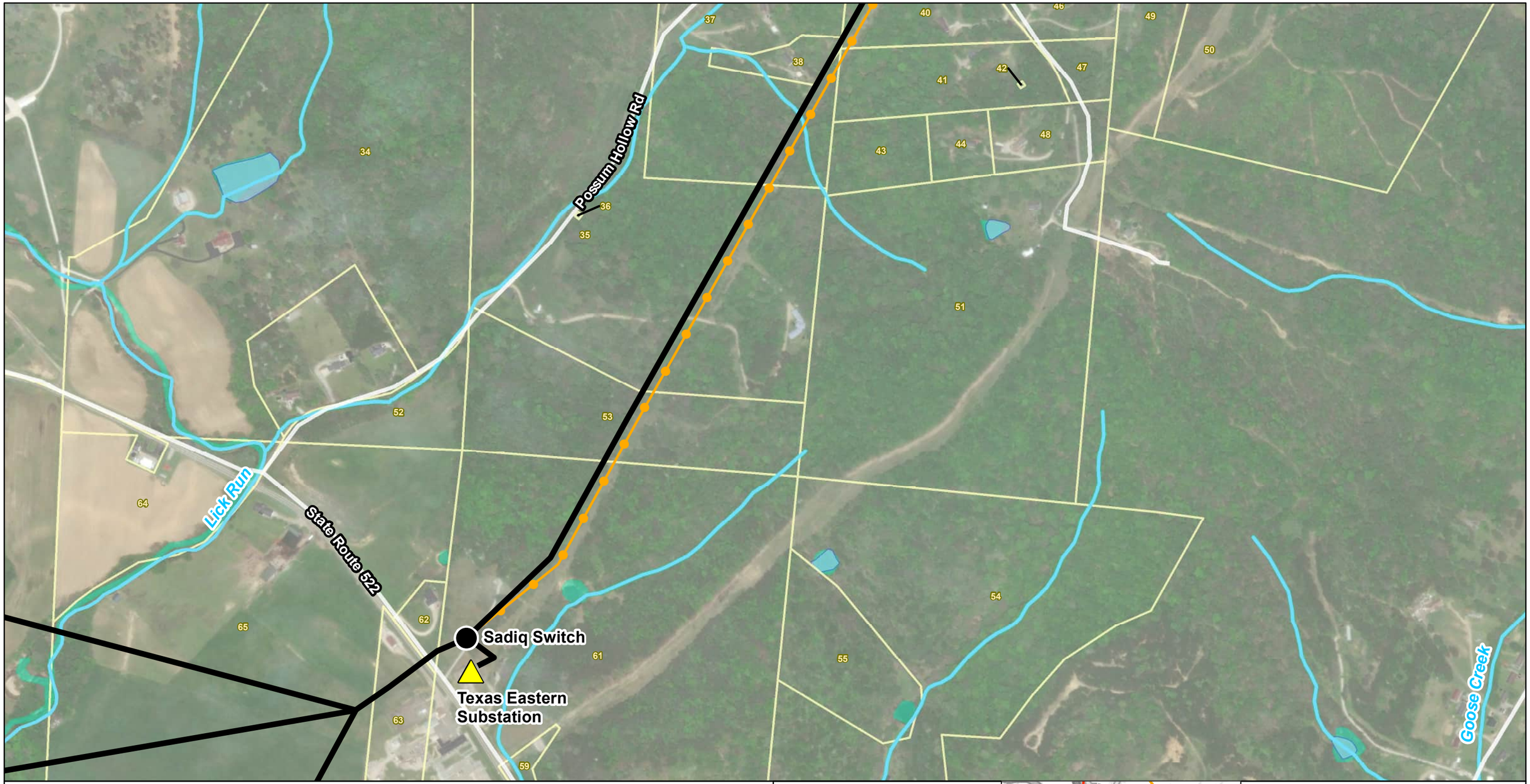
BOUNDLESS ENERGY™

Wheelersburg Area Improvements



Legend

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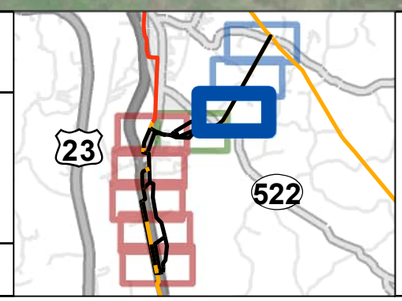
0 320 640
Feet

March 03, 2022



Aerial Map
East Wheelersburg Substation - Sadiq Switch
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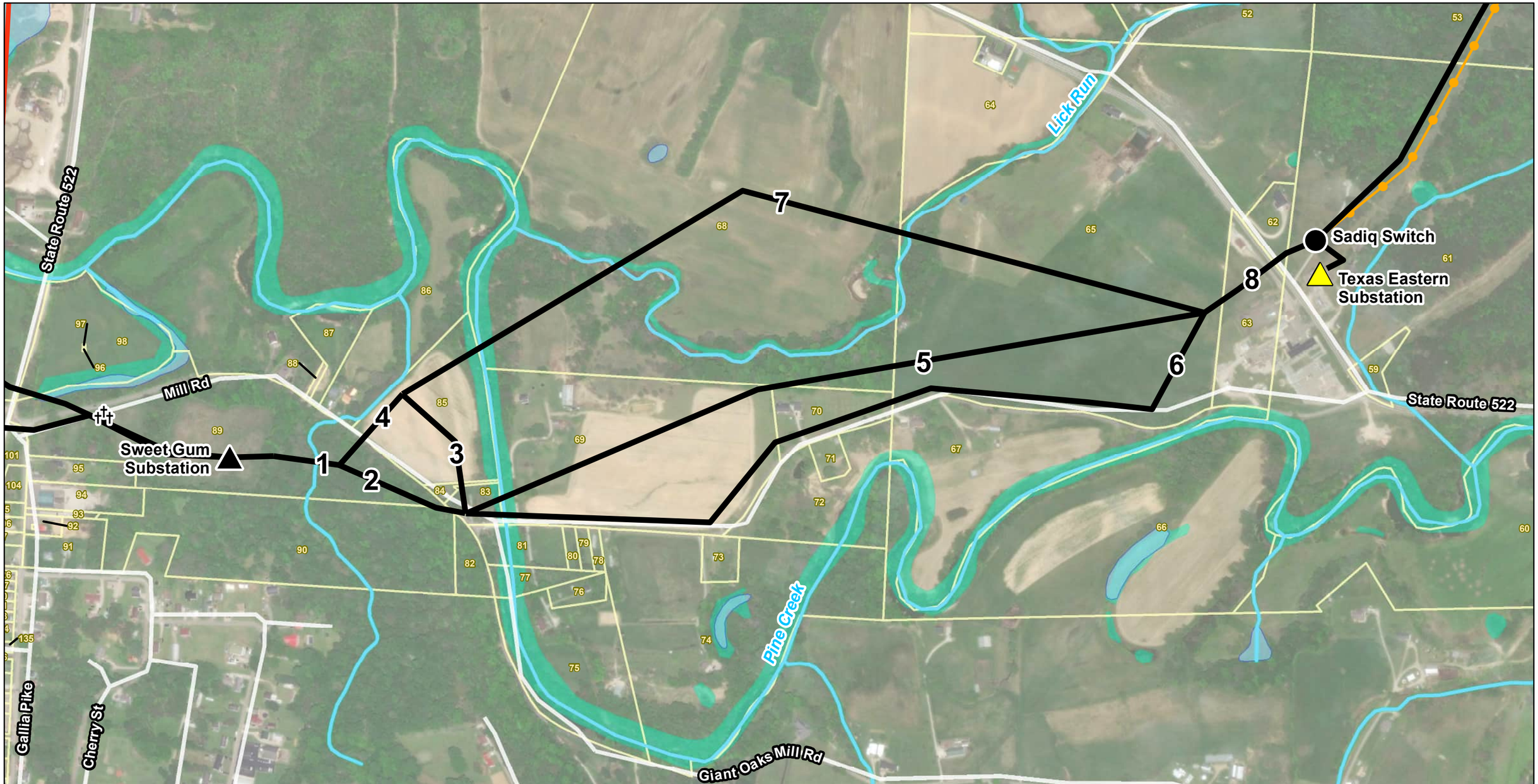
AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements



Legend

- Proposed Substation
- Existing Substation
- Switch Structure
- Cemetery
- Existing Transmission Line
- Study Segment For Transmission Line To Be Built
- Transmission Facilities to be Removed
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- NHD Waterbody
- NWI Wetland
- Parcel Boundary

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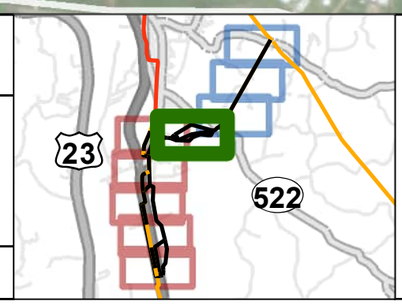
When printed at 17x11
0 320 640
Feet

March 03, 2022



Aerial Map
Sadiq Switch - Sweet Gum Substation
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AEP OHIO
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BOUNDLESS ENERGY™

Wheelersburg Area Improvements

Wheelersburg Substation

Sweet Gum Substation

State Route 522

Us Hwy 52

Mill Rd

Lick Run

Pine Creek

Giant Oaks Mill Rd

Gallia Pike

Cherry St

1

2

Legend

- Proposed Substation
- Existing Substation
- Cemetery
- Existing Transmission Line
- Study Segment For Transmission Line To Be Built
- Study Segment For Transmission Line To Be Rebuilt
- Transmission Facilities to be Removed
- NHD Stream
- NHD Waterbody
- NWI Wetland
- Parcel Boundary

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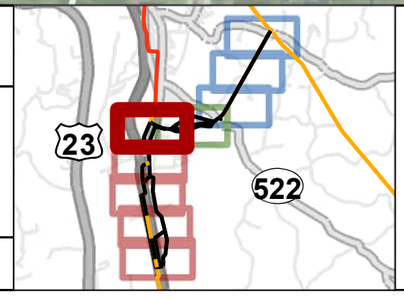
1 inch = 470 feet

When printed at 17x11

0 320 640

Feet

March 03, 2022



Aerial Map
Sweet Gum Substation - Althea Substation
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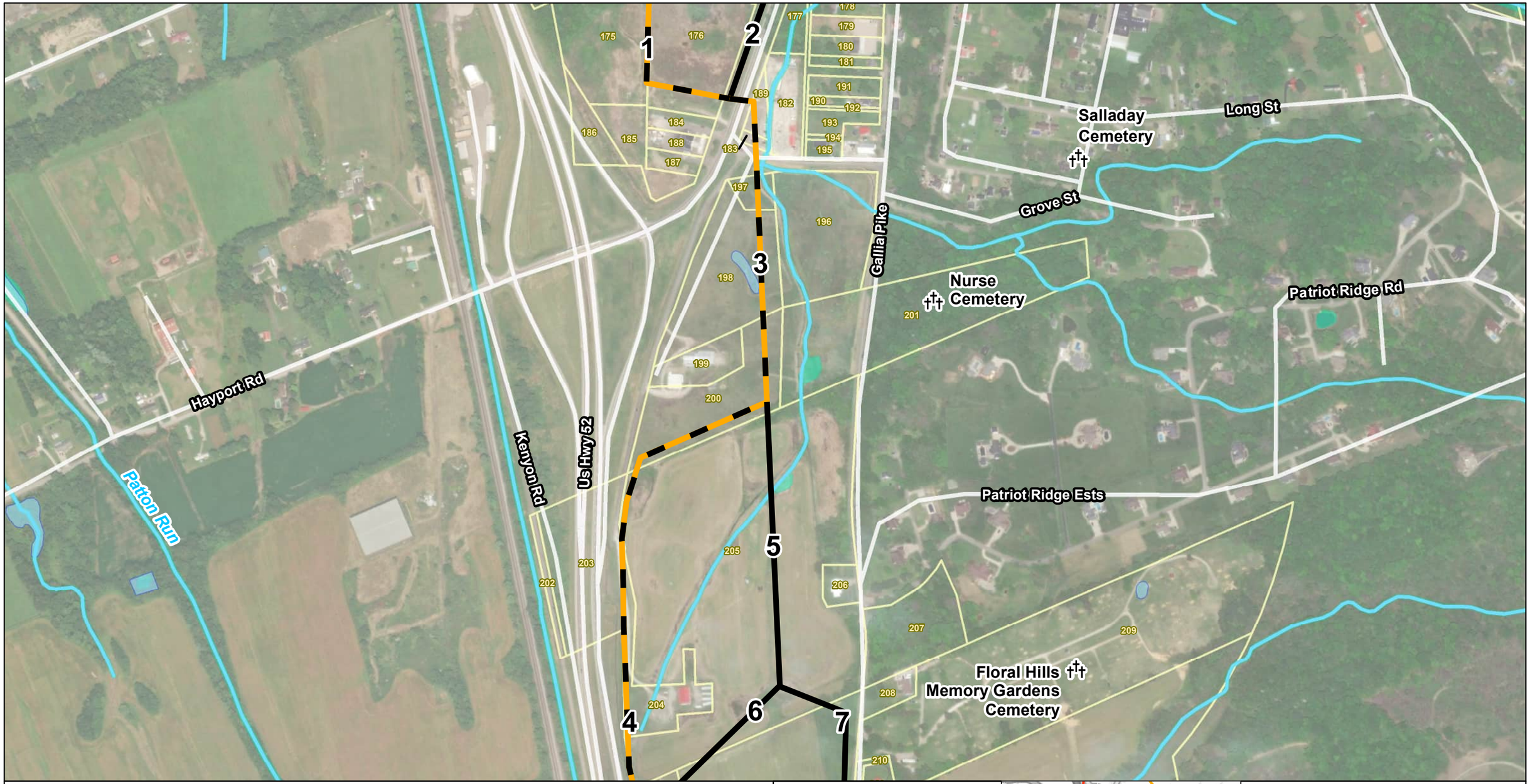
AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements



Legend

- Cemetery
- Study Segment For Transmission Line To Be Built
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- NHD Waterbody
- NWI Wetland
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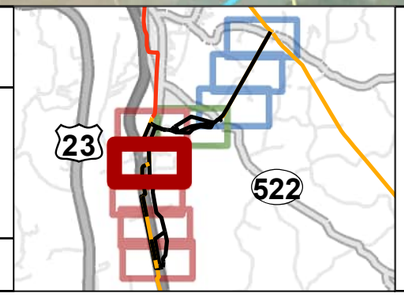
0 320 640

Feet

March 03, 2022



Aerial Map
Sweet Gum Substation - Althea Substation
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AEP OHIO
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BOUNDLESS ENERGY™

Wheelersburg Area Improvements

Floral Hills Memory Gardens Cemetery

Gallia Pike

Kenyon Rd

Hayport Road Switch

Us Hwy 52

Patton Run

Jewell Rd

Ohio River

Patton Run

4 6 8 7 9 10

204 208 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 241 242 243 244 245 246

Legend

- Switch Structure
- Cemetery
- Study Segment For Transmission Line To Be Built
- Study Segment For Transmission Line To Be Rebuilt
- NHD Stream
- NHD Waterbody
- NWI Wetland
- Parcel Boundary

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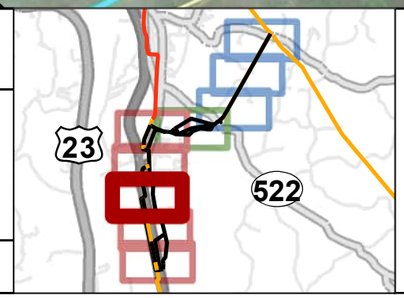
Feet

March 03, 2022



Aerial Map
Sweet Gum Substation - Althea Substation
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AEP OHIO
An AEP Company
BOUNDLESS ENERGY

Wheelersburg Area Improvements

Legend

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- Study Segment For Transmission Line To Be Rebuilt
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- Parcel Boundary

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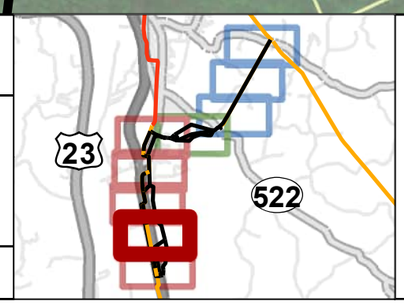
Feet

March 03, 2022



Aerial Map
Sweet Gum Substation - Althea Substation
Page 8 of 9

AEP OHIO
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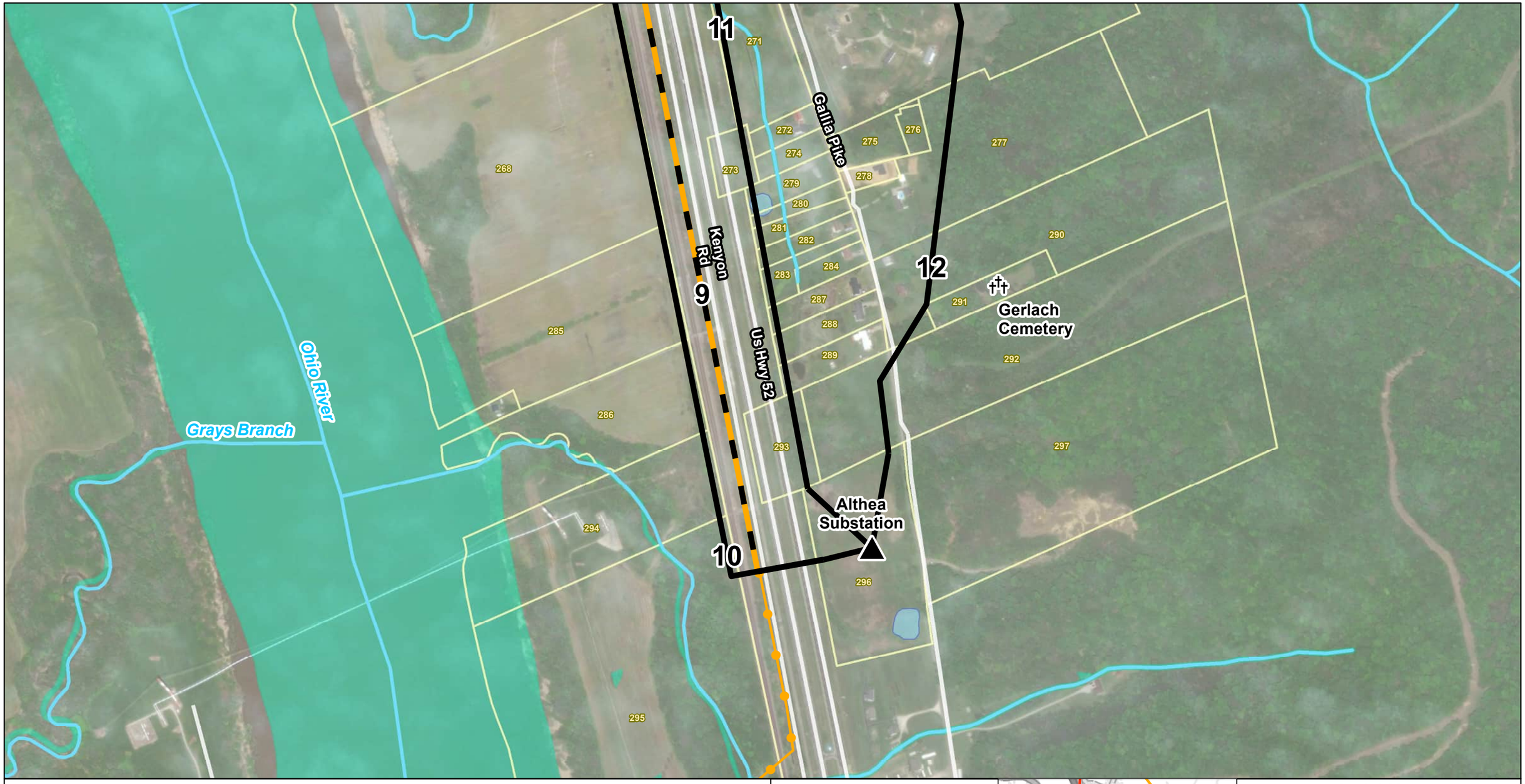
BOUNDLESS ENERGY™

Wheelersburg Area Improvements



Legend

- Proposed Substation
- Cemetery
- Existing Transmission Line
- Study Segment For Transmission Line To Be Built
- Study Segment For Transmission Line To Be Rebuilt
- NHD Stream
- NHD Waterbody
- NWI Wetland
- Parcel Boundary

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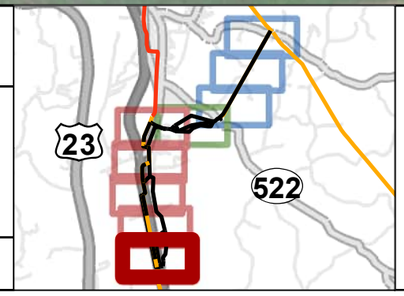
1 inch = 470 feet

When printed at 17x11

0 320 640

Feet

March 03, 2022



Aerial Map
Sweet Gum Substation - Althea Substation
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AEP OHIO
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BOUNDLESS ENERGY™

Wheelersburg Area Improvements

Wheelersburg Substation

Sweet Gum Substation

Hayport Road Switch

Althea Substation

1

2

3

Wheelersburg Substation
Vernon St
Green St
Possum Hollow Rd
Old Us 23 Loop
522
Lick Run
Sweet Gum Substation
Pine Creek
Mill Rd
Hayport Rd
Selby Ave
Cherry St
Giant Oaks Mill Rd
Long St
Grove St
Patriot Ridge Rd
Burkes Ln
Little Rocky Branch
Ohio
Kentucky
Patton Run
Kenyon Rd
Hayport Road Switch
Jewell Rd
Moore Rd
Ohio River
Gallia Pike
Grays Branch
Ohio River Rd
Sugarcamp Branch
Pitch Branch
Mullins Rd
TWHY 515
Althea Substation
23
52

Legend

- Proposed Substation
- Existing Substation
- Switch Structure
- Route Alternative A
- Route Alternative B
- Limits of City
- State Boundary
- Sweet Gum - Althea Figure Key

Transmission line routes are preliminary and subject to change

1 inch = 667 feet

When printed at 24x36

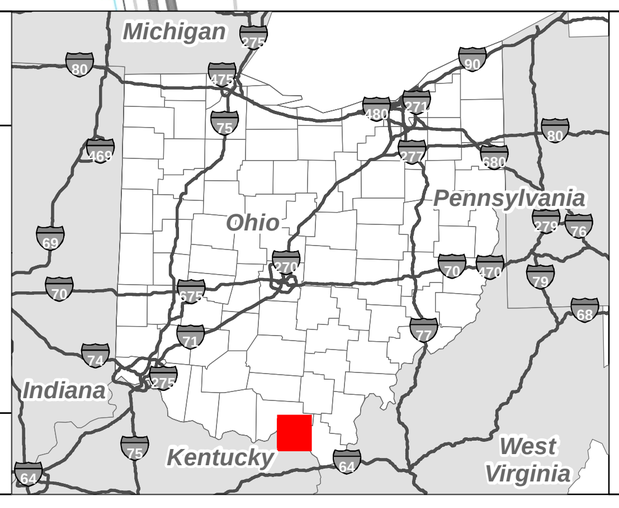
0 1,000 2,000

Feet

0 0.2 0.4

Miles

October 04, 2022



Index Overview Map
Althea - Sweetgum
138kV Transmission Line

AEP OHIO
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Wheelersburg Area Improvements

Pine Creek
Wheelersburg Substation
State Route 522
Pine Creek
Mill Rd
Sweet Gum Substation
Hunt Ln
State Route 522
Gallia Pike
Cherry St
Carter St
Midway Ave
Long St
Salladay Cemetery
US Hwy 52
International Ln
Grove St
Nurse Cemetery
Patriot Ridge Rd
Kenyon Rd
Patriot Ridge Ests

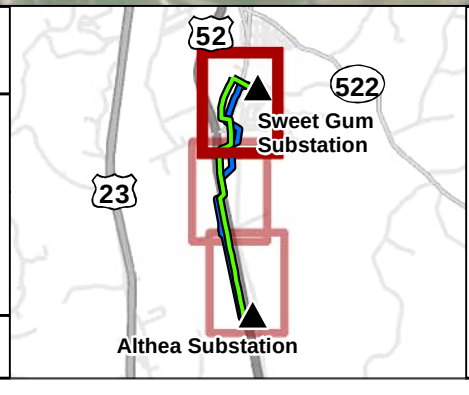
Legend

- Proposed Substation
- Existing Substation
- Religious Facility
- Cemetery
- Route Alternative A
- Route Alternative B
- Railroad
- NHD Stream
- NHD Waterbody
- NWI Wetland
- Parcel Boundary

Transmission line routes are preliminary and subject to change

1 inch = 470 feet
When printed at 11x17
0 290 580
Feet

October 04, 2022



Aerial Map
Althea - Sweetgum
138 kV Transmission Line
Page 1 of 3

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements

Patriot Ridge Ests

Floral Hills
Memory Gardens
Cemetery

Kenyon Rd

Us Hwy 52

Hayport
Road Switch

Gallia Pike

Patton Run

Jewell Rd

Moore Rd

112 110 111 116 114 115 113 117 118 121 120 119 123 125 122 124 138 139 140 137 141 142 134 133 148 149 130 136 126 129 131 132 150 135 147 151 152 127 128 146 145 156 143 144 157 153 158 159

Legend

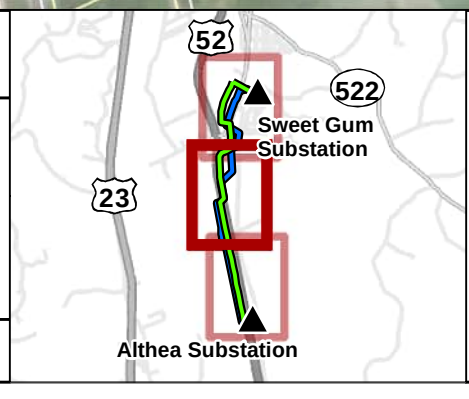
- Switch Structure
- Parcel Boundary
- Cemetery
- Route Alternative A
- Route Alternative B
- Railroad
- NHD Stream
- NHD Waterbody
- NWI Wetland

Transmission line routes are preliminary and subject to change

1 inch = 470 feet
When printed at 11x17

0 290 580
Feet

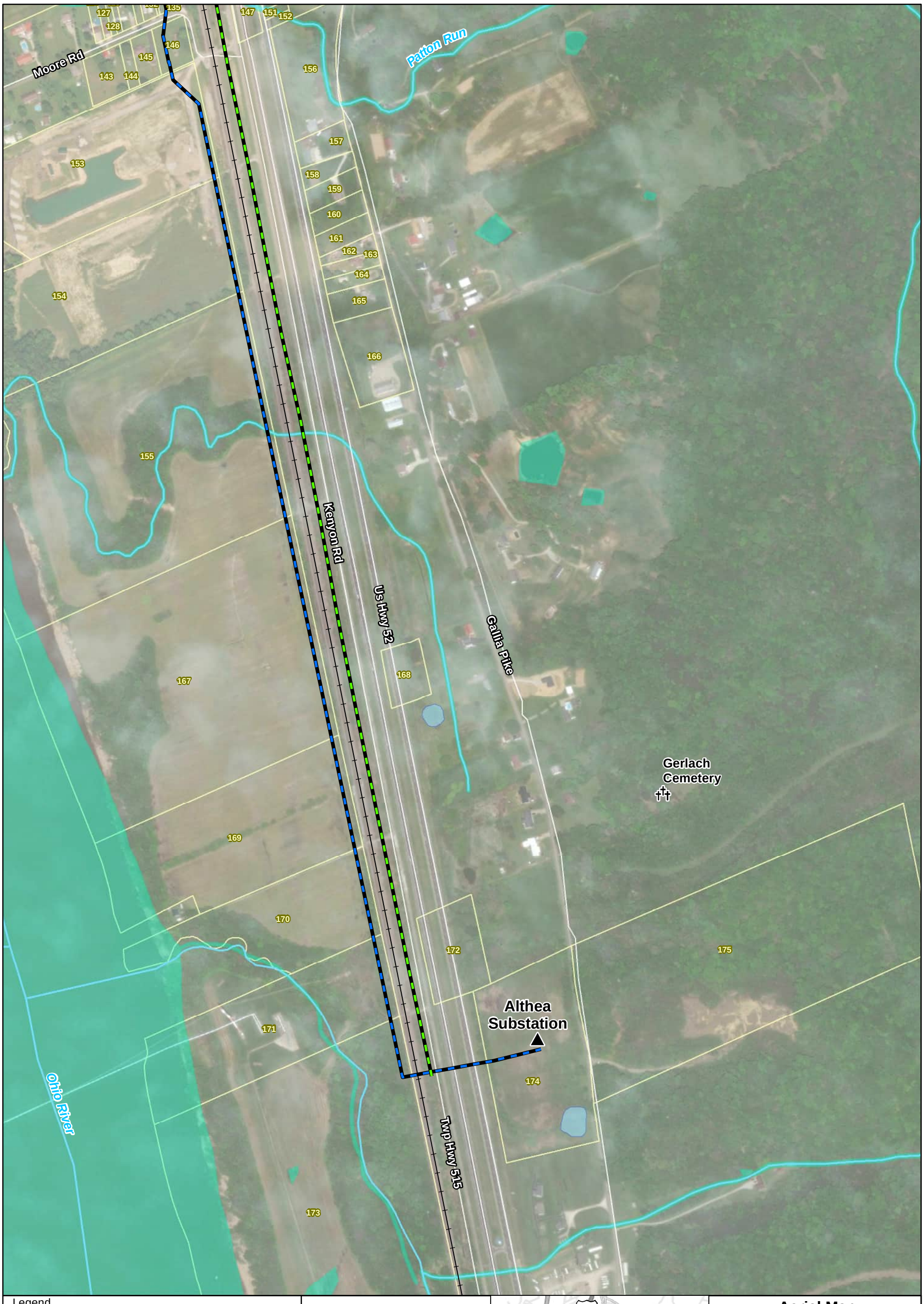
October 04, 2022



Aerial Map
Althea - Sweetgum
138 kV Transmission Line
Page 2 of 3

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements



Legend

- Proposed Substation
- Parcel Boundary
- Cemetery
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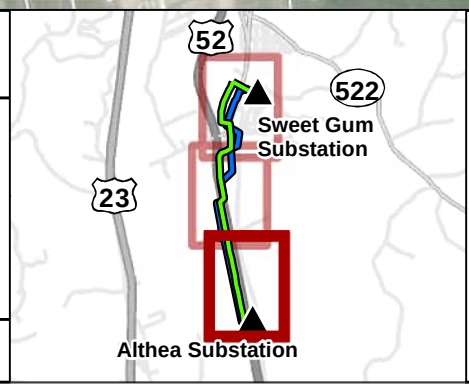
October 04, 2022



Aerial Map
Althea - Sweetgum
138 kV Transmission Line
Page 3 of 3

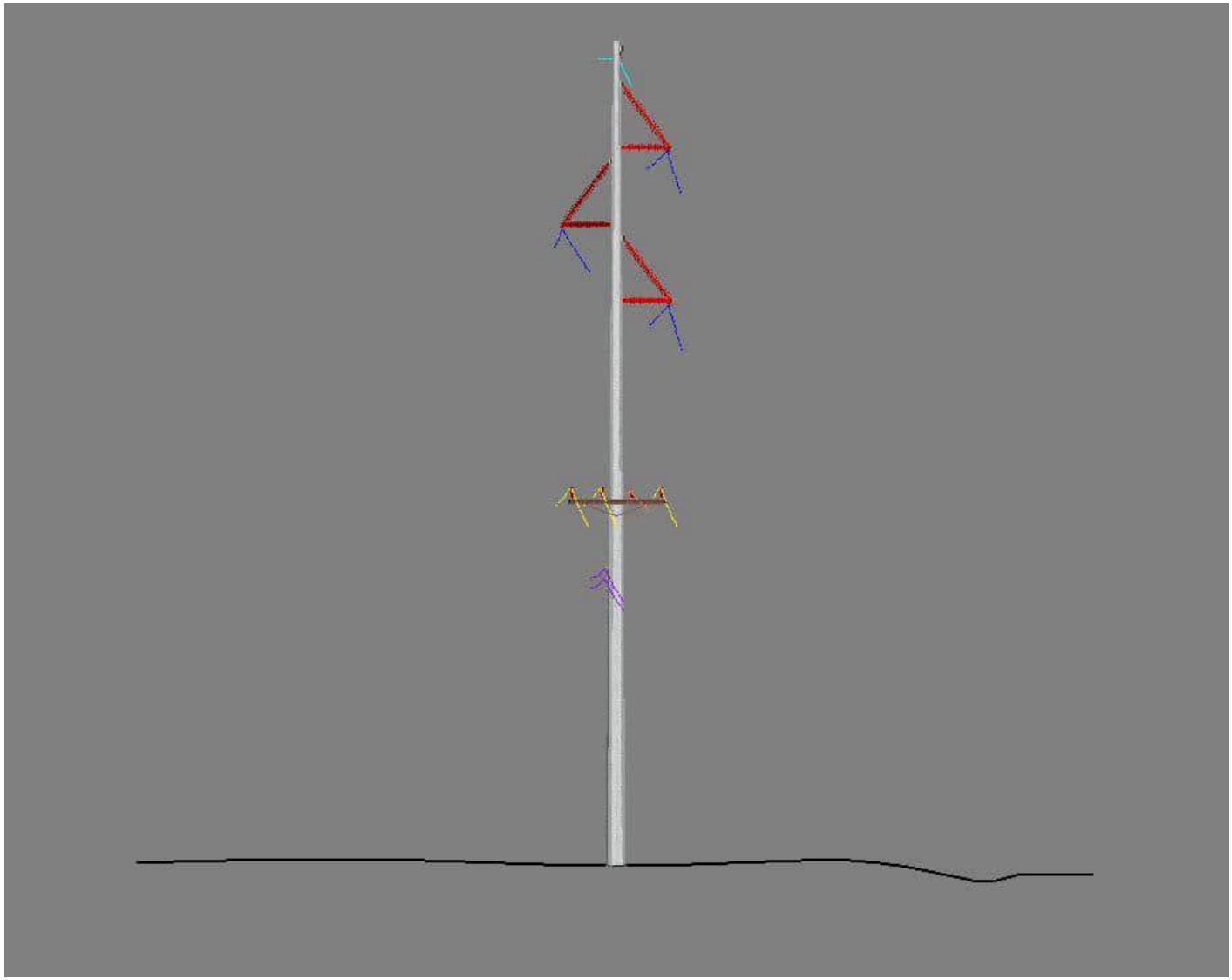
AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements

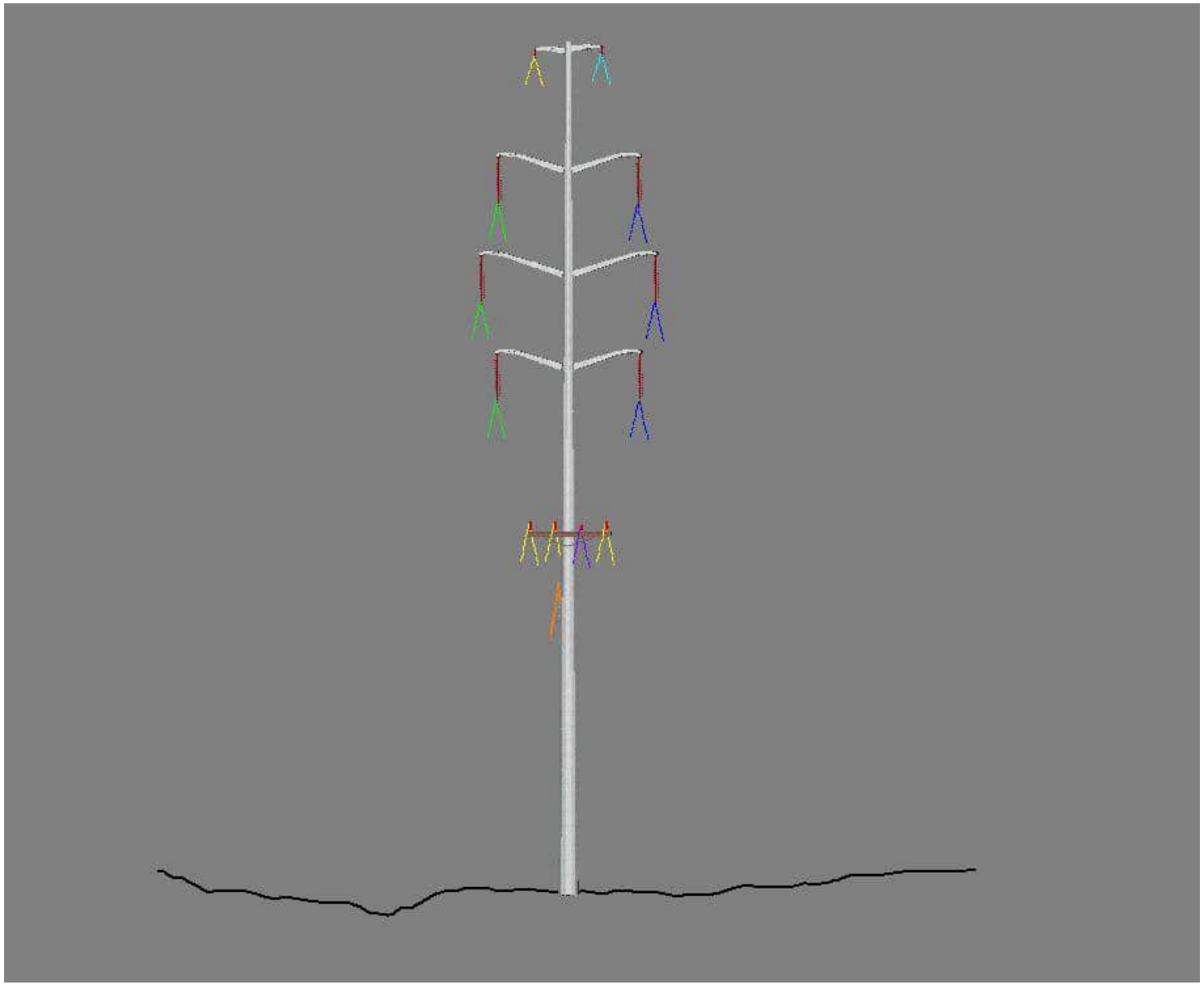
Appendix 5-1
Transmission Structure Diagram

Figure 5-1 Typical Steel Monopole Transmission Line Structures

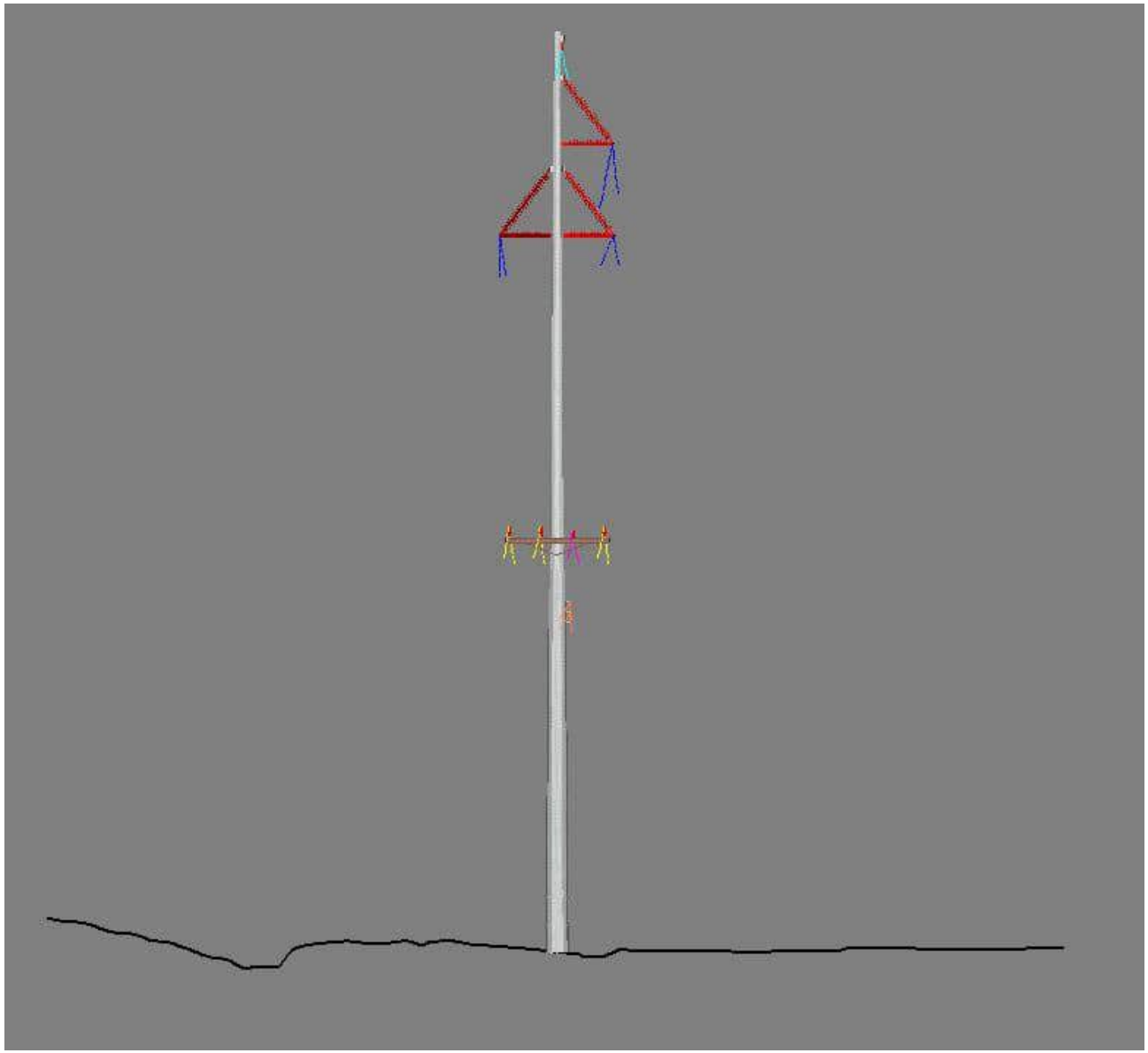
Alternating Configuration Structure



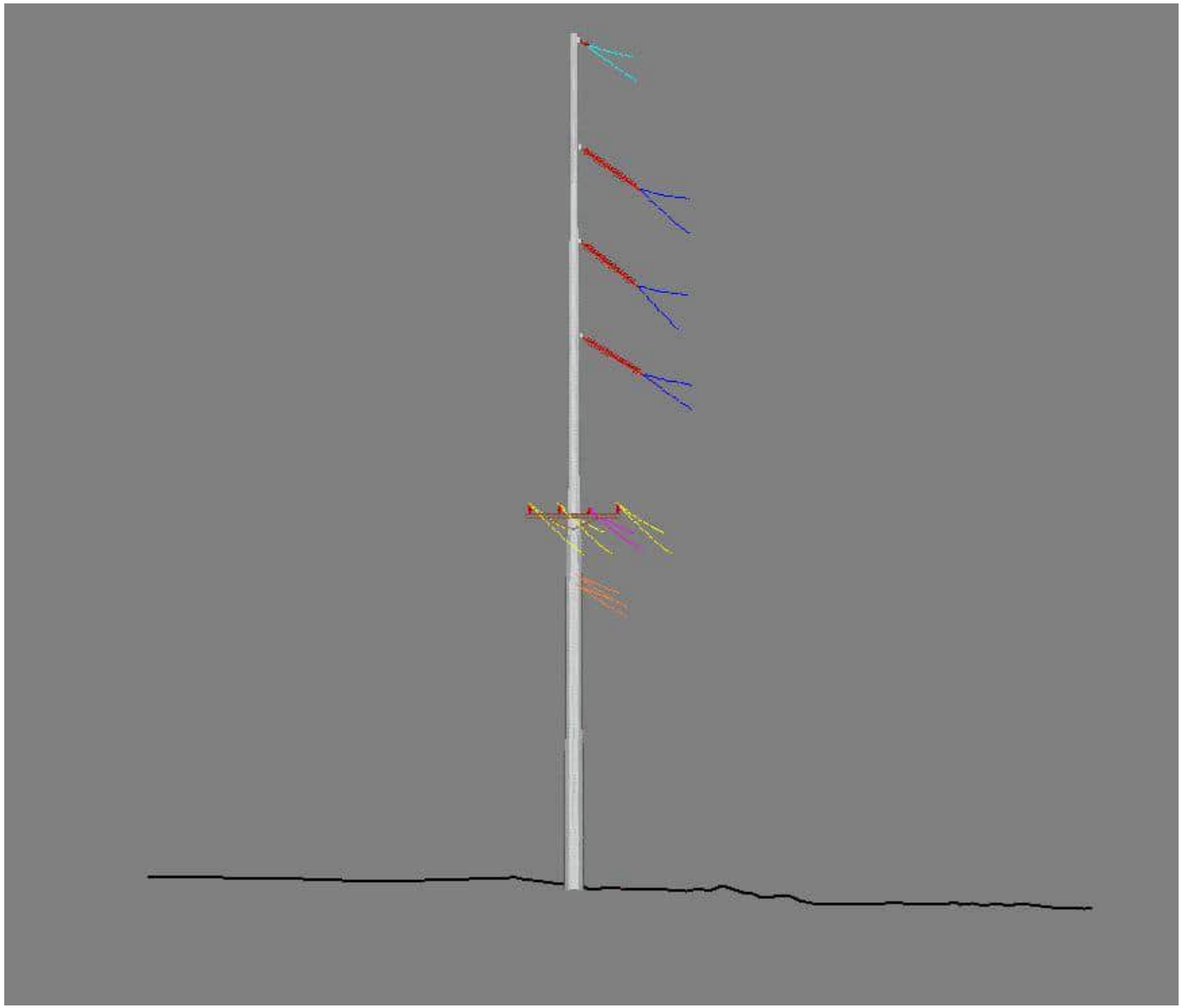
Davit Arm Structure



Delta Structure



Running Corner Structure



Appendix 6-1
List of Public Official Points of Contact

Municipality	Department	Title	Name	Phone	Email	Address
Scioto County	Commissioner	Chairman	Scottie Powell	740-355-8313	Scottie.powell@sciotocounty.net	602 7th Street Room 310, Portsmouth, OH 45662
			Bryan Davis		Bryan.davis@sciotocounty.net	
			Cathy Coleman		Ccoleman@sciotocounty.net	
Porter Township	-	Trustee	David Hayden	740-574-4245	-	1535 Dogwood Ridge Road, PO Box 427, Wheelersburg, OH 45694
		Trustee	Dennis DeCamp		-	
		Trustee	Kent Madden		-	
		Fiscal Officer	Ted Adams		-	
Portsmouth Public Library	-	Deputy Director	Michael Dombrowski	740-773-2691	-	1220 Gallia St, Portsmouth, OH 45662
Scioto County Soil and Water Conservation District	-	District Administrator	Debby Basham	-	-	12167 State Route 104, Lucasville, OH 45648
Scioto County Engineer's Office	-	County Engineer	Darren LeBrun	-	-	56 State Route 728, Lucasville, OH 45648
		County Engineer	Darren LeBrun	-	-	602 7th St., Room 401, Portsmouth, OH 45662

Appendix 6-2
Public Open House Informational Materials

WHEELERSBURG AREA IMPROVEMENTS PROJECT

AEP Ohio representatives plan power grid upgrades in Scioto County. The upgrades enhance area electric reliability by adding another power source and replacing aging equipment with modern facilities. Crews expect to begin construction fall 2023 and conclude by spring 2026.

WHAT

The project involves:

- Building about 5 miles of 138-kilovolt (kV) power line
- Rebuilding about 2 miles of 138-kV power line
- Removing about 10 miles of transmission facilities
- Replacing Wheelersburg Substation located on Earwood Lane with Sweetgum Substation located near OH-522 and Mill Road
- Building Althea Substation located off Gallia Pike in Franklin Furnace

*This project involves Ohio Power Siting Board (OPSB) approval.

WHY

The improvements:

- Enhance electric service reliability for customers by providing an additional power source to meet the current power demand
- Replace deteriorating equipment from 1916 with modern facilities to ensure continued reliable electric service
- Upgrade the power grid and speed recovery of service when an outage occurs

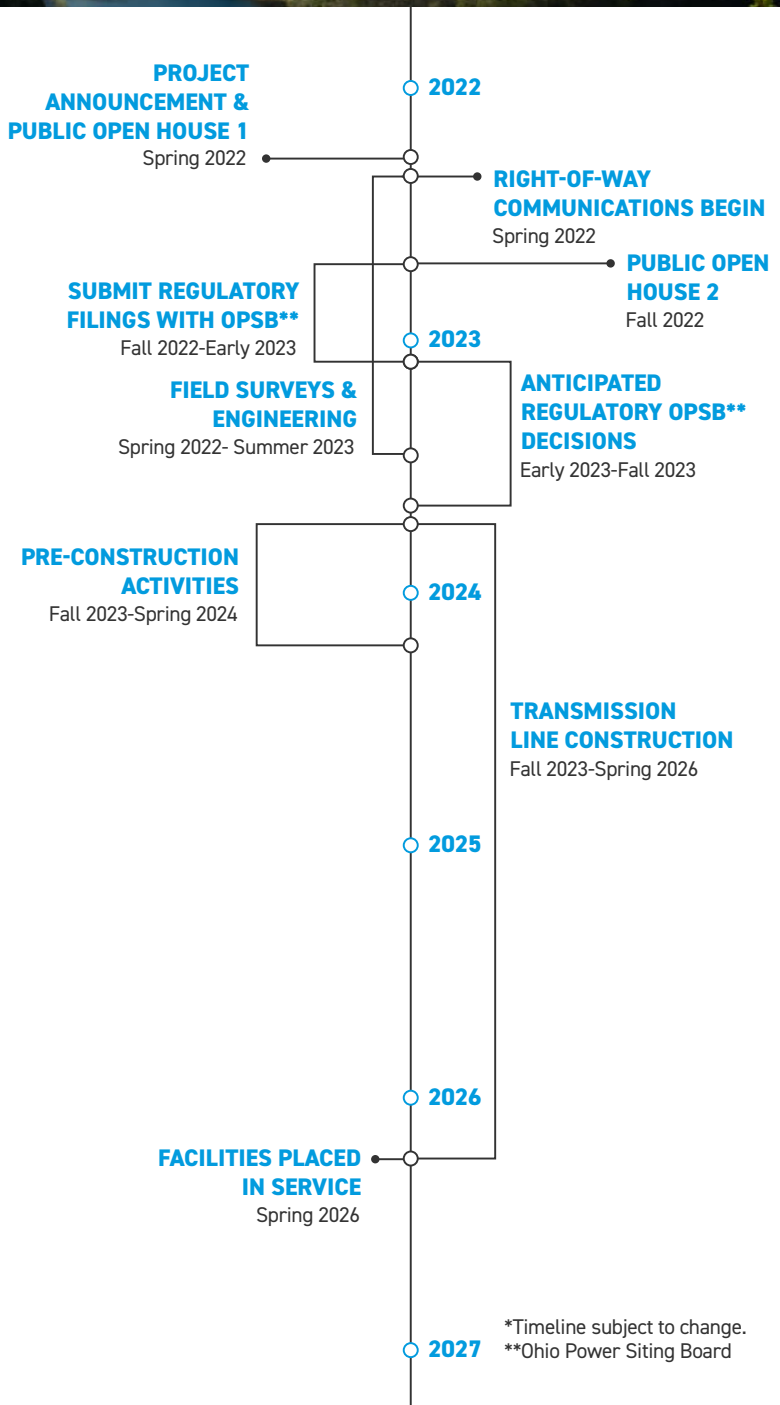
WHERE

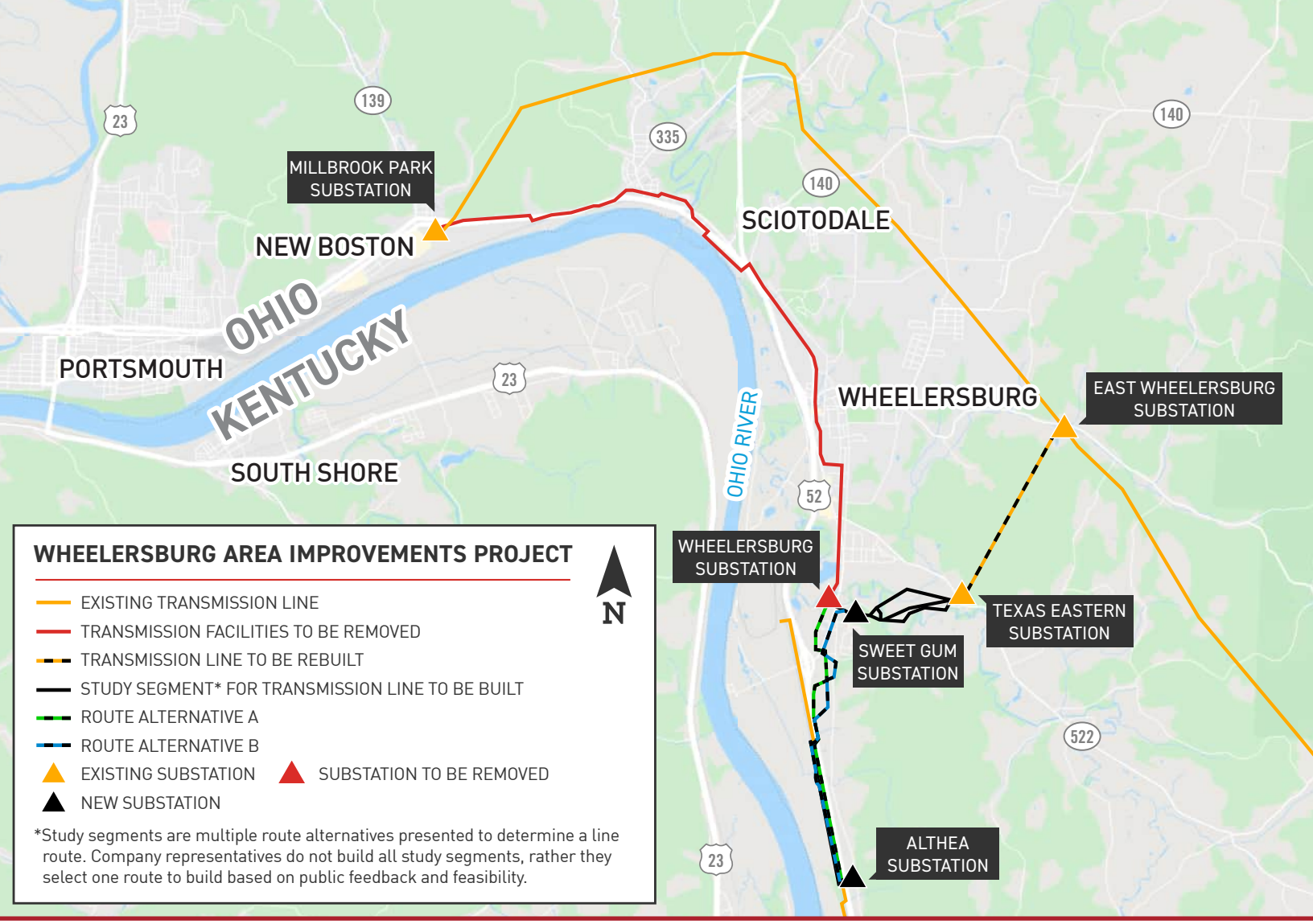
The project area involves:

- City of Wheelersburg
- Green Township
- Allentown
- Porter Township
- Sciotodale
- Village of New Boston

Company representatives plan to evaluate possible study segments* to help determine the location of the improvements. Input from the community helps determine the location of the final line route.

*Study segments, or route options, are multiple alternatives presented to determine a line route. Company representatives do no build all route options, but rather they select one route to build based on public feedback and feasibility.





WHEELERSBURG AREA IMPROVEMENTS PROJECT

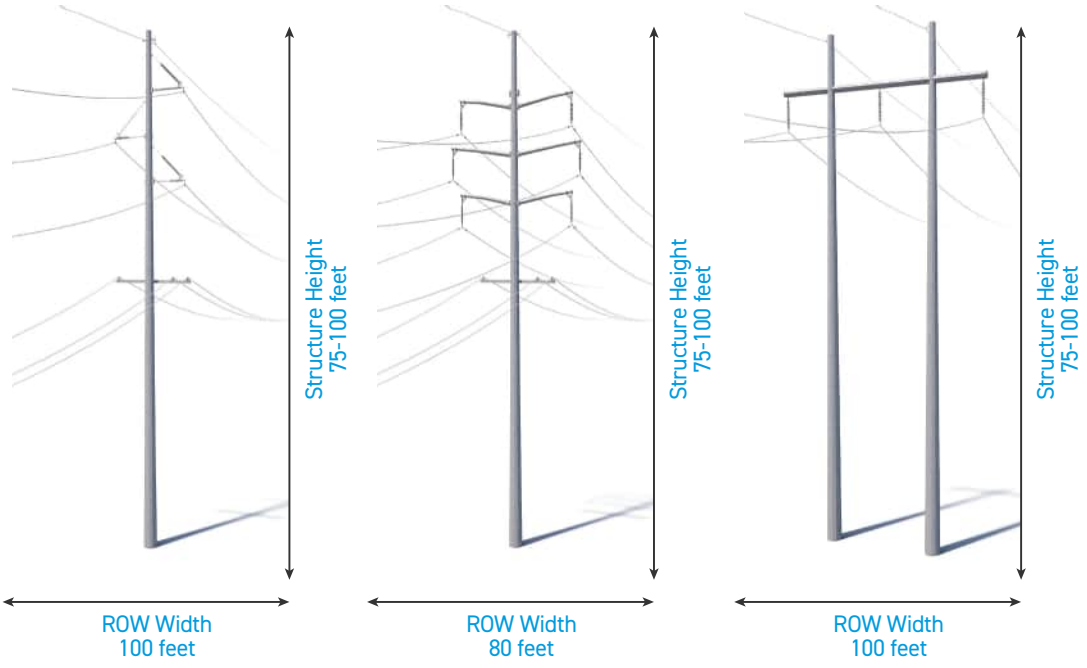
- EXISTING TRANSMISSION LINE
- TRANSMISSION FACILITIES TO BE REMOVED
- TRANSMISSION LINE TO BE REBUILT
- STUDY SEGMENT* FOR TRANSMISSION LINE TO BE BUILT
- ROUTE ALTERNATIVE A
- ROUTE ALTERNATIVE B
- EXISTING SUBSTATION
- SUBSTATION TO BE REMOVED
- NEW SUBSTATION

*Study segments are multiple route alternatives presented to determine a line route. Company representatives do not build all study segments, rather they select one route to build based on public feedback and feasibility.

TYPICAL STRUCTURES

The project involves the use of steel single pole and H-frame structures.

Pole Height Range: 75-100 feet
Right-of-Way Width Range: 80-100 feet



Exact structure, height, and right-of-way requirements may vary.

WE VALUE YOUR INPUT. PLEASE SEND COMMENTS AND QUESTIONS TO:
MAGGIE BEGGS · PROJECT OUTREACH SPECIALIST
MRBEGGS@AEP.COM · 380-205-5178
AEPOHIO.COM/WHEELERSBURG

AEP OHIO
An AEP Company
BOUNDLESS ENERGY

09/20/2022

Wheelersburg Substation

Sweet Gum Substation

Hayport Road Switch

Althea Substation

1

2

3

Wheelersburg Substation
Vernon St
Green St
Possum Hollow Rd
Old Us 23 Loop
522
Lick Run
Sweet Gum Substation
Pine Creek
Mill Rd
Hayport Rd
Selby Ave
Cherry St
Giant Oaks Mill Rd
Long St
Grove St
Patriot Ridge Rd
Burkes Ln
Little Rocky Branch
Ohio
Kentucky
Patton Run
Kenyon Rd
Hayport Road Switch
Jewell Rd
Moore Rd
Ohio River
Gallia Pike
Grays Branch
Ohio River Rd
Sugarcamp Branch
Pitch Branch
Mullins Rd
TWHY 515
Althea Substation
23
52

Legend

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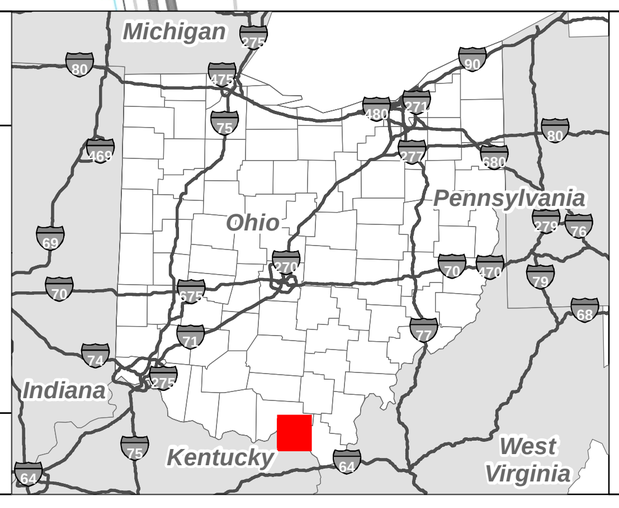
0 1,000 2,000

Feet

0 0.2 0.4

Miles

October 04, 2022



Index Overview Map
Althea - Sweetgum
138kV Transmission Line

AEP OHIO
An AEP Company
BOUNDLESS ENERGY™

Wheelersburg Area Improvements

Pine Creek
Wheelersburg Substation
State Route 522
Pine Creek
Mill Rd
Sweet Gum Substation
Hunt Ln
State Route 522
Gallia Pike
Cherry St
Carter St
Midway Ave
Long St
Salladay Cemetery
US Hwy 52
International Ln
Grove St
Nurse Cemetery
Patriot Ridge Rd
Kenyon Rd
Patriot Ridge Ests

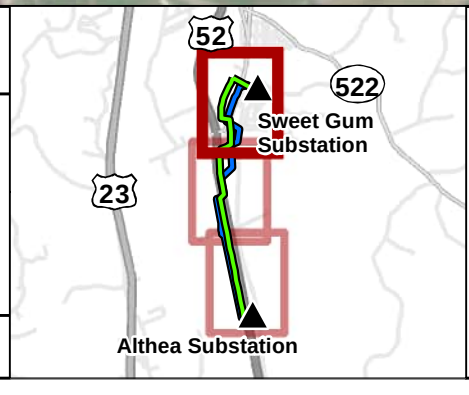
Legend

- Proposed Substation
- Existing Substation
- Religious Facility
- Cemetery
- Route Alternative A
- Route Alternative B
- Railroad
- NHD Stream
- NHD Waterbody
- NWI Wetland
- Parcel Boundary

Transmission line routes are preliminary and subject to change

1 inch = 470 feet
When printed at 11x17
0 290 580
Feet

October 04, 2022



Aerial Map
Althea - Sweetgum
138 kV Transmission Line
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AEP OHIO
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Wheelersburg Area Improvements

Patriot Ridge Ests

Floral Hills
Memory Gardens
Cemetery

Kenyon Rd

Us Hwy 52

Hayport
Road Switch

Gallia Pike

Patton Run

Jewell Rd

Moore Rd

112 110 111 116 114 115 113 117 118 121 120 119 123 125 122 124 138 139 140 137 141 142 134 133 148 149 130 136 126 129 131 132 150 135 147 151 152 127 128 146 145 156 143 144 157 153 158 159

Legend

- Switch Structure
- Parcel Boundary
- Cemetery
- Route Alternative A
- Route Alternative B
- Railroad
- NHD Stream
- NHD Waterbody
- NWI Wetland

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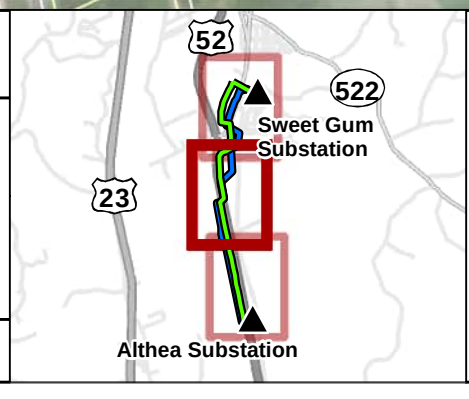
0 290 580
Feet

October 04, 2022



Aerial Map
Althea - Sweetgum
138 kV Transmission Line
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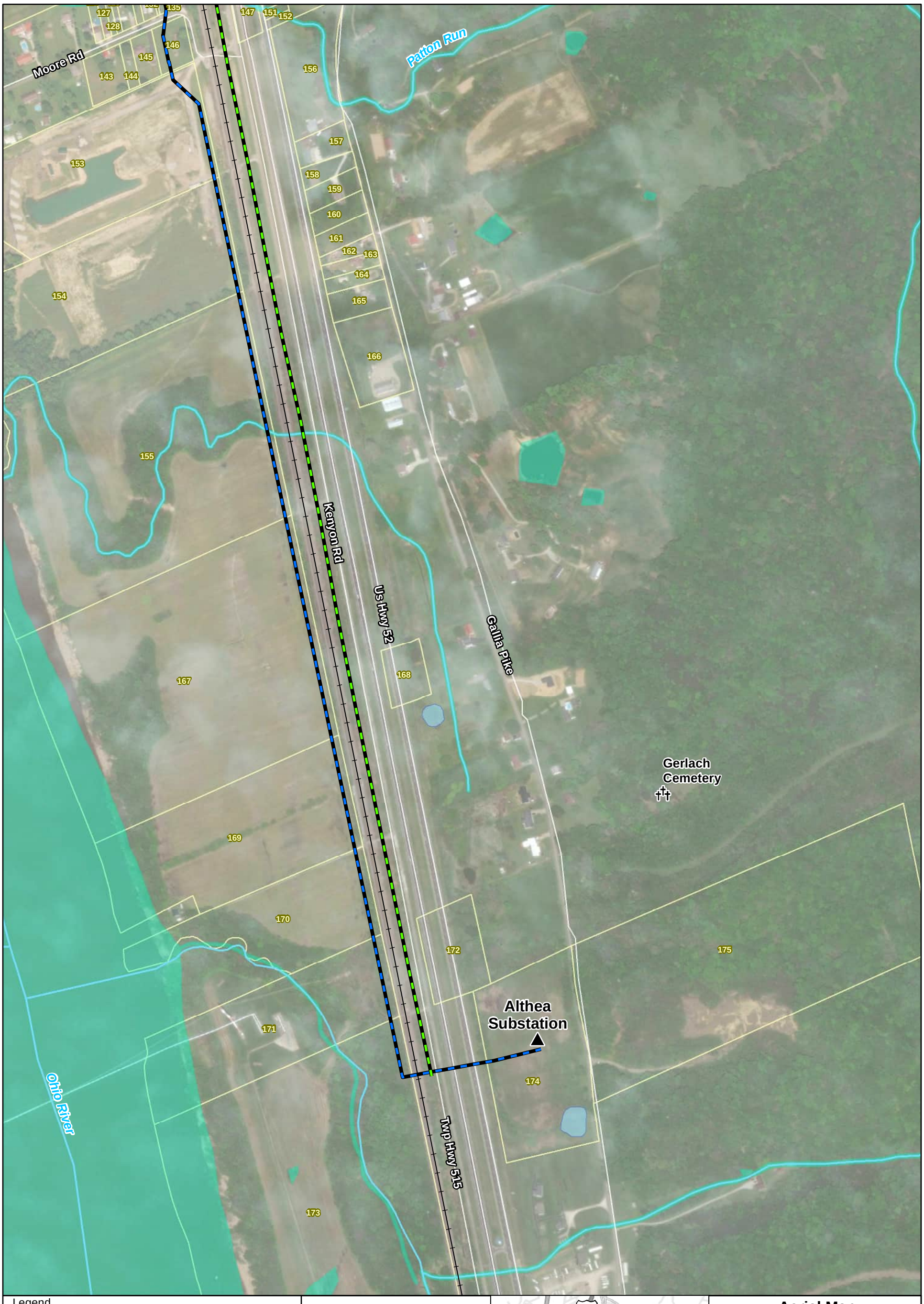
Wheelersburg Area Improvements



Legend

- Proposed Substation
- Parcel Boundary
- Cemetery
- Route Alternative A
- Route Alternative B
- Railroad
- NHD Stream
- NHD Waterbody
- NWI Wetland

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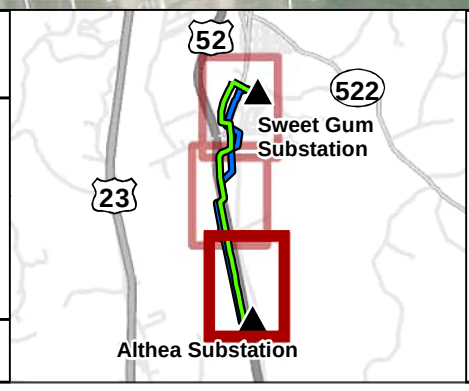
Feet

October 04, 2022



Aerial Map
Althea - Sweetgum
138 kV Transmission Line
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Wheelersburg Area Improvements

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in

Case No(s). 22-0857-EL-BTX

Summary: Application Althea-Sweetgum 138 kV Transmission Line Project 2 of 5 electronically filed by Hector Garcia-Santana on behalf of AEP Ohio Transmission Company, Inc.