CONSTRUCTION NOTICE

FOR THE

Seward Substation Transmission Line Relocation Project

OPSB Case No. 22-0012-EL-BNR

Submitted to:

The Ohio Power Siting Board

Pursuant to O.A.C. 4906-06

Submitted by:

Duke Energy Ohio, Inc.

TABLE OF CONTENTS

ATTACHMENTS

CONSTRUCTION NOTICE

This Construction Notice has been prepared by Duke Energy Ohio, Inc., (hereafter Duke Energy Ohio or Company) in accordance with Ohio Administrative Code (O.A.C.) Section **4906-6-05** for review of the Accelerated Certificate Application for the Duke Energy Ohio Seward Substation Transmission Line Relocation Project. The following sections correspond to the administrative code sections for the requirements of a Construction Notice.

4906-06-05: ACCELERATED APPLICATION REQUIREMENTS

4906-6-05(B): General Information

4906-6-05(B)(1): Name, Reference Number, Brief Description, and Construction Notice Requirement

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

Name of Project:

Duke Energy Ohio Seward Substation Transmission Line Relocation Project (Project)

	Reference Numbers:
OPSB Filing Number:	The Project has been assigned Ohio Power Siting Board (OPSB) Case Number 22-0012-EL-BNR.
PJM Number:	The project has been presented to PJM and a supplemental project number is anticipated in the near future.
2021 LTFR:	The Project was not included in the 2021 Long-Term Forecast Report (LTFR); however, it will be included in the 2022 LTFR.
Circuit Reference:	Circuit 3889

Brief Description of the Project:

Duke Energy Ohio proposes to relocate segments of Circuit 3889, a 138 kilovolt (kV) transmission line due to equipment upgrades and changes within the existing distribution Seward Substation. The relocation of the transmission line will consist of the removal of an existing single pole structure and the installation of three new single pole structures to align the transmission line with the new equipment within the Seward Substation. Specifically, the Project will include three direct embed steel monopoles and approximately 200 feet of new conductor per phase. The Project is located entirely within Duke Energy Ohio property and existing Duke Energy Ohio right of way (ROW) and easement.

Duke Energy Ohio will also be constructing an access drive at the rear (southwest corner) of the Seward Substation to allow for construction and maintenance vehicles and equipment to reach the relocated transmission and distribution structures through the Duke Energy owned property.

This access drive will require minimal vegetation removal, grading and the extension of substation grounding materials.

The proposed Project is necessary in order to maintain the integrity of existing Duke Energy Ohio structures and ensure adequate power supplies to current and future utility customers in the area. The Project is located south of the Norfolk and Western Railroad, north of Symmes Road, east of Seward Road and west of the Erie-Miami Trail in the City of Fairfield, Butler County, Ohio (Figures 1 and 2).

Construction Notice Requirement:

This Project qualifies as a Construction Notice filing because it meets the requirements outlined in O.A.C. 4906-1-01, Appendix A, item (2)(a). Item (2)(a) *Application Requirement Matrix for Electric Power Transmission Lines:*

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

   (a) Line(s) not greater than 0.2 miles in length.

4906-6-05(B)(2): Statement of Need

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

The relocated segments of Circuit 3889 are necessary to align the 138 kilovolt (kV) transmission line to the equipment upgrades and equipment reconfiguration within the existing distribution Seward Substation. The equipment upgrades and reconfiguration within the existing distribution Seward Substation are required to support the anticipated load requirement that has been requested by a local industrial customer, as well as to provide additional capacity for future load growth in the area.

4906-6-05(B)(3): Project Location

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

The location of the Project is depicted in Attachment A: Figures 1 and 2. Figure 1 displays the Project's general vicinity depicted on a United States Geological Survey (USGS) quadrangle topographic map. Figure 2 depicts the planned transmission line location, associated GIS layers, and additional details depicted on an aerial imagery map.

The location of the Project in relationship to existing transmission lines and substations is shown on Figure 3.

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

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

The proposed Project will occur entirely within existing Duke Energy Ohio property and easements. No long-term impacts to adjacent properties are anticipated as a result of the Project. Other alternative routes were not considered because the Project was able to take advantage of existing easements and avoid further impacts to ecological resources.

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

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

The Project is located entirely on Duke Energy Ohio property (see Figure 2). Any impacted property owner(s) will be notified prior to construction activities. Further information on the ongoing status of this Project and other Duke Energy Projects can be found at the following website:

www.duke-energy.com/Seward.

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

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

Construction is scheduled to begin in March 2022 pending approval of this Construction Notice. The Project is anticipated to be completed and the line in service by December 2022.

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

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

Figures 1 and 2, in Attachment A – Figures, depict the general location of the Project. Figure 1 shows the general Project vicinity on a United States Geological Survey (USGS) quadrangle topographic map. Attachment A, Figure 2, depicts the structure replacement location on an aerial image, with associated GIS layers, and additional features in the Project vicinity.

4906-6-05(B)(8): Property Agreements

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

The proposed Project is located entirely within existing Duke Energy Ohio property and easements.

4906-6-05(B)(9): Technical Features

The Project involves the removal of one existing wooden single pole structure and installation of three new direct embed steel monopoles. Specifically, proposed structure BTO-6113-73A will be approximately 85 feet in height and proposed structures BTO-21659-73B and BTO-15950-74B will be 80 feet in height. Additionally, approximately 200 feet of new conductor per phase (600 total conductor feet) will be installed in conjunction with the Project. General transmission line alignment and structure locations are provided in Attachment A – Figures.

The proposed access drive will be installed to the southeast of the Seward Substation perimeter fence. The access drive is projected to extend 150 feet from the substation and will be approximately 20 feet wide. The materials used to construct the access drive will consist of compacted clay fill and gravel. Approximately 420 cubic yards of material will be required to construct the access drive.

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

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

Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.

Voltage:	138-kV
Structure Type:	Three direct embed steel monopoles (1 – 85 ft. and 2 – 80 ft.)
Conductors:	Existing conductor will be transferred to the 1- 85 ft. structure; install three 954 ACSR Rail conductors (200 ft. per phase; 3 phase = 600 conductor feet).
Static Wire:	Existing 1/0 ACSR will be transferred. Install 200 circuit feet of 7#8AW static.
Insulators:	138-kV glass insulators
ROW Land Requirements:	Duke Energy Ohio owned property and existing easements

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

Information concerning the electric and magnetic fields are not required as the Project is not located within 100 feet of an occupied residence or institution.

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

The estimated capital cost of the project.

The estimated cost for the 138 kV transmission line relocation, including access drive, is approximately $649,254.

4906-6-05(B)(10): Social and Ecological Impacts

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

4906-6-05(B)(10)(a): Land Use Characteristics

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

The Project is located in the City of Fairfield, Butler County, Ohio. The City of Fairfield, which covers approximately 20.92 square miles, has a population of 42,510 people based on 2010 census data. The land use immediately surrounding the Project is developed commercial properties, recreational multiuse trail, and agricultural land.

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

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

The Project is located entirely in existing Duke Energy Ohio ROW and easement. Industrial turf and undeveloped commercial property dominates the majority of the Project area. No agricultural land is located within the Project area; therefore, the Project is not located within a registered agricultural district as defined by Chapter 929 of the Ohio Revised Code.

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

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

The Ohio Historic Preservation Office (OHPO) online mapping system was consulted in October 2021 to identify previously recorded cultural resources within 1 mile of the Project area (one mile buffer) (OHC 2015). Reviewed records indicate that 13 archaeological sites, 4 historic structures, and no National Register of Historic Places (NRHP)-listed resources or cemeteries are located within the 1.6 km (1 mi) study area. Two archaeological sites are located approximately 50 meters north of the current Project area. Site 33-Bu-0979 consists of a remnant, abandoned channel segment of the Miami-Erie Canal. The site consists of a ditch that is 65 feet wide at the ground

surface. No canal features were identified in the channel during its recordation and the segment was recommended ineligible for the NRHP (Kreinbrink 2003). The Miami-Erie Canal channel also travels through the eastern end of the current Project area. The section of the Miami-Erie Canal channel within the project is likely similar in size and design as the section recorded to the north as site 33-Bu-0979, and is unlikely to retain integrity and the channel will not be disturbed by the Project. Site 33-Bu-0980 consists of a small prehistoric lithic scatter determined ineligible for the NRHP (Kreinbrink 2003). No archaeological sites, cemeteries, historic resources, or NRHP listed resources have been previously recorded within the Project boundary.

Three available historic maps were referenced for information pertaining to the historic use of the Project area between 1875 and 1956 (Everts 1875; Rerick Brothers 1895; and USGS 1956).

The 1875 atlas depicts the Project area as being owned by W. Morris (Everts 1875). No structures or features are located within the Project area. Although not labelled on mapping, the Miami and Erie Canal is mapped within the eastern end of the Project area, and a road in the current location of Seward Road is mapped along the western boundary of the Seward Substation parcel (Everts 1875).

The 1895 atlas depicts the Project area as being owned by Sigmond Sommer. No structures are mapped within or adjacent to the Project area. The Miami and Erie Canal continues to be depicted within the eastern end of the Project area (Rerick Brothers 1895).

By 1956, the Glendale, Ohio 7.5' USGS topographic quadrangle depicts no structures within the Project area. The outline of the Miami and Erie Canal is mapped within the Project area; however, by this year, it is likely utilized for drainage, similar to its present use (USGS 1956).

Historic Aerial imagery depicts a large amount of ground disturbance within the Project area between 2004 and present (NetrOnline 2021). In 1956, the entire Project area is within agricultural fields and no structures are visible within the Project area. By 2004, the western portion of the Project area contains the initiation of the construction of Seward Substation and the entire parcel appears to have had some level of grading. By 2005, the completed substation and facilities are located in the western portion of the Project area. Grading is evident in the southeastern quadrant of the Project area. In 2017, a substation expansion was underway and the new substation footprint had grading nearly all the way to the remnant canal bed/ drainage channel in the eastern end of the Project area. The level of soil disturbance within the Project area between 2004 and present make it highly unlikely that intact cultural resources eligible for the NRHP are present.

No named waterbodies are located within the Project area; however, a ditch that represents the remains of the Miami and Erie Canal travels through the eastern end of the Project area. The Project area is currently located in heavily disturbed and graded areas that would not be conducive to intact archaeological deposits. The entire Project area appears to have been graded during the initial construction of the substation facility and construction of adjacent facilities between 2004 and the present. Due to the previously disturbed soils within the Project area, no archaeological reconnaissance is recommended for the project to proceed as planned. Although a remnant channel of the Miami and Erie Canal runs through the eastern end of the Project area, it represents an isolated remnant of what would have been a broader environment and will not be disturbed by the Project. The setting, feeling, and association of the canal channel have been greatly altered to the extent that it lacks integrity. Based on the documentation of nearby site 33-Bu-0979, the portion of the Miami-Erie Canal within the Project area will not be disturbed and is not expected to yield significant information important to the history of the canal or Butler County. As a result, no archaeological work is recommended for the canal in order for the proposed Project to proceed as planned.

Pursuant to Ohio Revised Code §149.53 and administrative rules promulgated thereunder, if archaeological artifacts or skeletal remains are identified during project activities in any location, work within the area must stop and the OHPO must be notified within two (2) business days. The full Cultural Resources Literature Review can be found in Attachment D.

Table 1-1 Previously Recorded Ohio Archaeological Inventory Sites in the 1.6 km (1 mi) Study Area

Resource Number	Resource Type/ Name	Site Type	Address/ Location
33-BU-0208	Archaeological Site	Prehistoric Scatter	Confidential
33-BU-0479	Archaeological Site	Prehistoric Scatter	Confidential
33-BU-0480	Archaeological Site	Prehistoric Scatter	Confidential
33-BU-0481	Archaeological Site	Prehistoric Scatter	Confidential
33-BU-0655	Archaeological Site	Prehistoric Scatter	Confidential
33-BU-0979	Archaeological Site	Historic Canal Segment	Confidential
33-BU-0980	Archaeological Site	Prehistoric	Confidential
33-BU-1199	Archaeological Site	Prehistoric Isolate	Confidential
33-BU-1200	Archaeological Site	Prehistoric Isolate	Confidential
33-BU-1201	Archaeological Site	Prehistoric Scatter	Confidential
33-BU-1202	Archaeological Site	Historic Farmstead	Confidential
33-BU-1203	Archaeological Site	Prehistoric Scatter	Confidential
33-BU-1204	Archaeological Site	Prehistoric Scatter	Confidential
BUT0147212	Historic Structure	Water Related Facility	Tylersville Rd
BUT0147012	Historic Structure	Single Dwelling	NEC Tylersville Rd
BUT0147112	Historic Structure	Single Dwelling	N Side Tylersville Rd-E-Morris
BUT0146912	Historic Structure	Single Dwelling	Tylersville Rd E By-Pass 4

4906-6-05(B)(10)(d): Local, State, and Federal Agency Correspondence

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

One potentially federally jurisdictional wetland (Wetland 1) and no streams were identified within the Project Study Area. No impacts to Wetland 1 are anticipated as a result of the proposed Project. Therefore, a Nationwide Permit is not required as no impacts to '*Waters of the U.S.*" will occur as a result of the Seward Substation Transmission Line Relocation Project. See Attachment C, Regulated Waters Delineation Report.

A National Pollutant Discharge Elimination System (NPDES) Construction Site General Permit from the Ohio EPA is not required as the Project disturbance is conservatively estimated at 0.7 acres (Erosion and Sediment Control Plan, Figure 3).

An Earth Moving, Erosion and Sediment Control Permit from Butler County, Ohio, is not required as the Project disturbance is conservatively estimated at 0.7 acres (Erosion and Sediment Control Plan, Figure 3).

The Project area is not located within a 100-year floodplain; therefore, the Project will not require a "no rise" certification and/or elevation certificate from the Ohio Department of Natural Resources (ODNR) for development within the floodplain. Likewise, the Project will not require a Flood Hazard Area Development Permit from the Butler County Floodplain Administrator for development within the floodplain.

Duke Energy Ohio has reviewed the clearance requirement on the proposed structures through the Federal Aviation Administration (FAA) and the Ohio Department of Transportation (ODOT) for no-hazard determinations to navigable airspace and no permits are necessary for the proposed project.

No other local, state, or federal permit or other authorizations are required for the Project.

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

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

Several sources of information were consulted to further define the potential habitat of listed species that occur within the county of the Project. Attachment B – Agency Coordination Letters, contains a list of the Rare Threatened Endangered (RTE) species known to occur within Butler County and their potential to occur within the Project area based on their habitat requirements and observations during the field survey. Further, Duke Energy Ohio will conform to seasonal tree clearing (October 1 – March 31) restrictions and recommendations made by the United States Fish and Wildlife Service (USFWS) during agency coordination.

Coordination with the USFWS and the ODNR Division of Wildlife (DOW) was initiated on November 11, 2021. The USFWS response letter was received on November 17, 2021, and the ODNR-DOW response letter was received on November 24, 2021. Copies of the USFWS and ODNR-DOW response letters are included in Attachment B – Agency Coordination Letters.

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

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

Duke Energy Ohio hired Cardno to conduct an investigation for areas of ecological concern within the Project area. As a part of Cardno's investigation, a request was submitted to the ODNR

Environmental Review Services and the USFWS on November 11, 2021, to research the presence of any unique ecological sites, geological features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forest, national wildlife refuges, or other protected areas within 1 mile of the Project, using the ODNR Natural Heritage Database. Copies of the USFWS and ODNR-DOW response letters are included in Attachment B – Agency Coordination Letters.

Cardno conducted a wetland delineation and stream assessment of the Project area. Cardno's investigation included approximately 4.4 acres of existing Duke Energy Ohio property. During the investigation, Cardno identified one wetland (Wetland 1) and no streams within the Project area. No impacts to Wetland 1 are anticipated as a result of the Project. No impacts to RTE habitats are expected. See Attachment C, Regulated Waters Delineation Report.

Cardno also identified 100-year floodplains using the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer within the Project area. No 100-year floodplains were identified within the Project area. Refer to Attachment A – Figures, Figure 2.

4906-6-05(B)(10)(g): Unusual Conditions

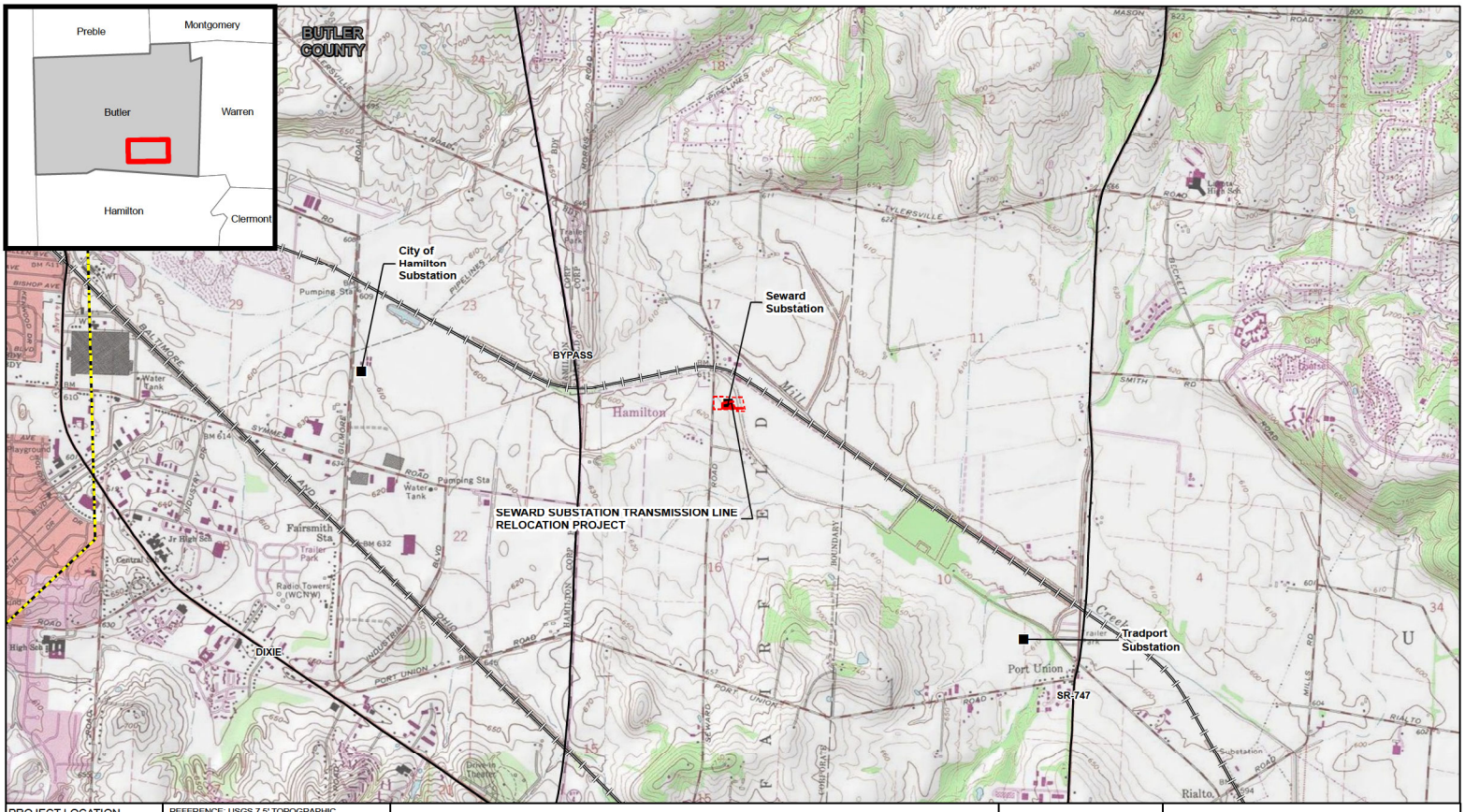
Provide any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts.

To the best of Duke Energy Ohio's knowledge, no unusual conditions exist that would result in environmental, social, health, or safety impacts. Construction and operation of the proposed Project will meet all applicable safety standards established by the Occupational Safety and Health Administration and will be in accordance with the requirements specified in the latest revision of the National Electric Safety Code as adopted by the Public Utilities Commission of Ohio.

4906-6-07: Service and Public Distribution of Accelerated Certification Applications

Copies of this Construction Notice will be sent to the appropriate Butler County public officials as well as to the Fairfield Lane Public Library, prior to construction activities. Information on how to request an electronic or paper copy of the Construction Notice as well as additional information on the ongoing status of this Project can be found at the following website: www.duke-energy.com/Seward.

Attachment A – Figures



PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE:GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

- Existing Facility
- Route Centerline
- Project Area
- Interstate
- State Highway
- US Highway
- Railroad
- County Boundary
- Municipal Boundary

DUKE ENERGY.

Cardno

0 500 1,000 2,000 Feet

FIGURE 1
PROJECT VICINITY MAP
SEWARD SUBSTATION TRANSMISSION LINE RELOCATION PROJECT
OPSB CASE NO. 22-0012-EL-BNR

DUKE ENERGY OHIO

DRAWN BY: COD DATE: 1/17/2022
CHECKED: CAJ APPROVED: CAJ

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PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

- Existing Structure
- Proposed Structure
- Existing Facility
- Potential Access
- Project Centerline
- Project Area
- Delineated Wetland
- NHD Flowline
- NWI Wetlands
- Railroad
- 100-YR Floodplain
- Floodway
- Parcels
- Municipal Boundary
- County Boundary

DUKE ENERGY.

Cardno

0 20 40 80 Feet

FIGURE 2
AERIAL MAP
SEWARD SUBSTATION TRANSMISSION LINE
RELOCATION PROJECT
OPSB CASE NO. 22-0012-EL-BNR

DUKE ENERGY OHIO

DRAWN BY: COD DATE: 1/18/2022
CHECKED: CAJ APPROVED: CAJ

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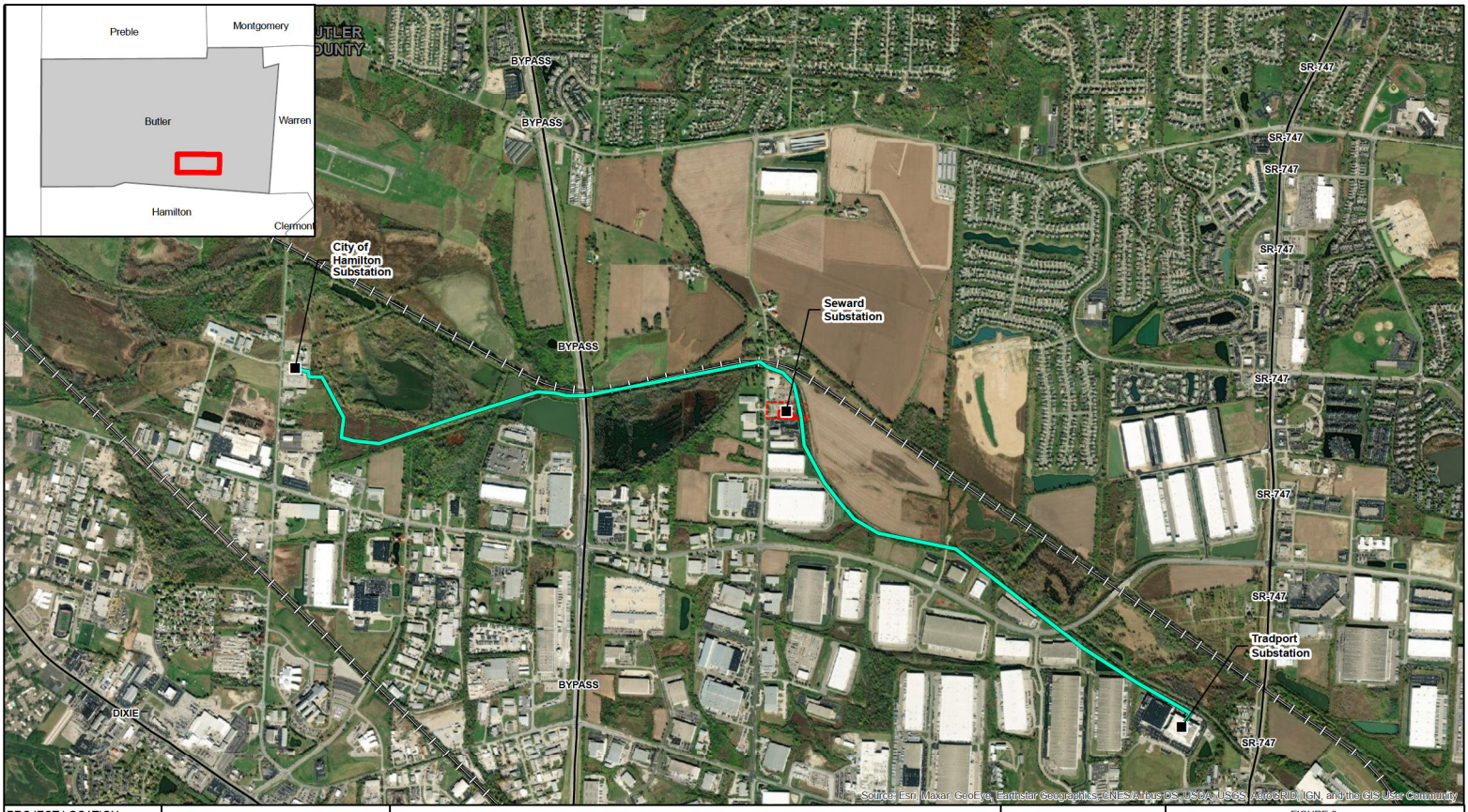

PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

- Existing Facility
- Existing 3865–69kV/ 3889 – 138kV TLine
- Route Centerline
- Project Area
- Interstate
- State Highway
- US Highway
- Railroad
- Municipal Boundary
- County Boundary

DUKE ENERGY.

Cardno

0 375 750 1,500 Feet

FIGURE 3
EXISTING TRANSMISION LINE AND SUBSTATION PROXIMITY MAP
SEWARD SUBSTATION TRANSMISSION LINE RELOCATION PROJECT
OPSB CASE NO. 22-0012-EL-BNR

DUKE ENERGY OHIO

DRAWN BY: COD DATE: 1/17/2022
CHECKED: CAJ APPROVED: CAJ

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Attachment B – Agency Coordination Letters

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

November 24, 2021

Cori Jansing
Cardno
11121 Canal Rd. Suite 200
Sharonville, Ohio 45241

Re: 21-1024; Duke Energy Seward Substation Expansion

Project: The proposed project involves the expansion of the Seward Substation approximately 0.7 acres to the east.

Location: The proposed project is located in the City of Fairfield, Butler 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:

Sora rail (*Porzana carolina*), SC
Gilmore Ponds – MetroParks of Butler Co.

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 project is within the vicinity of records for the little brown bat (*Myotis lucifugus*), a state endangered species. Because presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

In addition, 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 bat species 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. The DOW recommends tree 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.

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 rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the tonguetied minnow (*Exoglossum laurae*), a state endangered fish, and the American eel (*Anguilla rostrata*), a state threatened fish. 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 Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet fields and meadows. 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 cave salamander (*Eurycea lucifuga*), a state endangered 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 black-crowned night-heron *(Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

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

The project is within the range of the lark sparrow (*Chondestes grammacus*), a state endangered bird. This sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. These summer residents normally migrate out of Ohio shortly after their young fledge or leave the nest. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

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

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

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

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

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

ODNR appreciates the opportunity to provide these comments. Please contact 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: Cori Jansing
Subject: Duke Energy, Seward Substation Expansion, Butler County, Ohio
Date: Wednesday, November 17, 2021 1:55:37 PM
Attachments: image.png
image.png

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

TAILS# 03E15000-2022-TA-0249

Dear Ms. Jansing,

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: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) to avoid impacts to the endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), 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.

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.

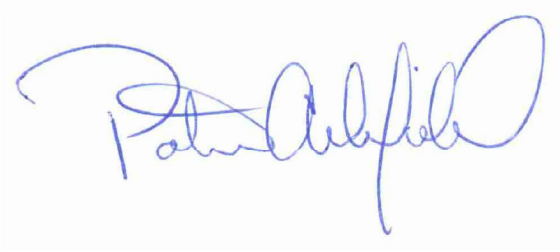
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing 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.

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

Attachment C – Regulated Waters Delineation Report

Regulated Waters Delineation Report

Seward Substation Transmission Line Relocation (138kV)

City of Fairfield, Butler County, Ohio

November 25, 2021.

Cardno®

Document Information

Prepared for	Duke Energy Ohio
Client Contact	Dane Vandewater (Duke Energy)
Project Name	Seward Substation Transmission Line Relocation (138kV)
Project Number	Cardno # J19Y465028
Project Manager	Cori Jansing (Cardno)
Date	November 25, 2021

Prepared for:

Duke Energy Ohio
139 E. 4th Street, Cincinnati, Ohio 45202

Prepared by:

Cardno
11121 Canal Road, Cincinnati, Ohio 45241

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Tables

Figures

Acronyms

APA	Administrative Procedure Act
BF	Bank Full
CFR	Code of Federal Regulations
CWA	Clean Water Act
DBH	Diameter at Breast Height
DP	Data Point
EPA	U.S. Environmental Protection Agency
ETR	Endangered, Threatened, and Rare
FAC	Facultative Plant
FACU	Facultative Upland Plant
FACW	Facultative Wetland Plant
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographical Information SystemAcronyms, continued
MS4	Municipal Separate Storm Water Sewer Systems
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
NWP	Nationwide Permit
NWPL	National Wetland Plant List
OBL	Obligate Wetland Plant
OEPA	Ohio Environmental Protection Agency
ODNR	Ohio Department of Natural Resources
OHWM	Ordinary High Water Mark
PEM	Palustrine Emergent Wetland
PFO	Palustrine Forested Wetland
PLSS	Public Land Survey Section
PSS	Palustrine Shrub Scrub Wetland

RGP	Regional General Permit
SNE	Significant Nexus
SWANCC	Solid Waste Agency of Northern Cook County
TNW	Traditional Navigable Water
TOB	Top of Bank
UPL	Upland Plant
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WOTUS	Waters of the United States
WQC	Water Quality Certification

1 Introduction

Cardno was contracted to perform a water resource inventory, including wetlands and streams, which are located within the Duke Energy Ohio Seward Substation Transmission Line Relocation (138kV) Project Study Area and potential access points (4.4) (Study Area) in the City of Fairfield, Butler County, Ohio (Figure 1). The fieldwork for this task was conducted on October 6, 2021.

The total size of the Study Area was approximately 4.4 acres with an actual Project earth disturbance potential of approximately 0.7 acres. Specifically, the Study Area is located north of Symmes Road, south of the Norfolk and Western Railroad, east of Seward Road and west of Erie-Miami Trail. The Study Area consisted of four habitat types: maintained lawn, scrub/shrub, fallow field, and emergent wetland vegetation assemblages. The Study Area is located within Mill Creek headwaters to below East Fork Mill Creek (14-digit HUC 05090203010010) watershed.

This report identifies the jurisdictional status of aquatic features identified within the Study Area based on Cardno's best professional understanding and interpretation of the *Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory, 1987) and U.S. Army Corps of Engineers' (USACE) guidance documents and regulations. Jurisdictional determinations for other "Waters of the U.S." were made based on definitions and guidance found in 33 CFR 328.3, USACE Regulatory Guidance Letters, and the wetland delineation manual. The USACE administers Section 404 of the Clean Water Act (CWA), which regulates the discharge of fill or dredged material into all "Waters of the U.S.", and is the regulatory authority that must make the final determination as to the jurisdictional status of the Study Area.

2 Regulatory Definitions

2.1 Waters of the United States

"Waters of the U.S." are within the jurisdiction of the USACE under the CWA. "Waters of the U.S." is a broad term, which includes waters that are used or could be used for interstate commerce. This includes wetlands, ponds, lakes, territorial seas, rivers, tributary streams including any definable intermittent waterways, and some ditches below the ordinary high water mark (OHWM). Also included are manmade water bodies such as quarries and ponds, which are no longer actively being mined or constructed and are connected to other "waters". Wetlands, mudflats, vegetated shallows, riffle and pool complexes, coral reefs, sanctuaries, and refuges are all considered special aquatic sites, which involve more rigorous regulatory permitting requirements. A specific, detailed definition of "Waters of the U.S." can be found in the Federal Register (33 CFR 328.3).

On January 9, 2001, the U.S. Supreme Court issued a decision, Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers (No. 99-1178). The decision reduced the regulation of isolated wetlands under Section 404 of the CWA, which assigned the USACE authority to issue permits for the discharge of dredge or fill material into "Waters of the U.S.". Prior to the SWANCC decision, the USACE had adopted a regulatory definition of "Waters of the U.S." that afforded federal protection for almost all of the nation's wetlands. The Supreme Court

decision interpreted that the USACE's jurisdiction was restricted to navigable waters, their tributaries, and wetlands that are adjacent to these navigable waterways and tributaries. The decision leaves the majority of "isolated" wetlands unregulated by the CWA. Therefore, most wetlands that are not adjacent to, or contiguous with, any other "Waters of the U.S." via a surface drain such as a swale, ditch, or stream are considered isolated and thus no longer jurisdictional by the USACE.

On June 19, 2006, the U.S. Supreme Court issued decisions in regards to John A. Rapanos v. United States (No. 04-1034) and June Carabell v. United States (04-1384), et al. The plurality decision created two 'tests' for determining CWA jurisdiction: the permanent flow of water test (set out by Justice Scalia) and the "significant nexus" test (set out by Justice Kennedy). On June 5, 2007 the USACE and U.S. Environmental Protection Agency (EPA) issued joint guidance on how to interpret and apply the Court's ruling. According to this guidance, the USACE will assert jurisdiction over traditionally navigable waters, adjacent wetlands, and non-navigable tributaries of traditionally navigable waters that have "relatively permanent" flow, and wetlands that border these waters, regardless of whether or not they are separated by roads, berms, and similar barriers. In addition, the USACE will use a case-by-case "significant nexus" analysis to determine whether waters and their adjacent wetlands are jurisdictional. A "significant nexus" can be found where waters, including adjacent wetlands, alter the physical, biological, or chemical integrity of the traditionally navigable water based on consideration of several factors.

In January 2015 an EPA sponsored publication, *Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence* (EPA, 2015), emphasized how streams, nontidal wetlands, and open waters in and outside of riparian areas and floodplains effect downstream waters such as rivers, lakes, estuaries, and oceans.

On May 27, 2015 the EPA released a statement that a new Clean Water Rule typically referred to as, "The Waters of the United States (WOTUS) Rule" was finalized and that it would "not create any new permitting requirements and maintains all previous exemptions and exclusions" (epa.gov). The rule would only protect waters that have historically been covered by the Clean Water Act. The intent was to clearly define:

- Jurisdictional limits of tributaries of navigable waterways;
- Set boundaries on covering nearby waters;
- Identify specific national water treasures by name (prairie potholes, etc.);
- Clearly define when a ditch is jurisdictional, and when it is not;
- Maintain status that waters within Municipal Separate Storm Water Sewer Systems (MS4) are not jurisdictional; and
- Reduce the use of case-specific analysis of waters.

Also on May 27, 2015 a publication, *Technical Support Document for the Clean Water Rule: Definition of Waters of the United States* (EPA, 2105), was released discussing in detail why the significant nexus (SNE) between one water and another is important. It specifically ties distances to the various types of waters mentioned within the Code of Federal Regulations [33 CFR 328.3(a)(1) through (a)(8)]. For example, the document states "Waters located within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas and waters

located more than 1,500 feet and less than 4,000 feet from the lateral limit of an (a)(1) or (a)(3) water may still be determined to have a significant nexus on a case-specific basis under paragraph (a)(8) of the rule and, thus, be a "water of the United States" (EPA 2015).

On June 29, 2015 the new Clean Water Rule was entered into the Federal Register (40 CFR Parts 110, 112, 116, et al. Clean Water Rule: Definition of ''waters of the United States''; Final Rule). This report will refer to this rule as "June 29, 2015 WOTUS Rule". This rule includes exact distances mentioned in the May 27, 2015 Technical Support Document as it relates to adjacent waters, including the following:

- Waters within 100 ft. of jurisdictional waters;
- Waters within the 100-year floodplain to a maximum of 1,500 feet from the ordinary high water mark (OHWM);
- Waters within the 100-year floodplain with a SNE to the Traditional Navigable Water (TNW); and
- Waters with a SNE within 4,000 ft. of jurisdictional waters.

On October 9, 2015 the U.S. Court of Appeals for the Sixth Circuit (Court) issued a nationwide stay against the enforcement of the June 29, 2015 WOTUS Rule. The Court stated, "…we conclude that…Justice Kennedy's opinion in *Rapanos* represents the best instruction on the permissible parameters of "waters of the United States" as used in the Clean Water Act, it is far from clear that the new Rule's distance limitations are harmonious with the instruction.

Moreover, the Court stated that the rulemaking process by which the distance limitations were adopted is facially suspect. Petitioners contend the proposed rule that was published, on which interested persons were invited to comment, did not include any proposed distance limitations in its use of terms like "adjacent waters" and "significant nexus." Consequently, petitioners contend, the Final Rule cannot be considered a "logical outgrowth" of the rule proposed, as required to satisfy the notice-and-comment requirements of the APA, 5 U.S.C. Section 553. As a further consequence of this defect, petitioners contend, the record compiled by respondents is devoid of specific scientific support for the distance limitations that were included in the Final Rule. They contend the Rule is therefore not the product of reasoned decision-making and is vulnerable to attack as impermissibly "arbitrary or capricious" under the APA, 5 U.S.C. Section 706(2)."

On February 28, 2017, President Donald Trump signed Executive Order #13778 titled "Restoring the Rule of Law, Federalism, and Economic Growth by reviewing the 'Waters of the United States' Rule". Section 1(a) states that the EPA "shall review the final rule entitled 'Clean Water Rule: Definition of 'Waters of the United States," 80 Fed. Reg. 37054; and '….shall…publish…proposed rules rescinding or revising, those issuances, as appropriate' [Section 2(b)]."

On April 21, 2020, the EPA and USACE published the Navigable Waters Protection Rule to define "Waters of the United States" (WOTUS) in the Federal Register. This rule became effective on June 22, 2020. The rule limits the federal regulatory authority to wetlands adjacent to or directly abutting a jurisdictional stream, and to only streams considered perennial or intermittent. No federal guidance is yet published on this rule, and prior guidance will be used until the rule becomes effective.

On November 18, 2021, the U.S. Environmental Protection Agency and the Department of the Army announced the signing of a proposed rule revising the definition of "Waters of the United States.". On December 7, 2021, the proposed rule was published in the Federal Register. Until further notice, the pre-2015 definition of "Waters of the United States," is in effect in Ohio. Furthermore, this report includes a professional opinion as it relates to the 2015 Clean Water Rule.

2.2 Waters of the State

"Waters of the State" are within the jurisdiction of the Ohio Environmental Protection Agency (OEPA). They are generally defined as surface and underground water bodies, which extend through or exist wholly in the State of Ohio, which includes, but is not limited to, streams and both isolated and non-isolated wetlands. Private ponds, or any pond, reservoir, or facility built for reduction of pollutants prior to discharge are not included in this definition. In addition to "Waters of the U.S.", OEPA also regulates and issues permits for isolated wetland impacts.

OEPA relies on the USACE decision regarding wetland determinations and delineations including whether or not a wetland is isolated or non-isolated.

2.3 Wetlands

Wetlands are a category of "Waters of the U.S." for which a specific identification methodology has been developed. As described in detail in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), wetland boundaries are delineated using three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. In addition to the criteria defined in the 1987 Manual, the procedures described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region Version 2.0* (Environmental Laboratory, 2010) were used to evaluate the Study Area for the presence of wetlands.

2.3.1 Hydrophytic Vegetation

On June 1, 2012, the National Wetland Plant List (NWPL), formerly called the National List of Plant Species that Occur in Wetlands (Reed 1988), went into effect after being released by the U.S. Army Corps of Engineers (USACE) as part of an interagency effort with the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (Lichvar and Kartesz, 2009). The NWPL, along with the information implied by its wetland plant species status ratings, provides general botanical information about wetland plants and is used extensively in wetland delineation, restoration, and mitigation efforts. The NWPL consists of a comprehensive list of wetland plant species that occur within the United States along with their respective wetland indicator statuses by region. An indicator status reflects the likelihood that a particular plant species occurs in a wetland or upland (Lichvar et al. 2012). Definitions of the five indicator categories are presented below.

> **OBL** (Obligate Wetland Plants): almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface. These plants are of four types: submerged, floating, floating-leaved, and emergent.

FACW (Facultative Wetland Plants): usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

FAC (Facultative Plants): occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.

FACU (Facultative Upland Plants): usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

UPL (Upland Plants): almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

According to the USACE's Midwest Regional Supplement, plants that are rated as FAC, FACW, or OBL are classified as wetland plant species. The percentage of dominant wetland species in each of the four vegetation strata (tree, shrub/sapling, herbaceous, and woody vine) in the sample area determines the hydrophytic (wetland) status of the plant community. Dominant species are chosen independently from each stratum of the community. In general, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total.

For the purposes of determining dominant plant species, the four vegetation strata are defined. Trees consist of woody species 3 inches or greater in diameter at breast height (DBH). Shrubs and saplings are woody species that are over 1 meter in height and less than 3 inches DBH. Herbaceous species consist of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants less than 1 meter tall. Woody vines consist of vine species greater than 1 meter in height, such as wild grapes.

2.3.2 Hydric Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. In general, hydric soils are flooded, ponded, or saturated for a week or more during the growing season when soil temperatures are above 32 degrees Fahrenheit. The anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry, which are used to differentiate hydric from non-hydric soils.

In this report, soil colors are described using the Munsell notation system. This method of describing soil color consists of separate notations for hue, value, and chroma that are combined in that order to form the color designation. The hue notation of a color indicates its relation to red, yellow, green, blue, and purple; the value notation indicates its lightness, and the chroma notation indicates its strength or departure from a neutral of the same lightness.

The symbol for hue consists of a number from 1 to 10, followed by the letter abbreviation of the color. Within each letter range, the hue becomes more yellow and less red as the numbers increase. The notation for value consists of numbers from 0 for absolute black, to 10 for absolute white. The notation for chroma consists of numbers beginning with /0 for neutral grays and increasing at equal intervals. A soil described as 10YR 3/1 soil is more gray than a soil designated 10YR 3/6.

2.3.3 Wetland Hydrology

Wetland hydrology is defined as the presence of water for a significant period of time at or near the surface (within the root zone) during the growing season. Wetland hydrology is present only seasonally in many cases, and is often inferred by indirect evidence. Hydrology is controlled by such factors as seasonal and long-term rainfall patterns, local geology and topography, soil type, local water table conditions, and drainage. Primary indicators of hydrology are inundation, soil saturation in the upper 12 inches of the soil, watermarks, sediment deposits, and drainage patterns. Secondary indicators such as oxidized root channels in the upper 12 inches of the soil, water-stained leaves, local soil survey data, and the FAC-neutral vegetation test are sometimes used to identify hydrology. A primary indicator or two or more secondary indicators are required to establish a positive indication of hydrology.

2.3.4 Wetland Definition Summary

In general, an area must meet all three criteria to be classified as a wetland. In certain problem areas such as seasonal wetlands, which are not wet at all times, or in recently disturbed (atypical) situations, areas may be considered a wetland if only two criteria are met. In special situations, an area that meets the wetland definition may not be within the USACE's jurisdiction due to a specific regulatory exemption.

2.4 Streams, Rivers, Watercourses & Jurisdictional Ditches

With non-tidal waters, in the absence of adjacent wetlands, the extent of the USACE's jurisdiction is defined by the OHWM. USACE regulations define the term "ordinary high water mark" for purposes of the CWA lateral jurisdiction at 33 CFR 328.3(e), which states:

> The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Streams, rivers, watercourse, and ditches within the Study Area were evaluated using the above definition and documented. Waterways that did exhibit an OHWM were recorded and evaluated using the Ohio Environmental Protection Agency's Primary Headwater Habitat Evaluation (HHEI)

or Qualitative Habitat Evaluation Index (QHEI) methodology. If applicable, the results of the HHEI and/or QHEI are presented in Section 3.2.

2.5 Endangered Species Act

Endangered, Threatened, and Rare (ETR) species are protected at both the state and federal level (ORC 1531.25 and 50 CFR 17.11 through 17.12, respectively). The Ohio Revised Code defines “Take” as to harass, hunt, capture, or kill; or attempt to harass, hunt, capture, or kill.

The USFWS, under authority of the Endangered Species Act of 1973 (16 U.S. Code 1531), as amended, has the responsibility for federally listed species. The Ohio Department of Natural Resources (ODNR) has the responsibility for state listed species.

3 Background Information

3.1 Existing Maps

Several sources of information were consulted to identify potential wetlands and wetland soil units on the site. These include the USFWS's *National Wetland Inventory* (NWI), the USGS’s *National Hydrography Dataset* (NHD), and the Natural Resources Conservation Service's (NRCS) *Soil Survey* for this county. These maps identify potential wetlands and wetland soil units on the site. The NHD maps are used to portray surface water. The NWI maps were prepared from high altitude photography and in most cases were not field checked. Because of this, wetlands are sometimes erroneously identified, missed, or misidentified. Additionally, the criteria used in identifying these wetlands were different from those currently used by the USACE. The county soil maps, on the other hand, were developed from actual field investigations. However, they address only one of the three required wetland criteria and may reflect historical conditions rather than current site conditions. The resolution of the soil maps limits their accuracy as well. The mapping units are often generalized based on topography and many mapping units contain inclusions of other soil types for up to 15 percent of the area of the unit. The USACE does not accept the use of either of these maps to make wetland determinations.

3.1.1 National Wetland Inventory

The NWI map of the area (Figure 2) identified no wetland features within the Study Area.

3.1.2 National Hydrography Dataset

The NHD map of the area (Figure 2) identified one stream feature within the Study Area. One Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC).

3.1.3 Soil Survey

The NRCS Soil Survey identified two (2) soil types located within the Study Area (Figure 3). The following table identifies the soil unit symbol, soil unit name, and whether or not the soil type contains components that meet the hydric soil criteria.

Table 3 – 1 Soil Map Units within the Seward Substation Transmission Line Relocation (138kV) Project Study Area

Symbol	Description	Hydric
RvB2	Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded	N
XeA	Xenia silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	N

4 Methodology and Description

4.1 Regulated Waters Investigation

The delineation of regulated waters within the Study Area was based on the methodology described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region Version 2.0* (Environmental Laboratory, 2010) as required by current USACE policy.

Prior to the fieldwork, the background information was reviewed to establish the probability and potential location of wetlands on the site. Next, a general reconnaissance of the Study Area was conducted to determine site conditions. The site was then walked with the specific intent of determining wetland boundaries. Data stations were established at locations within and near the wetland areas to document soil characteristics, evidence of hydrology and dominant vegetation. Note that no attempt was made to examine a full soil profile to confirm any soil series designations. However, when possible, soils were examined to a depth of at least 16 inches to assess soil characteristics and site hydrology. Complete descriptions of typical soil series can be found in the soil survey for these counties.

4.1.1 Site Photographs.

Photographs of the site are located in Appendix A. These photographs are the visual documentation of site conditions at the time of inspection. The photographs are intended to provide representative visual samples of any wetlands or other special features found on the site.

4.1.2 Delineation Data Sheets.

Where stations represent a wetland boundary point they are presented as paired data points (dp), one each documenting the wetland and upland sides of the wetland boundary. These forms are the written documentation of how representative sample stations met or did not meet each of the wetland criteria. For plant species included on the National Wetlands Plant List, nomenclature will follow their lead. For all other plants not listed in the NWPL, nomenclature will follow the USDA's Plants Database.

4.2 Technical Descriptions

Complete field data sheets from the site investigation are located in Appendix B. The Study Area is located in the City of Fairfield, Butler County, Ohio (see Figure 1). Specifically, the Study Area is located south of the Norfolk and Western Railroad, north of Symmes Road, east of Seward Road and west of the Erie-Miami Trail. The Study Area was approximately 4.4 acres in size and consisted of four habitat types: maintained turf, scrub shrub, and emergent wetland located

entirely in Duke Energy ROW and easements. The project area is located within Mill Creek headwaters to below East Fork Mill Creek (14-digit HUC 05090203010010) watershed.

4.2.1 Wetland and Stream Descriptions

Wetland 1 (0.14-acre within the Study Area)

Wetland 1 was classified as an emergent wetland located within the remnant portion of the Miami-Erie Canal (Figure 4). The NWI Map identified Wetland 1 as a riverine wetland (R4SBC) (Figure 2). This wetland was located within the Miami-Erie Canal network which flows into Mill Creek, a Traditional Navigable Water (TNW). Due to the significant nexus the Miami Erie Canal, this wetland should be considered a jurisdictional "Waters of the U.S.". The ORAM score for wetland 1 was 24, categorizing the wetland as a Category 1, or low quality, wetland. A complete ORAM field data sheet is located in Appendix C.

Wetland Data Point
Data Point 1 (DP01)

Dominant vegetation in the vicinity of DP01 included false daisy (*Eclipta prostrata*, FACW). In addition, non-dominant vegetation observed included mild water-pepper (*Persicaria hydropiper*, OBL), slim amaranth (*Amaranthus hybridus*, UPL), devil's-pitchfork (*Bidens frondosa*, FACW), single-vein sweetflag (*Acorus calamus*, OBL), and rough cockleburr (*Xanthium strumarium*, FAC). The plants at this data point qualified as hydrophytic vegetation. The soil from 0 to 16 inches had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 20 percent, and a texture of Silty Clay Loam. The soil at the data point was mapped as RvB2 (Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded, and met the Depleted Matrix (F3), and Redox Depressions (F8) hydric soil criteria. Secondary indicators of hydrology observed included Surface Soil Cracks (B6), Crayfish Burrows (C8), Geomorphic Position (D2), and the FAC-Neutral Test (D5). This data point qualified as a wetland.

Upland Data Point
Data Point 2 (DP02)

Dominant vegetation in the vicinity of DP02 included ash-leaf maple (*Acer negundo*, FAC), hedge false bindweed (*Calystegia sepium*, FAC), and common fox sedge (*Carex vulpinoidea*, FACW). In addition, non-dominant vegetation observed included mild water-pepper (*Persicaria hydropiper,* OBL), and blunt broom sedge (*Carex tribuloides,* OBL). The plants at this data point qualified as hydrophytic vegetation. The soil from 0 to 16 inches had a matrix soil color of 10YR 3/2 with a texture of Silt Loam. The soil at the data point was mapped as RvB2 (Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded, and did not meet any hydric soil criteria. Secondary indicators of hydrology observed included Geomorphic Position (D2), and the FAC-Neutral Test (D5). This data point did not meet wetland criteria.

4.3 Endangered, Threatened and Rare Species

The potential for listed species known to occur within Butler County were evaluated based on the habitat observed within the Study Area. In addition, high quality natural communities and significant natural habitat areas were documented if encountered. A walking survey of the Study Area was performed in which all observed Endangered, Threatened and Rare (ETR) species or specific known special habitats were noted.

Coordination with the ODNR-DOW and the USFWS regarding RTE located within a ½-mile of the Study Area were sent November 8, 2021. The ODNR-DOW response was received on November 24, 2021and the USFWS response was received on November 17, 2021. Copies of the agency response letters are located in Appendix D.

4.3.1 Bat Roost Habitat

The Indiana bat (*Myotis sodalis*, federally endangered) and northern long-eared bat (*Myotis septentrionalis*, federally threatened) are protected under the Endangered Species Act, which is overseen by the USFWS. Typical guidance from USFWS regarding potential bat roost trees is avoidance of cutting trees from April through October. The Study Area was assessed for potential bat roosting habitat with respect to any indicated clearing activities. Potential bat roost trees include dead or dying trees (including live shagbark hickories) with at least 10-percent exfoliating bark, a diameter at breast height (DBH) of at least 3 inches, and solar exposure for maternity roost trees (the tree is on a wooded edge or in a canopy gap). If applicable, correspondence from USFWS regarding Indiana bat and northern long-eared bat is included within Appendix D.

5 Jurisdictional Analysis

5.1 U.S. Army Corps of Engineers

The USACE has authority over the discharge of fill or dredged material into “Waters of the U.S.”. This includes authority over any filling, mechanical land clearing, or construction activities that occur within the boundaries of any “Waters of the U.S.”. A permit must be obtained from the USACE before any of these activities occur. Permits can be divided into two general categories: Individual Permits and Nationwide Permits.

Individual Permits are required for projects that do not fall into one of the specific Nationwide Permits (NWP) or are deemed to have significant environmental impacts. These permits are much more difficult to obtain and receive a much higher level of regulatory agency and public scrutiny and may require several months to more than a year for processing.

Nationwide Permits (NWP) have been developed for projects that meet specific criteria and are deemed to have minimal impact on the aquatic environment. There are currently 54 Nationwide Permits for qualifying activities with 32 Nationwide Permit General Conditions that must be satisfied in order to receive NWP consideration from the USACE.

5.2 Ohio Environmental Protection Agency

The OEPA is responsible for issuing Clean Water Act (CWA) Section 401 permits known as Water Quality Certifications (WQC) for all impacts to “Waters of the State of Ohio.” This includes authority over any dredging, filling, mechanical land clearing, impoundments or construction activities that occur within the boundaries of any “Waters of the State,” including those isolated waters and ephemeral streams not otherwise regulated by the USACE.

The OEPA issues Section 401 WQC in conjunction with the USACE’ Section 404 permits. A Section 401 WQC must be received before the USACE can issue any Section 404 Department of the Army Permit. The OEPA must issue Individual Section 401 WQC for all Individual Section 404 Permits. Water quality certification may be granted, without notification to the OEPA, if the project falls under the NWP limitations described above. Furthermore, in order to qualify for this

granted certification, all prior-authorized and *de minimis* Ohio State Certification General Limitations and Conditions as published by the OEPA must be satisfied.

The OEPA also requires notification for all impacts to isolated wetlands and ephemeral streams, which includes a permit application and mitigation plan pursuant to Section 6111 of Ohio Revised Code (ORC).

6 Summary and Conclusion

6.1 Summary

Cardno inspected the Seward Substation Transmission Line Relocation (138kV) Project Study Area on October 6, 2021. Table 6-1 summarizes the potentially regulated waters delineated within the Study Area.

Table 6-1 Features Identified within the Seward Substation Transmission Line Relocation (138kV) Project Study Area

Feature Name	NWI Identified	Feature Class	Regulatory Status[1,2]	ORAM Score	Acreage (AC)
Wetland 1	Yes	PEM	Jurisdictional	24	0.14
TOTALS		Wetland	PEM	JD	0.14

[1] Regulatory Status is based on our "professional judgment" and experience; however the USACE makes the final determination.

[2] Waters identified as federally non-jurisdictional under Section 404 of the Clean Water Act have the potential to be considered "waters of the State" under Section §6111.01 of the Ohio Revised Code.

6.1.1 Endangered, Threatened, and Rare Species

The potential for federally listed species known to occur within Butler County were evaluated based on the habitat observed within the Study Area. A walking survey of the Study Area was performed in which all observed Endangered, Threatened, and Rare (ETR) species or specific known special habitats were noted.

6.1.2 Indiana Bat and Northern Long-eared Bat Roost Habitat

The Indiana bat (Myotis sodalis, federally endangered) and northern long-eared bat (Myotis septentrionalis, federally threatened) are protected under the Endangered Species Act, which is overseen by the USFWS. Typical guidance from USFWS regarding potential bat roost trees is avoidance of cutting trees from April through October. The Study Area was assessed for potential bat roosting habitat with respect to any indicated clearing activities. Potential bat roost trees include dead or dying trees (including live shagbark hickories) with at least 10-percent exfoliating bark, a diameter at breast height (DBH) of at least 3 inches, and solar exposure for maternity roost trees (the tree is on a wooded edge or in a canopy gap).

The entire Study Area was surveyed to identify potential Indiana bat and northern long-eared bat roost trees. Based on our field inspection and our best professional judgment, there are no potential roost or maternity roost trees suitable for harboring Indiana bats and northern long-eared bats within the Study Area. The Study Area contained approximately 0.6 acres of low quality bat roost habitat. Dominant species included callery pear (*Pyrus calleryana*) and Amur honeysuckle (*Lonicera maackii*). Average diameter at breast height (DBH) for these canopy species was approximately three (3) to four (4) inches with a maximum of approximately five (5) inches.

Generally, the USFWS standard recommendation is that all tree clearing activities for this habitat shall occur between October 1 and March 31, during the hibernation period of listed species. If tree clearing cannot be completed within this seasonal window, additional surveys may be required in order to perform the work during the roosting season. The USFWS is the regulatory authority that makes the final determination as to the status of the Indiana bat and northern long-eared bat in the Study Area. A copy of the ODNR-DOW and USFWS response letters are located in Appendix D.

6.2 Conclusion

One (1) wetland and no streams were identified during the field investigation. All wetland features are likely to be considered jurisdictional “Waters of the U.S.” subject to Clean Water Act, Section 404/401 Permitting.

7 Recommendations

Cardno inspected the Substation Transmission Line Relocation (138kV) Project Study Area on October 6, 2021. One emergent wetland and no streams were identified during the site investigation. Every effort should be taken to avoid and minimize impacts to jurisdictional waters to maximum extent practicable. If unavoidable impacts are necessary, permits may be required.

Permits are likely to be required from the USACE and/or OEPA prior to any filling, dredging, or mechanical land clearing that occurs within the boundaries of any wetland and/or other ‘regulated waters’ delineated in this report. Cardno appreciates the opportunity to consult with Duke Energy Ohio regarding site-specific permitting strategies when anticipated impacts are known. In general, projects are limited up to 0.5 acre of total waters, including wetlands and streams, in order to qualify for a Nationwide General Permit. Nationwide General Permits can generally be obtained within 3 months following the submittal of a complete application and pre-construction notification (PCN) package. Impacts that exceed these thresholds are required to go through a lengthier Individual 404/401 Permit review process with the USACE and OEPA. Individual permits often take 9-12 months and require an extensive alternatives analysis and public review process.

While this report represents our best professional judgment based on our knowledge and experience, it is important to note that the Huntington District of the USACE has final discretionary authority over all jurisdictional determinations of ‘Waters of the U.S.’ including wetlands and streams under Section 404 of the CWA in this region. Therefore, if any impacts to the aquatic resources identified in this report are expected, Cardno recommends that a copy of this report be furnished to the Huntington District of the USACE to confirm the results of our findings.

8 References

Environmental Laboratory. 1987. *U.S. Army Corps of Engineers' Wetland Delineation Manual*, Technical Report Y-87-1, U.S. Waterways Experiment Station, Vicksburg, MS.

Environmental Laboratory. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*, ERDC/EL TR-12-19, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. 2nd Edition. The New York Botanical Garden. Bronx, NY.

Lichvar, R.W. 2013. The National Wetland Plant List: 2013 Wetland Ratings. Phytoneuron 2013-49: 1-241. Published July 17, 2013. ISSN 2153 733X.

Lichvar, R.W., and John T. Kartesz. 2009. *North American Digital Flora: National Wetland Plant List, version 2.4.0* (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC.

Lichvar, R., Melvin, N.C., Butterwick, M.L. and Kirchner, W.N. 2012. *National Wetland Plant List Indicator Rating Definitions.* ERDC/CRREL TN-12-1. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. http://www.fws.gov/wetlands/documents/National-Wetland-Plant-List-Indicator-Rating-Definitions.pdf

Ohio Environmental Protection Agency, Division of Surface Water. 2009. Biological and Water Quality Study of the Lower Little Miami River and Selected Tributaries 2007 Including the Todd Fork Subwatershed.
(https://www.epa.state.oh.us/portals/35/documents/lowerlittlemiamirivertsd2007.pdf)

Reed, P. B., Jr. 1988. National List of Plant Species that Occur in Wetlands: 1988. Washington, DC: U.S. Fish and Wildlife Service.

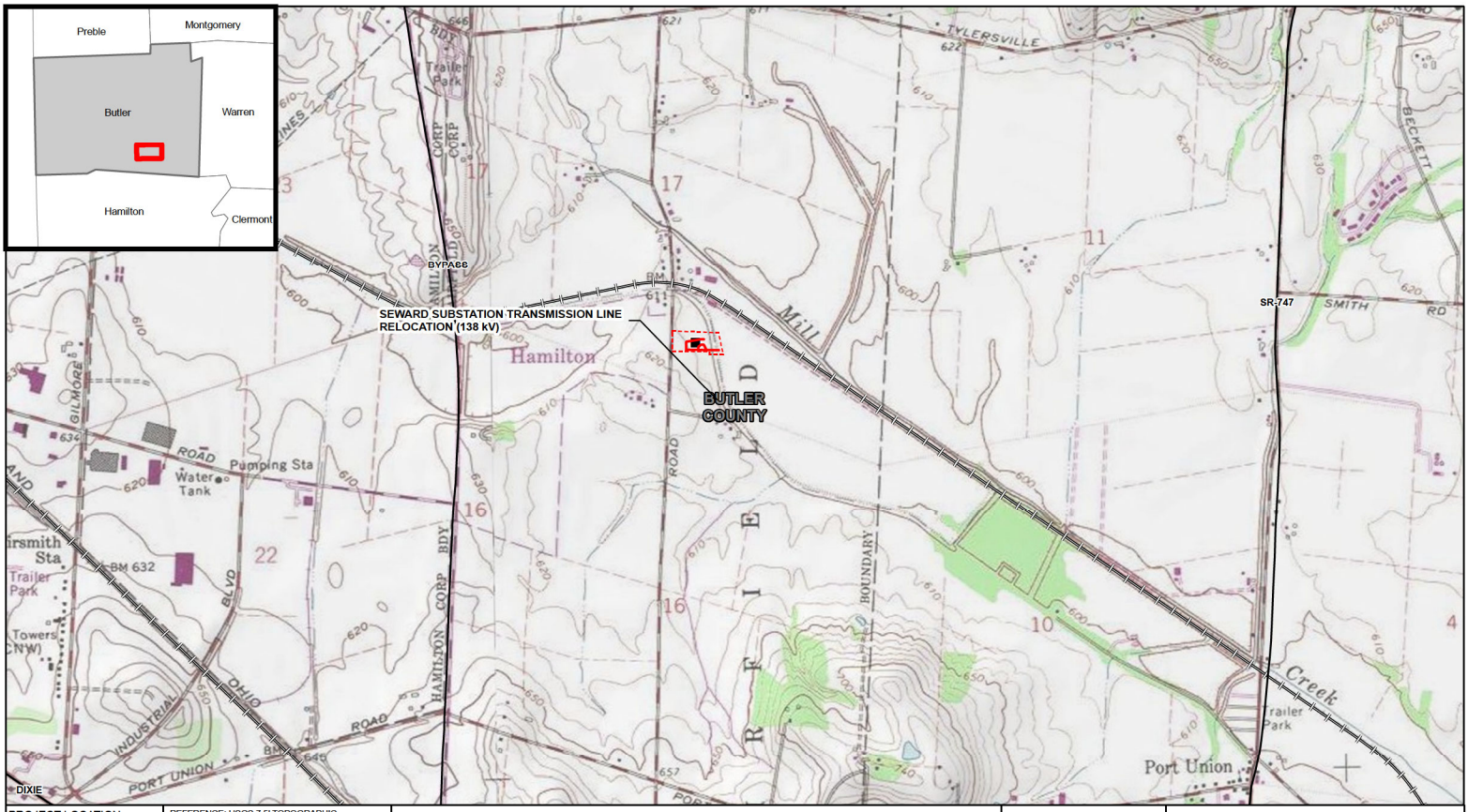
United States Department of Agriculture, Natural Resource Conservation Service (NRCS). Web Soil Survey. Soil Survey of Hamilton County, OH.

United States Environmental Protection Agency (EPA). 2015. Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence (http://www.epa.gov/cleanwaterrule)

United States Environmental Protection Agency (EPA). 2015. Technical Support Document for the Clean Water Rule: Definition of Waters of the United States (http://www.epa.gov/cleanwaterrule)

DUKE ENERGY OHIO
SEWARD SUBSTATION TRANSMISSION LINE
RELOCATION (138KV) PROJECT
REGULATED WATERS DELINEATION REPORT

FIGURES



PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE:GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

- Existing Facility
- Route Centerline
- Project Area
- Interstate
- State Highway
- US Highway
- Railroad
- County Boundary
- Municipal Boundary

DUKE ENERGY.
Cardno

0 500 1,000 Feet

FIGURE 1
PROJECT VICINITY MAP
SEWARD SUBSTATION TRANSMISSION LINE RELOCATION (138 kV)
REGULATED WATERS DELINEATION REPORT
DUKE ENERGY OHIO

DRAWN BY: COD DATE: 12/21/2021
CHECKED: CAJ APPROVED: CAJ

R:\Projects\19\19Y\19Y465MC_DukeEnergy_Contract25320_SitingPermitting&Engagement\19Y4650MC_PC25361_Transmission\28_SewardSubstation_ButlerCounty\GIS\MXD\WDR\20211014_WDR_F1_Project Vicinity Map.mxd

PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE:GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

N

0 95 190 380 Feet

Existing Facility
AccessRoute
Project Centerline
Project Area
NHD
US Highway
State Highway
NWI
Interstate
Railroad
Municipal Boundary

DUKE ENERGY.

Cardno

FIGURE 2
WATER RESOURCE MAP
SEWARD SUBSTATION TRANSMISSION LINE RELOCATION (138 kV)
REGULATED WATERS DELINEATION REPORT
DUKE ENERGY OHIO

DRAWN BY: COD DATE: 12/21/2021
CHECKED: CAJ APPROVED: CAJ

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PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE:GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

Existing Facility
Project Centerline
Soil Unit
Soil Unit - Hydric
Project Area
Interstate
State Highway
US Highway
Railroad
County Boundary
Municipal Boundary

DUKE ENERGY.
Cardno

0 100 200 400 Feet

FIGURE 3
SOIL SURVEY MAP
SEWARD SUBSTATION TRANSMISSION LINE RELOCATION (138 kV)
REGULATED WATERS DELINEATION REPORT
DUKE ENERGY OHIO

DRAWN BY: COD
CHECKED: CAJ
DATE: 12/21/2021
APPROVED: CAJ

R:\Projects\19\19Y\19Y465MC_DukeEnergy_Contract25320_SitingPermitting&Engagement\19Y4650MC_PC25361_Transmission\28_SewardSubstation_ButlerCounty\GIS\MXD\WDR\20211014_WDR_F3_Soils.mxd

PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE:GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

N

0 35 70 140 Feet

Existing Facility
Data Point
Delineated Wetland
Project Area
Project Centerline

DUKE ENERGY.
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FIGURE 4
IDENTIFIED FEATURES MAP
SEWARD SUBSTATION TRANSMISSION LINE RELOCATION (138 kV)
REGULATED WATERS DELINEATION REPORT
DUKE ENERGY OHIO

DRAWN BY: COD DATE: 12/21/2021
CHECKED: CAJ APPROVED: CAJ

R:\Projects\19\19Y\19Y465MC_DukeEnergy_Contract25320_SitingPermitting&Engagement\19Y4650MC_PC25361_Transmission\28_SewardSubstation_ButlerCounty\GIS\MXD\WDR\20211014_WDRF4_Delineation.mxd

DUKE ENERGY OHIO
SEWARD SUBSTATION TRANSMISSION LINE
RELOCATION (138KV) PROJECT
REGULATED WATERS DELINEATION REPORT

APPENDIX

A

SITE PHOTOGRAPHS

Photo 1. DP01, Wetland 1, Facing North.

Photo 2. DP01, Wetland 1, Facing South.

Photo 3. DP01, Wetland 1, Facing East.

Photo 4. DP01, Wetland 1, Facing West.

Photo 5. DP02, Upland, Facing North.

Photo 6. DP02, Upland, Facing South.

Photo 7. DP02, Upland, Facing East.

Photo 8. DP02, Upland, Facing West.

Photo 9. Overview of Maintained Lawn vegetation assemblage.

Photo 10. Overview of Scrub Shrub vegetation assemblage.

Photo 11. Overview of Fallow vegetation assemblage.

Photo 12. Overview of Erie-Miami Trail.

DUKE ENERGY OHIO
SEWARD SUBSTATION TRANSMISSION LINE
RELOCATION (138KV) PROJECT
REGULATED WATERS DELINEATION REPORT

APPENDIX

B

WETLAND DELINEATION DATA SHEETS-MIDWEST REGION

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Seward Substation 138kV T-Line Project | City/County: Glendale/Butler County | Sampling Date: 10/6/2021

Applicant/Owner: Duke Energy | State: OH | Sampling Point: DP01

Investigator(s): Kaitlin Hillier, Macenzie Reed | Section, Township, Range: 17, 2E, 2N

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): concave

Slope (%): | Lat: 39.349966 | Long: -84.488952 | Datum: NAD83 UTM16N

Soil Map Unit Name: RvB2 (Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded | NWI classification: R4SBC

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

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? | Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? | (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?**	Yes X No ____
Hydric Soil Present?	Yes X	No ____		
Wetland Hydrology Present?	Yes X	No ____		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Eclipta prostrata*	50%	Yes	FACW
2. *Persicaria hydropiper*	15%	No	OBL
3. *Amaranthus hybridus*	5%	No	UPL
4. *Bidens frondosa*	5%	No	FACW
5. *Acorus calamus*	10%	No	OBL
6. *Xanthium strumarium*	3%	No	FAC
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	88%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	A/B
OBL species	25%	x1 =	0.25
FACW species	55%	x2 =	1.10
FAC species	3%	x3 =	0.09
FACU species		x4 =	
UPL species	5%	x5 =	0.25
Column Totals:	88% (A)		1.69 (B)

Prevalence Index = B/A = 1.92

Hydrophytic Vegetation Indicators:

X 1-Rapid Test for Hydrophytic Vegetation

X 2-Dominance Test is >50%

X 3-Prevalence Index is ≤3.0[1]

____ 4-Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

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

SOIL

Sampling Point: DP01

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 4/2	80	10YR 4/6	20	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators[3]:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Seward Substation 138kV T-Line Project | City/County: Glendale/Butler County | Sampling Date: 10/6/2021

Applicant/Owner: Duke Energy | State: OH | Sampling Point: DP02

Investigator(s): Kaitlin Hillier, Macenzie Reed | Section, Township, Range: 17, 2E, 2N

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): concave

Slope (%): | Lat: 39.350026 | Long: -84.489206 | Datum: NAD83 UTM16N

Soil Map Unit Name: RvB2 (Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded | NWI classification: none

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

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? | Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? | (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?**	Yes ____ No X
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes X	No ____		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	10%	Yes	FAC
2.			
3.			
4.			
5.			
	10%	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Calystegia sepium*	45%	Yes	FAC
2. *Carex vulpinoidea*	35%	Yes	FACW
3. *Persicaria hydropiper*	15%	No	OBL
4. *Carex tribuloides*	10%	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	105%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	____	= Total Cover	

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	A/B
OBL species	25%	x1 =	0.25
FACW species	35%	x2 =	0.70
FAC species	55%	x3 =	1.65
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	115% (A)		2.60 (B)

Prevalence Index = B/A = 2.26

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation
X 2-Dominance Test is >50%
____ 3-Prevalence Index is ≤3.0[1]
____ 4-Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

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

SOIL

Sampling Point: DP02

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 3/2	100			C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators[3]:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	N/A
Water Table Present?	Yes ___ No X	Depth (inches):	>18"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	>18"

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

DUKE ENERGY OHIO
SEWARD SUBSTATION TRANSMISSION LINE
RELOCATION (138KV) PROJECT
REGULATED WATERS DELINEATION REPORT

APPENDIX

C

OHIO RAPID ASSESSMENT METHOD 5.0 FORMS

ORAM v 5.0 Field Form Quantitative Rating

Site: Seward Substation 138kV T-Line	Rater(s): KGH, MRR	Date: October 6, 2021

Project: Duke Energy

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

10	10
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

6	16
max 30 pts.	subtotal

Metric 3. Hydrology

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

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

3b. Connectivity. Score all that apply.

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

3c. Maximum water depth. Select only one and assign score.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

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

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

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

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [ ] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other

8	24
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

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

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

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

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

24
subtotal this page

ORAM v 5.0 Field Form Quantitative Rating

Site:	Seward Substation 138kV T-Line	Rater(s):	KGH, MRR	Date:	October 6, 2021

2
subtotal this page

Site:	Duke Energy

0	0
max 10 pts	subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- [x] Not Applicable (0)

2	2
max 20 pts	subtotal

Metric 6. Plant communities, interspersion, microtopograhy.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [1] Emergent
- [0] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other

6b. Horizontal (plan view) Interspersion.
Select only one.

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

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

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

6d. Microtopography.
Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but no always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

26	Grand Total (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Comments:

DUKE ENERGY OHIO
SEWARD SUBSTATION TRANSMISSION LINE
RELOCATION (138KV) PROJECT
REGULATED WATERS DELINEATION REPORT

APPENDIX

D

ENDANGERED, THREATENED, AND RARE SPECIES AGENCY COORDINATION

From: Ohio, FW3
To: Cori Jansing
Subject: Duke Energy, Seward Substation Expansion, Butler County, Ohio
Date: Wednesday, November 17, 2021 1:55:37 PM
Attachments: image.png
image.png

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

TAILS# 03E15000-2022-TA-0249

Dear Ms. Jansing,

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: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) to avoid impacts to the endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), 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.

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.

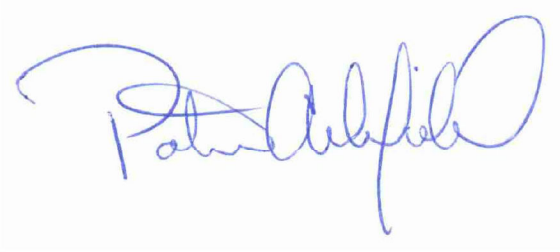
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing 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.

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

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

November 24, 2021

Cori Jansing
Cardno
11121 Canal Rd. Suite 200
Sharonville, Ohio 45241

Re: 21-1024; Duke Energy Seward Substation Expansion

Project: The proposed project involves the expansion of the Seward Substation approximately 0.7 acres to the east.

Location: The proposed project is located in the City of Fairfield, Butler 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:

Sora rail (*Porzana carolina*), SC
Gilmore Ponds – MetroParks of Butler Co.

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 project is within the vicinity of records for the little brown bat (*Myotis lucifugus*), a state endangered species. Because presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with DOW (contact Erin Hazelton at Erin.hazelton@dnr.ohio.gov).

In addition, 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 bat species 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. The DOW recommends tree 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.

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 rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the tonguetied minnow (*Exoglossum laurae*), a state endangered fish, and the American eel (*Anguilla rostrata*), a state threatened fish. 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 Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet fields and meadows. 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 cave salamander (*Eurycea lucifuga*), a state endangered 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 black-crowned night-heron *(Nycticorax nycticorax*), a state-threatened bird. Night-herons are so named because they are nocturnal, conducting most of their foraging in the evening hours or at night, and roost in trees near wetlands and waterbodies during the day. Night herons are migratory and are typically found in Ohio from April 1 through December 1 but can be found in more urbanized areas with reliable food sources year-round. Black-crowned night-herons primarily forage in wetlands and other shallow aquatic habitats, and roost in trees nearby. These night-herons nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

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

The project is within the range of the lark sparrow (*Chondestes grammacus*), a state endangered bird. This sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. These summer residents normally migrate out of Ohio shortly after their young fledge or leave the nest. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

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

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

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

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

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

ODNR appreciates the opportunity to provide these comments. Please contact 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)

Attachment D – Cultural Resources Literature Review

Cultural Resources Literature Review

Seward Substation Transmission Line Relocation Project

Butler County, Ohio

Cardno

Document Information

Prepared for	Duke Energy Ohio
Project Name	Cultural Resources Literature Review Seward Substation Transmission Line Relocation Project, Butler County, Ohio
Cardno Project No.	J1954650MC28
Client Contact	Dane Vandewater (Duke Energy)
Project Manager	Cori Jansing (Cardno)
Date	October 20, 2021

Prepared and Submitted By Kaye Grob and Veronica Parsell

Principal Investigator

Veronica Parsell

Prepared for:

Duke Energy
139 E. 4th Street, Cincinnati, Ohio 45202

Prepared by:

Table of Contents

Appendices

Tables

Figures

Executive Summary

Cardno, Inc. (Cardno) conducted a cultural resources literature review for the Duke Energy Ohio Seward Substation Transmission Line Relocation Project in Butler County, Ohio. Research focused on documenting known prehistoric and historic resources within a 1.6 kilometer (km) (1 mile [mi]) radius of the Project Area (the study area) to ascertain the likelihood for encountering unidentified cultural resources within Project boundaries. The literature review centered on the 1.6 km (1 mi) study area, but also examined the region on a larger scale when appropriate.

The Project consists of extending the existing substation as well as removing and/or replacing one existing transmission line structure, located east of the existing Seward substation. The Project is anticipated to have approximately 0.4 hectares (ha) (1 acre [ac]) of subsurface impact. The entire Seward Substation parcel totals approximately 1.8 ha (4.4 ac). The Project Area consists of heavily graded and disturbed soils.

The literature review indicates 13 archaeological sites, 4 historic structures, and no NRHP-listed resources or cemeteries within the 1.6 km (1 mi) study area. One archaeological site, representing the recordation of a portion of the Miami-Erie Canal (33-Bu-0979) is located just north of the Project, and this canal channel continues south, beyond the documented site boundaries, and travels through the east end of the Project Area.

The Project Area is located in heavily disturbed and graded soils that would not be conducive to intact archaeological deposits. The entire Project Area appears to have been graded during the initial construction of the facility and construction of adjacent facilities to the north and south.

Although a remnant channel of the Miami and Erie Canal runs through the eastern end of the Project Area, it represents an isolated remnant of what would have been a broader environment. The setting, feeling, and association of the canal channel have been greatly altered to the extent that it lacks integrity. The canal channel remnant does not represent a significant development in canal construction and based on the documentation of nearby site 33-Bu-0979, it is not expected to yield significant information important to the history of the Miami-Erie Canal or Butler County. As a result, no archaeological work is recommended for the canal in order for the proposed Project to proceed as planned. In addition, due to the presence of heavily graded and disturbed soils throughout the entirety of the Project Area, no archaeological reconnaissance is recommended for the Project to proceed as planned.

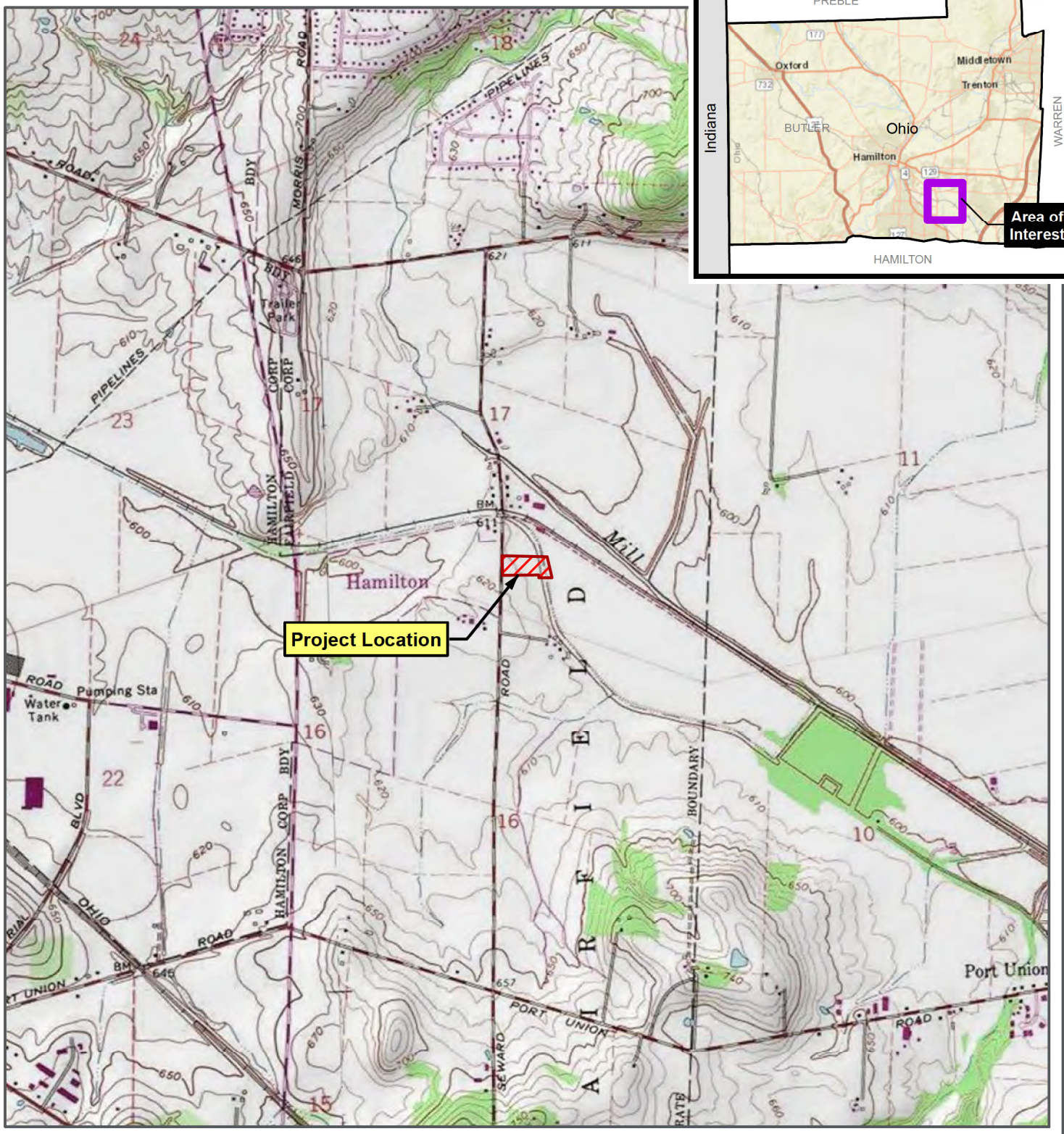
1 Introduction

In response to a request from Duke Energy Ohio (Duke), Cardno, Inc. (Cardno) conducted a cultural resources records review for the Duke Energy Ohio Seward Substation Transmission Line Relocation Project in Butler County, Ohio (the Project Area). Based on information provided by Duke, the Project Area is located in Section 17, Township 2 East, Range 2 North, on the Glendale, Ohio 7.5' USGS topographic map, in Fairfield Township (Figure 1). The Project consists of the installation of a T-line, east of the existing Seward substation, anticipated to have approximately 0.4 hectares (ha) (1 acre [ac]) of subsurface impact. The majority of the T-line installation will be within a gravel lot associated with the extant Seward Substation. The entire Project Area appears to have been graded during the initial construction of the Seward Substation facility and construction of adjacent facilities to the north and south, between 2004 and the present.

Background research conducted in October 2021 focused on a 1.6 km (1 mi) study area around the proposed Project footprint. Cardno gathered information about previously conducted cultural resource investigations and documented cultural resources as well as the environmental and cultural context of the region to assess the potential for additional undocumented cultural resources in and around the Project Area.

Key personnel committed to the project include Ms. Veronica Parsell and Ms. Kaye Grob, who served as report co-authors. Mr. Stephen LaFon created the report graphics.

This report presents the research design and results of the background research in Section 2.0. Section 3.0 discusses the conclusions and recommendations. The references cited in this report appear in Section 4.0. Appendix A includes historic maps.



0 500 1,000 2,000 Feet

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Project Location

N W E S

7.5' Quadrangle: GLENDALE
T2e R2n Sec17
Project No. j19y465028

Figure 1: Project Location
Cultural Resources Literature Review
Seward Substation Transmission
Line Relocation Project
Duke Energy Ohio
Butler County, Ohio

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2 Background Research

The objective of the current study is to identify and evaluate previously documented archaeological resources present within the proposed Project Area, as well as assess the potential for the Project Area to contain additional cultural resources.

This section provides a basic context through which to evaluate the results of our investigation, and will briefly outline the environmental and cultural background of the region in and around Butler County, Ohio.

2.1 Literature Review

Research was conducted using data from online files provided by the Ohio Historic Preservation Office (OHPO) in October 2021 (OHC 2015a). Cardno focused on previously recorded resources within 1.6 km (1 mi) of the Project Area, but also examined the larger region where appropriate. For the literature review, the following resources were consulted:

- National Historic Landmark list;
- National Register of Historic Places (NRHP) list;
- Ohio Archaeological Inventory Forms (OAI);
- Ohio Historic Inventory Forms (OHI);
- Cultural Resource Management reports;
- Ohio Genealogical Society (OGS) Cemetery Survey files;
- County Histories and Atlas Maps;
- Mills (1914) Archaeological Atlas of Ohio.

Reviewed records indicate that 13 archaeological sites, 4 historic structures, and no NRHP-listed resources or cemeteries are located within the 1.6 km (1 mi) study area (Figure 2).

2.1.1 National Historic Landmarks List

Research indicates no National Historic Landmarks located in or adjacent to the 1.6 km (1 mi) study area.

2.1.2 National Register of Historic Places (NRHP)

No NRHP-listed resources are located within or adjacent to the 1.6 km (1 mi) study area.

2.1.3 Ohio Archaeological Inventory Forms (OAI)

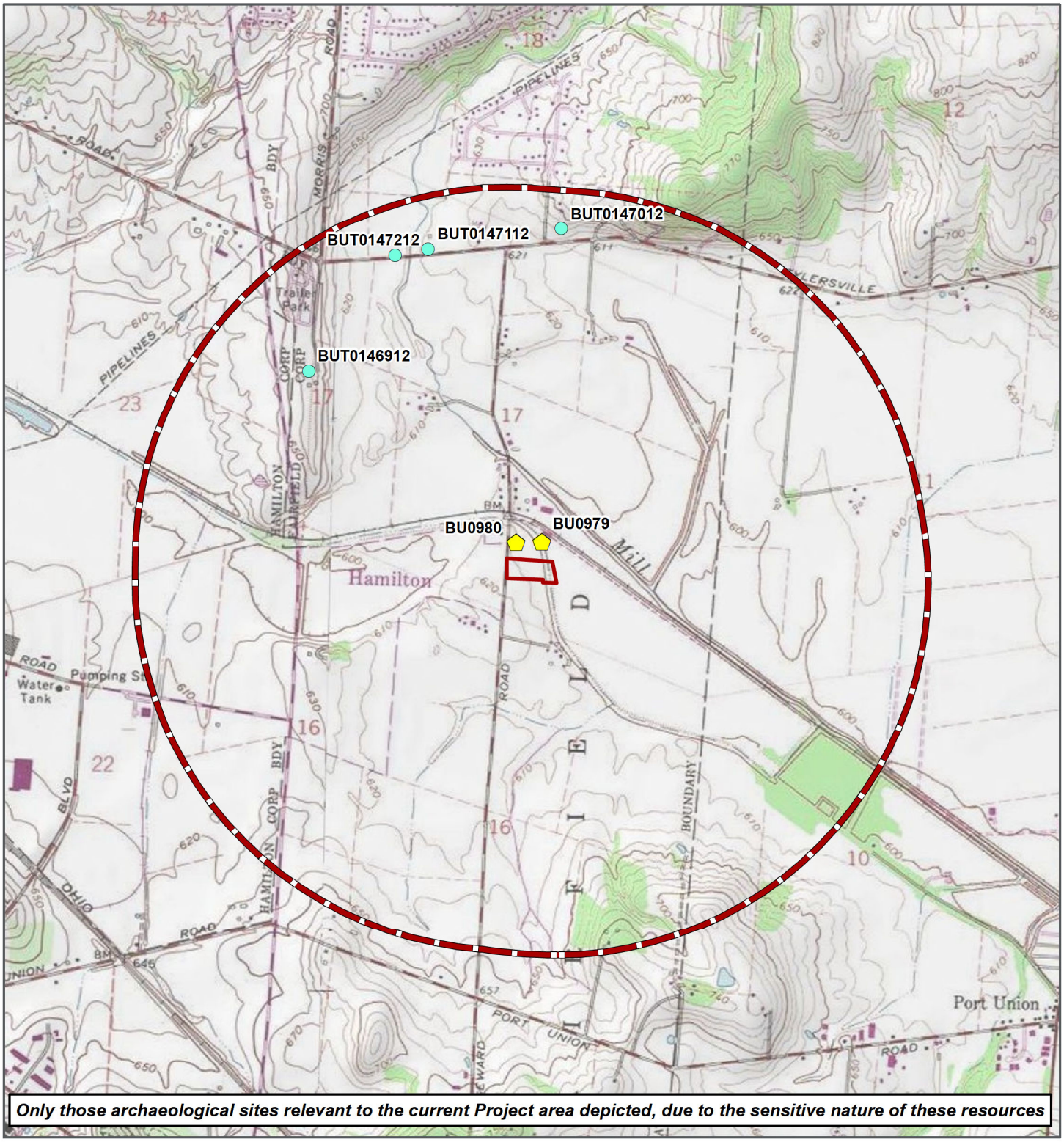
The OAI files indicate 13 archaeological sites within the 1.6 km (1 mi) study area, two of which are approximately 50 meters north of the current Project Area (Table 1; Figure 2). Site 33-Bu-0979 is a remnant, abandoned channel segment of the Miami-Erie Canal. The site consists of a ditch that is 65 ft wide at the ground surface. No canal features were identified in the channel during its recordation and it was noted to have been subject to extensive dredging and erosional activities. The segment was recommended not eligible for the NRHP (Kreinbrink 2003). This Miami-Erie Canal channel also traverses the eastern end of the current Project Area. Due to its proximity, the portion of the canal that travels through the Project Area is likely similar in design and condition to the section recorded as site 33-Bu-0979.

Site 33-Bu-0980 consists of a small prehistoric lithic scatter determined ineligible for the NRHP (Kreinbrink 2003).

Table 1. Previously Recorded Archaeological Sites in the 1.6 km (1 mi) study area

Site Number	Site Type	Temporal Affiliation	NRHP Eligibility
33-BU-0208	Prehistoric Scatter	Unidentified Prehistoric	Not Assessed
33-BU-0479	Prehistoric Scatter	Unidentified Prehistoric	Ineligible
33-BU-0480	Prehistoric Scatter	Unidentified Prehistoric	Ineligible
33-BU-0481	Prehistoric Scatter	Unidentified Prehistoric	Ineligible
33-BU-0655	Prehistoric Scatter	Early Archaic, Late Archaic, Middle Woodland, Late Woodland	Ineligible
33-BU-0979*	Historic Canal Segment	Historic	Ineligible
33-BU-0980*	Prehistoric	Unidentified Prehistoric	Ineligible
33-BU-1199	Prehistoric Isolate	Early Archaic	Ineligible
33-BU-1200	Prehistoric Isolate	Unidentified Prehistoric	Ineligible
33-BU-1201	Prehistoric Scatter	Unidentified Prehistoric	Ineligible
33-BU-1202	Historic Farmstead	Historic	Ineligible
33-BU-1203	Prehistoric Scatter	Unidentified Prehistoric	Ineligible
33-BU-1204	Prehistoric Scatter	Unidentified Prehistoric	Ineligible

**Located adjacent to the Project Area*



0 500 1,000 2,000 Feet
0 100 200 300 400 500 600 Meters

Archaeological Site
Historic Structure
Project Location
1-mile Buffer

N
W E
S

7.5' Quadrangle:
GLENDALE
T2e R2n Sec17
Project No.
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Figure 2: Previously Identified Cultural Resources
Cultural Resources Literature Review
Seward Substation Transmission
Line Relocation Project
Duke Energy Ohio
Butler County, Ohio

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2.1.4 Ohio Historic Inventory Forms (OHI)

The OHI files list four structures within the 1.6-km (1-mi) study area (Table 2; Figure 2). These structures include dwellings and a water facility. None of the identified resources are located in or adjacent to the Project Area.

Table 2. Previously Recorded OHI Structures in the 1.6 km (1 mi) study area

Structure Number	Historic Use	Location	Approx. Date
BUT0147212	Water Related Facility	Tylersville Rd	1900
BUT0147012	Single Dwelling	NEC Tylersville Rd	1853
BUT0147112	Single Dwelling	N Side Tylersville Rd-E-Morris	1870
BUT0146912	Single Dwelling	Tylersville Rd E By-Pass 4	1853

2.1.5 Ohio Genealogical Society (OGS) Cemetery Survey files

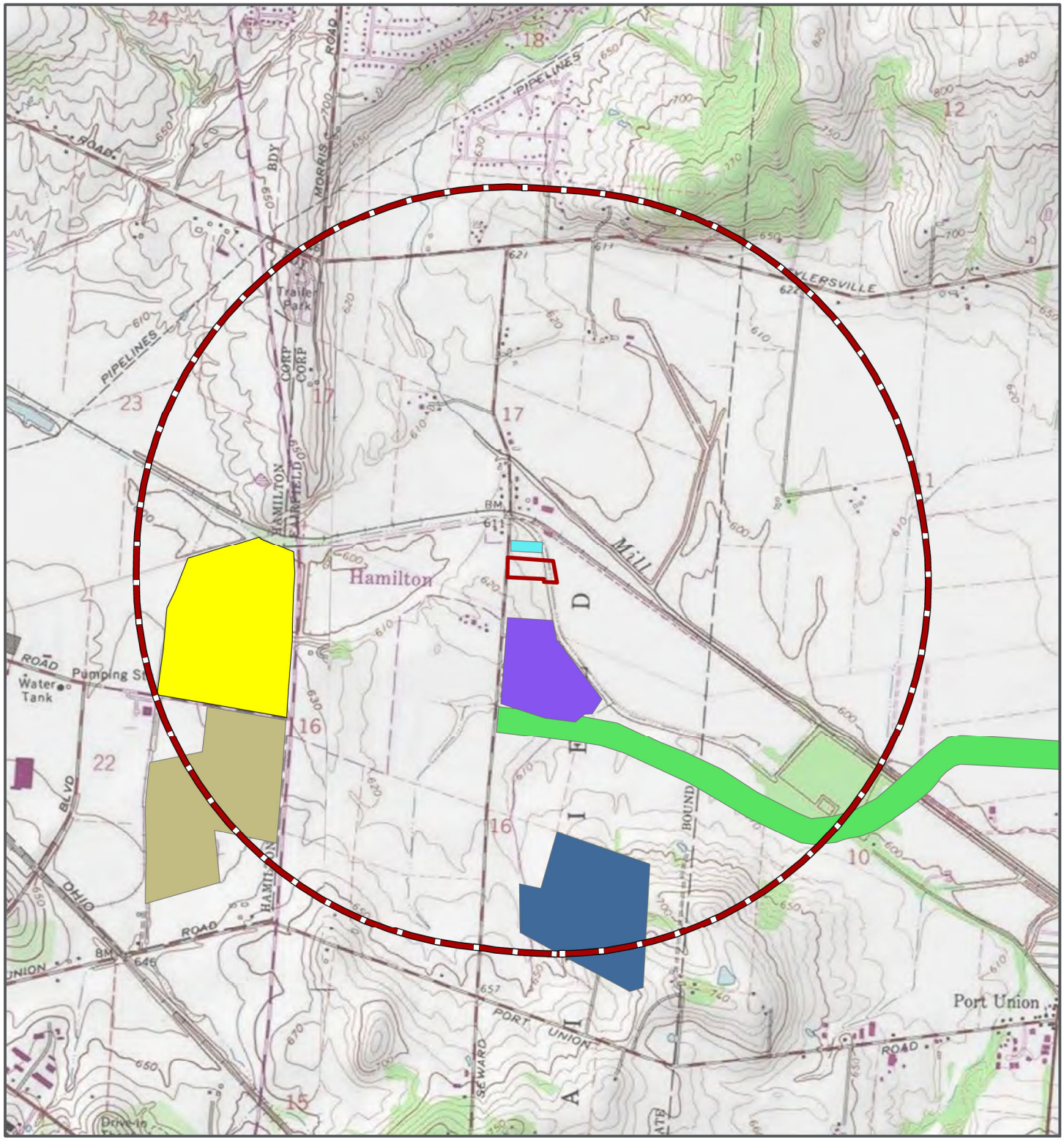
No recorded cemeteries were identified within the 1.6-km (1-mi) study area or within the Project Area.

2.1.6 Cultural Resource Management (CRM) Reports

Records on file at OHPO indicate that six cultural resource investigations have previously been conducted within 1.6 km (1 mi) of the Project Area, none of which are located within the Project Area. These investigations are listed in Table 3 and depicted on Figure 3.

Table 3. Previous Cultural Resource Investigations in the 1.6 km (1 mi) study area

Year	Author(s)	Title	Archaeological Sites Identified
1993	Duerksen, Ken and John F. Doershuk	Phase I and II Cultural Resources Survey for the Proposed Kiesland Business Park in Fairfield Township, Butler County, Ohio	33-Bu-0477
1994	Duerksen, Ken and John F. Doershuk	Phase I and II Cultural Resources Survey of an 80 Acre Tract in Fairfield Township, Butler County, Ohio	33-Bu-0479, 0480, and 0481
2000	Miller, Donald A., Ken Duerksen, and Christopher Bergman	Phase I and II Cultural Resource Investigations for the 1.9 Mile Proposed Symmes Road Extension, Fairfield and Union Townships, Butler County, Ohio	33-Bu-0654 and 0655
2003	Kreinbrink, Jeannine	Phase I Archaeology Survey of 3.7 Acre Seward Road Substation, City of Fairfield, Butler County, Ohio	33-Bu-0979 and 33-Bu-0780
2009	Lillis-Warwick, Jaclyn, Rachel Bankowitz, Evelyn M. Tidlow, and Andrew J. Weir	Phase I Cultural Resource Survey of the Preferred Site for the Proposed Military Construction Site Project, Madison and Fairfield Townships, Butler County, Ohio.	None
2016	Kreinbrink, Jeannine and Doug Von Strohe	Phase I Archaeology Survey Report: 39.765 Acre Hoffman-Schumacher Farm 8550 Seward Road, in Fairfield (Township), Butler County, Ohio	33-Bu-1999 through 1204



7.5' Quadrangle:
GLENDALE
T2e R2n Sec17
Project No.
j19y465028

Figure 3: Previous Cultural Resource Investigations

Cultural Resources Literature Review
Seward Substation Transmission
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2.1.7 Historic Maps, Atlases, and Aerial Imagery

Three available historic maps were referenced for information pertaining to the historic use of the Project Area between 1875 and 1956 (Everts 1875; Rerick Brothers 1895; and USGS 1956) (Appendix A).

The 1875 atlas depicts the Project Area on land owned by W. Morris (Everts 1875). No structures or features are located within the Project Area. Although not labelled on mapping, the Miami and Erie Canal is mapped within the eastern end of the Project Area, and a road in the current location of Seward Road is mapped along the western boundary of the Project Area (Everts 1875).

The 1895 atlas depicts the Project Area as being owned by Sigmond Sommer. No structures are mapped within or adjacent to the Project Area. The Miami and Erie Canal continues to be mapped within the eastern end of the Project Area (Rerick Brothers 1895).

By 1956, the Glendale, Ohio 7.5' USGS topographic quadrangle depicts no structures within the Project Area. The outline of the Miami and Erie Canal is mapped within the Project Area; however, by this time it is likely utilized for drainage, similar to its present use (USGS 1956).

Historic Aerial imagery depicts a large amount of ground disturbance within the Project Area between 2004 and present (Appendix A). In 1956, the entire Project Area is located within agricultural fields and no structures are visible within the Project Area. By 2004, the western portion of the Project Area contains the initiation of the construction of Seward Substation and the entire parcel appears to have had some level of grading. By 2005, the completed substation and facilities are located in the western portion of the Project Area. Grading is evident on the imagery in the southeastern quadrant of the Project Area. In 2017, a substation expansion was underway and the new substation footprint had grading nearly all the way to the remnant canal bed/ drainage channel in the eastern end of the Project Area. The level of soil disturbance within the Project Area between 2004 and present makes it highly unlikely that intact cultural resources are present.

In the *Archaeological Atlas of Ohio*, Mills (1914) lists a total of 251 prehistoric sites in Butler County, including 221 mounds, 24 enclosures, 1 village, 1 cemetery, and 4 burials. Of these, 17 mounds, 7 enclosures, and 1 cemetery are located within Fairfield Township. No mapped prehistoric archaeological sites are shown within the current Project Area; however, the Miami and Erie Canal is mapped in proximity to the Project Area (Mills 1914).

2.2 Brief Environmental Context

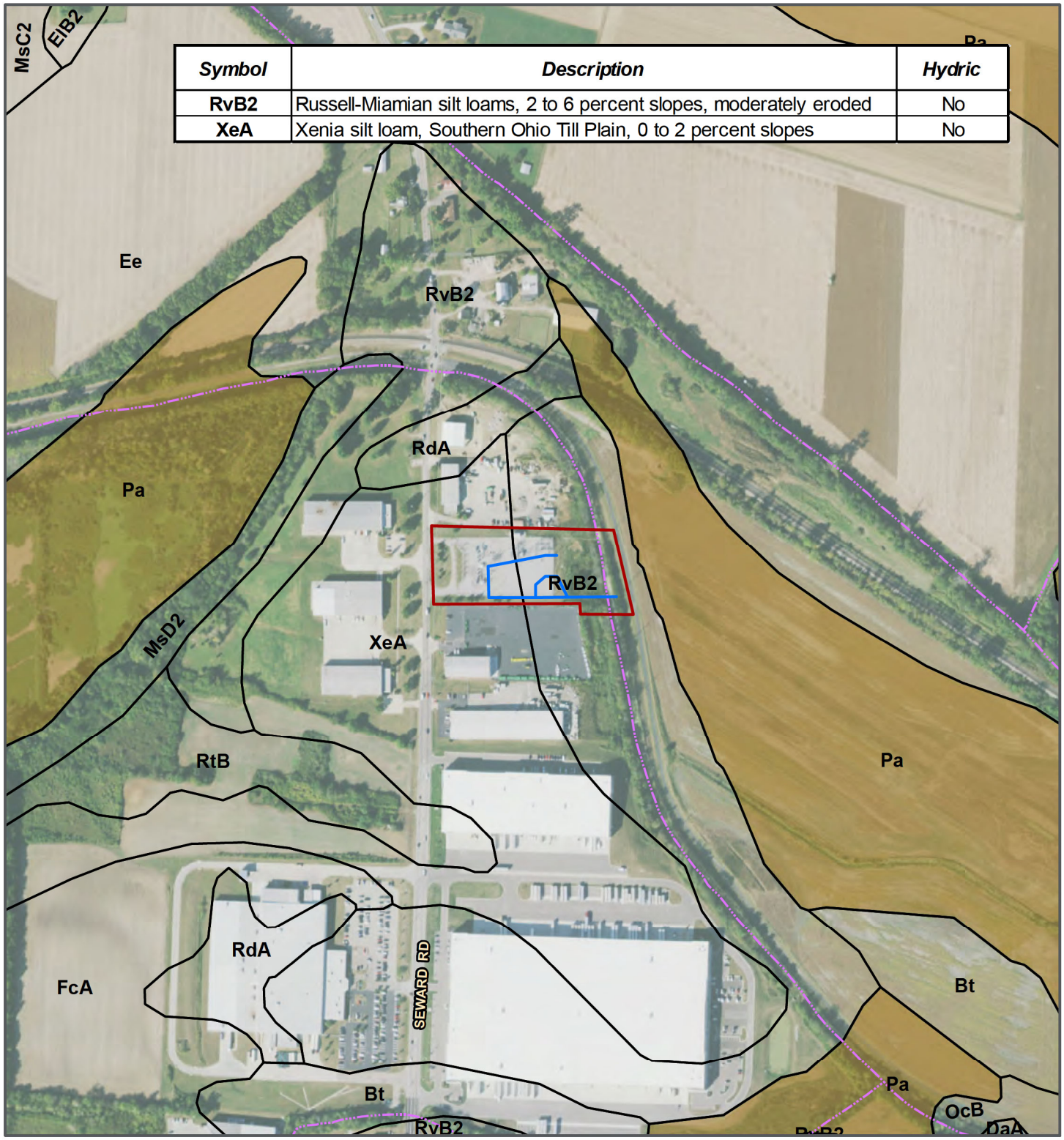
The Project Area is located within the Central Lowland Till Plains Province, in the Southern Ohio Loamy Till Plain physiographic region (Brockman 1998). The proposed Project Area is located in the Mill Creek Watershed. Mill Creek is located approximately 220 m (722 ft) northeast of the Project Area. A ditch that likely represents the remains of the Miami and Erie Canal travels through the eastern portion of the Project Area.

2.2.1 Project Area Soils

The Project Area is located within the Fincastle-Patton-Xenia soil association, which consists of "deep, nearly level and gently sloping, somewhat poorly drained, poorly drained, and moderately well-drained soils that have a moderately fine textured subsoil, formed in loess, glacial till, and lacustrine silts" (USDA/SCS 1980). Soils within the Project Area are depicted Figure 4 and listed on Table 4. The soils in the Project Area are predominantly disturbed as a result of construction activity and grading. This extensive disturbance can be seen on the aerial imagery included in Appendix A.

Table 4. Soil Units within the Project Area

Abbreviation	Soil Unit	Hydric
RvB2	Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded	No
XeA	Xenia silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	No



Symbol	Description	Hydric
RvB2	Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded	No
XeA	Xenia silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	No

N
W E
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7.5' Quadrangle:
GLENDALE
T2e R2n Sec17
Project No.
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Figure 4: Project Area Soils (2019 Aerial)
Cultural Resources Literature Review
Seward Substation Transmission Line
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2.2.2 Prehistoric Cultural Setting

Archaeological sites are well-documented in Butler County, Ohio. The county is located in a region with a temperate climate, well-drained soils, topography, and riverine corridors, making it an ideal location for settlement and subsistence throughout history. Nearly 1,200 archaeological sites have been documented in Butler County to date, including many with a historic component (OHC 2015a). The prehistoric occupation of Ohio is generally divided into three broad periods: Paleoindian, Archaic, and Woodland. Butler County contains sites dating to each of these time periods; however, many of the recorded prehistoric sites in the county do not contain diagnostic artifacts and therefore cannot be attributed to specific cultural occupations (OHC 2015a). This section will outline each of these broad time periods, including smaller divisions within each.

2.2.2.1 Paleoindian Period (ca. 13,000 – 10,000 B.P.)

The Paleoindian period encompasses the cultural remains of the earliest recorded occupants of the region, after about 13,000 years before present day (B.P.), shortly following the retreat of the last glaciers to cover the land. Paleoindians were nomadic groups comprised of small kin-based bands that primarily practiced a foraging subsistence strategy. Current research suggests that these Paleoindian bands moved within a circumscribed geographic range to intercept large herd animals during their migratory cycles (Gramly 1988; Stothers 1996). Over time, the focus likely shifted from large-scale hunting expeditions to a more regular procurement of game, accompanied by a decrease in the overall size of territory exploited by these groups

Paleoindian sites are most easily recognized in the archaeological record by the presence of lanceolate spear points. These points may be fluted (a large flake removed from each side of the base) or unfluted. Early Paleoindian projectile points are often made of high quality materials, usually from a widely dispersed area, which suggest a high level of mobility. Later Paleoindian points are more often made from local chert types, which may reflect a reduction in this mobility.

Documented archaeological sites dating to this time period are relatively rare in this part of state. The Ohio Archaeological Inventory lists approximately 5 sites dating to this period in Butler County (OHC 2015a).

2.2.2.2 The Archaic Period (10,000 – 2,500 B.P)

The Archaic period is identified by archaeologists as the period when settlements organized around local environmental resources replaced the broad seasonal migration patterns of the Paleoindian period. Approximately 8 sites in Butler County can be broadly attributed to the Archaic Period, often through the presence of characteristic projectile points (OHC 2015a).

2.2.2.2.1 Early Archaic (10,000 – 8,000 B.P.)

The Early Archaic time period is often identified in the archaeological record by the transition from large, lanceolate bifaces of Paleoindian assemblages to smaller, notched and bifurcated bifaces. Groundstone tools and other lithic tools such as gravers, scrapers, and notched knives are also observed in the Early Archaic. Local cherts continue to appear in the archaeological record as a common resource. Early Archaic subsistence strategies continued the focus on large migrating Pleistocene herd animals, but Early Archaic groups also began to exploit more local environmental resources including smaller game animals. Early Archaic artifacts tend to display more diversity in style and function, which also may reflect diversity in resource exploitation. Currently, nearly 50 documented sites in Butler County have an Early Archaic component (OHC 2015a).

2.2.2.2.2 Middle Archaic Period (8,000 – 5,000 B.P.)

Archaeologists observe little change between the Early and Middle Archaic periods. The Middle Archaic period is reflected by changes in projectile point and blade types, but these variations are more prominent in southern portions of the U.S., and are not evident in southern Ohio (Vickery and Litfin 1992). The Middle

Archaic may be described simply as a transitional period between the Early and Late Archaic periods. Only 14 sites in Butler County have a documented Middle Archaic component (OHC 2015a).

2.2.2.2.3 Late Archaic Period (5,000 – 2,500 B.P.)

The Late Archaic Period sees an increased focus on regional mobility patterns as well as an increase in resource diversity. Late Archaic groups incorporated plants into a larger part of their subsistence strategy. Late Archaic sites often represent repeated occupation over a long period of time, which suggests a regular, more localized pattern of movement across the landscape. Projectile points and other lithic tools also show an increase in variation. Small side-notched and corner-notched points and side and end scrapers appear frequently in Late Archaic assemblages. Groundstone tools are also increasingly evident. Pottery begins to appear in the transition between the Late Archaic and Early Woodland periods. There are nearly 75 documented sites with a Late Archaic component in Butler County (OHC 2015a).

2.2.2.3 The Woodland Period (2,500 – 500 B.P)

Wide exchange of materials, the innovation of ceramic technology, the emergence of domesticated crops and animals, and an increasing shift toward permanent settlements generally identify the transition to the Woodland time period. Populations in the Woodland period tended to be broad spectrum hunter-gatherers, living in semi-sedentary occupations made up of small groups, likely based on kinship. These occupations were typically located around riverine environments and organized around communal burials. Innovations such as a more intensive reliance on pottery, horticulture, as well as the bow and arrow also occur during the Woodland time period. Butler County contains approximately 172 sites with artifacts dating to the Woodland period (OHC 2015a).

2.2.2.3.1 Early Woodland Period (2,500 – 1,900 B.P.)

The Early Woodland period marks the transition from the more nomadic Archaic subsistence strategy to a more localized, semi-sedentary subsistence strategy. The Adena culture is representative of the Early Woodland period in southern Ohio. Cultural material associated with the Adena are stemmed projectile points with weak shoulders, ceramic vessels with flat bottoms and lug handles, drills, scrapers, and a variety of ornamental and ceremonial materials (Tuck 1978). The earliest earthworks and burial mounds in southern Ohio are attributed to the Adena. These earthworks were often constructed over another structure, indicated by the presence of post-hole features. Burials are often associated with a variety of exotic materials, such as cut mica, copper, beads, gorgets, and shell. It is important to note, however, that “Adena”, like “Hopewell” in the Middle Woodland, refers more to a pattern of mortuary practices and exchange of goods, rather than to a discrete group of peoples. . Currently, approximately 42 sites in Butler County date to the Early Woodland Period (OHC 2015a).

2.2.2.3.2 The Middle Woodland Period (1,900 – 1,400 B.P)

Archaeologists generally describe the Middle Woodland period in Ohio as the period associated with the development of the Hopewell culture. The subsistence strategy was organized around a seasonal pattern of resource procurement and an increasing reliance on horticulture. The Middle Woodland period saw a continued increase in population and social organization, reflected in the numerous earthworks constructed in this period. These earthworks, often constructed in geometric figures, may have represented ceremonial centers suggesting that populations may have been organized at some larger scale. The prehistoric trade of exotic materials also reached a high during the Middle Woodland as populations within the “Hopewell Interaction Sphere” traded materials from as far away as the Upper Peninsula of Michigan (copper), the Gulf Coast (shell and shark teeth), and the Carolinas (mica). It is likely that the Hopewell Interaction Sphere represents a broad but loosely organized pattern of exchange rather than a well-defined system of trade (Pacheco 1996). While pottery tends to be more utilitarian in nature, vessels with an engraved duck motif appear in funerary contexts. In general, Middle Woodland vessels have thinner walls than earlier ceramics. There are approximately 40 sites in Butler County with a Middle Woodland component (OHC 2015a).

2.2.2.3.3 The Late Woodland/Late Prehistoric Period (1,400 – 1,000 B.P.)

A significant reduction in the extensive, extra-regional trade of exotic goods and materials marks the Late Woodland period. The construction of large ceremonial earthworks also ends in the Late Woodland, as there is a shift in mortuary practices to interring burials into existing, older mounds or small stone mounds. Isolated, individual burials are also observed. This period is also characterized by an increasingly sedentary residential pattern of large nucleated villages supported by a growing reliance on maize and other cultigens as a substantial part of the Late Woodland diet. Palisades or ditches were sometimes constructed around these villages. This need for defensive structures suggests an increasing instability at times. Resource diversity also continued to increase, although reliance on aquatic resources was less pronounced in southern Ohio than in other areas of the Midwest. The deeply dissected drainages of southern Ohio do not produce the oxbow pond or lake features as seen in the Mississippi, Missouri or Illinois River valleys (Seeman and Dancey 2000). Late Woodland artifacts include small triangular points, scrapers, mortars and pestles, celts, and hoes. A distinct technological innovation of the period was the use of earthen ovens for steaming or baking food (Seeman and Dancey 2000). Pottery in the early portion of the Late Woodland exhibits thick angular shoulders (Newtown shoulder) and contrasts with Middle Woodland containers (Seeman and Dancey 2000). The bow and arrow became prevalent, though likely in the later portion of the Late Woodland. Butler County contains approximately 33 documented sites with artifacts dating to the Late Woodland Period (OHC 2015a).

2.2.2.4 Fort Ancient (1,000 B.P. – contact)

In southwest Ohio, archaeologists have described a settlement system marked by sedentary villages located along floodplains, with smaller resource-specific occupations in the uplands and lowlands (Pollack and Henderson 2000). The Fort Ancient period has been described as an in situ development from Late Woodland groups in the Ohio valley, extending into southeastern Indiana, northern Kentucky, southern Ohio, and eastern West Virginia (Drooker 1997). The Mississippian influence is evident in designs and forms, but made from locally available materials such as spatula shaped celts, triangular projectile points, and the falcon motif. Fort Ancient villages are typically located along the Ohio River and its major tributaries. In the late pre-contact period, the majority of settlements were located within 12.4 mi (20 km) of the Ohio River (Drooker 1997). Many of these villages are organized around a central plaza and some were surrounded by palisades. Structures varied in size from as small as 107 square feet (10 square meters) to as large as 1930 square feet (180 square meters) (Drooker 1997). Semi-subterranean pit houses provided cooler temperatures in the summer and warmer temperatures in the winter. Storage pits also became more extensive, with some measuring 3.4 ft (1 m) in diameter and 6.5 ft (2 m) in depth, capable of storing over 45 bushels of shelled corn (Cowan 1987).

Use of burial mounds declined after approximately 700 B.P., as people began interring their deceased in the villages around plazas as well as in and around houses. Funerary items include pots and pipes, but more exotic materials such as marine shell also are seen. The presence of marine shell and other engraved Mississippian goods along with the location of Fort Ancient groups along the Ohio River suggest some level of regional interaction. The late pre-contact period, however, is characterized by more concentrated settlement locations and more intraregional similarities in goods such as ceramics.

By the later part of the Fort Ancient period (post 1400 A.D.), most settlements were located within 20 km of the Ohio River and appear to represent a collection of formerly dispersed groups (Drooker and Cowan 2001). This period also includes increased intra and extra-regional interaction among eastern and western populations (Drooker and Cowan 2001). The mid-sixteenth century marks the beginning of the Protohistoric period, when European goods begin to arrive in the region, but prior to substantial European establishment.

Despite sharing the name “Fort Ancient”, the large earthworks at the hilltop enclosure located approximately 23.3 km (14.5 mi) east of the Project Area, were built during the Middle Woodland period. The Fort Ancient enclosure includes over 18,000 feet of linear earthworks on a terrace overlooking the Little Miami River.

One of the most prominent sites in the area dating to the Fort Ancient period is the Madisonville site located near Cincinnati. Currently, there are approximately 40 sites that date to this time period in Butler County (OHC 2015a).

2.2.3 Historic Cultural Setting

The establishment of Detroit in 1701 as a major center for fur trade and as the seat of European political and military power in the region led to an increase of non-Native people and a resurgence of Native Americans in the Ohio area throughout the eighteenth century (Nester 2000). By the mid-eighteenth century, British and French traders began to rival each other in the Ohio region. Following the French and Indian War (1756-1763), the French relinquished control of all Ohio lands to the British (Nester 2000). In the years following the treaty that ended the war, British colonists were often engaged in skirmishes and battles with the Native Americans, who were disgruntled with the postwar policies of the British. In an attempt to maintain peaceful relations with the tribes that participated as allies to the French during the war, Great Britain passed the Royal Proclamation of 1763, which restricted settlement west of the Appalachian Mountains (OHC 2015b). The proclamation only served to anger the colonists, who continued to move west and settle. The British victory in the French and Indian War and the events that followed shortly thereafter sparked the upheaval that would lead to the American Revolution against Great Britain (OHC 2015b). After the Revolutionary War (1775–1783), most of the Native American territory was ceded to the United States through a series of treaties, including the Treaty of Fort McIntosh (Pennsylvania) in 1785 and the Treaty of Greenville (Ohio) in 1795 (OHC 2015c).

The 1795 Treaty of Greenville, which was signed at Fort Greenville (now the city of Greenville located northwest of Montgomery County in Darke County), effectively ended war with the Native Americans and meant that southwest Ohio could develop along the Great and Little Miami Rivers. The stage had been set for this development by John Cleves Symmes, an investor who purchased the entire area between the Great and Little Miami Rivers, from the Ohio River north to the Mad River (in present-day Montgomery County) (Honious 2003). Symmes had purchased the land in 1787, for 66 cents an acre; however, it was not until the Treaty of Greenville, which created a boundary line between land owned by Native American tribes and the area open to European settlement, that Symmes could profit from his purchase (Honious 2003). Two weeks after the treaty was signed, Symmes sold a portion of his property to a group of developers that included Arthur St. Clair (the Governor of the Northwest Territory), Israel Ludlow, James Wilkinson, and Congressman Jonathan Dayton (Honious 2003). Known as the “Dayton Purchase,” this tract included land in present-day eastern Montgomery County and western Greene County, and included the land that would become the city of Dayton. The investors chose “Dayton” for the name as the most pleasant of their four surnames (Honious 2003). Ohio officially became a state in February 1803, when President Jefferson endorsed the United States Congress's decision to grant Ohio statehood; however, Ohio celebrates statehood in March 1, when the Ohio General Assembly met for the first time (OHC 2015d).

2.2.3.1 Butler County

Butler County, located west of Symmes’ Miami Purchase, was founded in 1803 when Hamilton County was divided. The new county was named after revolutionary war hero Richard Butler, who died during St. Clair’s defeat in 1791 (Western Biographical Publishing Company 1882). It was one of the first twelve counties formed in the new State of Ohio. Settlement in Butler County began in the 1790s, with the construction of Fort Hamilton on the Miami River (Bauer and McNutt 2006). Hamilton, on the site of Fort Hamilton, is the county seat, and is also the largest city in the county (OHC 2015e).

Lemon Township was originally platted in 1803 and at the time contained portions of Madison Township. Madison Township was divided out in 1810, creating the current boundaries of Lemon Township. The Miami-Erie Canal, multiple roads, and railroads made early travel through the region accessible.

The Miami Canal travelled through Middletown and was in operation from Middletown to Cincinnati in 1828. By 1830, 17 miles were added north to connect with Dayton (Touring Ohio 2017). In 1833, the Ohio and

Erie Canal was completed. By 1845, the Miami-Erie canal system was complete from the Ohio River to Lake Erie (Touring Ohio 2017). Early plans for the canal included a system of waterworks and hydraulic dams and locks to assist in water flow in the canal (WBPC 1882).

Today, Butler County holds approximately 333,807 residents, of which approximately 49,000 of them live in Middletown. Butler County has recently seen a population increase, and many residents commute to Cincinnati, though the county is also home to multiple industries (OHC 2015e).

Many archaeological sites in Butler County date to the historic period. These sites represent the introduction and perpetuation of European and early American settlement in the region. The majority of these sites consist of domestic, industrial or commercial development associated with the historic growth of Butler County. Some common site types include elements of farmsteads or other residential sites, municipal buildings such as schools or churches, commercial structures such as mills, or historic dump and debris discard areas.

2.3 Summary and Discussion

This section presented the results of the cultural resources records review. The records check indicates that 13 archaeological sites, 4 historic structures, and no NRHP-listed resources or cemeteries have been recorded within 1.6 km (1 mi) of the Project Area. The records review suggests that aside from the Miami and Erie Canal remnant present within the eastern end of the Project, it is unlikely that intact cultural resources would be extant within the Project Area. The Project Area is located in disturbed and heavily graded soils related to the construction of the substation and surrounding facilities.

Although a remnant channel of the Miami and Erie Canal runs through the eastern end of the Project Area, it represents an isolated remnant of what would have been a broader environment. The setting, feeling, and association of the canal channel have been greatly altered to the extent that it lacks integrity. The canal channel remnant does not represent a significant development in canal construction and based on the documentation of nearby site 33-Bu-0979, it is not expected to yield significant information important to the history of the Miami-Erie Canal or Butler County.

3 Summary and Recommendations

In response to a request from Duke, Cardno conducted a cultural resources records review for the Seward Substation Transmission Line Relocation Project in Butler County, Ohio. Based on information provided by Duke, the Project Area is located in Section 17, Township 2 East, Range 2 North, on the Glendale, Ohio 7.5' USGS topographic map in Butler County, Ohio. The Project consists of extending the existing substation as well as removing and/or replacing one existing transmission line structure, located east of the existing Seward substation. It is anticipated to have approximately 0.4 ha (1 ac) of subsurface impact. The entire Seward Substation parcel totals approximately 1.8 ha (4.4 ac).

Background research conducted in October 2021 focused on a 1.6 km (1 mi) study area around the proposed Project footprint. Cardno gathered information about previously conducted cultural resource investigations and documented cultural resources as well as the environmental and cultural context of the region to assess the potential for additional undocumented cultural resources in and around the Project Area.

3.1 Applicable Regulations and Guidelines

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies assess the effect(s) of their projects on cultural resources eligible for listing in the NRHP. Section 106 of the NHPA applies to any federal agency undertaking that has the potential to affect cultural resources eligible for listing in the NRHP, should they be present. This federal agency action may include permitting, funding, or other approval of project activities.

Section 106 of the NHPA requires that the federal agency assess effects of their undertakings in areas where the effects are likely to occur, known as the Area of Potential Effects (APE). The APE takes into account both direct and indirect effects. Direct effects are limited to the areas of likely ground disturbance in the planned area of improvements and in associated easements. Direct effects in these areas may affect archaeological or architectural resources if present. Indirect effects includes areas where visual, noise, or other effects caused by the project occur outside the footprint of the Project Area. Indirect effects may affect architectural resources, certain types of archaeological resources, or other cultural resources if present.

Ohio Administrative Code 4906-06 outlines the requirements regarding filing an accelerated certificate application with the Ohio Power Siting Board. This regulation requires the applicant "provide a description of the applicant's investigation concerning the presence or absence of significant archeological or cultural resources that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation".

Pursuant to Ohio Revised Code §149.53, if archaeological artifacts or human remains are identified during project activities in any location, work within the area must stop and the OHPO must be notified within two (2) business days.

3.2 Summary of Results and Recommendations

The records check indicates that 13 archaeological sites, 4 historic structures and no NRHP-listed resources or cemeteries have been recorded within 1.6 km (1 mi) of the Project Area. The Project Area has not been previously investigated for cultural resources. One archaeological site, representing the recordation of a portion of the Miami-Erie Canal (33-Bu-0979) is located just north of the Project, and this canal channel continues south, beyond the documented site boundaries, and travels through the east end of the Project Area.

Although a remnant channel of the Miami and Erie Canal runs through the eastern end of the Project Area, it represents an isolated remnant of what would have been a broader environment. The setting, feeling, and association of the canal channel have been greatly altered to the extent that it lacks integrity. Based on the documentation of nearby site 33-Bu-0979, the portion of the Miami-Erie Canal within the Project Area is not expected to yield significant information important to the history of the canal or Butler County. As a result, no archaeological work is recommended for the canal in order for the proposed Project to proceed as planned.

The Project Area is located in heavily disturbed and graded areas that would not be conducive to intact archaeological deposits. The entire Project Area appears to have been graded during the initial construction of the facility and construction of adjacent facilities to the north and south, between 2004 and the present. Due to the previously disturbed soils within the Project Area, no archaeological reconnaissance is recommended for the Project to proceed as planned.

4 References Cited

Bauer, Cheryl and Randy McNutt

2006 Postcard History Series: Butler County. Mount Pleasant: Arcadia Publishing.

Brockman, C. Scott

1998 Physiographic Regions of Ohio. Electronic document, http://www.epa.state.oh.us/portals/27/SIP/Nonattain/F2-physiographic_regions_of_Ohio.pdf, accessed October 2021.

Cowan, C. Wesley

1987 First Farmers of the Middle Ohio Valley. Cincinnati Museum of Natural History, Cincinnati, Ohio.

Drooker, P.

1997 The View from Madisonville: Protohistoric Western Fort Ancient Interaction Patterns. Memoirs of the Museum of Anthropology No. 21. The University of Michigan, Ann Arbor.

Drooker, P.B. and C.W. Cowan

2001 Transformation of the Fort Ancient cultures of the central Ohio Valley. In Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, A.D. 1400-1700, ed. D.S. Brose, C.W. Cowan, and R.C. Manifort, Jr. Smithsonian Institution Press, Washington, D.C., 83-106.

Everts, L.H.

1875 Combination Atlas Map of Butler County, Ohio: Map of Lemon Township. L.H. Everts Publishing. Electronic document, https://www.ohiohistory.org/OHC/media/OHC Media/Documents/SHPO/Atlas/Everts-_Combination_Atlas_Map_of_Butler_County_1875.pdf, accessed October 2021. Provided by the Ohio History Connection, Ohio State Historic Preservation Office.

Gramly, R.

1988 Paleoindian Sites South of Lake Ontario, Western and Central New York State. In Late Pleistocene and Early Holocene Paleoecology and Archaeology of the Eastern Great Lakes Region, edited by R.S. Laub, N. Miller and D. Steadman, pp. 265-280. Bulletin of the Buffalo Society of Natural Sciences 33.

Honious, Ann

2003 What Dreams We Have: The Wright Brothers and Their Hometown of Dayton, Ohio. U.S. Department of the Interior, National Park Service. Electronic document http://www.nps.gov/parkhistory/online_books/daav/chap1.htm, accessed March 2016.

Mills, W. C.

1914 Archaeological Atlas of Ohio. Ohio State Archaeological and Historical Society, Columbus.

Nester, William

2000 The Great Frontier War: Britain, France, and the Imperial Struggle for North America, 1607-1755. Praeger Publishers. Westport, Connecticut.

Nationwide Environmental Title Research, LLC (NetrOnline)

2021 Historic Aerials. Electronic database, https://www.historicaerials.com/viewer, accessed October 2021.

Ohio History Connection (OHC)

2015a Ohio State Historic Preservation Office Online Mapping System. Electronic document, https://www.ohiohistory.org/preserve/state-historic-preservation-office/mapping, accessed October 2021.

2015b Ohio History Central: French and Indian War. Electronic document, http://www.ohiohistorycentral.org/w/French_and_Indian_War, accessed July 2017.

2015c Ohio History Central: Treaty of Greeneville (1795). Electronic document, http://www.ohiohistorycentral.org/w/Treaty_of_Greeneville_(1795), accessed July 2017.

2015d Ohio History Central: Ohio Statehood. Electronic document, http://www.ohiohistorycentral.org/w/Ohio_Statehood, accessed July 2017.

2015e Ohio History Central: Butler County. Electronic document, http://www.ohiohistorycentral.org/w/Butler_County, accessed March 2016.

Pacheco, P.

1996 Ohio Hopewell Regional Settlement Patterns. In A View From the Core: A Synthesis of Ohio Hopewell Archaeology, edited by P. J. Pacheco, pp. 18-35. Ohio Archaeological Council, Columbus.

Pollack, David and A. Gwyn Henderson

2000 “Insights Into Fort Ancient Cultural Change: A View from South of the River.” In Cultures Before Contact: the Late Prehistory of Ohio and Surrounding Regions, ed. R.A. Genheimer. Columbus: Ohio Archaeological Council, 194-227.

Rerick Brothers

1895 The County of Butler, an Imperial Atlas and Art Folio. Electronic copy, https://www.ohiohistory.org/OHC/media/OHC-Media/Documents/SHPO/Atlas/Rerick_Brothers-_The_County_of_Butler_County_Ohio_1895.pdf, accessed October 2021. Provided by the Ohio History Connection, Ohio State Historic Preservation Office.

Seeman, M. and W. Dancey

2000 The Late Woodland Period in Southern Ohio: Basic Issues and Prospects. In Late Woodland Societies: Tradition and Transformation Across the Midcontinent, edited by T. E. Emerson, D. L. McElrath, and A. C. Fortier, pp. 583-611. University of Nebraska Press, Lincoln.

Stothers, D.

1996 Resource Procurement and Band Territories: A Model for Lower Great Lakes Paleoindian and Early Archaic Settlement Systems. Archaeology of Eastern North America 24: 173-216.

Touring Ohio

2017 Miami and Erie Canal System. Electronic document, http://touringohio.com/day-trips/miamieriecanal.html, accessed December 2017.

Tuck, J.

1978 Regional Cultural Development, 3,000-300 B.C. Handbook of North American Indians (15). Smithsonian Institution Press, Washington, D.C.

USDA/SCS

1980 Soil Survey of Butler County, Ohio. United States Department of Agriculture/Natural Resources Conservation Service

2014 Websoil Survey. Electronic document, http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx, accessed October 2021.

United States Geological Survey (USGS)

1956 Glendale, Ohio [map]. 1:24,000. 7.5 Minute Series. United States Department of the Interior. Butler County, Ohio (WCI).

Vickery, K. and J. Litfin

1992 A Proposed Revision of the Classification of Midwestern Paleoindian, Early Archaic, and Middle Archaic Projectile Points. Department of Anthropology, University of Cincinnati, Cincinnati.

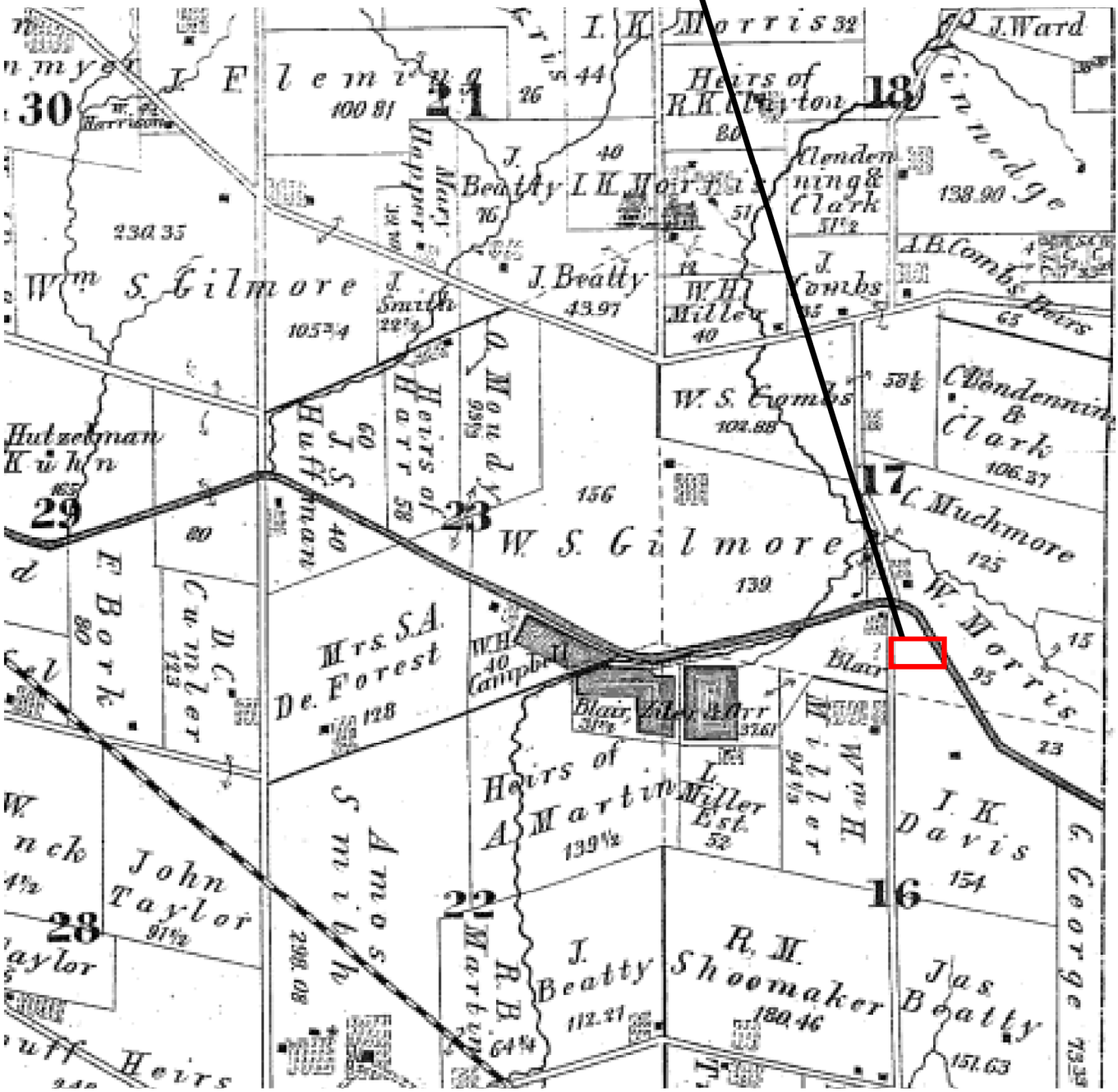
Western Biographical Publishing Company (WBPC)

1882 A History and Biographical Cyclopedia of Butler County, Ohio. Western Biographical Publishing Company. Cincinnati.

Cultural Resources Literature Review for the Seward Substation Transmission Line Relocation Project Butler County, Ohio

APPENDIX A

HISTORIC MAPS



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Appendix A: 1875 Map
Cultural Resources Literature Review
Seward Substation Transmission Line Relocation Project
Duke Energy Ohio
Butler County, Ohio

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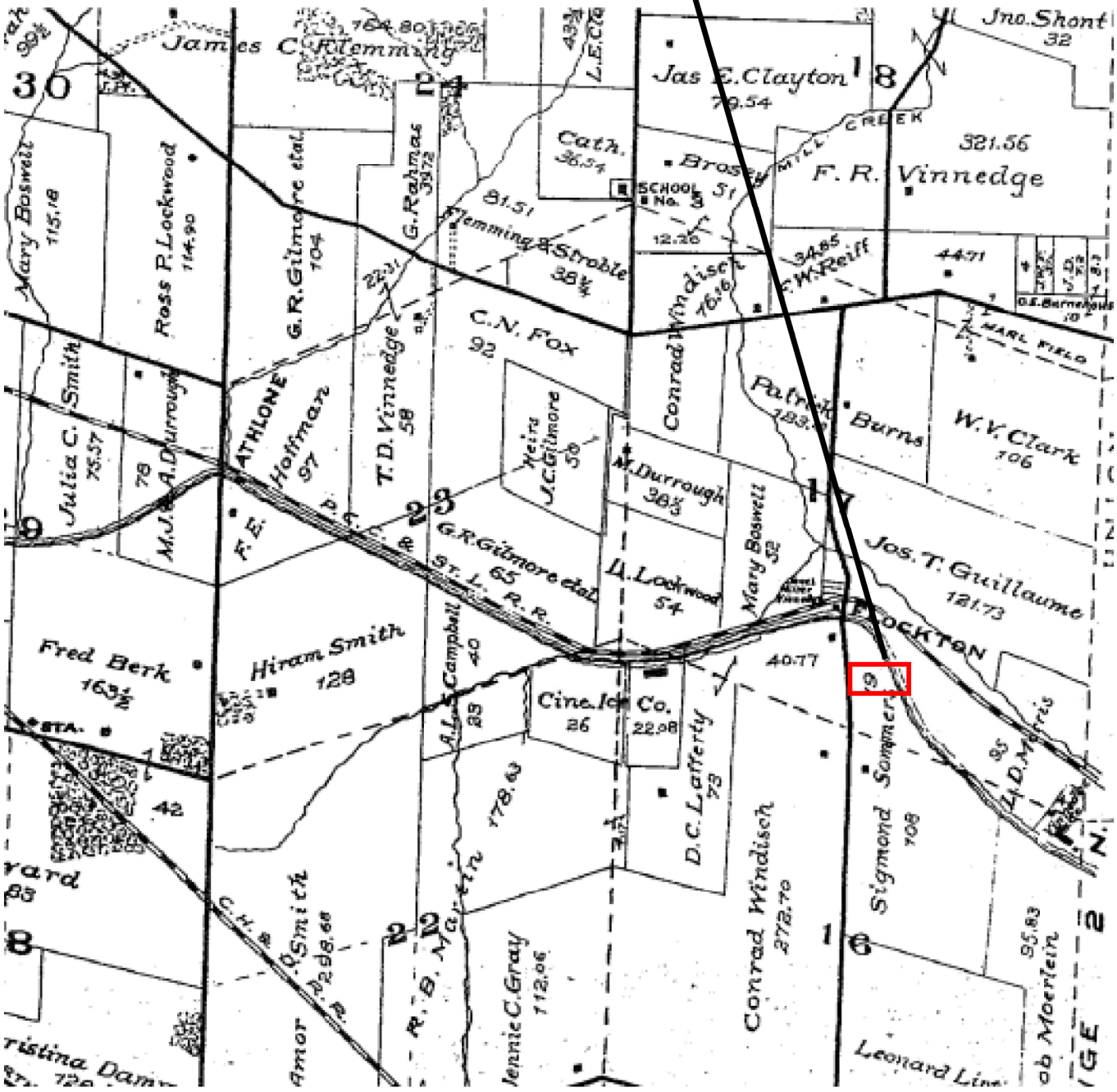
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James C. Flemming
Jas E. Clayton
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Jno. Shont
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Cath.
36.24
SCHOOL No. 5
Flemming & Stroble
38¼
F. R. Vinnedge
321.56
MILL CREEK
Mary Boswell
115.18
Ross P. Lockwood
114.90
G. R. Gilmore etal
104
G. Rahmas
39.72
81.51
12.26
34.85
F. W. Reiff
44.71
C. N. Fox
92
Conrad Windisch
76.16
MARL FIELD
Julia C. Smith
75.57
M. J. & A. Durrough
78
ATHLONE
Hoffman
97
T. D. Vinnedge
58
Heirs J. C. Gilmore
58
M. Durrough
38¾
Patrick Burns
183
W. V. Clark
106
G. R. Gilmore etal
65
St. L. & R. R.
A. Lockwood
54
Mary Boswell
52
Jos. T. Guillaume
121.73
Fred Berk
163½
Hiram Smith
128
A. Campbell
40
Cine. Ice Co.
26
22.98
40.77
D. C. Lafferty
73
Conrad Windisch
272.70
Sigmond Sommers
108
L. D. Morris
83
95.83
Jennie C. Gray
112.06
Leonard Linn
Project Number: 19Y4650MC28
This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs.
Appendix A: 1895 Map
Cultural Resources Literature Review
Seward Substation Transmission Line Relocation Project
Duke Energy Ohio
Butler County, Ohio
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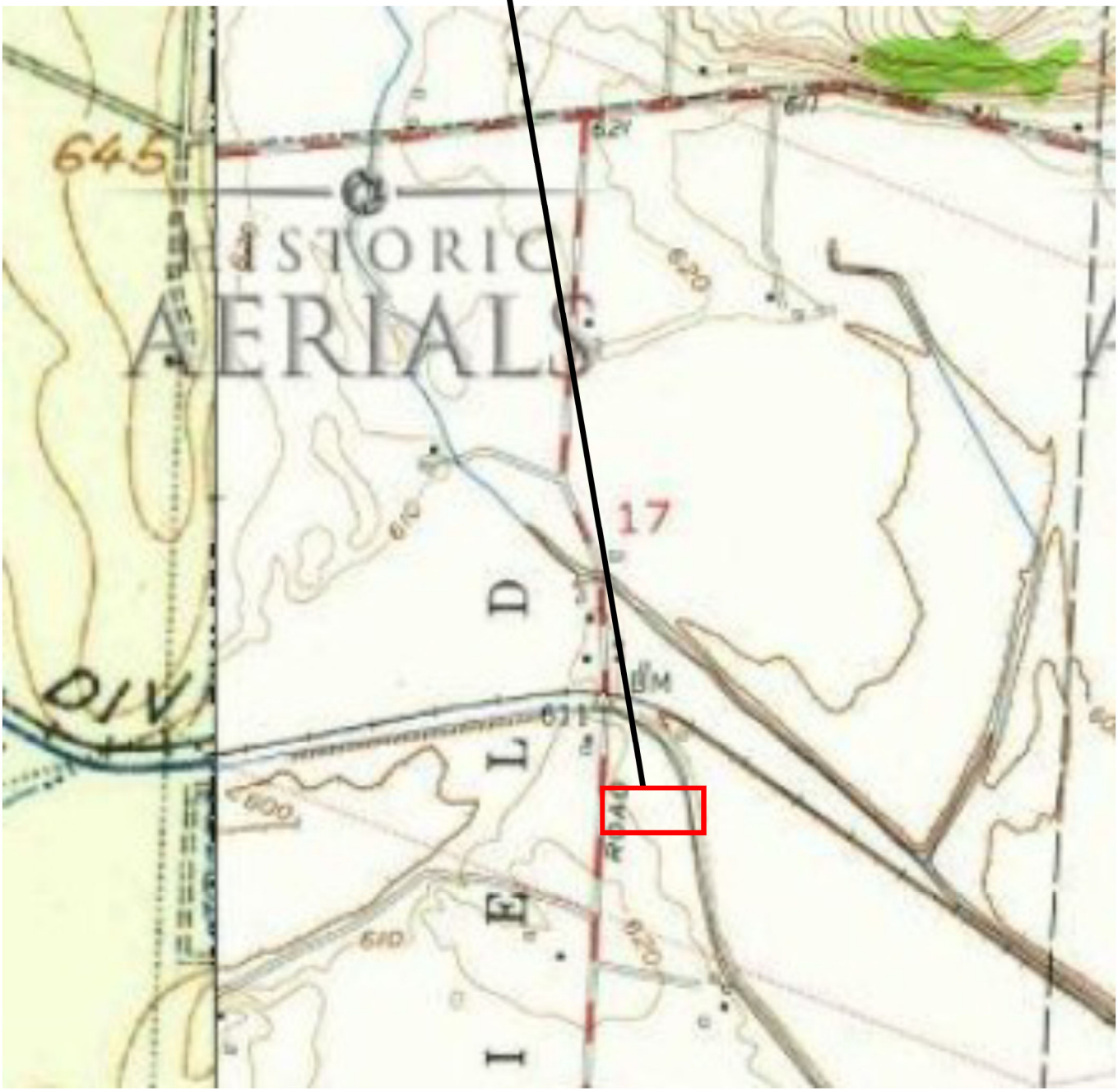
Approximate Project Location



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Appendix A: 1956 Map
Cultural Resources Literature Review
Seward Substation Transmission Line Relocation Project
Duke Energy Ohio
Butler County, Ohio

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Appendix A: 1956 and 2004 Aerial
Cultural Resources Literature Review
Seward Substation Transmission Line Relocation Project
Duke Energy Ohio
Butler County, Ohio

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Appendix A: 2005 and 2017 Aerial
Cultural Resources Literature Review
Seward Substation Transmission Line Relocation Project
Duke Energy Ohio
Butler County, Ohio

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Cultural Resources Literature Review for the Seward Substation Transmission Line Relocation Project Butler County, Ohio

APPENDIX B

PHOTOPAGES

Photo 1: Project Area overview; existing substation and transmission lines.

Photo 2: Project Area overview, looking west towards substation from shrub-scrub vegetation adjacent to Wabash-Erie Canal remnant.

Photo 3: Overview of Wabash-Erie Canal channel within the Project Area, looking south.

Photo 4: Overview of walking path located adjacent to the eastern edge of the Project Area.