CONSTRUCTION NOTICE

FOR THE

F5484 - 138kV Columbia Structure Replacement Project

OPSB Case No. 21-985-EL-BNR

Submitted to:

The Ohio Power Siting Board

Pursuant to O.A.C. 4906-06

Submitted by:

Duke Energy Ohio, Inc.

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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 F5484 - 138kV Columbia Structure Replacement Project (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 F5484 - 138kV Columbia Structure Replacement Project (Project)

	Reference Numbers:
OPSB Filing Number:	The Project has been assigned Ohio Power Siting Board (OPSB) Case Number 21-985-EL-BNR.
PJM Number:	PJM supplemental number associated with this project is S0451.
2022 LTFR:	The Project was included in the 2021 ELTFR, on page 46.
Circuit Reference:	Circuit 5484.

Brief Description of the Project:

The F5484 - 138kV Columbia Structure Replacement Project is a component of the previously approved 2018 F5484 – 138kV Columbia Substation Project (OPSB Case No. 18-1571-EL-BNR). Due to project delays the original project was unable to be constructed in its entirety prior to the expiration of the OPSB approval. The Project proposes to complete the original project scope by reconductoring approximately 1,240 feet (0.23 mile) of existing 138kV transmission line, in addition to the removal and replacement of two existing overhead structures. Specifically, the proposed Project involves the removal of one wooden single pole structure and replacement of that structure with a direct embed steel monopole, as well as the removal of one existing wooden

H-frame structure and its replacement with an engineered steel 3-pole structure. The Project is located entirely within existing Duke Energy Ohio right-of-way (ROW) and easement.

The proposed Project is necessary in order to maintain the integrity of existing Company structures, support the newly constructed Columbia Substation, and ensure adequate power supplies to current and future utility customers in the area. The Project transects the Little Miami River, and is situated north of Dwire Road, south of Mason Morrow Milgrove Road (CR 38), and west of State Route 48, in South Lebanon, Union Township and unincorporated Hamilton Township, Warren 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 natural gas transmission line, a statement explaining the need for the proposed facility.

Reliability is a responsibility that Duke Energy Ohio takes very seriously. The Company is dedicated toward modernizing, improving, and upgrading the electric system to meet the growing energy needs of communities. As part of the Company's commitment to provide reliable energy for homes, schools, and businesses, Duke Energy Ohio recently constructed the new Columbia distribution substation in 2019/2020. The proposed F5484 - 138kV Columbia Structure Replacement Project was originally approved as a component of the 2018 F5484 – 138kV Columbia Substation Project (OPSB Case No. 18-1571-EL-BNR) however due to project delays because of waterline locations within the transmission Right-of-Way (ROW), construction located south of the Little Miami River was unattainable prior to the expiration of the 2018 OPSB approval. The proposed F5484 - 138kV Columbia Structure Replacement Project will support the recently constructed Duke Energy Columbia Substation as well as maintain the integrity of existing Duke Energy structures and ensure adequate power supplies to current and future utility customers in the area. The rebuilt transmission line will continue to provide the service area with 138kV transmission service, but will be rebuilt with upgraded conductor capacity to enable more efficient future voltage conversion and allow support for future load growth in the area. The Project will relieve loading and improve reliability on nearby circuits. Moreover, to ensure the integrity of the

transmission line, certain existing wooden structures will be upgraded to galvanized steel structures.

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 Attachment A: 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 easement (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/Columbia

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 January 2022 with vegetation clearing pending approval of this Construction Notice. The Project is anticipated to be completed and the line in service by May 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 easements.

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

The Project involves the like-for-like reconductoring of approximately 1,240 feet (0.23 mile) of existing 138kV transmission line from Structure 156 to Structure 158, in addition to the removal and replacement of two existing overhead structures. Specifically, the proposed Project involves the removal and replacement of one wooden single pole structure (HL-156) with a direct embed steel monopole and the removal of one existing wooden H-frame structure (HL-157) replaced with an engineered steel 3-pole structure. General transmission line alignment and structure locations are provided in Attachment A – Figures.

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:	Engineered 3-pole structure with foundation.
Conductors:	All Structures: Replacing 954 AAC with 954 ACSR 45/7
Static Wire:	Replacing 1/0AAAC with OPGW (AC99/699-27)
Insulators:	138kV porcelain bells are being replaced with 138kV glass bells
ROW Land Requirements:	Duke Energy Ohio 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 Project is approximately $700,000.

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 within South Lebanon, Union Township, and unincorporated Hamilton Township, Warren County. The Project is centered approximately 150 feet west of State Route 48 at the intersection of Union and Hamilton Townships. South Lebanon, which covers 3.43 square miles, contained a population of 4,337 people based on the 2019 census data. The land

use immediately surrounding the Project area is commercial/industrial, secondary growth deciduous forest, residential, recreation (golf course) and maintained ROW.

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. Agricultural land vegetation assemblage does not exist within the Project area.

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 History Connection, Ohio's Historic Preservation Office (OHPO), online mapping system was consulted to identify previously recorded cultural resources within 1.6 km (1 mi) of the Project area (the study area). The OHPO records check indicates that no cultural resources have been previously identified within the Project area. At this time, the Project area has not been surveyed for cultural resources. However, given that the majority of the Project area is located in areas that are steeply sloped, in wetlands, or in areas that have been previously disturbed by mechanical equipment, it does not appear that impacts to significant cultural resources will occur as a result of the Project. See Attachment B, Cultural Resources Literature Review.

It does not appear that a Federal Nexus, requiring further coordination with the OPHO, will occur for the Project, as there are likely no impacts to wetlands or streams that would require Federal permitting.

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.

A Nationwide Permit 3 from the U.S. Army Corps of Engineers for the aerial crossing of the Little Miami River was approved on December 6, 2018 (LRH-2018-865-LMR-Little Miami River) in conjunction with the 2018 OPSB approved F5484 – 138 kV Columbia Substation Project (OPSB Case No. 18-1571-EL-BNR). A copy of the approved LRH-2018-865-LMR-Little Miami River permit is available in Attachment C.

A National Pollutant Discharge Elimination System (NPDES) Construction Site General Permit from the Ohio EPA was submitted on October 19, 2021. A copy of the Storm Water Pollution Prevention Plan is available in Attachment D and a copy of the OEPA NPDES application receipt is available in Attachment C.

An Ohio Department of Transportation (ODOT) Right of Way Permit was submitted on October 19, 2021 in order to gain access to the proposed Project area from SR 48 (Application ID 21-20977). A copy of the ODOT application receipt is available in Attachment C.

The Project area traverses the 100-year floodplain of the Little Miami River however, all support structures are located outside of the floodplain and minimum clearances above the water are maintained by conductor spanning this length. 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 construction or development in a flood hazard area permit from the Warren County Floodplain Administrator for development within the floodplain.

Coordination with the ODNR Scenic Review Manager, Aaron Rourke, was initiated on October 22, 2021, regarding the aerial crossing of the Little Miami River. A copy of the agency coordination is available in Attachment E.

Coordination with the ODNR's Division of Parks and Watercraft, Little Miami State Park Manager, Melissa Clark, was initiated on October 25, 2021, regarding the aerial crossing of the Little Miami State Park multi-use trail. Coordination efforts aim to minimize any impacts to the park (trail) users during the reconductoring of the overhead structures. The Little Miami State Park Manager, Melissa Clark had no additional comments regarding the proposed Project. A copy of the agency coordination is available in Attachment E.

Duke Energy Ohio has reviewed the clearance requirement on the proposed structures through the Federal Aviation Administration (FAA) and the 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 E – Agency Coordination Letters, contains a list of the Rare, Threatened, and Endangered (RTE) species known to occur within Warren 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 USFWS during agency coordination.

Coordination with the U.S. Fish and Wildlife Service (USFWS) and the ODNR Division of Wildlife (ODNR-DOW) was initiated on September 11, 2021. The correspondence from USFWS received on October 14, 2021 indicated "Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) to avoid impacts to the federally listed endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), we do not anticipate adverse effects to any federally endangered, threatened, proposed or candidate species" (Attachment E). A response from ODNR-DOW was received on October 21, 2021. ODNR-DOW indicated that the Natural Heritage Database has records at or within a one mile radius of the proposed Project area of the following resources: elktoe (*Alasmidonta marginata*, state species of concern), snuffbox (*Epioblasma triquetra*, federally and state endangered), fawnsfoot (*Truncilla donaciformis*, state threatened), western creek chubsucker (*Erimyzon claviformis*, state species of concern), mountain madtom (*Noturus eleutherus,* state threatened), Little Miami State Scenic River, Little Miami Scenic State Park – ODNR Division of Parks & Watercraft, Deerfield Gorge Scenic River Lands – ODNR Scenic Rivers Program, City of Lebanon, River Bend Land Co., TEJ Holdings, and Taft Broadcast, & Tournament Players Club Scenic Rivers Easements – ODNR Scenic Rivers Program. Furthermore the Project is located within the vicinity of records for the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. The ODNR DOW identified seven state and/or federally listed mussel species as well as eight state and/or federally listed fish species however in both cases ODNR DOW stated that "due to the location, and that there is no in-water work proposed in a perennial stream, this Project is not likely to impact these species". Furthermore "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" the eastern massasauga (*Sistrurus catenatus*), spotted turtle (*Clemmys guttata*), Kirtland's snake (*Clonophis kirtlandii*), lark sparrow (*Chondestes grammacus*), least bittern (*Ixobrychus exilis*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonis)*, sandhill crane (*Grus canadensis*) as their habitat was not identified within proposed Project area.

A copy of the USFWS and ODNR-DOW response letters are included in Attachment E – 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 September 30, 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 one mile of the Project, using the ODNR Natural Heritage Database. A copy of the USFWS and ODNR-DOW response letters are included in Attachment E – Agency Coordination Letters.

The ODNR response on October 21, 2021 indicated that one Scenic River (Little Miami River), one Scenic River State Park, and two Scenic River Lands/Easements were located within one mile of the Project area. However, as all of these areas are associated with the Little Miami River, the Project entails reconductoring an existing crossing of the river, and no in water work will occur, the Project is not likely to impact these areas. A Riparian Management Plan was developed and approved for work associated with the 2018 F5484 – 138 kV Columbia Substation Project (OPSB Case No. 18-1571-EL-BNR) addressing concerns regarding potential impacts to the Little Miami River and adjacent vegetation. The proposed Project will uphold all commitments outlined in the 2018 Riparian Management Plan (Attachment F).

Cardno conducted a wetland delineation and stream assessment of the Project area. Cardno's investigation included approximately 3.83 acres of existing Duke Energy Ohio property. During the investigation, Cardno identified one forested wetland (Wetland 1) and one perennial stream (Little Miami River) within the Project area. No impacts to identified wetlands or streams are anticipated as a result of the Project. No impacts to RTE habitats are expected. See Attachment G, Regulated Waters Delineation Report.

Cardno identified 100-year floodplains using the FEMA National Flood Hazard Layer within the Project area. The 100-year floodplain of the Little Miami River is crossed by the Project. However, all support structures are located outside of the floodplain and minimum clearances above the water are maintained by conductor spanning this length. No floodplain permit is required. 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

A link to this construction notice has been sent to the appropriate public officials of South Lebanon, Union Township, Hamilton Township, and Warren County, Ohio prior to construction activities. Additionally, a link to this construction notice has been sent to the Salem Township Public Library. 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/Columbia.

Attachment A – Figures

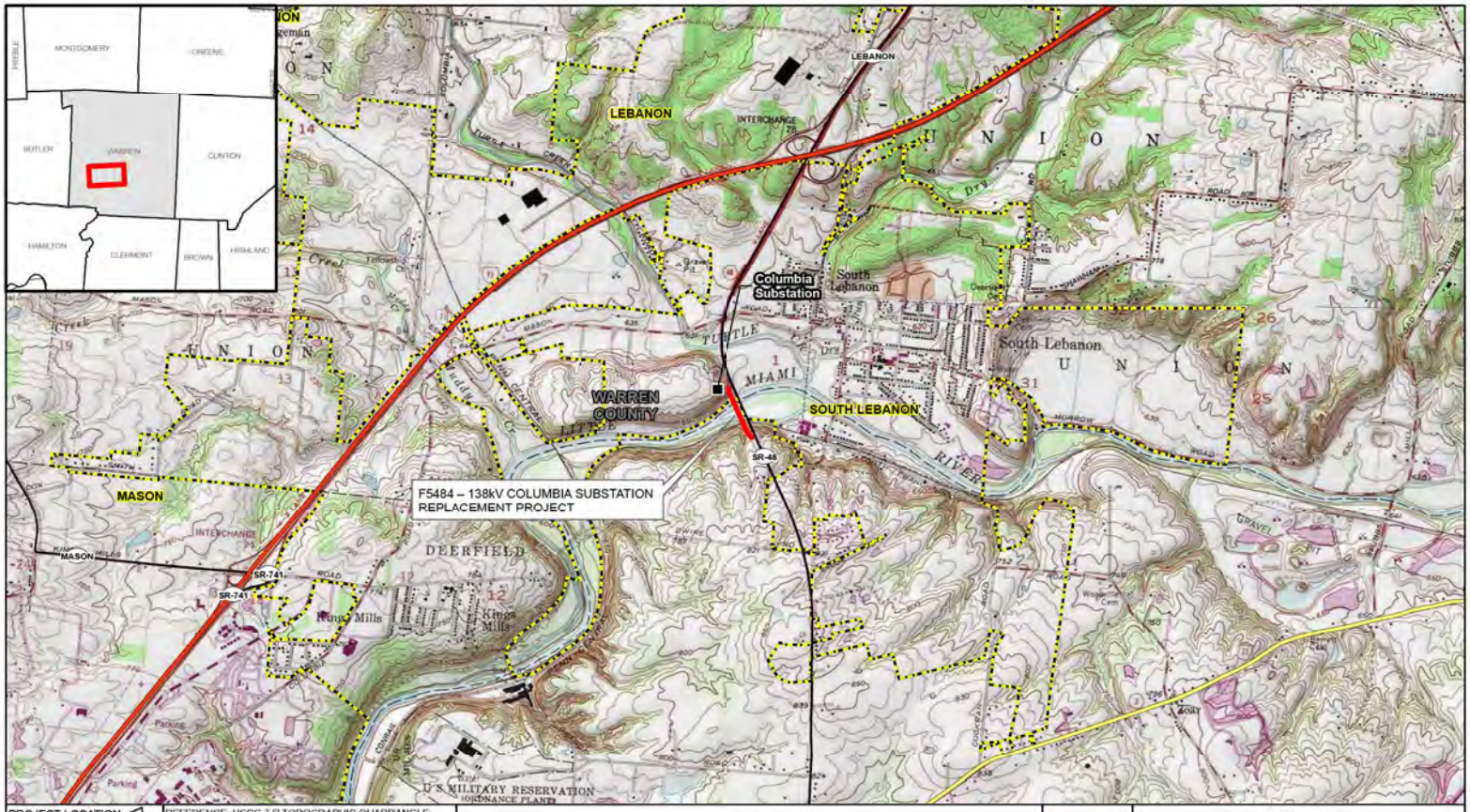

FIGURE 1
PROJECT VICINITY MAP
F5484 – 138kV COLUMBIA SUBSTATION
REPLACEMENT PROJECT
DUKE ENERGY OHIO
OPSB CASE NO. 21-985-EL-BNR

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CJ APPROVED: JT

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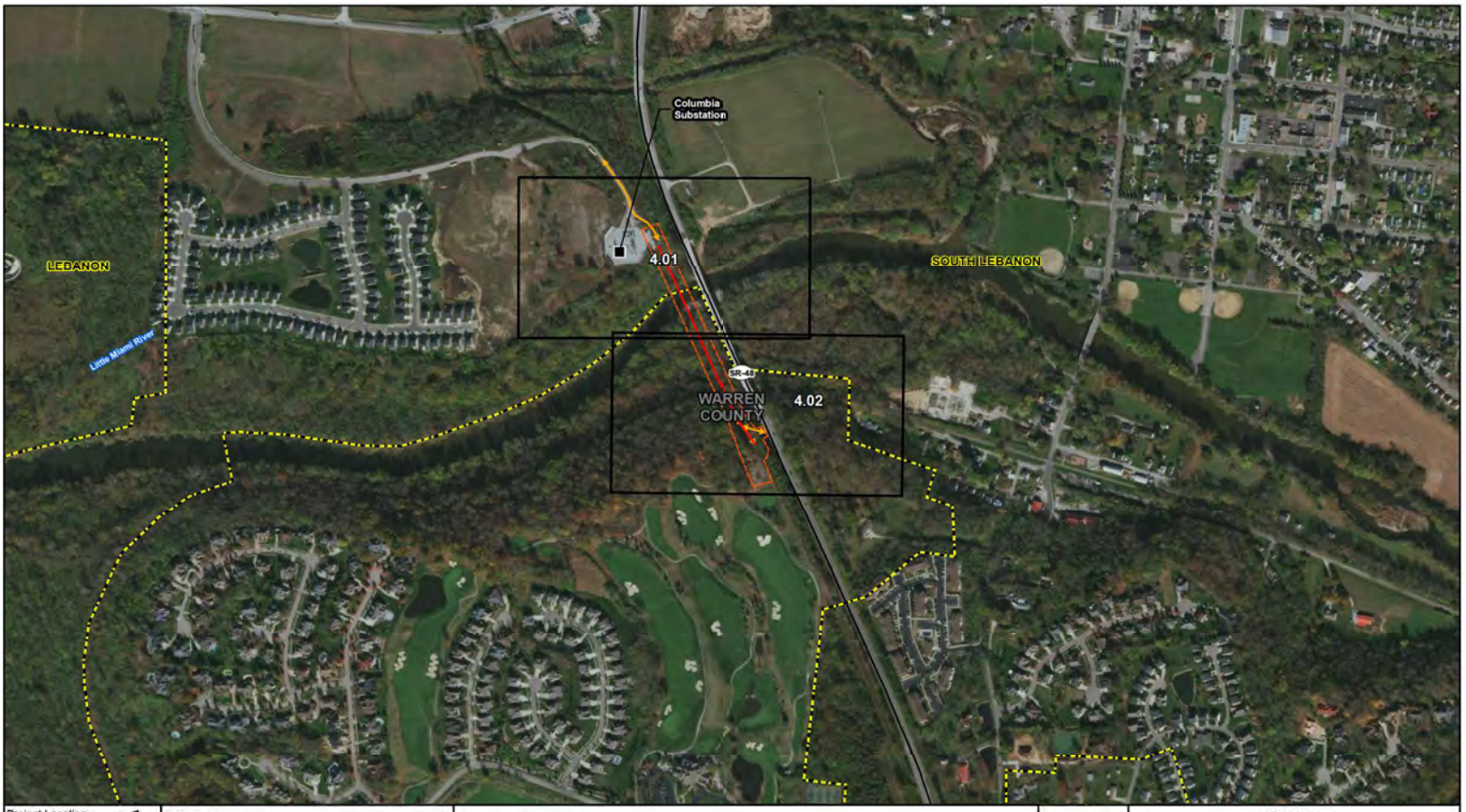

Project Location

REFERENCE
ESRI WORLD IMAGERY. OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 250 500 1,000 Feet

Sheet Grid
100ft Corridor
Existing Facility
Project Centerline
Potential Access
NHD Flowline
NWI Wetland
100yr Floodplain
Interstate
State Highway
US Highway
Railroad
County Boundary
Municipal Boundary

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FIGURE: 2
INDEX SHEET
F5484 – 138kV COLUMBIA SUBSTATION
REPLACEMENT PROJECT
DUKE ENERGY OHIO
OPSB CASE NO. 21-985-EL-BNR

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CJ APPROVED: JT

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401

402

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 50 100 Feet

- Existing Facility
- Proposed Structure
- Existing Structure
- Parcels
- 100ft Corridor
- Potential Access
- Delineated Wetland
- Stormwater Inlet
- Ditch
- Potential Tree Clearing
- Interstate
- US Highway
- Railroad
- Little Miami River
- Project Centerline
- NWI Wetland
- NHD Flowline
- 100yr Floodplain
- Municipal Boundary
- 2' Contour Line

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FIGURE: 2.01
ENVIRONMENTAL ACCESS PLAN
F5484 – 138kV COLUMBIA SUBSTATION
REPLACEMENT PROJECT
DUKE ENERGY OHIO
OPSB CASE NO. 21-985-EL-BNR

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CJ APPROVED: JT

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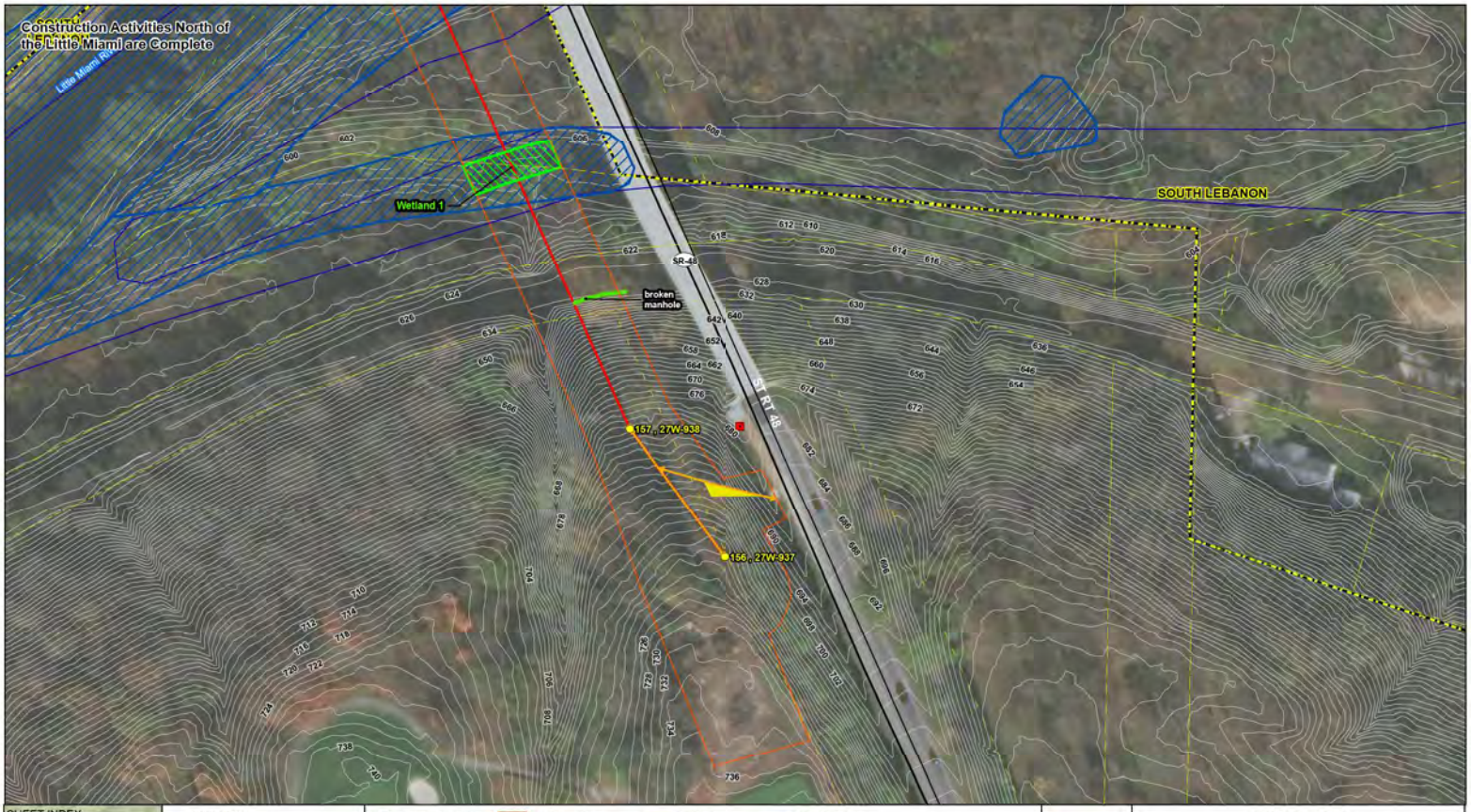

SHEET INDEX

401

402

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 50 100 Feet

- Existing Facility
- Proposed Structure
- Existing Structure
- Parcels
- 100ft Corridor
- Potential Access
- Delineated Wetland
- Stormwater Inlet
- Ditch
- Potential Tree Clearing
- Interstate
- US Highway
- Railroad
- Little Miami River
- Project Centerline
- NWI Wetland
- NHD Flowline
- 100yr Floodplain
- Municipal Boundary
- 2' Contour Line

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FIGURE : 2.02
ENVIRONMENTAL ACCESS PLAN
F5484 – 138kV COLUMBIA SUBSTATION
REPLACEMENT PROJECT
DUKE ENERGY OHIO
OPSB CASE NO. 21-985-EL-BNR

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Attachment B – Cultural Resources Literature Review

Cultural Resources Literature Review

F5484 – 138kV Columbia Structure Replacement

Warren County, Ohio

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Shaping the Future

Document Information

Prepared for	Duke Energy
Project Name	Cultural Resources Literature Review F5484 – 138kV Columbia Structure Replacement, Warren County, Ohio
Project Number	J156720M59
Project Manager	Amanda Jo Sheehe
Date	August 8, 2018

Prepared and Submitted By Kaye Grob and Veronica Parsell

Principal Investigator Veronica Parsell

Prepared for:

DUKE ENERGY®

Prepared by:

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Executive Summary

Cardno, Inc. (Cardno) conducted a cultural resources literature review for the 0.64 kilometer (km) (0.4 mile [mi]) long and 30.48 meter (m) (100 foot [ft]) wide Duke Energy F5484 – 138kV Columbia Structure Replacement in Warren 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 literature review indicates that cultural resources have not been previously identified within the project area. A total of 40 archaeological sites, 37 historic structures, 1 cemetery, and 1 NRHP-listed historic district have been identified within the 1.6 km (1 mi) study area. The majority of the project area is located in areas that are steeply sloped, in wetlands, or in areas that have been previously disturbed by mechanical equipment. These areas are not conducive to the identification of intact cultural deposits. No archaeological reconnaissance is recommended in areas with greater than a 15 degree slope, previously mechanically disturbed areas, within wetlands, and within areas previously investigated for cultural resources. These areas constitute the vast majority of the project area and are shown in Appendix C, Environmental Access Plan. While the project does cross the Little Miami River, this crossing is bound by steep slope on the north bank, while the south bank consists of NWI wetlands before again encountering steep slope to the south. There is a small area of land on the south side of the bank that is not listed as a wetland and therefore has the potential to contain intact cultural deposits. An archaeological reconnaissance is recommended for the portion of the project area on the south bank of the Little Miami River that is not within a wetland, as well as remaining portions of the project area which are not sloped over 15 degrees or mechanically disturbed.

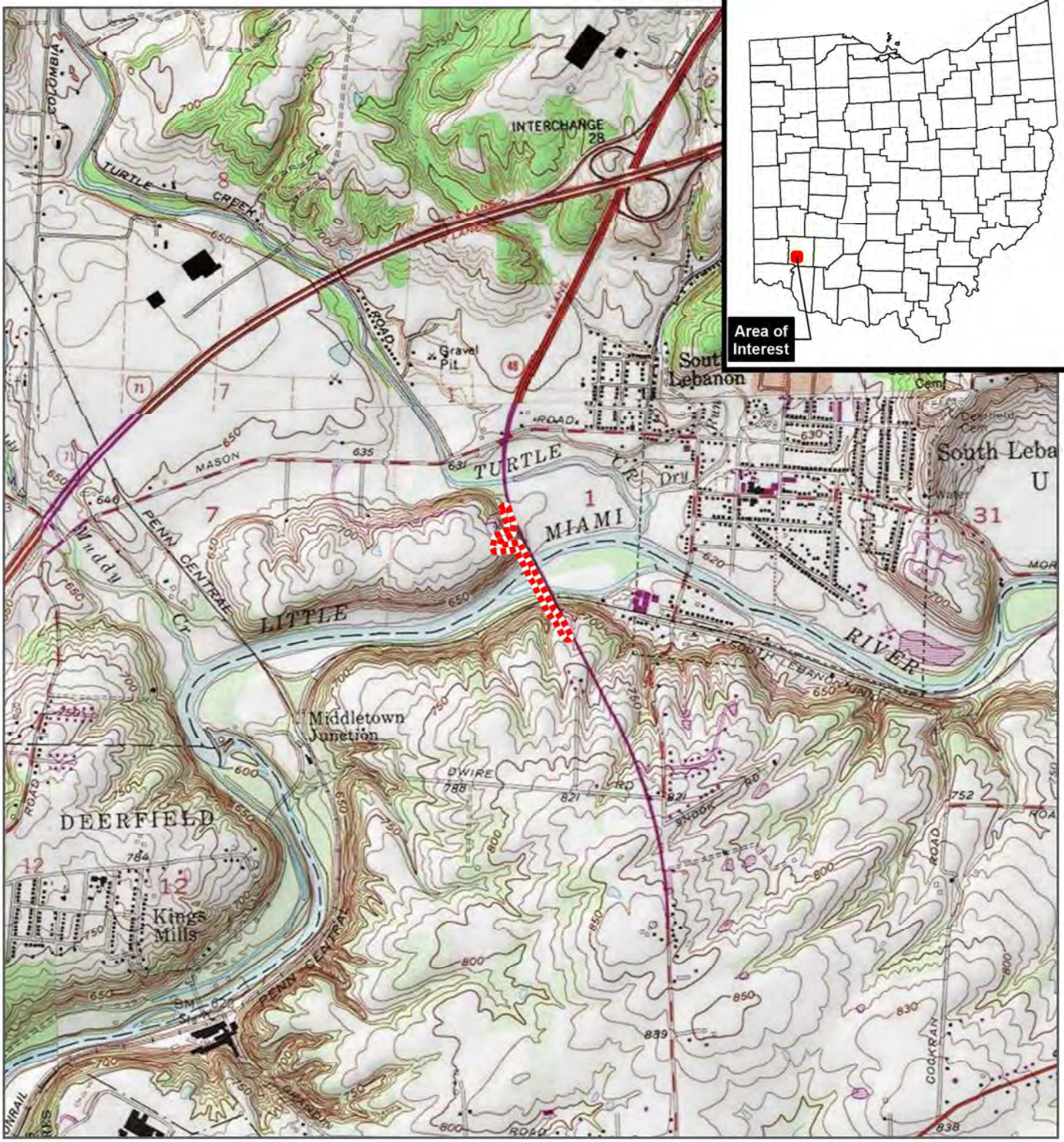
1 Introduction

In response to a request from Duke Energy (Duke), Cardno conducted a cultural resources records review for the F5484 – 138kV Columbia Structure Replacement in Warren County, Ohio (the project area). Based on information provided by Duke, the project area is located west of the town of South Lebanon, on the South Lebanon, Ohio 7.5' USGS topographic map in Warren County, Ohio (Figure 1). The project area consists of a 0.64 km (0.4 mi) long and 30.48 m (100 ft) wide transmission line construction project which crosses the Little Miami River. The project area consists of approximately 2.5 hectares (ha) (6.1 acres [ac]), with an actual project earth disturbance potential of approximately 0.89 ha (2.2 ac), based on a 6.1 meter (m) (20 foot [ft]) wide vehicular path for 1.27 km (0.79 mi) of proposed off-road construction access routes. The FF5484 Columbia Structure Replacement project initiates at Duke Structure 163 (39.3709, -84.2266), located north of the Little Miami River, south of East Mason Morrow Millgrove Road (CR 38), and west of State Route 48. It terminates at Duke Structure 155 (39.3658, -84.2236), located south of the Little Miami River, north of Dwire Road (CR 149), west of State Route 48, and east of Water Stone Lane.

Background research conducted in July 2018 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. Michael Loughlin 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
0 100 200 300 400 500 600 Meters

Project Area

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Figure 1: Project Location

Cultural Resources Literature Review
5484—138kV Columbia Structure Replacement
Duke Energy Ohio
Warren County, Ohio

Cardno
11121 Canal Road, Cincinnati, OH 45241
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com

Project No. 156720M59

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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.

The purpose of this section is to provide a basic context through which to evaluate the results of our investigation. This section will briefly outline the environmental and cultural background of the region in and around Warren County, Ohio.

2.1 Literature Review

Research was conducted using data from online files provided by the Ohio Historic Preservation Office (OHPO) in July 2018 (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 a total of 40 archaeological sites, 37 historic structures, 1 cemetery, and 1 NRHP-listed historic district 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 are located in or adjacent to the 1.6 km (1 mi) study area.

2.1.2 National Register of Historic Places (NRHP)

One National Register of Historic Places (NRHP) listed district is partially located on the edge of the 1.6 km (1.0 mi) study area (Ahimaaz King House District; NPS Ref. No. 08001199). The Ahimaaz King House District is located nearly 1.5 km (0.95 mi) southwest of the project area and will not be directly affected by the proposed project.

2.1.3 Ohio Archaeological Inventory Forms (OAI)

The OAI files indicate 40 archaeological sites within the 1.6 km (1 mi) study area (Table 1). These sites include prehistoric scatters, mound groups, individual earthen mounds, and historic scatters. No archaeological sites have been previously identified in or adjacent to the project area. Archaeological sites are not depicted on Figure 2 due to the sensitive nature of the resource.

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

Site Number	Site Type	Site Age	NRHP Eligibility
33-WA-0020	Prehistoric Hilltop Enclosure/ Geometric Earthwork	Woodland	Not Evaluated
33-WA-0046	Prehistoric Mound	Woodland	Not Evaluated, Potentially Destroyed
33-WA-0052	Prehistoric	Unidentified Prehistoric	Not Evaluated, Potentially Destroyed
33-WA-0053	Prehistoric Mound Group	Woodland	Not Evaluated, Potentially Destroyed
33-WA-0214	Prehistoric	Early Archaic, Late Archaic, Woodland, Late Prehistoric	Not Evaluated
33-WA-0217	Prehistoric	Late Woodland, Late Prehistoric	Likely Destroyed
33-WA-0218	Prehistoric	Unidentified Prehistoric	Not Evaluated, Potentially Destroyed
33-WA-0219	Prehistoric	Unidentified Prehistoric	Not Evaluated, Potentially Destroyed
33-WA-0220	Prehistoric	Late Archaic	Not Evaluated, Potentially Destroyed
33-WA-0221	Prehistoric	Archaic	Not Evaluated
33-WA-0222	Prehistoric	Archaic	Not Evaluated
33-WA-0223	Prehistoric	Unidentified Prehistoric	Not Evaluated
33-WA-0224	Prehistoric Mound/ Mound Group	Woodland	Not Evaluated
33-WA-0225	Prehistoric Mound/ Mound Group	Woodland	Not Evaluated
33-WA-0226	Prehistoric	Late Archaic	Not Evaluated, Potentially Destroyed
33-WA-0227	Prehistoric	Unidentified Prehistoric	Not Evaluated, Potentially Destroyed
33-WA-0228	Prehistoric	Unidentified Prehistoric	Not Evaluated, Potentially Destroyed
33-WA-0229	Prehistoric	Unidentified Prehistoric	Not Evaluated, Destroyed
33-WA-0230	Prehistoric and Historic	Unidentified Prehistoric	Not Evaluated
33-WA-0238	Prehistoric	Late Archaic	Not Evaluated
33-WA-0245	Prehistoric	Unidentified Prehistoric	Not Evaluated
33-WA-0508	Prehistoric	Unidentified Prehistoric	Ineligible

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

Site Number	Site Type	Site Age	NRHP Eligibility
33-WA-0728	Prehistoric Earthen Mound	Woodland	Potentially destroyed (same site as 33-WA-0046)
33-WA-0777	Historic	Historic Non-aboriginal	Ineligible
33-WA-0778	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0779	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0780	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0781	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0782	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0783	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0784	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0785	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0786	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0787	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0788	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0789	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0790	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0791	Historic	Historic Non-aboriginal	Ineligible
33-WA-0865	Prehistoric	Unidentified Prehistoric	Ineligible
33-WA-0866	Prehistoric	Unidentified Prehistoric	Ineligible

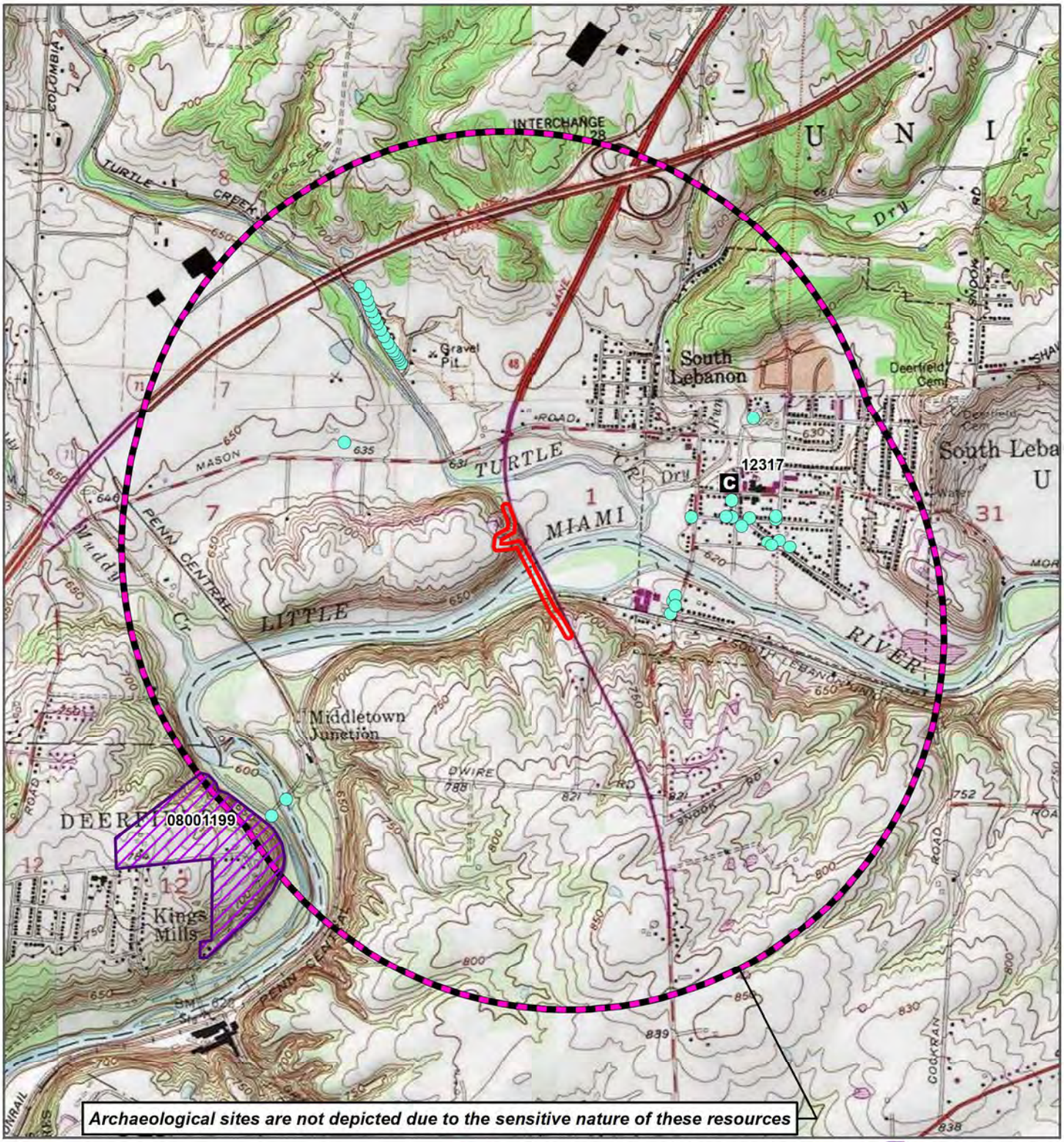
INTERCHANGE 28
TURTLE CREEK
Gravel Pit
South Lebanon
Deerfield Cem
MASON
TURTLE CR
12317
MIAMI
PENN CENTRAL
Middy Cr
LITTLE
RIVER
SOUTH LEBANON JUNC
Middletown Junction
DWIRE RD
DEERFI
08001199
Kings Mills
PENN CENTRAL
COGKRAN ROAD
Archaeological sites are not depicted due to the sensitive nature of these resources
Historic Structures
OGS Cemeteries
NR Boundaries
1_mil_ Buffer
Project Area
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Figure 2: Previously Identified Cultural Resources
Cultural Resources Literature Review
5484—138kV Columbia Structure Replacement
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2.1.4 Ohio Historic Inventory Forms (OHI)

The OHI files lists 37 structures within the 1.6-km (1-mi) study area (Figure 2) (Table 2). The structures include dwellings, a police station, barns, and a church. None of these structures are in or adjacent to the project area and will not be directly affected by future endeavors in the project area.

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

Structure Number	Historic Use	Architectural Style	Approx. Date
WAR0007608	Single Dwelling/ Agricultural Outbuildings	Greek Revival	1840
WAR0017308	Public Works (excluding transport)	Neo-Classical Revival	1908
WAR0017408	Police Station	Vernacular	1908
WAR0044911	Single Dwelling	Vernacular	1866
WAR0045008	Single Dwelling	Queen Anne	1892
WAR0045108	Single Dwelling	Vernacular	1900
WAR0045208	Single Dwelling	Bungalow	1920
WAR0045308	Multiple Dwelling	Vernacular	1850
WAR0045408	Single Dwelling	Vernacular	1870
WAR0045508	Church/Religious Structure	Gothic Revival	1888
WAR0045608	Single Dwelling	Vernacular	1854
WAR0045711	Single Dwelling	Gothic Revival	1890
WAR0045811	Single Dwelling, Hotel/ Inn/ Motel	Federal	1859
WAR0045908	Single Dwelling/ Barn	Queen Anne	1890
WAR0046208	Single Dwelling	Vernacular	1880
WAR0048408	Single Dwelling	Vernacular	1870
WAR0048508	Single Dwelling	Queen Anne	1896
WAR0051011	Single Dwelling	Vernacular	1900
WAR0053511	Not listed	Unknown	c 1920
WAR0053610	Not listed	Unknown	c 1920
WAR0137808	Single Dwelling	No academic style - Vernacular	1957
WAR0137908	Residential/ Domestic	No academic style - Vernacular	1956
WAR0138008	Single Dwelling	No academic style - Vernacular	1956
WAR0138108	Single Dwelling	No academic style - Vernacular	1956

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

Structure Number	Historic Use	Architectural Style	Approx. Date
WAR0138208	Residential/ Domestic	No academic style - Vernacular	1956
WAR0138308	Single Dwelling	No academic style - Vernacular	1956
WAR0138408	Single Dwelling	No academic style - Vernacular	1956
WAR0138508	Single Dwelling	No academic style - Vernacular	1956
WAR0138608	Single Dwelling	Other	1956
WAR0138708	Single Dwelling	No academic style - Vernacular	1956
WAR0138808	Single Dwelling	No academic style - Vernacular	1956
WAR0138908	Single Dwelling	No academic style - Vernacular	1956
WAR0139008	Single Dwelling	No academic style - Vernacular	1959
WAR0139108	Single Dwelling	No academic style - Vernacular	1961
WAR0139208	Single Dwelling	No academic style - Vernacular	1960
WAR0139308	Single Dwelling	No academic style - Vernacular	1957
WAR0139408	Single Dwelling	No academic style - Vernacular	1956

2.1.5 Ohio Genealogical Society (OGS) Cemetery Survey files

One cemetery was identified within the 1.6-km (1-mi) study area. The Old South Lebanon Cemetery (OGS ID 12317) is located over 0.8 km (0.5 mi) east of the project area in the town of South Lebanon.

2.1.6 Cultural Resource Management (CRM) Reports

Portions of the project area have been previously investigated for cultural resources through two investigations, and an additional six cultural resources investigations have been conducted in the one mile buffer (Table 3; Figure 3).

Portions of the project area were investigated by Gray & Pape, Inc. (Gray & Pape) for a project related to the Cincinnati Gas and Electric Company Foster-Lebanon 138kV electric transmission line corridor (Jackson 1992). No cultural resources were identified within the Duke project area; however, the investigation identified five cultural resources, one of which is located within the one-mile buffer (33-WA-0508).

In 2006, Gray & Pape completed a Phase I investigation prior to proposed road improvements along State Route 48 and Mason-Morrow-Millgrove Road (Niemel 2006). As a result of this investigation, Gray & Pape noted that one previously recorded site within the project area had become a gravel quarry, and was presumed to be destroyed. They also identified one new historic site, 33-Wa-0777, which they

recommended not eligible for listing in the NRHP (Niemel 2006). Neither of these sites are located in proximity to the Duke project area.

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

Year	Author	Report Title	Sites Identified
1985	Genheimer, Robert A.	An Archaeological Assessment of Proposed Improvements to the Kingsview Industrial Park (Eda #06-01-02024) in Warren County, Ohio	None
1988	Pape, W. Kevin	A Phase I & II Archaeological Assessment of the Proposed Kingsview Fugitech Drive Extension Project, Warren County, Ohio	3 sites, no assigned state trinomials at time of report, all sites ineligible
1992	Jackson, Kenneth E.	Phase I and II Investigations of the Cincinnati Gas & Electric Company's Proposed Foster-Lebanon Transmission Line (Preferred and Alternate Alignments), and the Proposed Lebanon Substation, Warren County, Ohio	33-WA-0505 through 33-WA-0509
1993	Jackson, Kenneth E.	Addendum To Phase II Investigations of the Cincinnati Gas & Electric Company's Proposed Foster-Lebanon Transmission Line (Preferred and Alternate Alignments) and the Proposed Lebanon Substation, Warren County, Ohio	33-WA-0505 through 33-WA-0509
1994	Duerksen, Ken	Phase I and II Cultural Resources Investigation of a Proposed 8.5 Mile Bike Path in Turtle Creek and Union Townships, Warren County, Ohio	33-WA-0543 through 545
1997	Baker, Stanley W.	Letter Report: Ham/War Ir71-27.310/0.000 (PID 6829) and War Ir 71-3.22 (PID 10696) -- Summary of Literature Search and Cultural Resources Field Review (Hamilton and Warren Counties, Ohio)	None
2006	Niemel, Karen	Phase I Cultural Resource Investigation of Road Improvements for the Rivers Crossing Development, South Lebanon, Warren County, Ohio	33-WA-0777, site 33-WA-0217 not reidentified
2006	Weller, Ryan J.	Phase I Cultural Resources Management Investigations for the Proposed 18.6 ha (46 ac) Bear Creek Capital Commercial Development near South Lebanon in Union Township, Warren County, Ohio	33-WA-0778 through 33-WA-0791
Located partially within the project area			

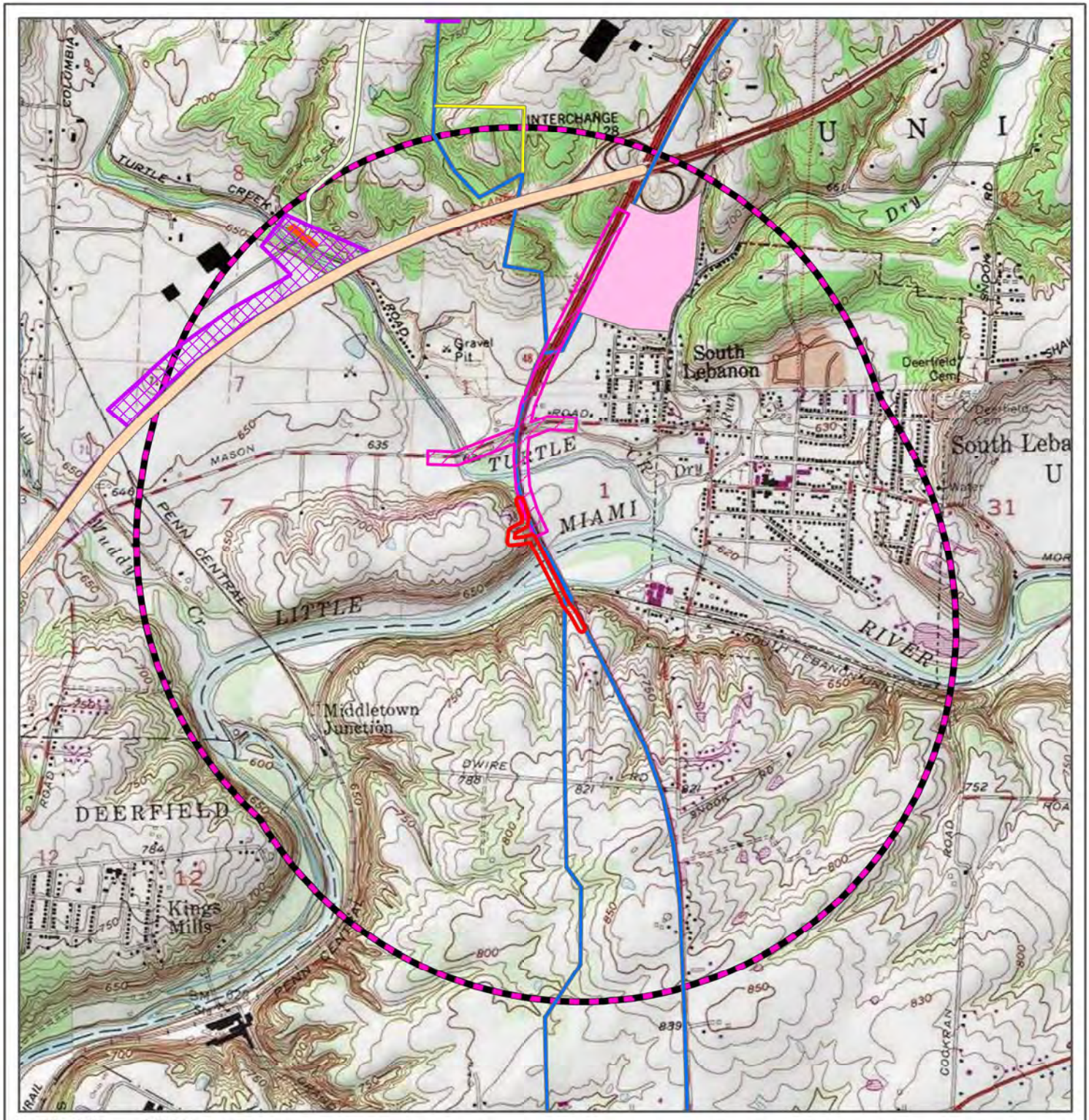

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Figure 3: Previous Cultural Resources Investigations in the 1.6 km (1 mi) study area

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2.1.7 Historic Maps, Atlases, and Aerial Imagery

Several available historic maps were referenced for information pertaining to the historic use of the project area between 1875 and 1968 (Everts 1875; Bone 1891; USGS 1956 and 1968) (Appendix A).

The 1875 atlas depicts the project area in a 330-acre parcel owned by D. Hufford, an 80-acre parcel owned by Mrs. G. Windey, and an island in the Little Miami River owned by Mounts (Everts 1875). The project area crosses an unnamed railroad. No other mapped structures are located within or adjacent to the project area. The project area crosses the Little Miami River, and Turtle Creek is located north and east of the project area (Everts 1875). Deerfield and South Lebanon Station are located east of the project area. By 1891, the project area is located within a 132.89-acre parcel owned by William S. Hufford, an 11.25-acre parcel owned by Irwin Snook, and a 76.7-acre parcel owned by Keziah Winders. No structures are depicted on this atlas; however, the project area crosses both the Little Miami River and the L.M. Railroad (Bone 1891). Deerfield and South Lebanon continue to be located east of the project area.

By 1956, the South Lebanon, Ohio 7.5' topographic quadrangle depicts no structures within the project area. The project area crosses both the Little Miami River and the Pennsylvania Railroad (USGS 1956). The town of Deerfield is now called South Lebanon and is no longer separated from the former South Lebanon on the south bank of the Little Miami River (USGS 1956). In 1968, there continue to be no structures in the project area and the project crosses the Little Miami River and the Pennsylvania Central Railroad. Route 48 is depicted along the eastern boundary of the project area (USGS 1968).

In the *Archaeological Atlas of Ohio*, Mills (1914) lists a total of 112 prehistoric sites in Warren County including mounds, enclosures, villages, cemeteries, effigies, and burials. None of the mapped archaeological sites appear to be in or adjacent to the current project area; however, one enclosure and two mounds are depicted north of the project area (Mills 1914).

2.2 Brief Environmental Context

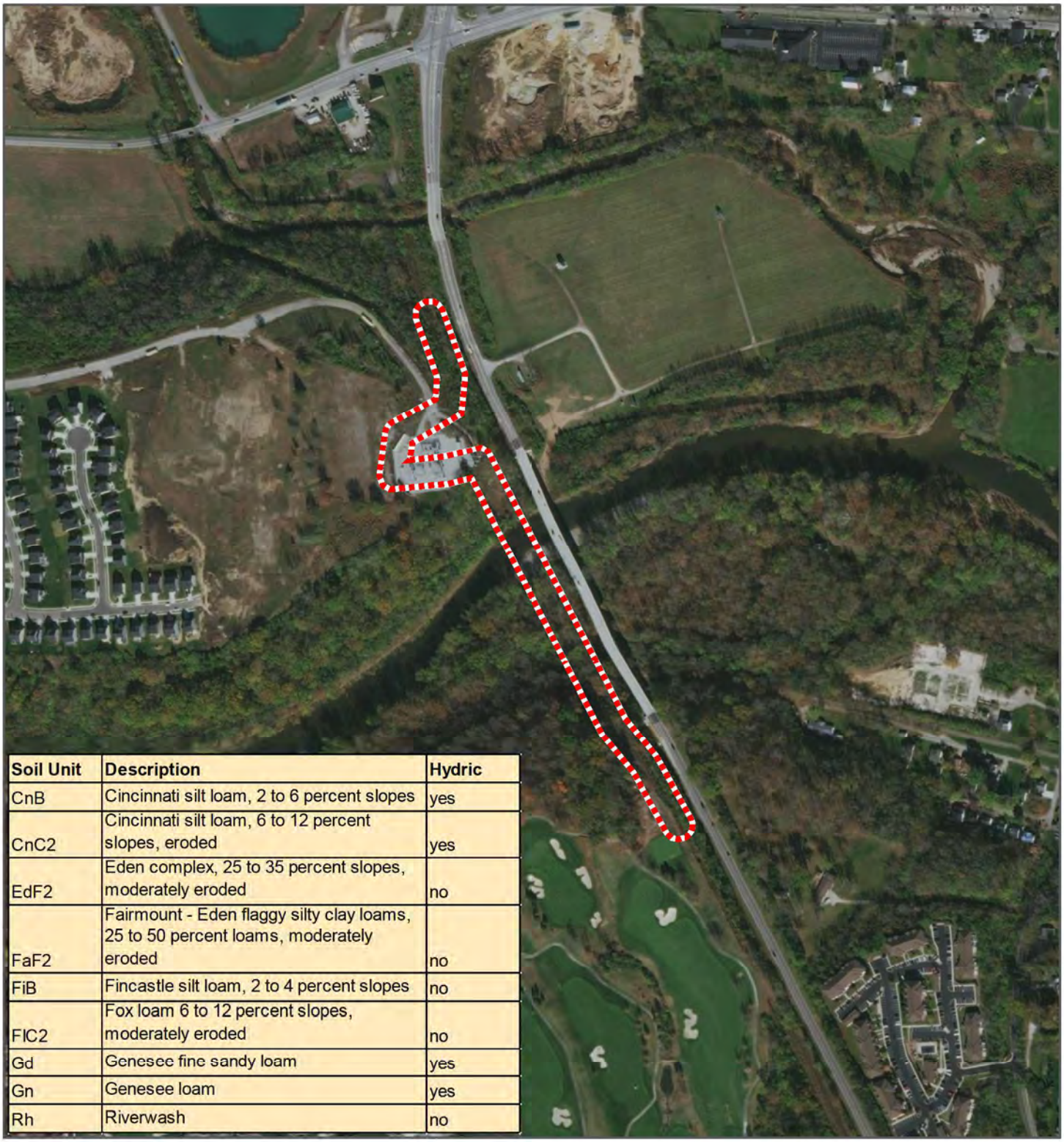
The project area is located within the Central Lowland Till Plain Physiographic Region, in the Illinoian Till Plain (Brockman 1998). The proposed project area is located in the Ohio River Watershed and crosses the Little Miami River (Appendix B; Photo 8). In addition, the project area is located within the Turtle Creek Watershed (14-digit HUC 05090202060030), the Little Miami River below Turtle Creek Watershed (14-digit HUC 05090202090020), and the Little Miami River below Todd Fork to above Turtle Creek Watershed (14-digit HUC 05090202060020).

2.2.1 Project Area Soils

The project area is located within the Genesee-Fox soil association, which consists of "well-drained, nearly level soils on flood plains and nearly level to moderately steep soils on Wisconsin age glacial outwash terraces" (USDA/SCS 1973) (Figure 4). Soils within the project area are depicted in Table 4.

Table 4. Soil Units within the Project Area

Soil Type	Soil Characteristics	Hydric
CnB	Cincinnati silt loam, 2 to 6% slopes	Y
CnC2	Cincinnati silt loam, 6 to 12% slopes, eroded	Y
EdF2	Eden Complex, 25 to 35% slopes, moderately eroded	N
FaF2	Fairmount-Eden flaggy silty clay loams, 25 to 50% percent loams, moderately eroded	N
FiB	Fincastle silt loam, 2 to 4% slopes	N
FlC2	Fox loam, 6 to 12% slopes, moderately eroded	N
Gd	Genesee fine sandy loam	Y
Gn	Genesee loam	Y
Rh	Riverwash	N



Soil Unit	Description	Hydric
CnB	Cincinnati silt loam, 2 to 6 percent slopes	yes
CnC2	Cincinnati silt loam, 6 to 12 percent slopes, eroded	yes
EdF2	Eden complex, 25 to 35 percent slopes, moderately eroded	no
FaF2	Fairmount - Eden flaggy silty clay loams, 25 to 50 percent loams, moderately eroded	no
FiB	Fincastle silt loam, 2 to 4 percent slopes	no
FlC2	Fox loam 6 to 12 percent slopes, moderately eroded	no
Gd	Genesee fine sandy loam	yes
Gn	Genesee loam	yes
Rh	Riverwash	no

0 50 100 200 300 400 500 600 700 Feet

0 50 100 150 Meters

Soil Unit

Soil Unit - Hydric

Project Area

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Figure 4: Project Area Soils

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Basemap: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2.2.2 Prehistoric Cultural Setting

Archaeological sites are well documented in Warren 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. Over 900 archaeological sites have been documented in Warren County to date. These include approximately 200 sites with a historic component; the remaining sites are prehistoric in nature (OHC 2015). The prehistoric occupation of Ohio is generally divided into three broad periods; Paleoindian, Archaic, and Woodland. Warren County contains sites dating to each of these time periods; however, almost half of recorded prehistoric sites in the county do not contain diagnostic artifacts and therefore cannot be attributed to specific cultural occupations (OHC 2015). 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 occupations 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). Overtime, 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 only ten sites dating to this period in Warren County.

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 45 sites in Warren 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, 61 documented sites in Warren 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 23 sites in Warren County have a documented Middle Archaic component (OHC 2015a).

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

Archaeologists characterize the Late Archaic as with 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 67 documented sites with a Late Archaic component in Warren 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. Warren County contains approximately 80 sites with artifacts dating broadly 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, 27 sites in Warren 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 66 sites in Warren 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). The 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. Warren County contains approximately 45 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 in southeastern Indiana, northern Kentucky, southern Ohio, and eastern West Virginia (Drooker 1997). The Mississippian influence is evident in designs and forms in 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 records.

Despite sharing the name "Fort Ancient", the large earthworks at the hilltop enclosure located approximately 12.5 km (7.7 mi) northeast 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 54 sites that date to this time period in Warren County (OHC 2015a).

2.2.3 Historic Cultural Setting

The establishment of Detroit (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. 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 (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 Warren County

Warren County was founded in 1803 and is named after General Joseph Warren, a revolutionary war hero (Ohio History Central 2015e). Warren is best known as the soldier who sent Paul Revere on his famous midnight ride. It was one of the first twelve counties formed in the new State of Ohio from a portion of what had been Hamilton County. Many of the county's earliest settlers were members of various religious groups, including the Shakers and the Quakers (Ohio History Central 2015e). Lebanon is the county seat, and has been since the creation of the county. In 1803, the first county courthouse was constructed in Lebanon. It consisted of a log structure and served as the courthouse, tavern, and local trading post. Warren County has recently seen a population increase, and many residents work in Cincinnati, though a sizable tourist industry through Paramount's King's Island also drives the economy (Ohio History Central 2015e).

The project area is located within both Hamilton and Union Townships. Hamilton was one of the original four townships in Warren County, and in 1818, the current boundaries were established. The township is part of the Virginia military land and early settlers were those granted warrants for the land. Early settlers south of the Little Miami River included William Mounts and five other families (Beers 1882). They settled in the township in 1796 and circled their cabins around a spring. The settlement was known as Mount's Station (Beers 1882). Union Township was organized in 1815 from parts of Turtle Creek and Deerfield Townships. In 1860, nine sections from the eastern part of the township were added to Salem Township which created the current boundary (Beers 1882). Union Township is the smallest township in Warren County. Originally known as Deerfield, the town of South Lebanon is the oldest in the county. The town was first laid out in 1795 and settled around 1796 (Beers 1882). General David Sutton, Andrew Lytle, and Captain Nathan Kelly were amongst the early settlers of Deerfield, which throughout the nineteenth century was an important stopping place along the Little Miami River (Beers 1882).

2.3 Summary and Discussion

This section presented the results of the cultural resources records review. The records check indicates that 40 archaeological sites, 37 historic structures, 1 cemetery, and 1 NRHP listed historic district have been recorded within 1.6 km (1 mi) of the project area. None of these resources are located within or adjacent to the project area. The results of the literature review indicate that portions of the project area have been previously surveyed for cultural resources. The cultural context of the region suggests that additional unidentified cultural resources may be present in undisturbed soils within the project area; however, the majority of the project area is located in areas that are steeply sloped, in wetlands, or in areas that have been previously disturbed by mechanical equipment (See Appendix B: Project Area Photographs). These areas are not conducive to the identification of intact cultural deposits. The Little Miami River crossing is bound by steep slope on the north bank and the south bank consists of NWI wetlands with a small area of land that is not listed as a wetland. This area has potential to contain intact cultural deposits (Appendix C).

3 Summary and Recommendations

3.1 Project Overview

In response to a request from Duke, Cardno conducted a cultural resources records review for F5484 – 138kV Columbia Structure Replacement in Warren County, Ohio. Based on information provided by Duke, the project area is located west of the town of South Lebanon, on the South Lebanon, Ohio 7.5' USGS topographic map in Warren County, Ohio. The project area consists of a 0.64 km (0.4 mi) long and 30.48 m (100 ft) wide future transmission line. The project area consists of approximately 2.5 ha (6.1 ac), with an actual project earth disturbance potential of approximately 0.89 ha (2.2 ac) (based on a 6.1 m [20-ft] wide vehicular path for 1.27 km [0.79 mi] of proposed off-road construction access routes). The FF5484 Columbia Structure Replacement project initiates at Duke Structure 163 (39.3709, -84.2266), located north of the Little Miami River, south of East Mason Morrow Millgrove Road (CR 38), and west of State Route 48. It terminates at Duke Structure 155 (39.3658, -84.2236), located south of the Little Miami River, north of Dwire Road (CR 149), west of State Route 48, and east of Water Stone Lane.

Background research conducted in July 2018 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.

3.2 Applicable Regulations and Guidelines

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies assess the effect 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 include 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.

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.

3.3 Summary of Results and Recommendations

The records check indicates that 40 archaeological sites, 37 historic structures, 1 cemetery, and 1 NRHP listed historic district have been recorded within 1.6 km (1 mi) of the project area, none of which are in or adjacent to the project area. A portion of the project area has been previously investigated for cultural resources.

The majority of the project area is located in areas that are steeply sloped, in wetlands, or in areas that have been previously disturbed by mechanical equipment. These areas are not conducive to the identification of intact cultural deposits. No archaeological reconnaissance is recommended in areas with greater than a 15 degree slope, previously mechanically disturbed areas, within wetlands, and within areas

previously investigated for cultural resources. These areas constitute the vast majority of the project area and are shown in Appendix C, Environmental Access Plan. The Little Miami River crossing is bound by steep slope on the north bank and the south bank consists of NWI wetlands with a small area of land that is not listed as a wetland. This area has potential to contain intact cultural deposits, before again encountering steep slope to the south (Appendix C). An archaeological reconnaissance is recommended for the portion of the project area on the south bank of the Little Miami River that is not within a wetland, as well as remaining portions of the project area which are not sloped over 15 degrees or within mechanically disturbed areas.

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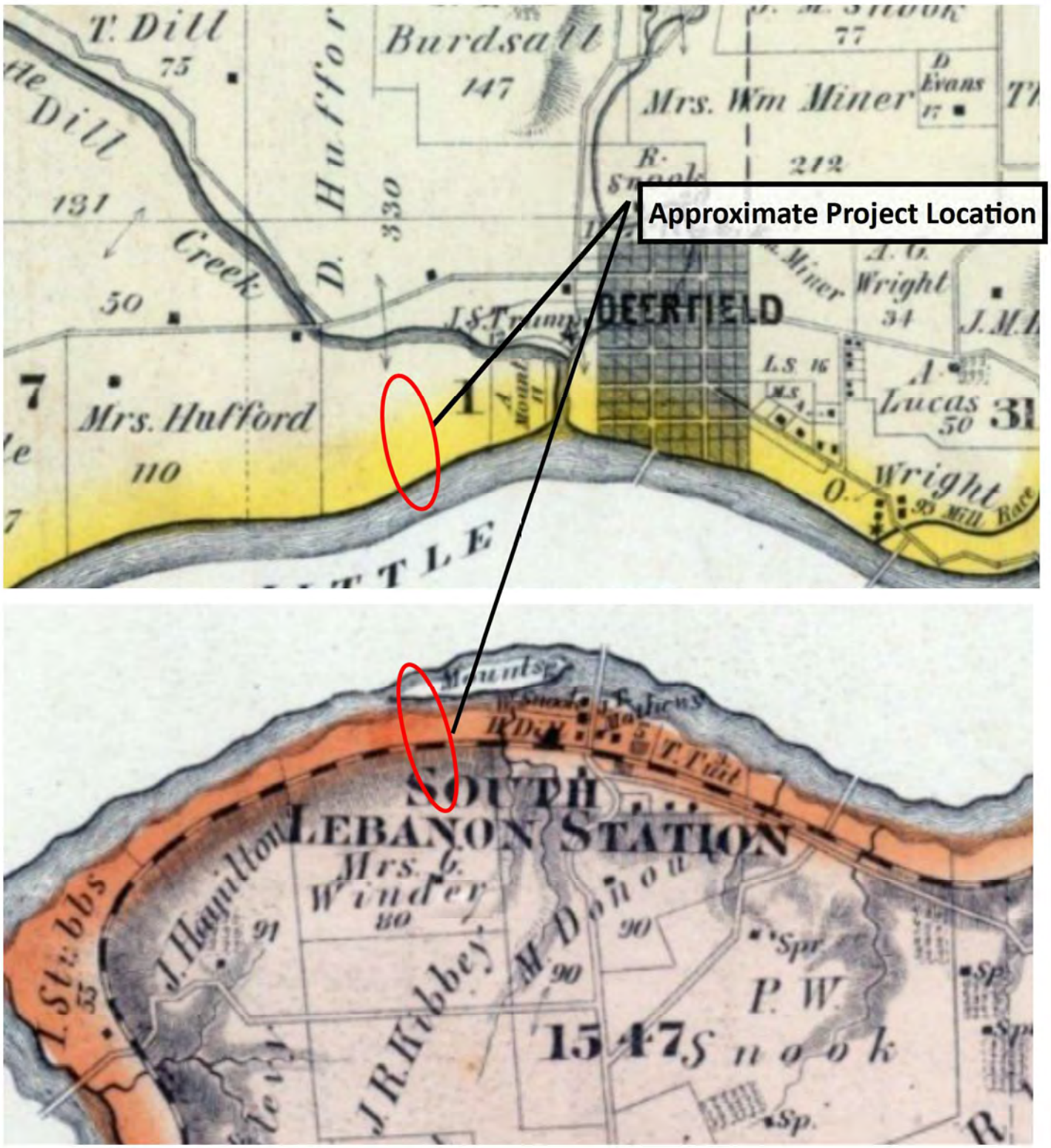
Cultural Resources Literature Review F5484 – 138kV Columbia Structure Replacement
Warren County, Ohio

APPENDIX A

HISTORIC MAPS



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Project Number:
J156720M59

Appendix A: 1875 Map

Cultural Resources Literature Review
5484—138kV Columbia Structure Replacement
Duke Energy Ohio
Warren County, Ohio

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Appendix A: 1891 Map
Cultural Resources Literature Review
5484—138kV Columbia Structure Replacement
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Warren County, Ohio

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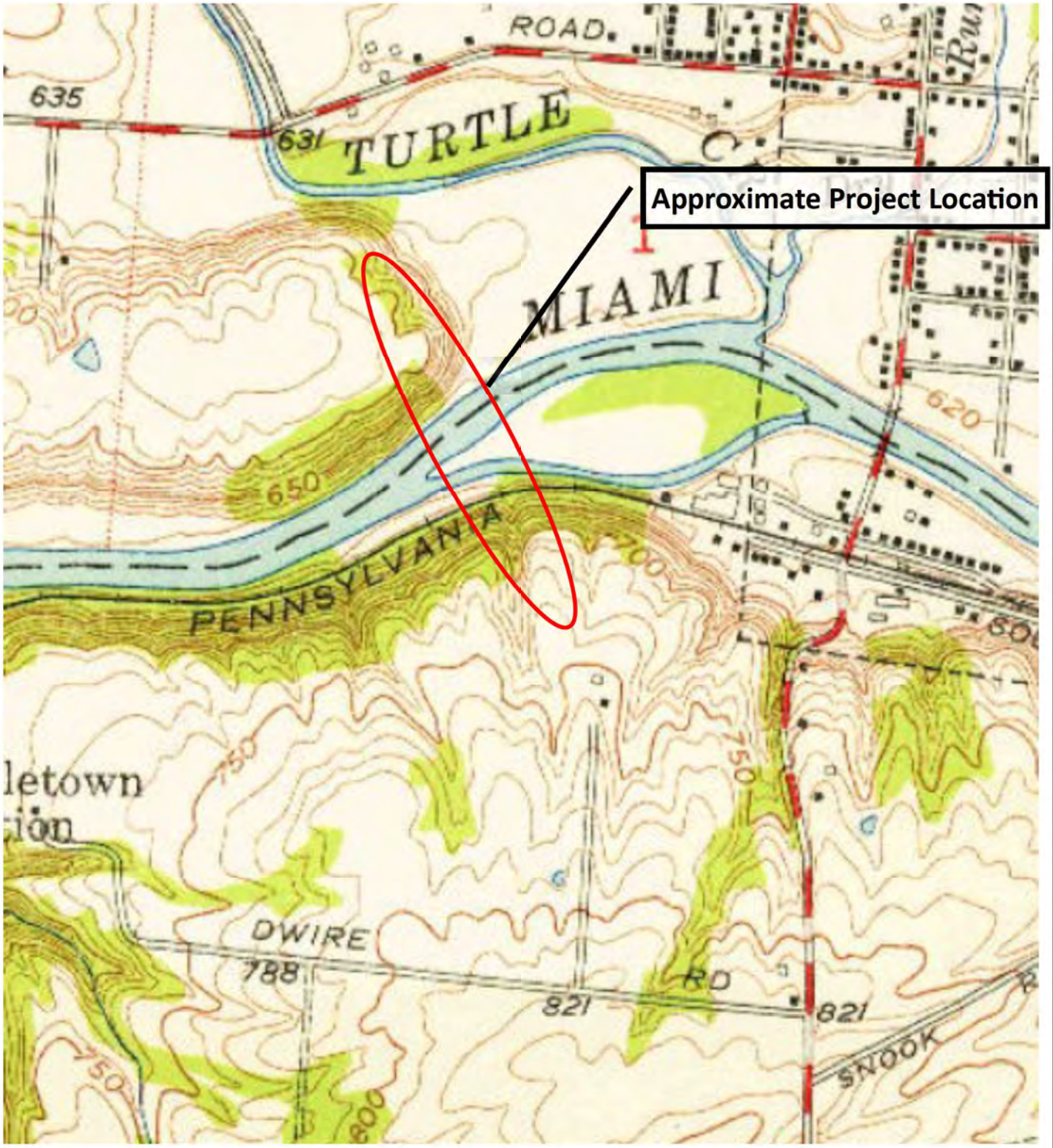

Project Number:
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Appendix A: 1956 Map

Cultural Resources Literature Review
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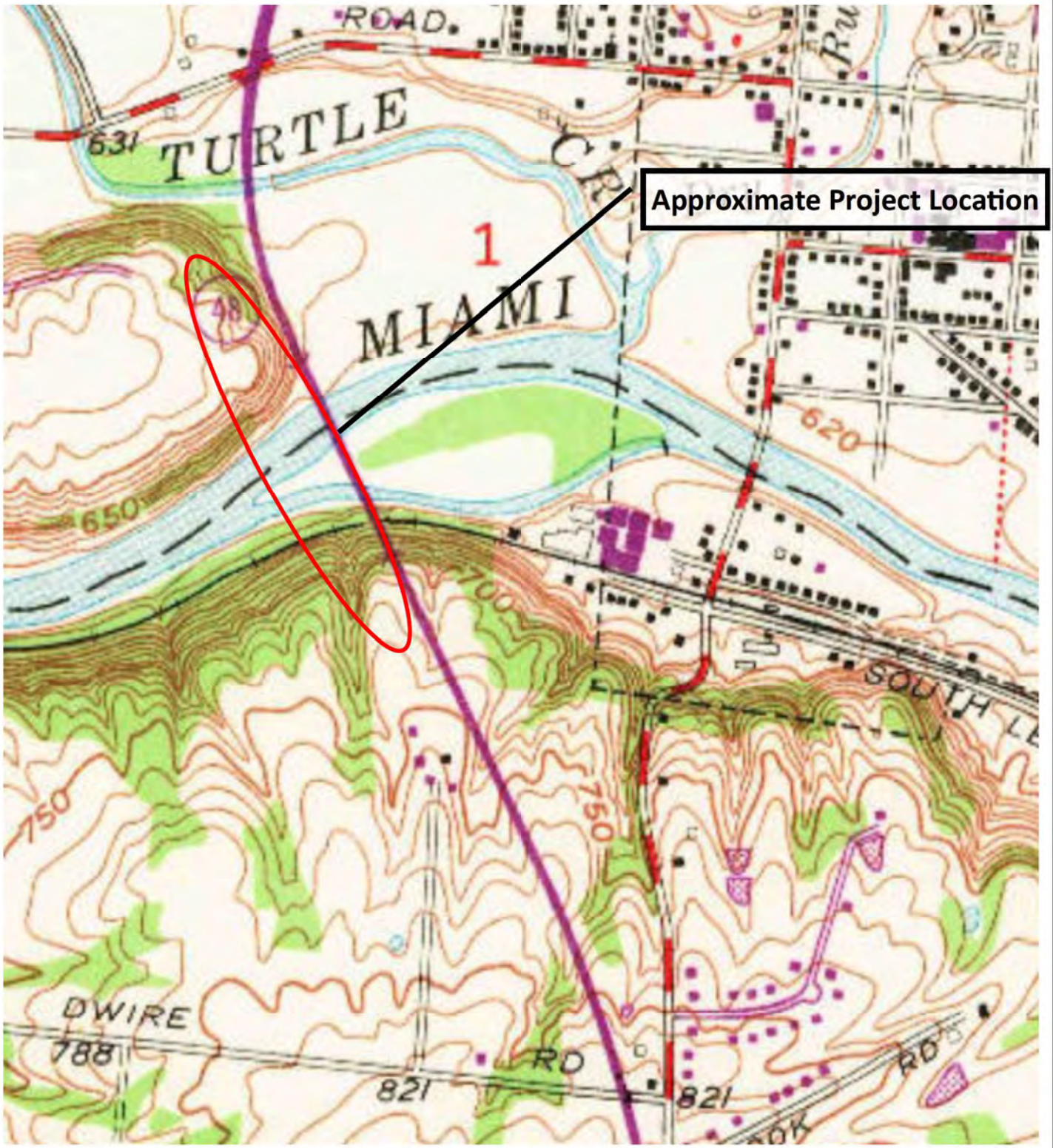

Project Number:
J156720M59

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Appendix A: 1968 Map

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Cultural Resources Literature Review
F5484 – 138kV Columbia Structure Replacement
Warren County, Ohio

APPENDIX B

PHOTOPAGES

Photo 1: Project area overview.

Photo 2: Project area overview.

Photo 3: Project area overview.

Photo 4: Project area overview..

Project Number
J156720M59

Project Area Photographs
Cultural Resources Literature Review
5484—138kV Columbia Structure Replacement
Duke Energy Ohio
Warren County, Ohio

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Photo 5: Project area overview.

Photo 6: Project area overview.

Photo 7: Project area overview.

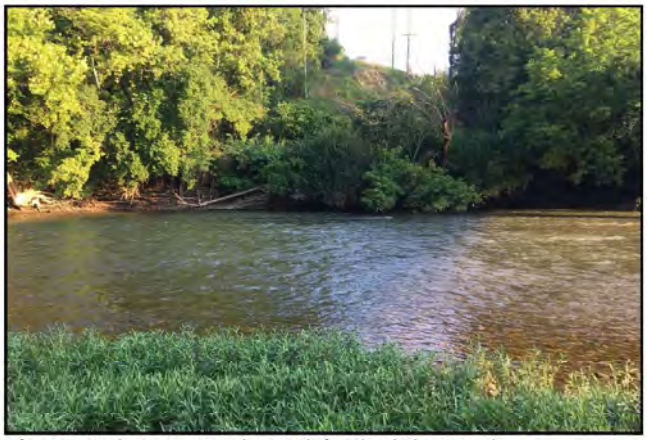

Photo 8: Project area overview at Little Miami River crossing.

Cultural Resources Literature Review
F5484 – 138kV Columbia Structure Replacement
Warren County, Ohio

APPENDIX

C

ENVIRONMENTAL ACCESS PLAN

SHEET INDEX

South Lebanon

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 50 100 Feet

- Existing Facility
- Existing Structure
- Potential Access
- State Highway
- Project Centerline
- NHD Flowline
- 2' Contour Line
- Little Miami River
- NWI Wetland
- Municipal Boundary
- Gravel Pad
- Parcels
- Study Area

DUKE ENERGY.

Cardno

FIGURE 1.01
CULTURAL LITERATURE REVIEW
5484—138kV COLUMBIA STRUCTURE REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS/ EROSION CONTROL PLAN

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CJ APPROVED: JT

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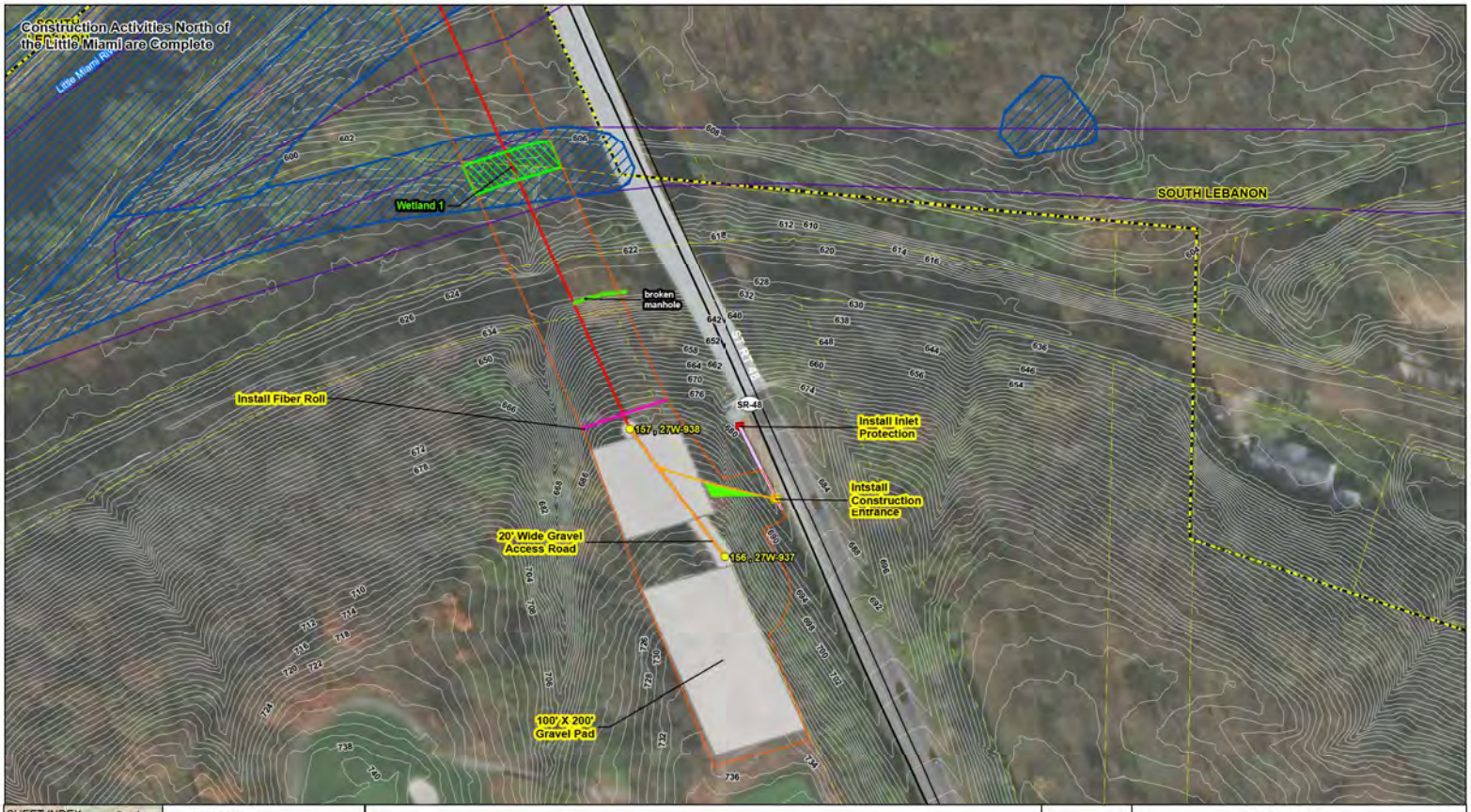

SHEET INDEX

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 50 100 Feet

- Proposed Structure
- Potential Access
- Construction Entrance
- Proposed Tempoary Culvert
- Fiber Roll
- Delineated Wetland
- Stormwater Inlet
- Ditch
- Potential Tree Clearing
- State Highway
- Project Centerline
- NHD Flowline
- 2' Contour Line
- NWI Wetland
- Municipal Boundary
- Gravel Pad
- Parcels
- Study Area

DUKE ENERGY.

Cardno

FIGURE: 1.02
CULTURAL LITERATURE REVIEW
5484—138kV COLUMBIA STRUCTURE REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS/ EROSION CONTROL PLAN

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CJ APPROVED: JT

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Attachment C – Permit Approvals and Coordination

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

REPLY TO
ATTENTION OF

December 6, 2018

Regulatory Division
North Branch
LRH-2018-865-LMR-Little Miami River

NATIONWIDE PERMIT NO. 3 VERIFICATION

Mr. Dustin Giesler
Duke Energy
139 East 4th Street
Cincinnati, Ohio 45202

Dear Mr. Giesler:

I refer to the pre-construction notification (PCN) received in this office on October 18, 2018, concerning the 5484 Columbia Substation Rebuild and Expansion Project. You have requested a Department of the Army (DA) authorization to replace an existing 138kV electrical powerline and associated infrastructure as part of the aforementioned project. The proposed project is located over the Little Miami River, east of State Route 48 in the City of South Lebanon, Warren County, Ohio (39.368647, -84.225516). The proposed project area is located over a section of the Little Miami River, a navigable water of the United States. We have assigned the following file number to your PCN: LRH-2018-865-LMR. Please reference this file number on all future correspondence related to this subject proposal.

The United States Army Corps of Engineers' (Corps) authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328, including the amendment to 33 CFR 328.3 (80 Federal Register 37053), and 33 CFR 329. Section 404 of the Clean Water Act (Section 404) requires a DA permit be obtained prior to discharging dredged and/or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires a DA permit be obtained for any work in, on, over or under a navigable water.

The proposed project, as described in the submitted information, has been reviewed in accordance with Section 404 and Section 10. Based on your description of the proposed work, and other information available to us, it has been determined that this project will not involve the discharge of dredged or fill material into waters of the United States and therefore is not subject to the requirements of Section 404. However, this project involves the replacement of an existing aerial line over the Little Miami River and is subject to the requirements of Section 10.

In the submitted PCN materials received in this office on October 18, 2018, you have requested a DA authorization to replace the existing 138kV electric power line over the Little Miami River in association with updating the wood support systems to galvanized steel structures. All work will be conducted in accordance with drawings submitted with the PCN materials received in this office on October 18, 2018.

Based on the provided information, it has been determined that the project meets the criteria for Nationwide Permit (NWP) No. 3 (enclosed) under the January 6, 2017 Federal Register, Issuance and Reissuance of NWPs (82 FR 1860) provided you comply with all terms and conditions of the enclosed material. Please be aware this NWP verification does not obviate the requirement to obtain any state or local assent required by law for the activities.

This verification is valid until the expiration date of the NWPs, unless the NWP authorization is modified, suspended, or revoked. The verification will remain valid if the NWP authorization is reissued without modification or the activity complies with any subsequent modification of the NWP authorization. All of the existing NWPs are scheduled to be modified, reissued, or revoked on March 18, 2022. Prior to this date, it is not necessary to contact this office for re-verification of your project unless the plans for the proposed activity are modified. Furthermore, if you commence or under contract to commence this activity before March 18, 2022, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

A copy of the NWPs and this verification letter must be kept at the site during construction. Upon completion of the activities authorized by this NWP verification, the enclosed certification must be signed and returned to this office. If you have any questions concerning the above, please contact Ms. Katie Taylor of the North Branch at 304-399-6933, by mail at the above address, or by email at katie.e.taylor@usace.army.mil.

Sincerely,

Andrew J. Wendt
Regulatory Project Manager
North Branch

Enclosures

SPECIAL CONDITIONS FOR NATIONWIDE PERMIT 3 VERIFICATION
5484 COLUMBIA SUBSTATION REBUILD AND EXPANSION PROJECT
LRH-2018-865-LMR
PAGE 1 OF 1

1. All work will be conducted in accordance with the submitted pre-construction notification information for the 5484 Columbia Substation Rebuild and Expansion project received in this office on October 18, 2018.

2. Upon completion of the activity authorized by this nationwide permit verification, the enclosed certification must be signed and returned to this office along with as-built drawings showing the location and configuration, as well as all pertinent dimensions and elevations of the activity authorized under this nationwide permit verification.

3. No area for which grading has been completed will be unseeded or unmulched for longer than 14 days. All disturbed areas will be seeded and/or revegetated with native species and approved seed mixes (where practicable) after completion of construction activities for stabilization and to help preclude the establishment of non-native invasive species.

4. Enclosed is a copy of Nationwide Permit 3, which will be kept at the site during construction. A copy of the nationwide permit verification, special conditions, and the submitted construction plans must be kept at the site during construction. The permittee will supply a copy of these documents to their project engineer responsible for construction activities.

5. Should new information regarding the scope and/or impacts of the project become available that was not submitted to this office during our review of the proposal, the permittee will submit written information concerning proposed modification(s) to this office for review and evaluation, as soon as practicable.

6. In the event any previously unknown historic or archaeological sites or human remains are uncovered while accomplishing the activity authorized by this nationwide permit authorization, the permittee must cease all work in waters of the United States immediately and contact local, state and county law enforcement offices (only contact law enforcement on findings of human remains), the Corps at 304-399-5210 and Ohio State Historic Preservation Office at 614-298-2000. The Corps will initiate the Federal, state and tribal coordination required to comply with the National Historic Preservation Act and applicable state and local laws and regulations. Federally recognized tribes are afforded a government-to-government status as sovereign nations and consultation is required under Executive Order 13175 and 36 CFR Part 800.

7. Section 7 obligations under Endangered Species Act must be reconsidered if new information reveals impacts of the project that may affect federally listed species or critical habitat in a manner not previously considered, the proposed project is subsequently modified to include activities which were not considered during Section 7 consultation with the United States Fish and Wildlife Service, or new species are listed or critical habitat designated that might be affected by the subject project.

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

Nov 01, 2021

Duke Energy Ohio
Dane Callaway
315 Main Street, Mail Code EX 0446-06
Cincinnati, OH 45202

Re: Approval Under Ohio EPA National Pollutant Discharge Elimination System (NPDES) - Construction Site Stormwater General Permit - OHC000005

Dear Applicant.

Your NPDES Notice of Intent (NOI) application is approved for the following facility/site. Please use your Ohio EPA Facility Permit Number in all future correspondence.

Facility Name:	Columbia Substation Transmission Line Connection
Facility Location:	1136 MASON MORROW MILLGROVE ROAD
City:	SOUTH LEBANON
County:	Warren
Township:	Hamilton
Ohio EPA Facility Permit Number:	1GC08407*AG
Permit Effective Date:	Nov 01, 2021

Please read and review the permit carefully. The permit contains requirements and prohibitions with which you must comply. Coverage under this permit will remain in effect until a renewal of the permit is issued by the Ohio EPA.

If more than one operator (defined in the permit) will be engaged at the site, each operator shall seek coverage under the general permit. Additional operator(s) shall submit a Co-Permittee NOI to be covered under this permit. There is no fee associated with the Co-Permittee NOI form.

Please be aware that this letter only authorizes discharges in accordance with the above referenced NPDES CGP. The placement to fill into regulated waters of the state may require a 401 Water Quality Certification and/or Isolated Wetlands Permit from Ohio EPA. Also, a Permit-To-Install (PTI) is required for the construction of sanitary or industrial wastewater collection, conveyance, storage, treatment, or disposal facility; unless a specific exemption by rule exists. Failure to obtain the required permits in advance is a violation of Ohio Revised Code 6111 and potentially subjects you to enforcement and civil penalties.

To view your electronic submissions and permits please Logon in to the Ohio EPA's eBusiness Center at http://ebiz.epa.ohio.gov.

If you need assistance or have questions please call (614) 644-2001 and ask for Construction Site Stormwater General Permit support or visit our website at http://www.epa.ohio.gov.

Sincerely,

Laurie A. Stevenson
Director

Back to Application/Permit List

Application/Permit Information

APPLICATION INFORMATION

Application ID	21-20977
District	District 08
Application Status	Application Under Review
Application Received Date	10/19/2021
Application Received Time	03:38 PM
Permit Type	Drive - Temporary Construction
Description of Work	The Columbia Substation Transmission Line Connection Project is a component of the previously approved 2018 F5484 – 138 kV Columbia Substation Project (PUCO Case No. 16-1759-EL-BNR). Due to project delays the original project was unable to be constructed in its entirety prior to the expiration of the OPSB approval. The Duke Energy Ohio Columbia Substation Transmission Line Connection Project proposes to complete the original project scope by reconductorring approximately 1,240 feet (0.23 mile) of existing 138 kV transmission line from Structure 156 to Structure 158 in addition to the removal and replacement of two existing overhead structures. Specifically, the proposed Project involves the removal and replacement of one wooden single pole structure (HL-156) with a direct embed steel monopole and the removal of one existing wooden H-frame structure (HL-157) replaced with an engineered steel 3-pole structure. The Project is located entirely within an existing Duke Energy Ohio right-of-way (ROW) and easement. Construction is scheduled to begin in January 2022 pending approval of this Construction Notice. The Project is anticipated to be completed and the line in service by May 2022.
Duration of Staging	151

APPLICANT INFORMATION

Company Name	Duke Energy Ohio
Address 1	315 Main Street
City	Cincinnati
State	OH

Zip	45202
Phone	513 287-1041
Alternate Phone	513 324-1927
eMail	Dane.Vandewater@duke-energy.com
On Behalf - Company Name	Duke Energy Ohio
On Behalf - Name	Dane Vandewater
On Behalf - Address 1	315 Main Street, Mail Code EX 0446-06
On Behalf - City	Cincinnati
On Behalf - State	OH
On Behalf - Zip	45202
On Behalf - Phone	5132871041
On Behalf - eMail	Dane.Vandewater@duke-energy.com
ATTACHED DOCUMENTS	
Map Location Maintenance of Traffic Drive Plan	
GIS LOCATION DATA	
County	
Point 1 - Route	SR48
Point 1 - SLM	8.4-8.66
Point 1 - Latitude	39.3666680
Point 1 - Longitude	-84.2238470

Attachment D – Storm Water Pollution Prevention Plan

Storm Water Pollution Prevention Plan

F5484 - 138Kv Columbia Structure Replacement Project

Warren County, Ohio

Cardno Project J19Y465031

October 15, 2021

Prepared for: **Duke Energy Ohio**
139 E. 4th Street
Cincinnati, Ohio 45202

Prepared by: **Cardno**
11121 Canal Road
Cincinnati, Ohio 45241

Storm Water Pollution Prevention Plan

F5484 - 138Kv Columbia Structure Replacement Project
Warren County, Ohio

October 14, 2021

Document Information

Project Site Owner	Duke Energy Ohio
Duke Energy Contact	Dustin Giesler, Duke Energy
Project(s) Name	F5484 - 138Kv Columbia Structure Replacement Project
Number	Cardno J19Y465031
Cardno Contact	Cori Jansing, Cardno

This plan was prepared in accordance with the Rainwater and Land Development: Ohio's Standards for Stormwater Management, Land Development and Urban Stream Protection published December 2006 by the Ohio Department of Natural Resources Division of Soil and Water Conservation and in compliance with ORC Chapter 1511, ORC Chapter 6111, and OAC Chapter 3745-38. In Ohio, responsibility for regulating storm water is held by both local and state authorities. Locally, municipalities, townships, and counties have the authority to regulate storm water. Ohio EPA administers the National Pollutant Discharge Elimination System (NPDES) program, which regulates wastewater discharges that are associated with construction and/or land disturbing activities by limiting the quantities of pollutants to be discharged and imposing monitoring requirements and other conditions.

Certification Requirements per Ohio EPA Permit No. OHC000004 Part V.G.

Corporate Certification (Duke Energy- Owner or Owner Representative)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manages the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name _____
Title _____
Date _____

Contractor Certification (_____ Utility Line General Contractor)

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Name _____
Title _____
Date _____

Contractor Certification (_____ Erosion Control Subcontractor)

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Name _____
Title _____
Date _____

Contractor Certification (_____ Grading and Excavation Subcontractor)

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Name _____
Title _____
Date _____

TABLE OF CONTENTS

Appendices

Figures

Acronyms

SWPPP	Storm Water Pollution Prevention Plan
NOI	Notice of Intent
NOT	Notice of Termination
NWP	Nationwide Permit
OEPA	Ohio Environmental Protection Agency
USACE	United States Army Corps of Engineers

SECTION A – Basic Plan Elements

A1 Plan Index showing locations of required items

See Table of Contents

A2 11 X 17 inch plat showing building lot numbers/boundaries and road layout/names

Please refer to Appendix A, Figure 4, Environmental Access and Erosion Control Plan.

A3 Narrative describing project nature and purpose

The Project proposes to reconductor approximately 0.23 miles of existing transmission line corridor right-of-way (ROW) and remove and replace existing structures HL-157 and HL-156. Structure HL-157 is a steel H-frame structure that will be upgraded to an engineered steel 3-pole structure. Structure HL-156 is an existing wood single pole structure that will be upgraded to a steel monopole structure. The F5484 - 138Kv Columbia Structure Replacement Project consists of an approximately 0.23 mile long and 100-foot wide existing right-of-way (ROW) (the "Study Area"), located in South Lebanon and Hamilton Township, Warren County, Ohio (See Figure 1). The Study Area consists of approximately 3.83 acres, with a potential Project earth disrurbance potential of approximately 1 acre. Specifically, the Project initiates at Duke Energy Columbia Substation (39.369457, -84.226673), north of the Little Miami River (Stream 1), south of Mason Morrow Milgrove Road (CR 38), and west of State Route 48 and terminates at Duke Energy Structure HL-156 (39.366393, -84.224119) located south of the Little Miami River and west of State Route 48. The original field investigation of the Study Area was conducted on July 5, 2018 and field verified on September 23, 2021.

F5484 - 138Kv Columbia Structure Replacement Project is necessary in order to maintain the integrity of existing Duke structures and ensure adequate power supplies to current and future utility customers in the area. The substation and transmission line route consists of an existing transmission line corridor and Duke Energy easement.

Construction will be accomplished largely through the use of bucket trucks with truck-mounted augers for structure installation and other construction vehicles transporting cable spools to install the transmission cable along the route. Excavation will be restricted to the locations where the installation of new structures will occur and construction of the substation. Earth moving activities are anticipated to be minimal, specific to the substation. The extent of access disturbance can vary widely dependent upon many factors, including density and type of surface, vegetative cover, weather conditions, and the type of vehicles moving over the area. The existing vegetation will be preserved to the maximum extent practicable.

Project construction is expected to begin in Spring 2022.

A4 Vicinity map showing project location

Please refer to Appendix A, Figure 1, Project Vicinity map, which provides a simplified layout of Project activities and adjacent land features and information.

A5 Legal description of the project site

The Project crosses the following section:

South Lebanon, Ohio Quad
South Lebanon and Hamilton Township, Warren County, Ohio

A6 Location of all lots and proposed site improvements

The proposed Project will take place entirely within Duke Energy ROW and easement. Only approved areas beyond the property and easement boundaries will be used for equipment storage, temporary access routing, and laydown areas. Where feasible, construction activities at structure locations will be performed

from roadways to minimize soil disturbance. Maps of the project site including structure locations, parcel boundaries, and water resources can be found in Appendix A, Figure 4, Environmental Access and Erosion Control Plan.

A7 Hydrologic Unit Code (HUC)

The Project lies within the boundary of the following 14-Digit USGS Hydrologic Unit Code watershed (Figure 2):

Little Miami River below Todd Fork to above Turtle Creek. (14-digit HUC 05090202060020)

A8 Notation of any State or Federal water quality permits

The F5484 - 138Kv Columbia Structure Replacement Project has received an approved Nationwide Permit 3 (LRH-2018-865-LMR-Little Miami River) on December 6, 2018 for reconductoring over the Little Miami River. The Notice of Intent (NOI) for storm water discharges will be submitted contingent on the local reviewing agency approval(s).

A9 Specific points where storm water discharge will leave the site

All discharges are planned to consist solely of storm water runoff through sheet flow leading to existing water courses. There are no planned non-storm water discharges associated with the proposed Project.

A10 Location and names of all wetlands, lakes, and watercourses on and adjacent to the site

Wetlands, watercourses, and other waters have been delineated with respect to pole placement. These locations are shown in Appendix A, Figure 4, Environmental Access and Erosion Control Plan. The National Wetland Inventory (NWI) mapped wetlands are shown in Appendix A, Figure 4, Project Vicinity.

A11 Identification of all receiving waters

The storm water runoff from the project will discharge directly into the Little Miami River.

A12 Identification of potential discharges to groundwater

The proposed Project does not contain any known sinkholes, active or abandoned wells, or any other direct groundwater recharge points. Any recharging of the groundwater supply by water from the proposed site will be by natural means of infiltration through the soil.

A13 100 year floodplains, floodways, and floodway fringes

None of the structures associated with the Columbia Substation Transmisson Line Connection Project were within the FEMA-defined floodplain boundaries. See Appendix A, Figures 4.1 to 4.2, for the location of floodplains. No floodplain permit is required.

A14 Pre-construction and post-construction estimate of peak discharge

Based on the nature of this Project, there will be no impounded storm water. There is no anticipated significant change in peak discharge from this project site between pre-construction and post-construction site conditions or new or impervious surfaces.

A15 Adjacent land use, including upstream watershed

Adjacent land use consists of a mix between maintained right-of-way (ROW) and secondary growth forest.

A16 Locations and approximate boundaries of all disturbed areas

The majority of ground disturbance will be associated with the construction of gravel pads. Additional disturbance will occur as a result of off-road sections of construction vehicle access routes and the structure installation locations. The expected disturbance for this Project is conservatively estimated at 1 acre.

A17 Identification of existing vegetative cover

The existing vegetative cover is mixture of maintained right-of-way (ROW), secondary growth forest, and forested wetland within the existing transmission line ROW.

A18 Soils map including descriptions and limitations

According to the NRCS Soil Survey Geodatabase data collected for Warren County, nine (9) mapped soil units are present within the Study Area and two (2) are listed as hydric. See Appendix A, Figure 3, Soils Classifications for soil types and hydric classification by line segment.

A19 Locations, size, and dimensions of proposed storm water systems

There is no proposed construction of any permanent storm water systems.

A20 Plan for any off-site construction activities associated with this project

No off-site construction activities are planned for this Project.

Any temporary staging and laydown areas for both new and used structures and other equipment will be identified near the time of construction. Typically, Duke Energy substations are utilized for storage or distribution, and used structures are taken off-site. Storm water protection will be integrated as necessary at laydown areas and amended into the plan and routine inspections by the Construction Supervisor.

A21 Locations of proposed soil stockpiles, borrow and/or disposal areas

It is anticipated that no soil fill will be brought in. However, gravel backfill will be used at structure locations. Where wetland or stream impacts may occur, spoils management protocol will be followed during structure installation. Where appropriate, any excavated soil, gravel backfill, or other construction material will be stored on construction matting within a wetland area and erosion control measures will be implemented. Excess soil from boring or auguring operations will be permanently relocated to an upland location away from surface drainage ways and wetland areas adjacent to structure replacement locations.

A22 Existing site topography at an interval appropriate to show detailed drainage patterns

Given the Project area runs through variable terrain, the existing drainage patterns are best depicted and evaluated with 1 foot contours shown in Appendix A, Figure 4, Environmental Access and Erosion Control Plan.

A23 Proposed final topography at an interval appropriate to show detailed drainage patterns

Final post-construction contours will match pre-construction condition to the extent practicable. The construction scope is limited to the replacement of utility structures and overhead facilities.

SECTION B – Active Construction Component

B1 Description of potential pollutant sources associated with the construction activities

The anticipated pollutants to be generated by this type of construction include the following:

- Sediment carried off-site by storm water runoff
- Vegetation debris generated during onsite vegetation removal
- Concrete washout and dewatering operations for projects with foundations
- Domestic garbage from construction workers
- Potential for petroleum spills from heavy equipment operation and refueling

Clearing and/or maintenance trimming will involve mowing and limb cutting with standard forestry equipment and hand cutting where required. In instances where tree or large limbs are removed entirely for access or maintenance they will be cut into appropriate lengths for use by the landowner, or otherwise chipped within the ROW. Digging, grubbing, and any other disturbance will be restricted to locations where the installation of new structures will occur. All excavated materials will be distributed in approved upland locations away from surface drainage ways. Wood chippings and other low-height vegetation will be distributed within the ROW to the maximum extent possible to assist in soil stabilization and sediment runoff control.

Any and all domestic garbage generated onsite such as disposable food and drink containers and other items shall be either carried off-site and properly disposed or deposited into a construction dumpster provided onsite. The project site shall be monitored on a daily basis for the proper disposal of such waste.

The erosion of exposed soils by storm water runoff shall be controlled through the installation of best management practices (BMPs) such as silt fence, fiber rolls, or similar barriers, followed by seeding and mulching. All such practices shall be installed and maintained in accordance with Appendix B, Storm Water Pollution Prevention Plan Typical Details.

Equipment cleaning will be limited to water washing in sediment and erosion controlled areas as required to insure reliable equipment operations while preventing the tracking of excessive dirt and mud from the project site. Soil materials that may need to be removed from the Project ROW will be taken to an upland area or other designated disposal area.

Concrete washout will be completed on projects with foundations at designated concrete washout stations for containment of this waste in accordance with Appendix B, Storm Water Pollution Prevention Plan Typical Details. Any dewatering associated with the excavation for the placement foundations will be conducted through an approved dewatering bag or other upland means of filtering dewatering point discharges.

B2 Sequence describing storm water quality measure implementation relative to land disturbing activities

Due to the nature of the Project, multiple construction stages may take place simultaneously within the Study Area. Below is the general sequence of construction activities and storm water quality measures implementation:

The general sequence of construction activities includes the following:

1) Installation of temporary construction entrances
2) Installation of temporary erosion and sediment control measures
3) Construction equipment access
4) Removal of existing poles and conductors
5) Installation of new poles and conductors

6) Final restoration (final grading, seeding, and stabilization)
7) Removal of temporary erosion and sediment control measures
8) Removal of temporary construction entrances

The storm water pollution prevention measures described within this SWPPP will be installed and inspected before soil disturbing activities commence. Structural erosion controls may also need to be installed along equipment access routes dependent upon site condition. These needs will be assessed as the project progresses. Any erosion controls that need to be moved for equipment transfers will be restored, to the extent practical, before significant rainfalls occur. All storm water quality control measures shall be inspected regularly. At the completion of the project all disturbed areas will be stabilized with vegetation and straw mulch. All measures will be in accordance with guidelines provided in the *Rainwater and Land Development* and this Plan.

As conditions may vary from pre-project condition during construction, sediment control measures may be altered and additional locations for such measures may be needed depending upon changing field conditions. Additional measures may be required and implemented as they become warranted and should be documented in Appendix D, SWPPP Amendment Log. SWPPP revisions or altercations require review and/or approval by a trained individual experienced in the principles of storm water, erosion and sediment control, treatment, and monitoring for Duke Energy Projects.

Recognizing the increased potential for erosion special care will be taken to seed and mulch construction travel ways in highly erodible or steep slope areas. Additional measures such as water bars, erosion matting, or other appropriate measures may be employed as necessary to protect the land surface from erosion until termination of the permit is verified and the Notice of Termination (NOT) is filed with OEPA.

Stabilized construction entrances or other means of limiting the tracking of sediment and debris off-site will be used at roadway intersections whenever possible. All debris or sediment tracked onto road ways will be removed at the end of the day to the maximum extent possible. Large equipment movement to each structure associated with, but not limited to, disassembly, framing, and clipping-in of line will be limited to the maximum extent possible to further reduce ground disturbance.

Temporary or permanent seeding stabilization will adhere to specifications in Subsections B11 and B12. Vegetated areas with a density of less than seventy percent (70%) shall be re-stabilized using appropriate methods to minimize the erosion potential. No structural erosion controls will be removed until construction has permanently stopped and reseeding and mulching has occurred. After the entire project is complete and vegetated coverage is at least 70% any accumulated sediment, fiber rolls, silt fence, or other specified erosion and sediment control measures will be removed.

Wherever equipment crossing drainage ways in steeply sloping areas will result in soil disturbances a combination of temporary timber matting bridges and water bars to divert runoff to the installed sediment controls or vegetative filter areas will help reduce impacts from concentrated flows to receiving streams.

B3 Stable construction entrance locations and specifications

Stabilized construction entrances will be installed when warranted based on project duration or varying site conditions impacted by wet weather patterns. Special consideration shall be given for installation of a stable construction entrance in the event of wet weather or high ingress and egress traffic. Stable construction entrances and other means of limiting the tracking of sediment and debris off-site will be used. Additional construction entrances, other than the ones indicated in the Plans, may be required and implemented as they become warranted based on variable site conditions. All debris or sediment tracked onto roadways will be removed at the end of the day to the maximum extent possible. The existing construction entrances will be evaluated and modified to be in accordance with *Rainwater and Land Development* and this Plan as deemed necessary.

B4 Sediment control measures for sheet flow areas

Runoff and sediment control practices will include a combination of fiber roll (or other plant fiber-based barrier) and/or silt fencing. These sedimentation and erosion control measures will be located at specific locations along the construction route to prevent sediment runoff into streams, wetlands, and other open waters. The placement and use of erosion control structures indicated in Appendix A, Figure 4, Environmental Access and Erosion Control Plan will be installed in accordance with Appendix B, SWPPP Typical Details and be in compliance with the *Rainwater and Land Development* manual. If required, additional appropriate structural controls will be implemented as the Project progresses. Plan changes require approval of Duke Energy.

B5 Sediment control measures for concentrated flow areas

No areas of concentrated flow are expected for this Project. If conditions dictate fiber roll or rock check dams will be used, as appropriate, within the ephemeral drainages along the route to limit sedimentation within the drainage and off-site. At locations where equipment crosses drainage ways in steeply-sloping areas, which could result in soil disturbance, a combination of temporary timber matting bridges and water bars to divert runoff to sediment controls or vegetative filter areas can help reduce impacts from concentrated flows to receiving streams.

B6 Storm sewer inlet protection measure locations and specifications

Not applicable for this Project.

B7 Runoff control measures

Water bars can be used to prevent runoff flows from occurring in wheel rutting on steep slopes which will impact receiving streams.

B8 Storm water outlet protection specifications

Not applicable for this Project.

B9 Grade stabilization structure locations and specifications

Not applicable for this Project.

B10 Location, dimensions, specifications and construction details of each storm water quality measure

The locations of the sediment control structures are indicated in Appendix A, Figure 4, Environmental Access and Erosion Control Plan. The general specifications for each practice are located in Appendix B, SWPPP Typical Details. As construction, progresses Duke Energy will consider modification to or addition of erosion control structures depending on changing site conditions with respect to slope and proximity to adjacent water bodies.

B11 Temporary surface stabilization methods appropriate for each season

In the event temporary stabilization is required (when construction activity has ceased but will resume in fourteen (14) days or more), either seeding or mulch application or other stabilization measure will be implemented within seven (7) days of the most recent disturbance. Areas within 50 feet of a stream (including intermittent streams) will be stabilized within 2 days of the most recent disturbance. Mulch alone is acceptable temporary cover and may be use in lieu of temporary seeding, provided that it is appropriately anchored. A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

Table 1. Temporary Seed Mixture

Species	Application Rate
Annual Ryegrass	40 lbs./acre
Oats	128 lbs./acre
Tall Fescue	40 lbs./acre

Straw mulch should be used at a rate of 2 tons/acre or 90 lbs./1,000 sq. ft. for seed protection and additional erosion control. It should be spread by hand or machine and be crimped or anchored, as appropriate. If slopes necessitate the use of a mulch cover, then erosion control blanketing shall be substituted. No hay should be used as it may introduce invasive non-native species to adjacent undisturbed habitats (such as hardwood forests or wetland areas).

B12 Permanent surface stabilization specifications

Areas within fifty (50) feet of a stream will require permanent surface stabilization within two (2) days of the last disturbance. Stream bank and riparian floodplain areas shall be mulched and seeded with the Stream Bank and Riparian Areas Restoration Seed Mix as recommended by Ohio DNR staff as follows.

Table 2. Stream Bank and Riparian Areas Restoration Seed Mix

Grass and Sedge Species	Application Rate
Andropogon gerardii (Big Bluestem)	24 oz./acre
Bouteloua curtipendula (Sideoats Grama)	1 oz./acre
Carex bicknellii (Prairie Oval Sedge)	2 oz./acre
Elymus canadensis (Canada Wild Rye)	2 oz./acre
Dactylis glomerata (Orchard grass)	24 oz./acre
Panicum virgatum, Switchgrass)	4 oz./acre
Schizachyrium scoparium (Little Bluestem)	3 oz./acre
Sorgastrum nutans (Indian Grass)	0.5 oz./acre
Cover Crop Species	Application Rate
Avena sativa (Seed Oats)	800 oz./acre
Lolium multiflorum (Annual Ryegrass)	160 oz./acre

All other areas of soil disturbance will be seeded and mulched for permanent surface stabilization within seven (7) days in areas where construction has ceased and the site is at final grade or will lay dormant for more than one (1) year. Any permanent seeding should consist of a seed mixture appropriate for the area that has been disturbed and conducted during the season appropriate for its installation.

Non-agricultural areas including access and other vegetated ROW areas shall be permanently mulched and seeded with a general use permanent seed mix consisting of the following:

Table 3. General Use Permanent Seed Mixture

Species	Application Rate
Kentucky Bluegrass	20-40 lb/acre
Perennial Ryegrass	10-20 lb/acre
Creeping Red Fescue	20-40 lb/acre

Site Preparations for installing both seed mixes are as follows:

Site Preparation: Use appropriate equipment to level disturbed areas and return to original grades focusing on reinforcing positive drainage. Avoid compaction during construction by placing equipment on mats to access wet or saturated areas. Soil amendments are acceptable in non-native seeding areas.

Seed Preparation: Thoroughly mix the seed prior to planting as many of the heavier seeds may have settled during shipping. The seed mix will contain a temporary cover of Common Spring Oat and Annual Ryegrass to accelerate re-vegetation.

Planting: Seed will be worked into the soil no greater than a ¼ inch in depth. For smaller areas a hand broadcaster and rake can be used. For larger areas the seed can be installed mechanically with a seed box no-till drill (Truax™ Trillion Broadcast Seeder or equivalent). Areas that are too wet for mechanical seeding will be installed via the hand broadcasting method.

Mulching: Straw mulch should be used at a rate of 2 tons/acre for all natural areas, non-maintained areas, for seed protection and additional erosion control. Swales and other areas of concentrated flow should be stabilized with erosion control blanketing.

B13 Material handling and spill prevention plan

Unlikely incidents involving spills or releases of other non-sediment pollutants are expected to be limited to small quantities of petroleum products from construction vehicles, including but not limited to motor oil, transmission fluids, and hydraulic oils. Spill clean-up kits and personnel trained in their use will be at each construction location. No vehicle maintenance activities that could result in storm water contamination (oil changes or engine repairs) will be permitted outside of stabilized construction areas. Appropriate spill control measures (oil absorbent pads or booms) must be in place before maintenance activities occur.

Spills of any amount of petroleum product or polluting materials are to be prevented. The following list details general requirements necessary to avoid spills and minimize the impact of accidental spills:

- No bulk quantities of diesel fuel and gasoline will be stored on the site. No bulk quantities of hazardous materials including solvents and lubricants will be stored on the site.
- Vehicles and equipment are expected to be re-fueled off-site. Fuel carriers (if applicable) and transported equipment will be inspected on a daily basis for leaks prior to entering the site and will not be allowed on site until leaks are repaired.
- The equipment staging area will be located away from surface waters and any private and municipal water wells.
- All construction equipment will be inspected daily for leaks prior to start of work. Any leaking equipment will be repaired, as necessary.
- If any soil is contaminated with hydrocarbons or other objectionable material, it will be segregated and properly disposed of off-site.
- If concrete materials are used on-site, concrete washouts should be used. No washout of concrete materials should occur within wetland areas or other drainage ways.

Project related solid wastes will be collected regularly and transferred to a licensed solid waste disposal site. No construction waste materials will be buried onsite. Portable sanitary waste units will be utilized and available for the project. A licensed sanitary waste management contractor will collect sanitary waste from the portable units as necessary. It will be the responsibility of the Construction Supervisor to ensure that all construction personnel are instructed regarding the correct procedure for waste disposal and that these practices are followed.

Contractors shall provide all necessary labor, materials, equipment, and response capabilities to prevent oil releases. Contractors causing an oil release must take appropriate actions to minimize the environmental impacts of the release.

If a hazardous substance release or oil spill requiring attention shall occur during construction, the responsible party shall immediately contact the Duke Energy Construction Supervisor, who will then contact Duke Energy Health and Safety or Environmental Services to report the spill as necessary and ensure that the spill is cleaned up properly by the responsible party or an approved remediation contractor.

In an emergency, immediately report all spills to the appropriate Duke Energy Coordinator. All spill notifications shall follow Duke Energy procedures.

Duke Energy Spill Hotline 1-800-527-3853

B14 Monitoring and maintenance guidelines for each proposed pollution prevention measure

To maintain the storm water management system in effective operating condition, erosion and sedimentation control structures will be inspected daily if construction personnel are actively working in the area. In addition, each installed erosion and sedimentation control structure, and areas contributing to storm water discharges at the locations of these structures, will also be regularly inspected at least weekly and again after each rainfall/precipitation event exceeding ½ inch in 24 hours by qualified personnel under the direction of Duke Energy.

Any damage or deficiency noted during routine or regular inspections will be recorded on a Storm Water Evaluation Form for Construction (Appendix C) and corrected as directed by the Construction Supervisor. The written inspection records will be kept on file and will include notes on any corrective actions taken. If requested, these records will be made available for review by the 'inspecting authority within 48 hours' per OAC Chapter 3745-38 (NPDES). Inspection records will be kept onsite with the SWPPP to the greatest extent possible.

Any deficiencies will be corrected by repair of damaged or deteriorated controls or by modifying structural or operational practices to achieve the desired results. If needed, the SWPPP shall be revised following such modifications.

Maintenance of stabilization and erosion control measures will include the following:

- "Qualified Inspection Personnel" under the direction and designation of the Construction Supervisor will be responsible for inspections of the erosion controls and completion of the Storm Water Evaluation Form for Construction.
- It is the responsibility of the Construction Supervisor that all personnel selected for maintenance responsibilities are trained in repairs as necessary to keep the erosion and sedimentation controls in good working order.
- Fiber rolls, silt fence, or other specified erosion control measure will be inspected for proper installation and function to include the following: proper anchoring of all controls, depth of sediment, separation from adjacent structures, and to see that stakes are firmly in the ground. Built up sediment will be removed when it has reached one-half (1/2) the height of the control and placed in previously stabilized and upland area.
- Seeded areas shall be checked regularly for bare spots, washouts, and healthy growth to assure that a good stand of grass is being maintained. Areas that fail to establish vegetation cover will be re-seeded as soon as such areas are identified.
- Sediment tracking from temporary construction entrances onto roadways should be minimized and will be the responsibility of the Construction Supervisor. When sediment is observed on roadways it shall be removed at the end of each workday.

B15 Erosion & sediment control specifications for individual building lots

Not applicable for this project.

SECTION C – Post Construction Component

C1 Description of pollutants and their sources associated with the proposed land use

The proposed Project includes the relocation of an existing transmission line and the construction of a new substation consisting of a construction pad and improvements to Duke Energy Ohio ROW. No post construction pollutants are expected.

C2 Sequence describing storm water quality measure implementation

Seeding and vegetation establishment are the only long-term storm water quality measures proposed for the Project. See Subsection B11 and B12 for a description of seeding implementation.

C3 Description of proposed post construction storm water quality measures

The Project are will be returned to its previous use and condition. Post-construction pollutant controls are addressed by establishment of permanent vegetative cover in all areas, except those that will be returned to agricultural crops. Cover crop, or nurse crop seed mix, may be used in agricultural areas that are not to be immediately cultivated.

C4 Location, dimensions, specifications and construction details of each storm water quality measure

See Subsection C3.

C5 Description of maintenance guidelines for proposed post construction water quality measures

Seeded areas will be inspected to ensure adequate vegetative establishment and coverage. Adequate coverage shall be defined as greater than or equal to 70% areal coverage by visual estimation. Reseeding, watering or fertilization shall be utilized to meet this goal. Fertilizer should not be used in areas requiring native seeding. The ROW will be maintained in accordance with easement guidelines and consist of vegetative mowing and/or woody removal. All temporary erosion and sediment control measures will be removed prior to the NOT being approved.

Routine inspections and monitoring of erosion control structures will end and structures removed, once the disturbed soil areas are permanently re-established with a vegetative cover of at least 70% or greater density (final stabilization). Final stabilization in agricultural areas is defined as returning the disturbed land to it pre-construction agricultural use.

When all construction and ground disturbance activities have ceased, final stabilization has been documented, and all temporary erosion measures are removed, if required the NOT shall be submitted to the OEPA within 45 days. The NOT shall be also submitted to any other Local agencies that required review of the Project.

Appendix A

Figures

F5484 – 138kV COLUMBIA SUBSTATION REBUILD AND EXTENSION
STORMWATER POLLUTION PREVENTION PLAN

PLANS PREPARED FOR:

DUKE ENERGY OHIO
139 4TH STREET
CINCINNATI, OHIO 45202-4161

PLANS PREPARED BY:

CARDNO INC.
11121 CANAL ROAD
CINCINNATI, OHIO 45241

VICINITY MAP

Union and Hamilton Townships
Warren County, Ohio

MAINTENANCE DISTRICT

Warren County, Ohio MS4

CIVIL/GEOGRAPHICAL INFO:

South Lebanon Quad
Warren County
Union and Hamilton Townships
The project initiates at the F5484 – 138kV Columbia Substation, extends to Duke Energy Structure 156 (39.366454, -84.224085) and terminates at Duke Energy Structure 157 (39.366839, -84.224467) located south of the Little Miami River, north of Dwire Road (CR 149), west of State Route 48, and east of Water Stone Lane.

MAP REFERENCES

SWPPP - 0 - Cover Sheet
SWPPP - 1 - Project Vicinity Map
SWPPP - 2 - Project Area Watersheds
SWPPP - 3 - Soil Classifications
SWPPP - 4 - Environmental Access Plan Key Map
SWPPP - 4.01 to 4.02 - Environmental Access Plan

MIGRATORY BIRD HOTLINE

STATE AND FEDERAL LAWS PROTECT ALL SPECIES OF NATIVE BIRDS FOUND THROUGHOUT THE DUKE ENERGY SERVICE AREA. INTERACTIONS OF BIRDS WITH GENERATING FACILITIES, TRANSMISSION AND DISTRIBUTIONS, SUBSTATIONS, OTHER STRUCTURES AND EQUIPMENT, AND OPERATIONS ARE POTENTIALLY HARMFUL OR FATAL TO BIRDS. DUKE ENERGY OPERATES THESE 24-HOUR MIGRATORY BIRD HOTLINES TO ASSIST EMPLOYEES AND CONTRACTORS WITH RELATED INCIDENTS THAT OCCUR DURING WORK ACTIVITIES.

MIDWEST: 317.430.4497
CAROLINAS: 800.573.3853
FLORIDA: 727.386.3084

811 CALL BEFORE YOU DIG:

CONTRACTOR SHALL NOTIFY "OHIO ONE CALL" (811) OR (1-800-362-2764) AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EX. UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDED THEIR OWN LOCATOR SERVICES INDEPENDENT OF "OHIO ONE CALL". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.

SPILL REPORTING HOTLINE:

IN ORDER TO ENSURE THE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT, FEDERAL AND STATE LAWS REQUIRE THAT CERTAIN TYPES OF SPILLS AND UNPERMITTED RELEASES BE REPORTED TO THE PROPER REGULATORY AGENCIES AS SOON AS POSSIBLE FOLLOWING IDENTIFICATION. IMMEDIATELY NOTIFY YOUR SUPERVISOR AND THE FIELD ENVIRONMENTAL/EHS PROFESSIONAL WHEN A SPILL OR UNPERMITTED RELEASE IS DISCOVERED. IF YOU ARE UNABLE TO REACH THE FIELD ENVIRONMENTAL/EHS PROFESSIONAL, CONTACT ONE OF THE DUKE ENERGY SPILL REPORTING HOTLINES AT:

CAROLINAS & MIDWEST: 800.527.3853
FLORIDA: 866.769.1266

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

Existing Facility
Study Area
State Highway
US Highway
Railroad
Project Centerline
County Boundary
Municipal Boundary

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COVER SHEET

STORMWATER POLLUTION PREVENTION PLAN
5484—138kV COLUMBIA STRUCTURE
REPLACEMENT PROJECT
DUKE ENERGY OHIO

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CAJ APPROVED: CAJ

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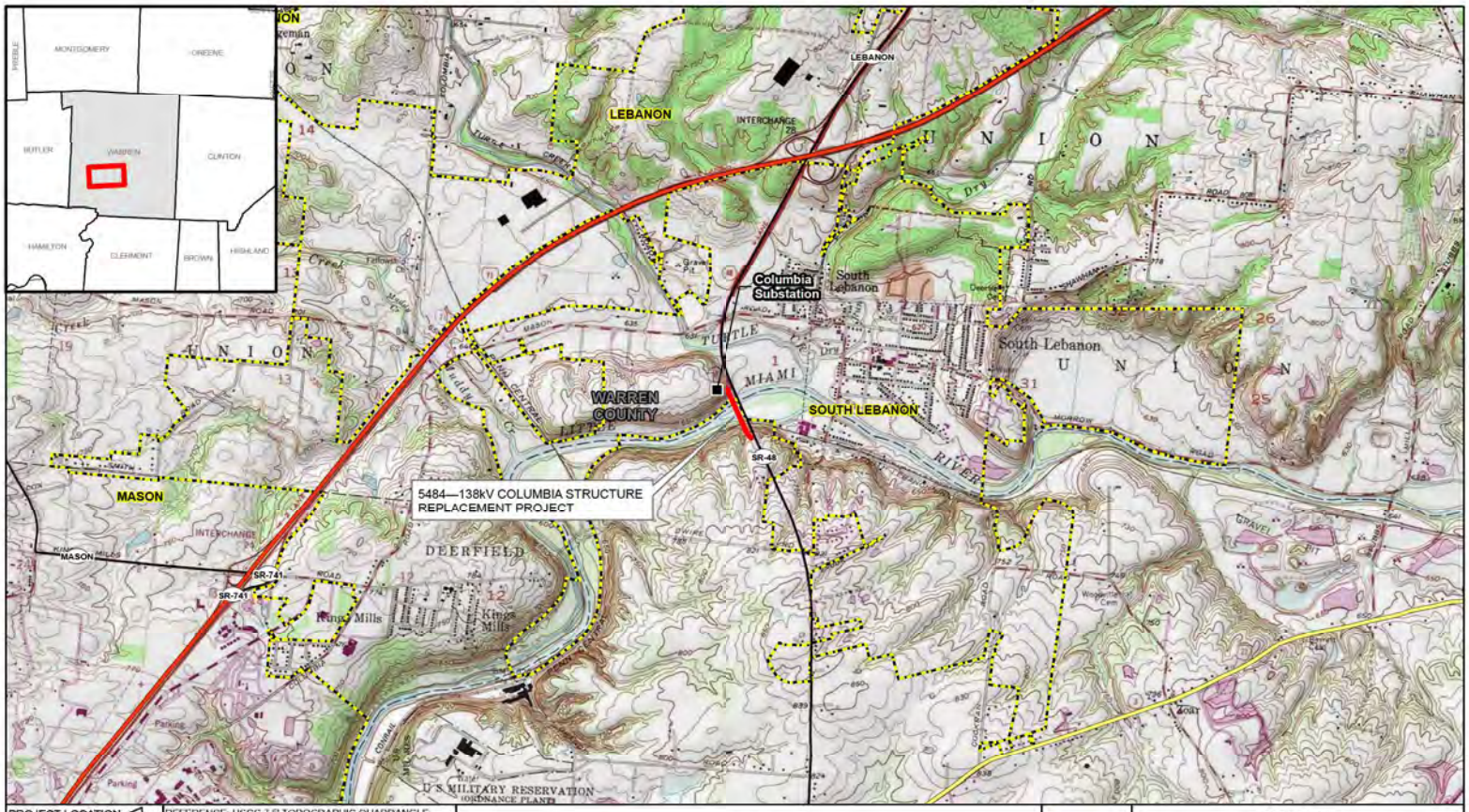

PROJECT LOCATION

WARREN COUNTY, OH

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

N

0 1,000 2,000 4,000 Feet

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

DUKE ENERGY.

Cardno

FIGURE 1

STORMWATER POLLUTION PREVENTION PLAN
5484—138kV COLUMBIA STRUCTURE
REPLACEMENT PROJECT
DUKE ENERGY OHIO
PROJECT VICINITY MAP

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CJ APPROVED: JT

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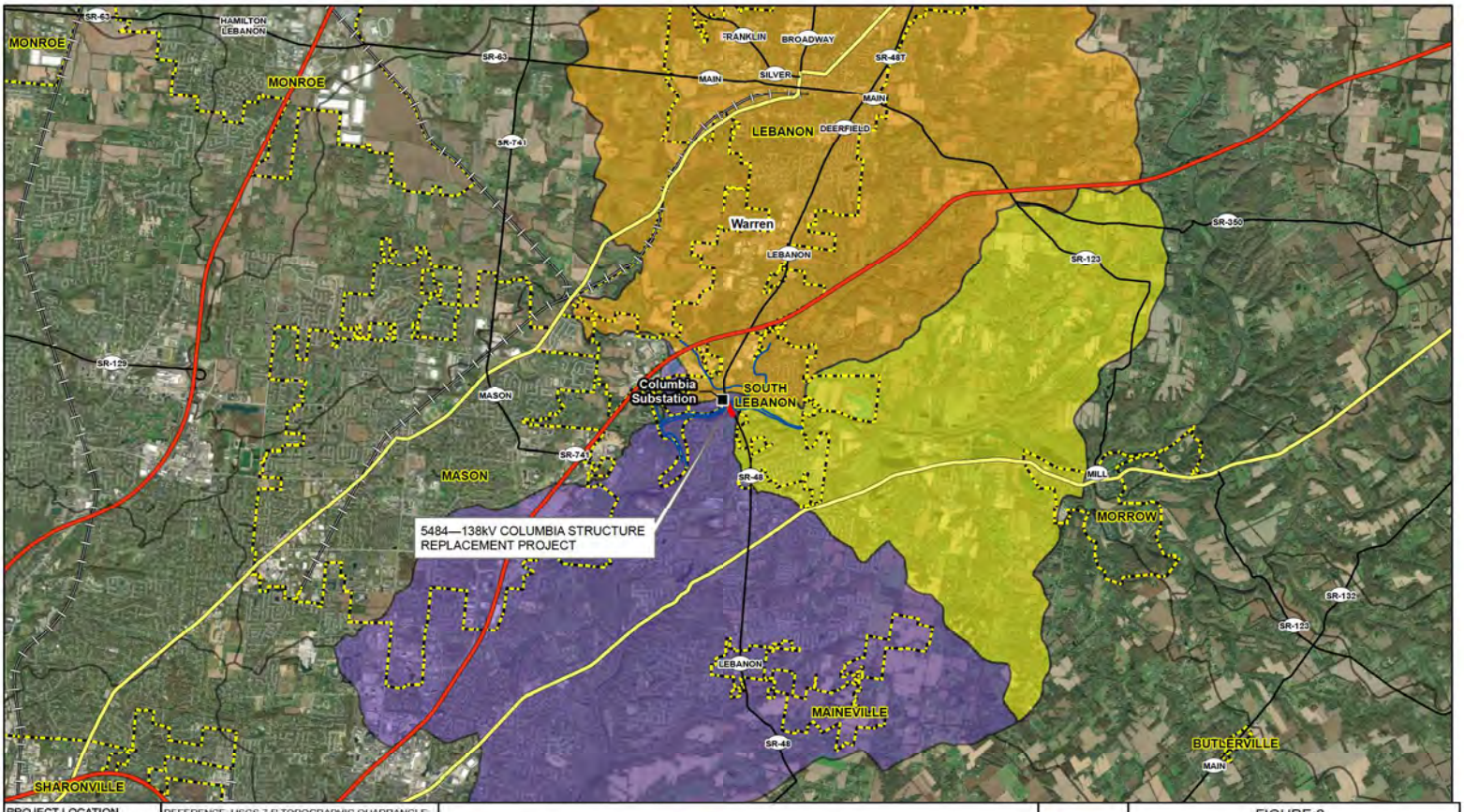

PROJECT LOCATION

WARREN COUNTY, OH

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

N

0 4,500 9,000 18,000 Feet

- Existing Facility
- Project Centerline
- Interstate
- NHD Flowline
- State Highway
- US Highway
- Railroad
- Municipal Boundary
- Adjacent Watersheds
- Little Miami R. below Todd Fk. to above Turtle Cr.
- Little Miami River below Turtle Cr. to above O'Bannon Cr. [except Muddy Cr.]
- Turtle Creek [except Little Muddy Cr.]

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FIGURE:2

STORMWATER POLLUTION PREVENTION PLAN
5484—138kV COLUMBIA STRUCTURE
REPLACEMENT PROJECT
DUKE ENERGY OHIO
PROJECT AREA WATERSHEDS

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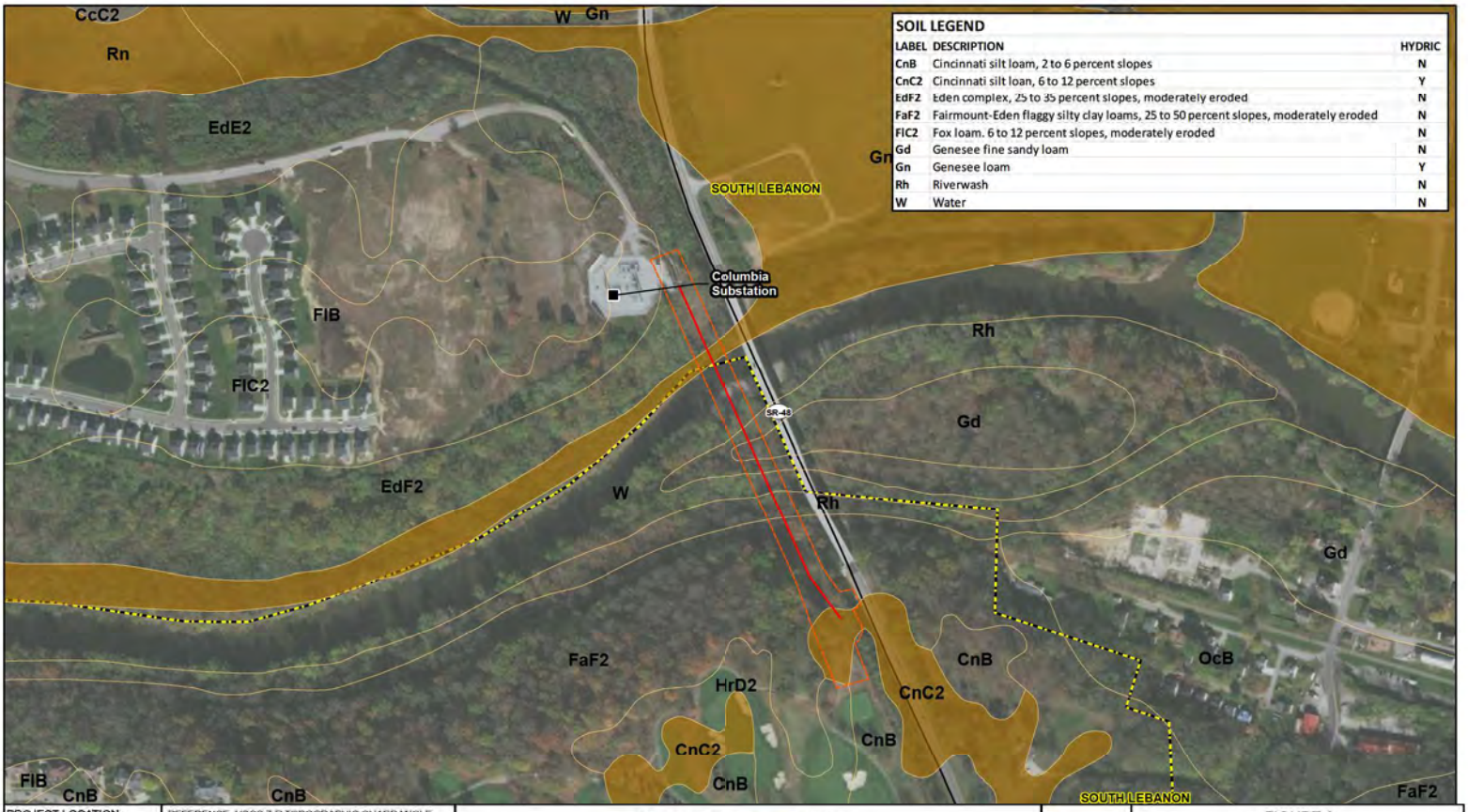
CcC2
Rn
W
Gn
EdE2
SOUTH LEBANON
Columbia Substation
FlB
FlC2
EdF2
SR-48
Rh
Gd
FaF2
HrD2
CnB
CnC2
OcB
SOUTH LEBANON
SOIL LEGEND
LABEL DESCRIPTION HYDRIC
CnB Cincinnati silt loam, 2 to 6 percent slopes N
CnC2 Cincinnati silt loam, 6 to 12 percent slopes Y
EdF2 Eden complex, 25 to 35 percent slopes, moderately eroded N
FaF2 Fairmount-Eden flaggy silty clay loams, 25 to 50 percent slopes, moderately eroded N
FlC2 Fox loam, 6 to 12 percent slopes, moderately eroded N
Gd Genesee fine sandy loam N
Gn Genesee loam Y
Rh Riverwash N
W Water N
PROJECT LOCATION
WARREN COUNTY, OH
REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: SOUTH LEBANON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.
N
0 150 300 600
Feet
Existing Facility
Project Centerline
100ft Corridor
Interstate
State Highway
US Highway
Railroad
Municipal Boundary
Soil Unit
Soil Unit - Hydric
DUKE ENERGY.
Cardno
FIGURE:3
STORMWATER POLLUTION PREVENTION PLAN
5484—138kV COLUMBIA STRUCTURE REPLACEMENT PROJECT
DUKE ENERGY OHIO
SOIL CLASSIFICATIONS
DRAWN BY: COD
DATE: 11/10/2021
CHECKED: CJ
APPROVED: JT
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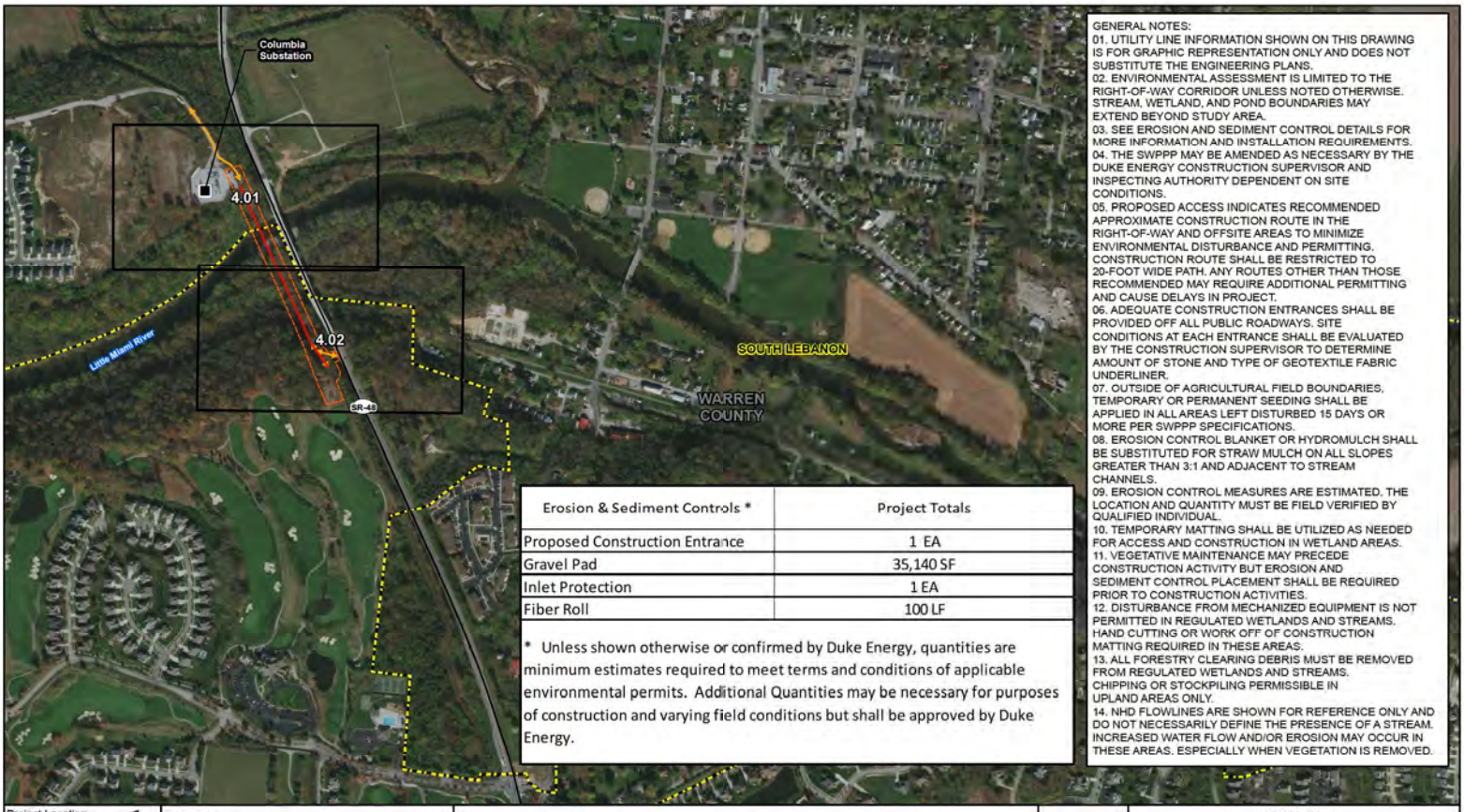

Erosion & Sediment Controls *	Project Totals
Proposed Construction Entrance	1 EA
Gravel Pad	35,140 SF
Inlet Protection	1 EA
Fiber Roll	100 LF

* Unless shown otherwise or confirmed by Duke Energy, quantities are minimum estimates required to meet terms and conditions of applicable environmental permits. Additional Quantities may be necessary for purposes of construction and varying field conditions but shall be approved by Duke Energy.

GENERAL NOTES:
01. UTILITY LINE INFORMATION SHOWN ON THIS DRAWING IS FOR GRAPHIC REPRESENTATION ONLY AND DOES NOT SUBSTITUTE THE ENGINEERING PLANS.
02. ENVIRONMENTAL ASSESSMENT IS LIMITED TO THE RIGHT-OF-WAY CORRIDOR UNLESS NOTED OTHERWISE. STREAM, WETLAND, AND POND BOUNDARIES MAY EXTEND BEYOND STUDY AREA.
03. SEE EROSION AND SEDIMENT CONTROL DETAILS FOR MORE INFORMATION AND INSTALLATION REQUIREMENTS.
04. THE SWPPP MAY BE AMENDED AS NECESSARY BY THE DUKE ENERGY CONSTRUCTION SUPERVISOR AND INSPECTING AUTHORITY DEPENDENT ON SITE CONDITIONS.
05. PROPOSED ACCESS INDICATES RECOMMENDED APPROXIMATE CONSTRUCTION ROUTE IN THE RIGHT-OF-WAY AND OFFSITE AREAS TO MINIMIZE ENVIRONMENTAL DISTURBANCE AND PERMITTING. CONSTRUCTION ROUTE SHALL BE RESTRICTED TO 20-FOOT WIDE PATH. ANY ROUTES OTHER THAN THOSE RECOMMENDED MAY REQUIRE ADDITIONAL PERMITTING AND CAUSE DELAYS IN PROJECT.
06. ADEQUATE CONSTRUCTION ENTRANCES SHALL BE PROVIDED OFF ALL PUBLIC ROADWAYS. SITE CONDITIONS AT EACH ENTRANCE SHALL BE EVALUATED BY THE CONSTRUCTION SUPERVISOR TO DETERMINE AMOUNT OF STONE AND TYPE OF GEOTEXTILE FABRIC UNDERLINER.
07. OUTSIDE OF AGRICULTURAL FIELD BOUNDARIES, TEMPORARY OR PERMANENT SEEDING SHALL BE APPLIED IN ALL AREAS LEFT DISTURBED 15 DAYS OR MORE PER SWPPP SPECIFICATIONS.
08. EROSION CONTROL BLANKET OR HYDROMULCH SHALL BE SUBSTITUTED FOR STRAW MULCH ON ALL SLOPES GREATER THAN 3:1 AND ADJACENT TO STREAM CHANNELS.
09. EROSION CONTROL MEASURES ARE ESTIMATED. THE LOCATION AND QUANTITY MUST BE FIELD VERIFIED BY QUALIFIED INDIVIDUAL.
10. TEMPORARY MATTING SHALL BE UTILIZED AS NEEDED FOR ACCESS AND CONSTRUCTION IN WETLAND AREAS.
11. VEGETATIVE MAINTENANCE MAY PRECEDE CONSTRUCTION ACTIVITY BUT EROSION AND SEDIMENT CONTROL PLACEMENT SHALL BE REQUIRED PRIOR TO CONSTRUCTION ACTIVITIES.
12. DISTURBANCE FROM MECHANIZED EQUIPMENT IS NOT PERMITTED IN REGULATED WETLANDS AND STREAMS. HAND CUTTING OR WORK OFF OF CONSTRUCTION MATTING REQUIRED IN THESE AREAS.
13. ALL FORESTRY CLEARING DEBRIS MUST BE REMOVED FROM REGULATED WETLANDS AND STREAMS. CHIPPING OR STOCKPILING PERMISSIBLE IN UPLAND AREAS ONLY.
14. NHD FLOWLINES ARE SHOWN FOR REFERENCE ONLY AND DO NOT NECESSARILY DEFINE THE PRESENCE OF A STREAM. INCREASED WATER FLOW AND/OR EROSION MAY OCCUR IN THESE AREAS. ESPECIALLY WHEN VEGETATION IS REMOVED.

REFERENCE:
ESRI WORLD IMAGERY. OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

0 275 550 1,100 Feet

N

Sheet Grid
100ft Corridor
Existing Facility
Project Centerline
Potential Access
NHD Flowline
NWI Wetland
100yr Floodplain
Interstate
State Highway
US Highway
Railroad
County Boundary
Municipal Boundary

DUKE ENERGY.

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FIGURE: 4
STORMWATER POLLUTION PREVENTION PLAN
5484—138kV COLUMBIA STRUCTURE REPLACEMENT PROJECT
DUKE ENERGY OHIO
INDEX SHEET

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SHEET INDEX

South Lebanon

401

402

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 50 100 Feet

- Existing Facility
- Existing Structure
- Potential Access
- State Highway
- Project Centerline
- NHD Flowline
- 2' Contour Line
- Little Miami River
- NWI Wetland
- Municipal Boundary
- Gravel Pad
- Parcels
- Study Area

DUKE ENERGY.

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FIGURE: 4.01
STORMWATER POLLUTION PREVENTION PLAN
F5484-138kV COLUMBIA STRUCTURE
REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS/ EROSION CONTROL PLAN

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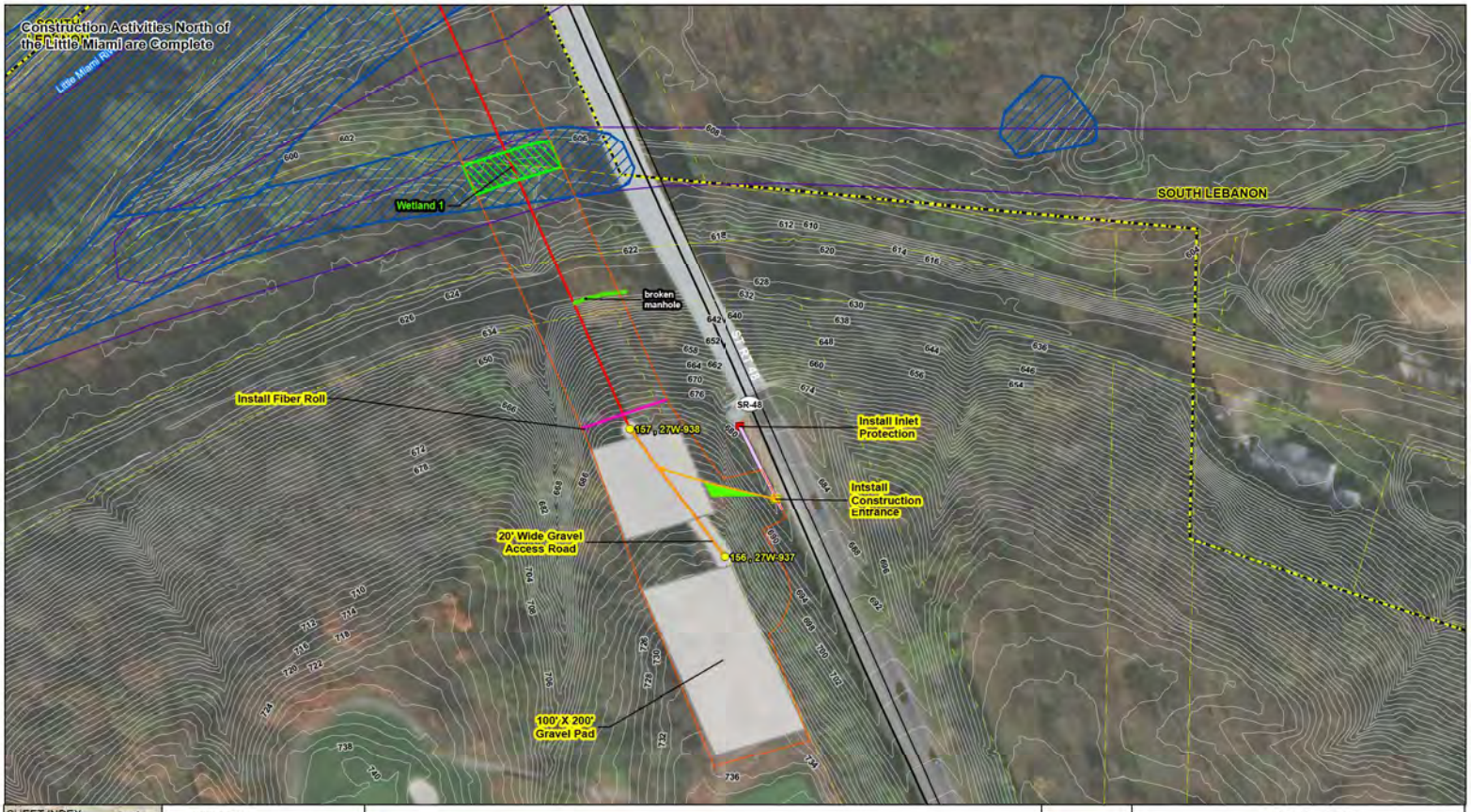

SHEET INDEX

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 50 100 Feet

- Proposed Structure
- Potential Access
- Construction Entrance
- Proposed Tempoary Culvert
- Fiber Roll
- Delineated Wetland
- Stormwater Inlet
- Ditch
- Potential Tree Clearing
- State Highway
- Project Centerline
- NHD Flowline
- 2' Contour Line
- NWI Wetland
- Municipal Boundary
- Gravel Pad
- Parcels
- Study Area

DUKE ENERGY.

Cardno

FIGURE: 4.02
STORMWATER POLLUTION PREVENTION PLAN
F5484-138kV COLUMBIA STRUCTURE REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS/ EROSION CONTROL PLAN

DRAWN BY: COD DATE: 10/19/2021
CHECKED: CJ APPROVED: JT

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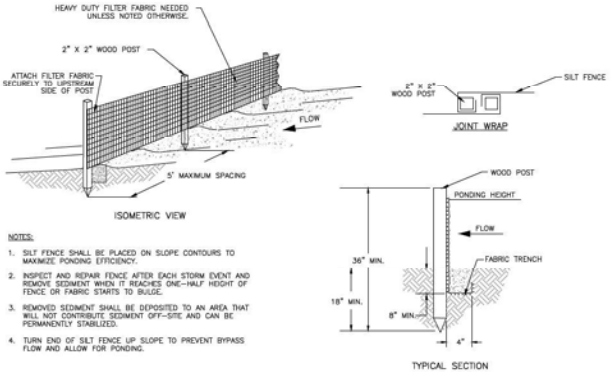
Appendix B

Storm Water Pollution Prevention Plan Typical Details

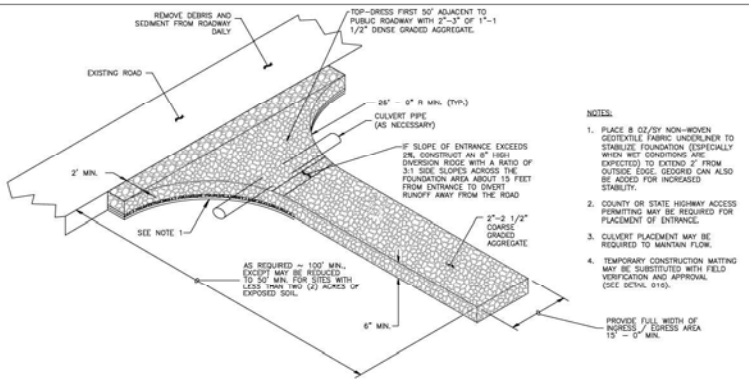


NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN IT REACHES ONE-HALF HEIGHT OF FENCE OR FABRIC STARTS TO BULGE.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
4. TURN END OF SILT FENCE UP SLOPE TO PREVENT BYPASS FLOW AND ALLOW FOR PONDING.

SILT FENCE

001

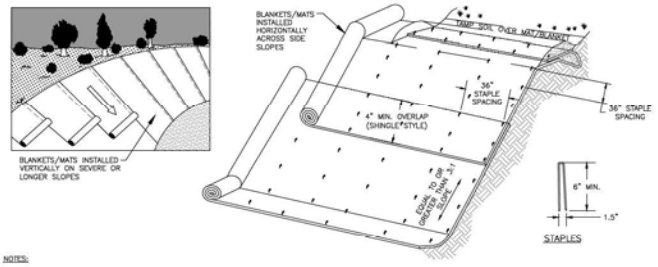


NOTES:

1. PLACE 8 OZ/SY NON-WOVEN GEOTEXTILE FABRIC UNDERLINER TO STABILIZE FOUNDATION (ESPECIALLY WHEN WET CONDITIONS ARE EXPECTED) TO EXTEND 2' FROM OUTSIDE EDGE. GEOGRID CAN ALSO BE ADDED FOR INCREASED STABILITY.
2. COUNTY OR STATE HIGHWAY ACCESS PERMITTING MAY BE REQUIRED FOR PLACEMENT OF ENTRANCE.
3. CULVERT PLACEMENT MAY BE REQUIRED TO MAINTAIN FLOW.
4. TEMPORARY CONSTRUCTION MATTING MAY BE SUBSTITUTED WITH FIELD VERIFICATION AND APPROVAL (SEE DETAIL 016).

TEMPORARY CONSTRUCTION ENTRANCE

002



NOTES:

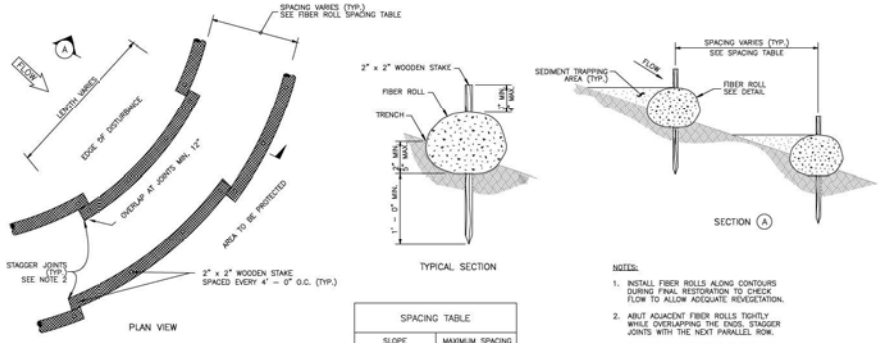
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. USE ON SIDE SLOPES EXCEEDING A 3:1 SLOPE AND DISTURBED STREAMBANKS.
5. THE FOLLOWING BLANKET TYPES SHALL BE UTILIZED:
   A. LONG-TERM BIODEGRADABLE DOUBLE-NET COCONUT BLANKET ON STREAMBANKS.
   B. SHORT-TERM BIODEGRADABLE DOUBLE-NET STRAW BLANKET ON 3:1 SLOPES OR GREATER
   C. SHORT-TERM BIODEGRADABLE SINGLE-NET STRAW ON LESSER SLOPES, FLAT FLOODPLAIN, AND WORKSPACE AREAS.
6. FOR STREAMBANK STABILIZATION:
   A. TUCK/UNDERLAP BASE OF BLANKET TO PREVENT HIGH WATER FROM REMOVING BLANKET AND SEED.
   B. STAPLE SPACING MAY NEED TO BE DECREASED.
   C. PREPARE SUBGRADE PRIOR TO INSTALLING BLANKET BY REMOVING DISPLACED ROCKS AND WOODY DEBRIS.

EROSION CONTROL BLANKET

003

INTENTIONALLY LEFT BLANK

004



SPACING TABLE	
SLOPE	MAXIMUM SPACING
1:1	10' - 0"
2:1	20' - 0"
3:1	30' - 0"
4:1	40' - 0"

* INSTALL FIRST ROW AT TOP OF BANK. INSTALL LAST ROW 10' FROM TOE OF SLOPE.

NOTES:

1. INSTALL FIBER ROLLS ALONG CONTOURS DURING FINAL RESTORATION TO CHECK FLOW TO ALLOW ADEQUATE REVEGETATION.
2. ABUT ADJACENT FIBER ROLLS TIGHTLY WHILE OVERLAPPING THE ENDS. STAGGER JOINTS WITH THE NEXT PARALLEL ROW.
3. PILOT HOLES MAY BE DRIVEN THROUGH THE FIBER ROLLS AND INTO THE SOIL WHEN SOIL CONDITIONS REQUIRE.
4. FIBER ROLLS SHALL BE INSPECTED REGULARLY, AND IMMEDIATELY AFTER A RAINFALL PRODUCES RUNOFF, TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.
5. A SINGLE ROW MAY BE INSTALLED ON FLAT SLOPES.

FIBER ROLL

005

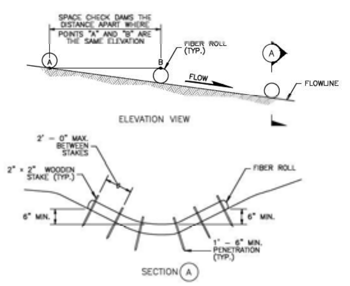
REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY	DATE
CAM/MRW	12/18/2015
DRAWN BY	JOB NO.
KSTH	- -
CHECKED BY	APPROVED
MRW	CAM

DUKE ENERGY.

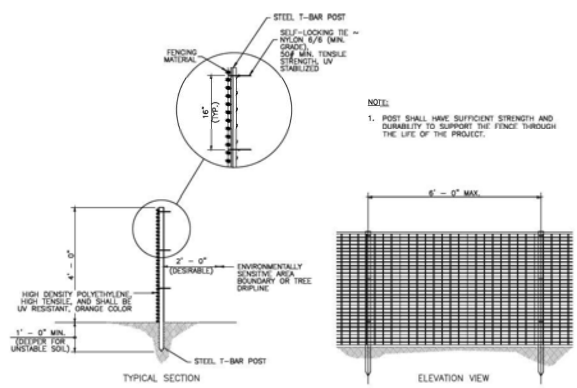
STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

SCALE	
N.T.S.	
DRAWING NO.	
SHEET	OF
1	5



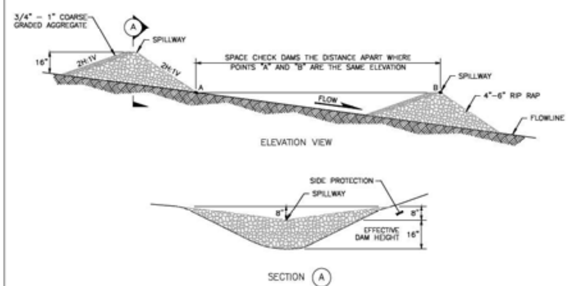
NOTE:
1. STRAW WATTLE SHALL NOT BE USED IN A CHECK DAM APPLICATION.

FIBER ROLL CHECK DAM 006

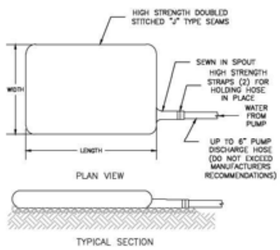


NOTE:
1. POST SHALL HAVE SUFFICIENT STRENGTH AND DURABILITY TO SUPPORT THE FENCE THROUGH THE LIFE OF THE PROJECT.

CONSTRUCTION BARRIER FENCING 007



ROCK CHECK DAM 008



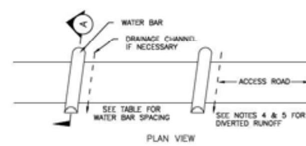
NOTES:

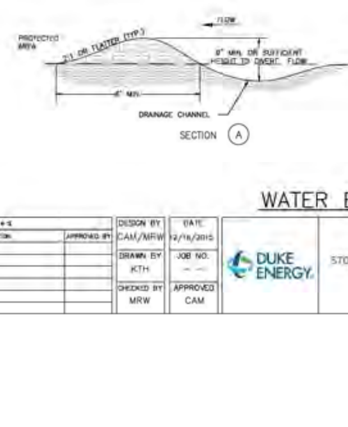
1. THE NECK OF THE FILTER BAG SHALL BE TIGHTLY STRAPPED (MINIMUM TWO STRAPS) TO THE DISCHARGE HOSE.
2. THE FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR PASS WATER AT A REASONABLE RATE.
3. FLOW RATES VARY DEPENDING ON THE SIZE OF THE DEWATERING DEVICE, AMOUNT OF SEDIMENT DISCHARGED INTO THE DEWATERING DEVICE, THE TYPE OF GROUND, ROCK, OR OTHER SUBSTANCE UNDER THE BAG AND THE DEGREE OF THE SLOPE ON WHICH THE BAG LIES. THE FILTER BAG SHOULD BE SIZED TO ACCOMMODATE THE ANTICIPATED FLOW RATES FROM THE TYPE OF PUMP USED. TYPICALLY FILTER BAGS CAN HANDLE FLOW RATES OF UP TO 1000 GALLONS PER MINUTE, BUT IN ALL CASES FOLLOW THE MANUFACTURERS RECOMMENDATIONS FOR FLOW RATES.
4. USE OF EXCESSIVE FLOW RATES OR OVERFILLING THE DEWATERING DEVICE WITH SEDIMENT WILL CAUSE RUPTURES OF THE BAG OR FAILURE OF THE HOSE ATTACHMENT STRAPS.
5. THE FILTER BAG SHALL BE REMOVED AND DISPOSED OF OFFSITE..
6. EACH STANDARD DEWATERING DEVICE SHALL HAVE A FILL SPOUT LARGE ENOUGH TO ACCOMMODATE THE DISCHARGE HOSE. USE TWO STAINLESS STEEL STRAPS TO SECURE THE HOSE AND PREVENT PUMPED WATER FROM ESCAPING WITHOUT BEING FILTERED.
7. THE DEWATERING DEVICE SHALL BE A NONWOVEN BAG, WHICH IS SEWN WITH A DOUBLE NEEDLE STITCHING USING A HIGH STRENGTH THREAD.
8. THE DEWATERING DEVICE SEAMS SHALL HAVE AN AVERAGE WIDE WITH STRENGTH PER ASTM D 4884 OF 100 LB/IN.
9. THE GEOTEXTILE FABRIC SHALL BE A NONWOVEN FABRIC WITH THE FOLLOWING PROPERTIES:

PROPERTIES	TEST METHOD	ENGLISH	METRIC
GRAB TENSILE	ASTM D - 4632	250 LBS.	113 KG
PUNCTURE	ASTM D - 4833	165 LBS.	75 KG
FLOW RATE	ASTM D - 4491	70 GAL/MIN/SQ FT	25 LITERS/MIN/SQ METER
PERMITIVITY	ASTM D - 4491	1.3 SEC. - 1	1.3 SEC. - 1
MULLEN BURST	ASTM D - 3786	550 LBS./SQ INCH	3.79 Mpa
UV RESISTANT	ASTM D - 4355	70%	70%
AOS % RETAINED	ASTM D - 4751	100%	100%

*ALL PROPERTIES ARE MINIMUM AVERAGE ROLL VALUE

DEWATERING BAG 009





NOTES:

1. SIDE SLOPES OF WATER BAR SHALL BE CONSTRUCTED SUFFICIENTLY FLAT TO ACCOMMODATE THE EXPECTED TRAFFIC.
2. THE SPACING BETWEEN WATER BARS SHALL BE AS NOTED (SEE SPACING TABLE):

WATER BAR SPACING TABLE

ROAD GRADE (%)	DISTANCE (FT.)
1	400
2	250
5	135
10	80
15	60
20	45

3. THE FIELD LOCATION SHALL BE ADJUSTED AS NEEDED TO PROVIDE A STABLIZED SAFE OUTLET.
4. DRAINAGE CHANNELS SHALL BE DIRECTED ONTO STABLE VEGETATIVE AREA OR A SEDIMENT TRAP OR A BASIN IF CONTRIBUTING AREA IS NOT STABLE.
5. DRAINAGE CHANNELS SHALL BE CONSTRUCTED WITH ≤ 2% WITH POSITIVE OUTLET TO STABLE AREA.
6. DIVERSIONS/WATER BARS SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT DURING CONSTRUCTION.
7. THE WATER BARS SHALL BE ANGLED SLIGHTLY DOWNSLOPE ACROSS THE CENTERLINE OF THE TRAVEL LANE.

WATER BAR 010

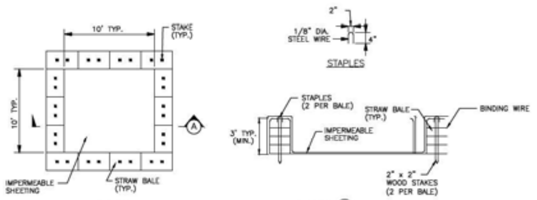
REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY	DATE
CAM/MRW	12/18/2015
DRAWN BY	JOB NO.
KTH	-- --
CHECKED BY	APPROVED
MRW	CAM

DUKE ENERGY

STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

SCALE	
N.T.S.	
DRAWING NO.	
SHEET	OF
2	5



PLAN VIEW

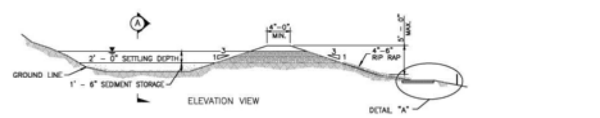
SECTION (A)

NOTES:

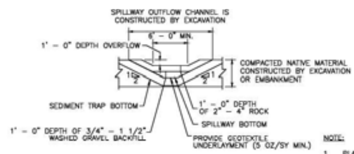
1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.
6. BALES CAN BE TWO STACKED OR PARTIALLY EXCAVATED TO REACH 3FT DEPTH (MIN.).
7. PREFABRICATED UNITS MAY BE USED WITH APPROVAL.

CONCRETE WASHOUT

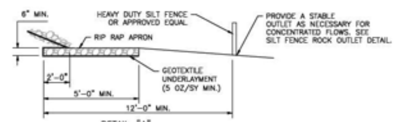
011



ELEVATION VIEW



SECTION (A)



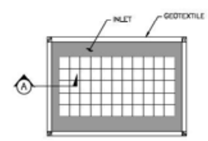
DETAIL "A"

NOTE:

1. PLACE GEOTEXTILE UNDER THE SPILLWAY SIDE SLOPES, SPILLWAY BOTTOM, AND RIP RAP APRON. PROVIDE A CONTINUOUS LAYER BETWEEN THE GRAVEL/ROCK AND THE NATIVE EARTHEN MATERIAL.

TEMPORARY SEDIMENT TRAP

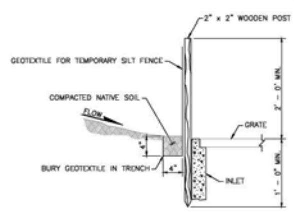
012



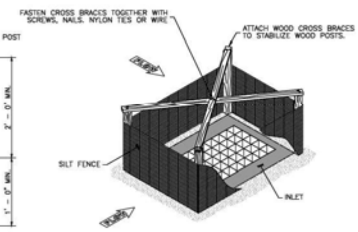
PLAN VIEW
(CROSS BRACES NOT SHOWN)

NOTES:

1. PREFABRICATED UNITS MAY BE USED WITH APPROVAL.
2. STRUCTURE SHALL BE CONSTRUCTED SUCH THAT GEOTEXTILE MATERIAL SHALL BE FASTENED TO POSTS CREATING A SEAM-LESS JOINT.
3. ENSURE THAT PONDING HEIGHT OF WATER DOES NOT CAUSE FLOODING ON ADJACENT ROADWAYS OR PRIVATE PROPERTY.



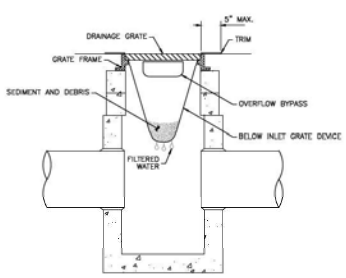
SECTION (A)



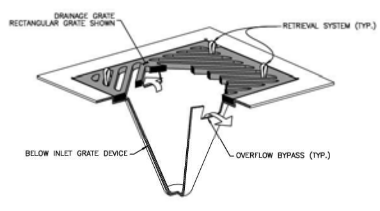
ISOMETRIC VIEW
(ENTIRE FENCE NOT SHOWN FOR ILLUSTRATIVE PURPOSES)

NON-PAVED AREA INLET PROTECTION

014



TYPICAL SECTION



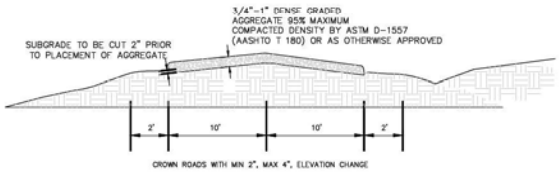
ISOMETRIC VIEW

PAVED AREA INLET PROTECTION

013

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

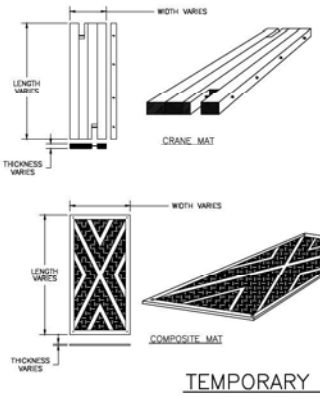
DESIGN BY	DATE			SCALE
CAM/MRW	12/18/2015	DUKE ENERGY	STORM WATER POLLUTION PREVENTION PLAN TYPICAL DETAILS	N.T.S.
DRAWN BY	JOB NO.			DRAWING NO.
KTH	--			
CHECKED BY	APPROVED			SHEET 3 OF 5
MRW	CAM			

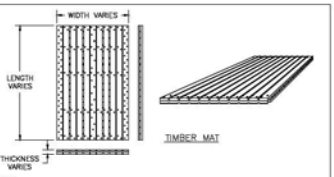


NOTE:

1. VARYING FIELD CONDITIONS MAY WARRANT ALTERNATE AGGREGATE GRADATIONS.

TEMPORARY ACCESS DRIVE 015

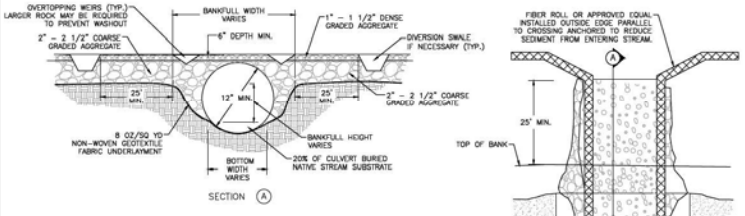


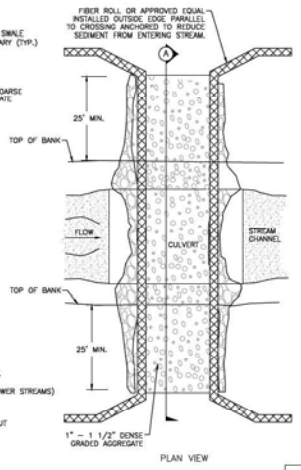


NOTES:

1. TEMPORARY CONSTRUCTION MATTING SHALL BE USED IN ALL SATURATED OR UNSTABLE WETLAND AREAS IF CROSSING IS NECESSARY.
2. FILL SHALL NOT BE PLACED OFF OF MATTING WHEN WORKING IN WETLAND AND STREAM AREAS.
3. SECTIONS TO BE ASSEMBLED TO REQUIRED SIZE SPECIFIC TO EQUIPMENT NEEDS.
4. NO GAPS SHALL BE PRESENT IN THE MATTING TO REDUCE "PUMPING" AND SEDIMENT FROM ENTERING STREAMS AND WETLANDS.
5. MATTING SHALL BE ANCHORED IN ALL NOTED FLOODWAYS AND ADJACENT TO OTHER STREAMS DETERMINED TO BE PRONE TO FLOODING.
6. MAINTAIN STREAM FLOWS AND UTILIZE EROSION CONTROLS IF MATTING IS TO BE USED FOR A STREAM CROSSING APPLICATION.
7. PLACE NON-WOVEN GEOTEXTILE UNDERLAYMENT (7 OZ/SY) BENEATH MATTING IN SATURATED OR DELINEATED WETLAND AREAS TO PREVENT PUMPING OF SATURATED SOILS.
8. INSTALL FIBER ROLL ALONG ENTIRE PERIMETER OF MATTING WITHIN DELINEATED WETLAND AREAS EXCEPT FOR THE INGRESS AND EGRESS LOCATIONS.

TEMPORARY CONSTRUCTION MATTING 016

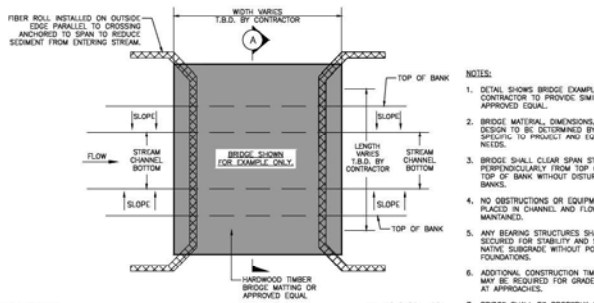




NOTES:

1. THE SLOPE OF THE BED WITHIN THE ENCAPSULATION MATCHES THE SLOPE OF THE BED BOTH IMMEDIATELY UPSTREAM AND DOWNSTREAM.
2. NO SOIL SHALL BE USED FOR CONSTRUCTION OF TEMPORARY CROSSING OR PLACED WITHIN STREAM CHANNEL.
3. CULVERTED CROSSINGS MAY REQUIRE ADDITIONAL STATE AND/OR FEDERAL PERMITTING. NOTIFY ENVIRONMENTAL COORDINATOR PRIOR TO IMPLEMENTATION OR CONSIDERATION TO MAKING PERMANENT.
4. CULVERT DIAMETER SHALL BE AT LEAST 3X DEPTH OF NORMAL FLOW. (2X DEPTH IS ALLOWED IN DEEP, SLOWER STREAMS)
5. IF MULTIPLE CULVERTS ARE NEEDED TO CROSS STREAM LEAVE 12" SPACE BETWEEN CULVERTS.
6. FOR FINAL RESTORATION, REMOVE CULVERT AND ALL STONE FROM STREAM AS PRACTICALLY POSSIBLE WITHOUT ADDITIONAL DAMAGE.

TEMPORARY CULVERT STREAM CROSSING 017



NOTES:

1. DETAIL SHOWS BRIDGE EXAMPLE ONLY. CONTRACTOR TO PROVIDE SIMILAR OR APPROVED EQUAL.
2. BRIDGE MATERIAL, DIMENSIONS, AND LOAD DESIGN TO BE DETERMINED BY CONTRACTOR SPECIFIC TO PROJECT AND EQUIPMENT NEEDS.
3. BRIDGE SHALL CLEAR SPAN STREAM PERPENDICULARLY FROM TOP OF BANK TO TOP OF BANK WITHOUT DISTURBING STREAM BANKS.
4. NO OBSTRUCTIONS OR EQUIPMENT SHALL BE PLACED IN CHANNEL AND FLOW MUST BE MAINTAINED.
5. ANY BEARING STRUCTURES SHALL BE SECURED FOR STABILITY AND SUPPORTED ON NATIVE SUBGRADE WITHOUT POURED FOUNDATIONS.
6. ADDITIONAL CONSTRUCTION TIMBER MATTING MAY BE REQUIRED FOR GRADE COMPENSATION AT APPROACHES.
7. BRIDGE SHALL BE PROPERLY ANCHORED TO PREVENT DISPLACEMENT BY STREAM FLOODING.

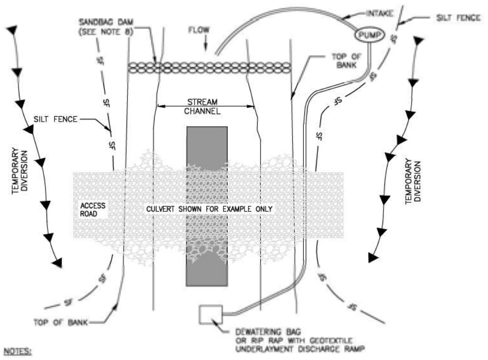
TEMPORARY CLEAR SPAN BRIDGE CROSSING 018

REVISIONS				DESIGN BY	DATE
NO.	DATE	DESCRIPTION	APPROVED BY	CAM/MRW	12/16/2015
				DRAWN BY	JOB NO.
				KTH	— —
				CHECKED BY	APPROVED
				MRW	CAM

DUKE ENERGY.

STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

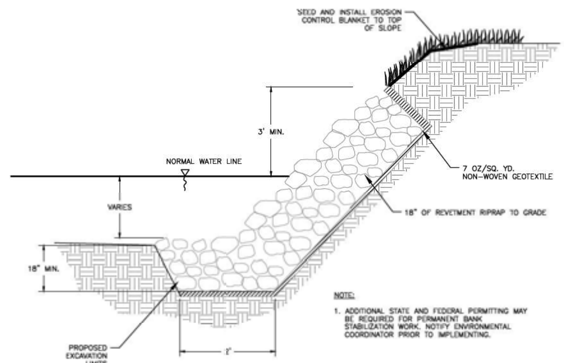
SCALE: N.T.S.
DRAWING NO.
SHEET 4 OF 5



NOTES:

1. INSTALL SILT FENCE, PUMP, DEWATERING BAG, AND SANDBAG DAM BEFORE TRENCHING STREAM.
2. PUMP MUST BE OF SUFFICIENT CAPACITY TO CONVEY NORMAL AND/OR EXISTING STREAM FLOW OVER SANDBAG DAM. A BACK-UP PUMP OF EQUAL CAPACITY MUST BE AVAILABLE ON-SITE DURING CONSTRUCTION OF THE CROSSING.
3. ANY SOIL PILES TO BE PLACED A MINIMUM OF 10 FEET FROM TOP OF BANK.
4. INSTALL DIVERSIONS AT APPROACHES TO STREAM CROSSING AND SILT FENCE (AS INDICATED ON PLAN SHEETS).
5. MAINTAIN SURFACE OF TEMPORARY EQUIPMENT CROSSING TO PREVENT SOIL DISCHARGES TO STREAM.
6. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 6 INCHES ABOVE ORIGINAL GRADE.
7. RESTORE AREA TO APPROXIMATE ORIGINAL CONTOURS.
8. ADJUST HEIGHT AS NEEDED BASED ON FLOW CONDITIONS AND PUMP INTAKE.

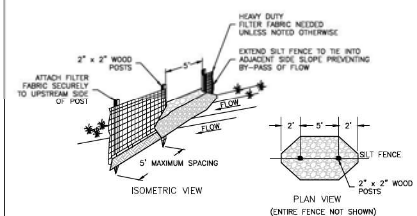
TEMPORARY STREAM CROSSING PUMP DIVERSION 019



NOTE:

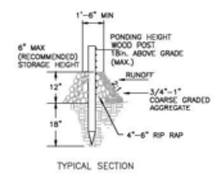
1. ADDITIONAL STATE AND FEDERAL PERMITTING MAY BE REQUIRED FOR PERMANENT BANK STABILIZATION WORK. NOTIFY ENVIRONMENTAL COORDINATOR PRIOR TO IMPLEMENTING.

HARD ARMAMENT BANK STABILIZATION 020



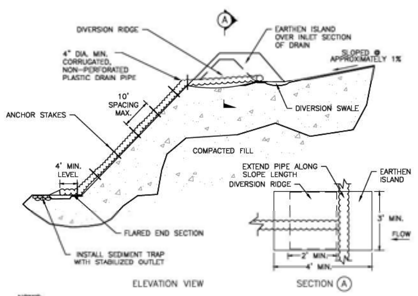
NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN IT REACHES ONE-HALF HEIGHT OF FENCE OR FABRIC STARTS TO BULGE.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
4. TURN END OF SILT FENCE UP SLOPE TO PREVENT BYPASS FLOW AND ALLOW FOR PONDING.
5. SEE TYPICAL SILT FENCE DETAIL FOR ADDITIONAL INFORMATION.



TYPICAL SECTION

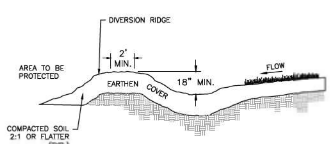
SILT FENCE ROCK OUTLET 021



NOTES:

1. THE SLOPE DRAIN SHALL BE CONSTRUCTED/LENGTHENED WITH THE CONSTRUCTION OF THE FILL SLOPE. AS A RESULT, INLET ELEVATIONS WILL VARY ACCORDING TO GRADE ELEVATIONS AT THE TIME OF CONSTRUCTION.
2. INSPECT SLOPE DRAIN AND SUPPORTING DIVERSIONS AFTER EVERY RAINFALL EVENT AND MAKE NECESSARY REPAIRS FOR PROPER OPERATION OF THE SYSTEM.
3. UPON PROJECT COMPLETION, REMOVE THE SLOPE DRAIN AND PROPERLY STABILIZE ALL DISTURBED AREAS.

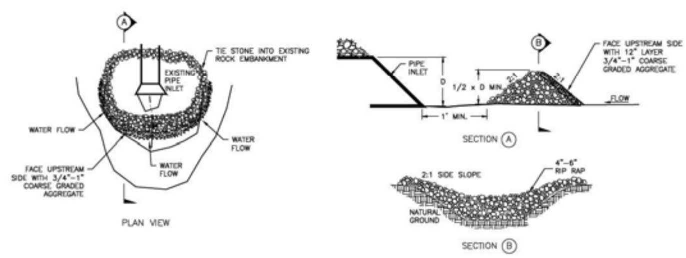
TEMPORARY SLOPE DRAIN 022



NOTE:

1. SWALE SHALL BE CONSTRUCTED WITH POSITIVE SLOPE ≤ 1% AND OUTLET TO A STABLE VEGETATED AREA OR SEDIMENT TRAP OR BASIN.

DIVERSION SWALE 023



ROCK PIPE INLET PROTECTION 024

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY	DATE			
CAM/MRW	12/18/2015	DUKE ENERGY	STORM WATER POLLUTION PREVENTION PLAN TYPICAL DETAILS	SCALE N.T.S.
DRAWN BY KTH	JOB NO. --			DRAWING NO.
CHECKED BY MRW	APPROVED CAM			SHEET 5 OF 5

Appendix C

Storm Water Evaluation Form for Construction

Storm Water Evaluation Form for Construction

(Complete at least once per week and after each storm event of 0.5 inches or more.)

DUKE ENERGY

Project Name: F5484 - 138Kv Columbia Structure Replacement Project	**Evaluation Date:**
Construction Supervisor:	**Evaluated By:**
Reason for Evaluation: ☐ **Routine** ☐ **Post Rain Event** ☐ **Non-Routine**	
Location and Phase of Construction:	**Conditions at time of evaluation?** ☐ Dry ☐ Wet ☐ Frozen

OBSERVATIONS	INSTALLED	CORRECTIVE ACTION NEEDED
Fiber Rolls/Filter Socks	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Gravel Pads	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Construction Entrances	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Gravel Access	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Seeding/Mulching	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		

Is sediment or other pollutants leaving the site?	☐ Yes ☐ No	If yes, corrective action is needed.
Is sediment being tracked onto public roadways?	☐ Yes ☐ No	If yes, corrective action is needed.
Have any areas been left disturbed for 21 days or more?	☐ Yes ☐ No	If yes, corrective action is needed.

See Reverse Side for More Information and Additional Space for Comments

Storm Water Evaluation Form for Construction

(Complete at least once per week and after each storm event of 0.5 inches or more.)

General Information:

- This storm water evaluation program is intended to comply with self-monitoring requirements and the project specific Storm Water Pollution Prevention Plan (SWPPP).
- A Storm Water Evaluation is required by a trained individual at a minimum of one (1) time per week and by the end of the next business day following each measurable storm event (total rainfall accumulation equal to one-half (0.5) inches or greater.
- Observed erosion and sediment control deficiencies shall be corrected within 7 days. Modifications to erosion and sediment control structures and/or locations shall be recorded in the SWPPP Amendment Log within 10 days.
- Areas that are scheduled to be inactive for 21 days or more must be temporarily or permanently stabilized with appropriate measures within 7 days of last disturbance.
- Erosion and sediment control structures shall be maintained until a vegetative cover of 70% or greater density in all disturbed, non-agricultural areas is achieved. At which time, all temporary erosion and sediment control structures shall be removed and Notice of Termination (NOT) will be filed with Ohio Environmental Protection Agency (OEPA).
- Completed Evaluation Forms to be submitted to Jessica Callaway at 315 Main Street, Cincinnati, OH 45202 (513)417-9100, Jessica.Callaway@Duke-Energy.com
- Upon request, Evaluation Forms must be provided to inspecting authorities within 48 hours and must be retained for 3 years after project completion.

Additional Comments/Actions (attach photographs and additional pages as necessary):

Appendix D

SWPPP Amendment Log

SWPPP Amendment Log

Project: F5484 - 138Kv Columbia Structure Replacement Project

Date	Description/Location	Initials

Attachment E – 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

October 21, 2021

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

Re: 21-0895; Duke Energy Columbus Substation Transmission Line Connection

Project: The proposed project involves reconductoring approximately 0.23 miles of existing transmission line corridor Right-of-Way (ROW) and remove and replace existing structures HL-157 and HL-156.

Location: The proposed project is located in South Lebanon and Hamilton Townships, Warren 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:

Elktoe (*Alasmidonta marginata*), SC
Snuffbox (*Epioblasma triquetra*), E, FE
Fawnsfoot (*Truncilla donaciformis*), T
Western creek chubsucker (*Erimyzon claviformis*), SC
Mountain madtom (*Noturus eleutherus*), T
Little Miami State Scenic River
Little Miami Scenic State Park – ODNR Division of Parks & Watercraft
Deerfield Gorge Scenic River Lands – ODNR Scenic Rivers Program
City of Lebanon, River Bend Land Co., TEJ Holdings, Taft Broadcast, & Tournament Players Club Scenic Rivers Easements – ODNR Scenic Rivers Program

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.

Statuscs arc dcfincd as: E = statc cndangcrcd; T = statc thrcatcncd; P = statc potcntially 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, and the tricolored bat (*Perimyotis subflavus*), 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 following listed mussel species.
Federally Endangered
clubshell (*Pleurobema clava*)
rayed bean (*Villosa fabalis*)
snuffbox (*Epioblasma triquetra*)

State Endangered
washboard (*Megalonaias* nervosa)

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

Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the following listed fish species.
State Endangered
bigeye shiner (*Notropis boops*)
goldeye (*Hiodon alosoides*)
mountain brook lamprey (*Ichthyomyzon greeleyi*)
northern brook lamprey *(Ichthyomyzon fossor*)
northern madtom (*Noturus stigmosus*)

State Threatened
American eel (*Anguilla rostrata*)
mountain madtom (*Noturus eleutherus*)
paddlefish (*Polyodon spathula*)

Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered and federally threatened snake species. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as drier upland habitat. 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 spotted turtle (*Clemmys guttata*), a state threatened species. This species prefers fens, bogs and marshes, but is also known to inhabit wet prairies, meadows, pond edges, wet woods, and the shallow sluggish waters of small streams and ditches. 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 Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet meadows and other wetlands. 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 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 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 loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. The loggerhead shrike nests in hedgerows, thickets and fencerows. They hunt over hayfields, pastures, and other grasslands. If thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 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 northern harrier (*Circus hudsonis*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 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 sandhill crane (*Grus canadensis*), a state threatened species. Sandhill cranes are primarily a wetland-dependent species. On their wintering grounds, they will utilize agricultural fields; however, they roost in shallow, standing water or moist bottomlands. On breeding grounds they require a rather large tract of wet meadow, shallow marsh, or bog for nesting. If grassland, prairie, or wetland habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 through August 31. If this habitat will not be impacted, this project is not likely to have an impact on this species.

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

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

The proposed Duke Energy F5484 kv 138 Columbia Substation expansion project falls within 1,000 of the Little Miami State and National Scenic River in Warren County, Ohio. It crosses the Little Miami State and National Scenic River and protected conservation land owned and managed by the ODNR Scenic Rivers Program. Scenic Rivers staff request that Cardno and Duke Energy schedule a time to meet on site to discuss the project in greater detail, including any potential real estate and mitigation needs, before the project moves forward. Please contact the ODNR regional manager, Aaron Rourke at Aaron.Rourke@dnr.ohio.gov or 614/230-8534.

Parks and Watercraft: The Division of Parks and Watercraft has the following comments.

The proposed Duke Energy F5484 kv 138 Columbia Substation expansion project will cross the Little Miami State Park multi-use trail and may have an impact on its users. The ODNR Division of Parks and Watercraft staff appreciate continued coordination on this project and discussion on how to minimize impact to the park (trail) users. Please work on project commitments, if

applicable, and the project schedule with the Little Miami State Park manager, Melissa Clark, as the project progresses. Ms. Clark can be reached at 937/408-8554 or Melissa.Clark@dnr.ohio.gov.

Geological Survey: The Division of Geological Survey has the following comments.

Physiographic Region
The proposed route is in Union and Hamilton Townships, Warren County. This area is in the Southern Ohio Loamy Till Plain physiographic region. This region is characterized by both end and recessional moraines. The surface consists of a high-lime loamy till and boulder belts are common in this area. Ground moraines are present and are relatively flat, but steep valleys are cut through the terrain by large streams. These valleys are filled with outwash and alternate between broad floodplains and narrows. Buried valleys are common. Carbonate rocks and shale underly the glacial features (Ohio Department of Natural Resources, Division of Geological Survey, 1998).

Surficial/Glacial Geology
The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. The northern portion of the route is covered by the flat to gently undulating loamy till of the Wisconsinan ground moraine. There is a thin layer of loess on the loamy till. The central portion of the route is more recent alluvium and alluvial terraces. The southern portion of the route is on a slope of limestone and shale. Shale rich lithologies on slopes with exposed bedrock may be prone to landslides (Pavey et al, 1999). Glacial drift throughout most of the study area is up to 23 feet thick. Drift is thinnest in the south (Powers and Swinford, 2004).

Bedrock Geology
The uppermost bedrock unit in the project area is the Grant Lake Formation. This unit is Ordovician-age and consists of bluish gray interbedded shale and limestone. The Grant Lake Formation is found on the upper portions of the valley wall. Underlying the Grant Lake Formation is the Ordovician-age Miamitown Shale-Fairview Formation Undivided. This unit is characterized by bluish gray silty shale and limestone with irregular bedding. The Miamitown Shale-Fairview Formation Undivided is found on the lower portions of the valley wall. Underlying the Miamitown Shale-Fairview Formation Undivided is the Ordovician-age Kope Formation. This unit is characterized by gray to bluish gray interbedded limestone and shale. The Kope Formation is found beneath the valley floor. Bedrock may be exposed in outcrops and roadcuts within the boundary of the project area (Slucher et al, 2006).

Oil, Gas and Mining
There are no oil and gas wells within one mile of the proposed route. The nearest drilled well is a plugged well located 3.5 miles to the west of the project area (Ohio Department of Natural Resources, Division of Oil and Gas, Ohio Oil and Gas Wells Locator).

ODNR does not have record of any mining operations within the project area. the nearest mine to the project area is the active Carl E. Oeder and Sons Sand and Gravel Quarry located 0.25 miles to the north of the route (Ohio Department of Natural Resources, Division of Mineral Resources, Mines of Ohio).

Seismic Activity
Several small earthquakes have historically been recorded in southwest Ohio. The three events closest to the site are listed in the chart below (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Earthquake Epicenters):

Date	Magnitude	Distance to Site Boundary	County	Township
October 8, 1936	3.3	10.5 miles	Butler	West Chester
November 20, 1834	3.5	16.4 miles	Montgomery	Miami
September, 1859	2.5	17.9 miles	Clermont	Batavia

Geologic Hazards

Outcrops of shale are susceptible landslides. Although there are no documented landslides along the preferred route there are areas where glacial till is thin or absent and outcrops of shale may be present. Landslides can occur where one or more of the following conditions exist: steep slopes, jointed rocks, fine-grained and permeable rock or sediment, presence of clay or shale units and large amounts of water (Hansen, 1995 and USGS Landslide Inventory). Portions of the preferred route cross areas where the bedrock is buried by thin to absent glacial till.

Karst

Karst features usually form in areas that are covered by thin or no glacial drift and the bedrock is limestone or dolomite. The nearest verified sinkhole is located 6.8 miles to the south. Although there are no sinkholes along the project route the underlying limestone formations are susceptible to the formation of sinkholes (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Karst).

Soils

According to the USDA Web Soil Survey, the project area consists primarily of soils derived from residuum, loess, and alluvium. Fairmount and Eden are the most common soil series found within the boundaries of the project area. The Fairmount and Eden soils are silty clay loams derived from residuum and account for over 46% of the route. Silt loam soil in the Cincinnati series accounts for 12% of the route and is derived from loess. The remaining soils are sandy loam, alluvium soils (USDA Web Soil Survey).

There is a low to high risk of shrink-swell potential in these soils. The Fairmount and Eden soils have high shrink swell potential. Slope remains relatively flat, with slope exceeding an 18% grade. Slope grades are highest along valley walls (Garner et al, 1973 and USDA Web Soil Survey).

Groundwater

Groundwater resources vary throughout the project area. Wells developed in bedrock are likely to yield up to five gallons per minute. Groundwater yields within bedrock are limited. The interbedded shales and thin limestone layers limit water to the upper few feet of fractured and weathered strata (Walker, 1986 and Ohio Department of Natural Resources, Division of Water, Bedrock Aquifer Map, 2000). Wells developed in glacial material are likely to yield up to 500 gallons per minute. The main unconsolidated aquifer along the route is the Little Miami River Buried Valley Aquifer, located in the center of the valley. Yields increase as valley deposits thicken towards the Little Miami River. Uplands have thin glacial deposits and limited groundwater availability (Ohio Department of Natural Resources, Division of Water, Statewide Unconsolidated Aquifer Map, 2000).

ODNR has record of 47 water wells drilled within one mile of the project area. These wells range in depth from 12 to 142 feet deep, with an average depth of 70 feet. The most common aquifer listed is sand and gravel. There are six water wells completed in the interbedded limestone and shale bedrock. The remaining 41 wells are completed in sand and gravel aquifers. Fifteen of the wells are monitor wells including the five wells under 30 feet deep. Two domestic wells in sand and gravel report sustainable yields of 20 and 40 gallons per minute. One high capacity municipal

well reports a sustainable yield of 1170 gallons per minute (Ohio Department of Natural Resources, Division of Geological Survey, Ohio Water Wells).

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)

Cori Jansing

From: Ohio, FW3 <ohio@fws.gov>
Sent: Thursday, October 14, 2021 9:32 AM
To: Cori Jansing
Cc: Dustin.giesler@duke-energy.com
Subject: Duke Energy - Columbia Substation Transmission Line Connection Project, Warren County, Ohio

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-0040

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.

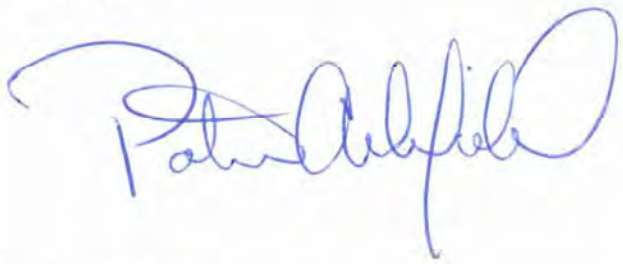
Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing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

Cori Jansing

From: Melissa.Clark@dnr.ohio.gov
Sent: Tuesday, November 9, 2021 1:27 PM
To: Cori Jansing
Subject: Re: Duke Energy Columbia Substation Transmission Line Connection Project_LMR Crossing

No additional comments. Thank you.

Sent from my iPhone

> On Nov 8, 2021, at 12:42 PM, Cori Jansing <cori.jansing@cardno.com> wrote:
>
> Hi Melissa,
>
> I just wanted to circle back and see if you have had time to review the attached documents regarding the aerial crossing of the Little Miami River and Little Miami State Park multi-use trail associated with the Columbia Substation Connection project. Please free to contact me at your earliest convenience if you have any questions/concerns regarding the project.
>
> Best,
>
> Cori
> Cori Jansing
> SENIOR PROJECT MANAGER | REGULATORY SPECIALIST, PWS CARDNO Office +1
> 513 489 2402 Direct +1 513 233 7034 Mobile +1 513 833 6392 Address
> 11121 Canal Rd. Suite 200, Sharonville, Ohio 45241 Email
> cori.jansing@cardno.com<mailto:cori.jansing@cardno.com> Web
>
www.cardno.com<https://urldefense.com/v3/__https://gcc02.safelinks.protection.outlook.com/?url=http*3A*2F*2Fwww.cardno.com*2F&data=04*7C01*7CMelissa.Clark*40dnr.ohio.gov*7C2241b99220e84999f5cc08d9a2df0686*7C50f8fcc494d84f0784eb36ed57c7c8a2*7C0*7C0*7C637719901512712999*7CUnknown*7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0*3D*7C3000&sdata=FAnfKKr6TJZlPmMrcvZ4JNabCvcJ6rlHGq*2Bz0XtJJjw*3D&reserved=0__;JSUlJSUlJSUlJSUlJSUlJSUl!!PwxmruxY!KAVBQ2MGe3HbvWAirXzqCdDlr1yXXEnyXhPBEVgpdnSsiTPVA91eOVoMJLd4sGzwHg$ > This email and its attachments may contain confidential and/or privileged information for the sole use of the intended recipient(s). All electronically supplied data must be checked against an applicable hardcopy version which shall be the only document which Cardno warrants accuracy. If you are not the intended recipient, any use, distribution or copying of the information contained in this email and its attachments is strictly prohibited. If you have received this email in error, please email the sender by replying to this message and immediately delete and destroy any copies of this email and any attachments. The views or opinions expressed are the author's own and may not reflect the views or opinions of Cardno.
>
>
> From: Cori Jansing
> Sent: Friday, October 22, 2021 11:00 AM
> To: 'Melissa.Clark@dnr.ohio.gov' <Melissa.Clark@dnr.ohio.gov>
> Cc: 'Giesler, Dustin' <Dustin.Giesler@duke-energy.com>
> Subject: Duke Energy Columbia Substation Transmission Line Connection
> Project_LMR Crossing

>
> Ms. Clark,
>
> I am working on behalf of Duke Energy on their proposed Columbia Substation Transmission Line Connection Project (Project). The proposed Project is a component of the previously approved 2018 F5484 – 138 kV Columbia Substation Project (PUCO Case No. 16-1759-EL-BNR). Due to project delays the original project was unable to be constructed in its entirety prior to the expiration of the OPSB approval. The Columbia Substation Transmission Line Connection Project proposes to complete the original project scope by reconductorring approximately 1,240 feet (0.23 mile) of existing 138 kV transmission line from Structure 156 to Structure 158 in addition to the removal and replacement of two existing overhead structures. Specifically, the proposed Project involves the removal and replacement of one wooden single pole structure (HL-156) with a direct embed steel monopole and the removal of one existing wooden H-frame structure (HL-157) replaced with an engineered steel 3-pole structure. Structure 157 is located approximately 580 LF south of the OHWM of the Little Miami River. Also the reconductorred transmission line will maintain the same aerial clearance as the existing line. The Project is located entirely within an existing Duke Energy Ohio right-of-way (ROW) and easement.
>
> I have attached the Project mapping, ODNR Coordination, and NWP approval for your review. Please feel free to let me know if you have any questions or concerns regarding the Project.
>
> Best,
>
> Cori
> Cori Jansing
> SENIOR PROJECT CONSULTANT | REGULATORY SPECIALIST, PWS CARDNO
> [cid:image001.jpg@01D7C734.05543330]
> Office +1 513 489 2402 Direct +1 513 233 7034 Mobile +1 513 833 6392
> Address 11121 Canal Rd. Suite 200, Sharonville, Ohio 45241 Email
> cori.jansing@cardno.com<mailto:cori.jansing@cardno.com> Web
> www.cardno.com<https://urldefense.com/v3/__https://gcc02.safelinks.pro
> tection.outlook.com/?url=http*3A*2F*2Fwww.cardno.com*2F&data=04*7C01*7
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> CAUTION: This is an external email and may not be safe. If the email looks suspicious, please do not click links or open attachments and forward the email to csc@ohio.gov <mailto:csc@ohio.gov> or click the Phish Alert Button if available.
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> <DE_ColumbiaSub Connection_SWPPPP_Combined_reduced.pdf>

Cori Jansing

From: Cori Jansing
Sent: Tuesday, November 9, 2021 1:04 PM
To: 'Aaron.Rourke@dnr.ohio.gov'
Cc: Giesler, Dustin
Subject: RE: Duke Energy Columbia Substation Transmission Line Connection Project_LMR Crossing

Aaron,

Construction is scheduled to begin in January 2022 with vegetation clearing pending approval of the OPSB Construction Notice which will be filed on 11/11. The Project is anticipated to be completed and the line in service by May 2022. I am available to meet onsite anytime this week or next week with the exception of after 4pm on 11/11 or next Friday 11/19. Feel free to let me know what works best for you.

Best,

Cori

Cori Jansing
SENIOR PROJECT MANAGER | REGULATORY SPECIALIST, PWS
CARDNO

Office +1 513 489 2402 Direct +1 513 233 7034 Mobile +1 513 833 6392
Address 11121 Canal Rd. Suite 200, Sharonville, Ohio 45241
Email cori.jansing@cardno.com Web www.cardno.com

From: Aaron.Rourke@dnr.ohio.gov <Aaron.Rourke@dnr.ohio.gov>
Sent: Monday, November 8, 2021 5:18 PM
To: Cori Jansing <cori.jansing@cardno.com>
Subject: RE: Duke Energy Columbia Substation Transmission Line Connection Project_LMR Crossing

Hi Cori,

Thanks for forwarding again. I have reviewed the docs and have just a couple of questions: what's the timeline for the project, and when might you be able to meet at the site?

Thanks –

Aaron

From: Cori Jansing <cori.jansing@cardno.com>
Sent: Monday, November 8, 2021 12:36 PM
To: Rourke, Aaron <Aaron.Rourke@dnr.ohio.gov>
Subject: FW: Duke Energy Columbia Substation Transmission Line Connection Project_LMR Crossing

Hi Aaron,

I just wanted to circle back and see if you have had time to review the attached documents regarding the aerial crossing of the Little Miami River associated with the Columbia Substation Connection project. Please free to contact me at your earliest convenience if you have any questions/concerns regarding the project.

Best,

Cori

Cori Jansing
SENIOR PROJECT MANAGER | REGULATORY SPECIALIST, PWS
CARDNO

Office +1 513 489 2402 Direct +1 513 233 7034 Mobile +1 513 833 6392
Address 11121 Canal Rd. Suite 200, Sharonville, Ohio 45241
Email cori.jansing@cardno.com Web www.cardno.com

From: Cori Jansing
Sent: Friday, October 22, 2021 11:14 AM
To: 'aaron.rourke@dnr.ohio.gov' <aaron.rourke@dnr.ohio.gov>
Subject: Duke Energy Columbia Substation Transmission Line Connection Project_LMR Crossing

Hi Aaron,

Thanks for taking my call yesterday regarding Duke Energy's Columbia Substation Transmission Line Connection Project (Project). As we discussed, the proposed Project is a component of the previously approved 2018 F5484 – 138 kV Columbia Substation Project (PUCO Case No. 16-1759-EL-BNR). Due to project delays the original project was unable to be constructed in its entirety prior to the expiration of the OPSB approval. The Columbia Substation Transmission Line Connection Project proposes to complete the original project scope by reconductorring approximately 1,240 feet (0.23 mile) of existing 138 kV transmission line from Structure 156 to Structure 158 in addition to the removal and replacement of two existing overhead structures. Specifically, the proposed Project involves the removal and replacement of one wooden single pole structure (HL-156) with a direct embed steel monopole and the removal of one existing wooden H-frame structure (HL-157) replaced with an engineered steel 3-pole structure. Structure 157 is located approximately 580 LF south of the OHWM of the Little Miami River. Also the reconductorred transmission line will maintain the same aerial clearance as the existing line. The Project is located entirely within an existing Duke Energy Ohio right-of-way (ROW) and easement.

I have attached the Project mapping, ODNR coordination, and the previously approved Riparian Management Plan for your review. Please feel free to let me know if you have any questions or concerns regarding the Project.

Best,

Cori

Cori Jansing
SENIOR PROJECT CONSULTANT | REGULATORY SPECIALIST, PWS
CARDNO

Office +1 513 489 2402 Direct +1 513 233 7034 Mobile +1 513 833 6392
Address 11121 Canal Rd. Suite 200, Sharonville, Ohio 45241
Email cori.jansing@cardno.com Web www.cardno.com

CONNECT WITH CARDNO

Attachment F – Riparian Management Plan

January 8, 2019

Cardno

11121 Canal Road
Cincinnati, Ohio 45241
USA

Phone 513 489 2402
Fax 513 489 2404

www.cardno.com

Ms. Barcy F. McNeal, Secretary
Ohio Power Siting Board
Docketing Division
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3716

Re: OPSB Case No. 18-1571-EL-BNR / Duke Energy Ohio Construction Notice for the F5484 – 138 kV Columbia Substation

Dear Ms. McNeal,

Duke Energy Ohio, Inc. (Duke Energy Ohio), has prepared this Riparian Management Plan for work associated with the F5484 – 138 kV Columbia Substation line improvement project that crosses the Little Miami River in South Lebanon, Ohio. Concerns about impacts to the Little Miami River and adjacent vegetation have necessitated the development of this plan, which includes a sediment and erosion control plan, specifications for seeding, mulching, and planting, invasive species control within the ROW, and confirmation that the trees on the banks of the river will remain undisturbed to the extent practicable.

No impacts to the riparian area within approximately 180 feet of the right bank (north side) and approximately 450 feet of the left bank (south side) are anticipated. The area adjacent to the river will remain undisturbed with the potential exceptions of future maintenance for invasive species control and/or minor tree trimming as necessary to maintain the safety of the overhead lines.

Silt fence will be installed within the ROW immediately down slope of areas to be impacted. This will be properly framed and entrenched during installation. No storm water inlets, ditches, or other drainage ways are present within the work areas. Disturbed areas within the ROW will be seeded with a native mix of forbs and grasses containing a cover crop of annual rye and oats to provide both long term stabilization as well as short term greening. The seed mix is located in Table 1 below. All seeded areas will be mulched with a straw mulch unless slopes exceed a 3:1 ratio in which case an erosion control fabric will be used. Erosion control fabric will be NAG S150BN or equivalent and staked down per manufacturer's guidelines.

Table 1: Native Forbs and Grasses Seed Mix

Botanical Name	Common Name	PLS Ounces/Acre
Permanent Grasses:		
Andropogon gerardii	Big Bluestem	12.00
Bouteloua curtipendula	Side-Oats Grama	16.00
Carex spp.	Prairie Sedge Species	3.00
Elymus canadensis	Canada Wild Rye	24.00
Panicum virgatum	Switch Grass	2.50
Schizachyrium scoparium	Little Bluestem	32.00
Sorghastrum nutans	Indian Grass	12.00
	Total	**101.50**
Temporary Cover:		
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	**460.00**
Forbs:		
Amorpha canescens	Lead Plant	0.50
Asclepias syriaca	Common Milkweed	2.00
Asclepias tuberosa	Butterfly Weed	1.50
Chamaecrista fasciculata	Partridge Pea	10.00
Coreopsis lanceolata	Sand Coreopsis	6.00
Coreopsis tripteris	Tall Coreopsis	1.50
Dalea purpurea	Purple Prairie Clover	2.00
Desmanthus illinoensis	Illinois Sensitive Plant	2.00
Echinacea purpurea	Broad-Leaved Purple Coneflower	8.00
Eryngium yuccifolium	Rattlesnake Master	1.00
Heliopsis helianthoides	False Sunflower	0.50
Lespedeza capitata	Round-Headed Bush Clover	1.00
Liatris aspera	Rough Blazing Star	1.00
Lupinus perennis v. occidentalis	Wild Lupine	2.00
Monarda fistulosa	Wild Bergamot	1.00
Oligoneuron rigidum	Stiff Goldenrod	1.00
Drymocallis arguta	Prairie Cinquefoil	1.00
Ratibida pinnata	Yellow Coneflower	4.00
Rudbeckia hirta	Black-Eyed Susan	6.00
Silphium terebinthinaceum	Prairie Dock	1.00
Solidago speciosa	Showy Goldenrod	0.50
Symphyotrichum laeve	Smooth Blue Aster	1.00
Symphyotrichum novae-angliae	New England Aster	0.50
Vernonia gigantea	Smooth Tall Ironweed	2.00
	Total	**57.00**

Any areas located inside the riparian area and outside the existing ROW where clearing may occur will be both seeded with the native forbs and grasses mix as well as replanted with native trees and shrubs with a sample species list below in Table 2.

Table 2: Native Tree and Shrub Examples for Areas Outside the ROW (if necessary)

Botanical Name	Common Name	Tree/Shrub
Acer rubrum	Red Maple	Tree
Hamamelis virginiana	Witch Hazel	Shrub
Liriodendron tulipifera	Tulip Tree	Tree
Quercus alba	White Oak	Tree
Viburnum lentago	Nannyberry	Shrub
Viburnum prunifolium	Blackhaw	Shrub

Within the maintained ROW invasive vegetation including honeysuckle, autumn olive, and tree-of-heaven will be controlled as encountered. Control will be achieved via the use of herbicide application with the chemicals and application methods listed below in Table 3. Other invasive species encountered in the maintained ROW will be controlled using methods as selected by a trained vegetation management specialist.

Table 3: Herbicides and Application Methods per Invasive Species

Invasive Species Target	Herbicide	Application Method
Honeysuckle species	Glyphosate (2% solution with non-ionic surfactant)	Foliar application
Autumn Olive	Triclopyr (20% solution in methylated seed oil)	Basal bark application to the bottom 18" of the plant
Tree-of-Heaven	Imazapyr (undiluted)	Hack-Squirt (injection of herbicide in the trunk)

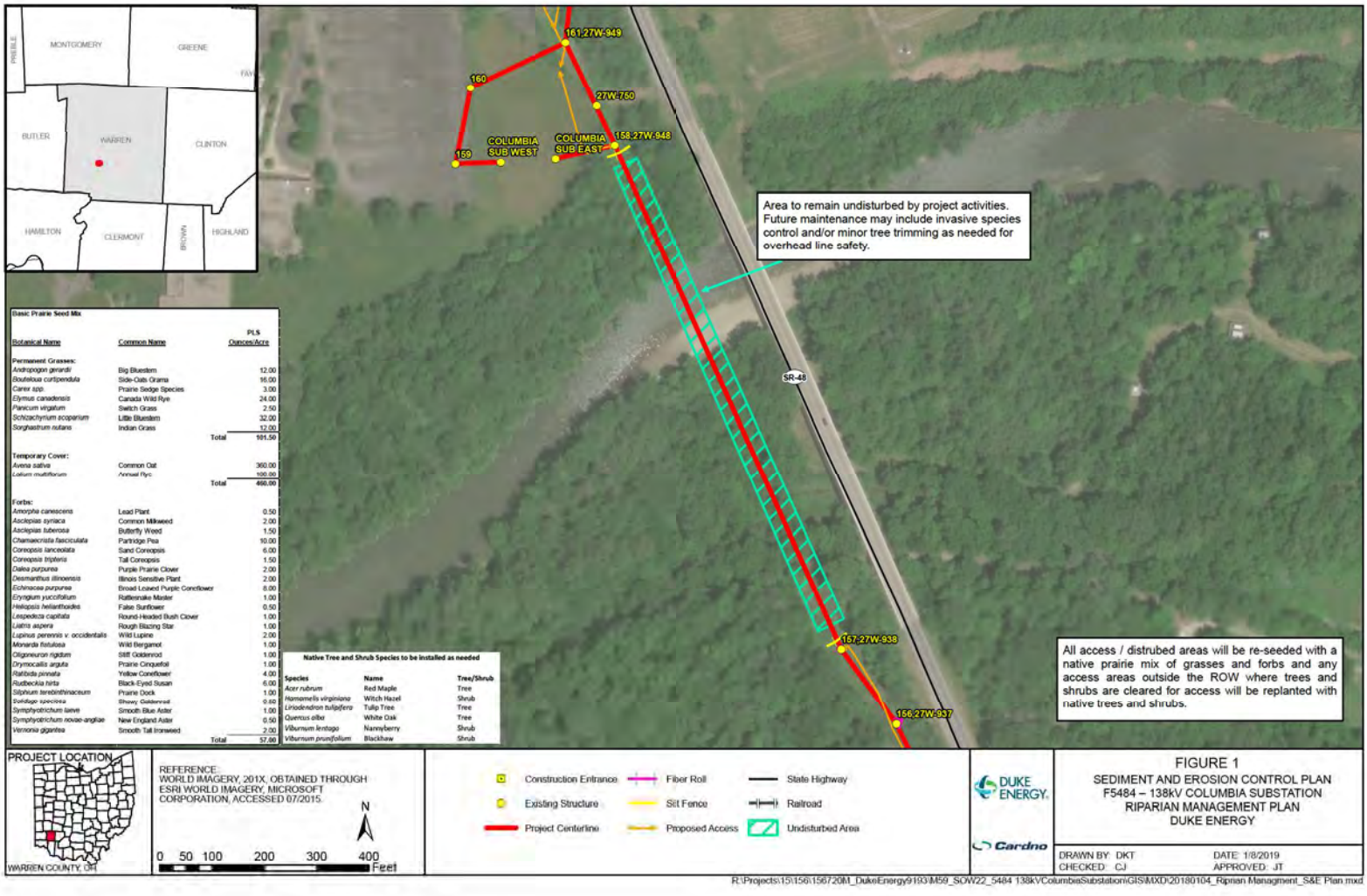
With no anticipated impacts to the vegetation immediately adjacent to the riverbanks, the trees in these areas are expected remain undisturbed. An exception may be made if it is found that trimming is needed to ensure safe operation of the overhead power lines. In this case, selective limbing of trees, but no removal of tree roots, may be necessary. This will be kept as minimal as possible to reduce any impacts to the vegetation adjacent to the river.

Enclosed please find Figure 1 with details of the location of the silt fence to be installed as well as the area that will not be impacted by the work associated with this project. If you need any further information about the project details and plans to minimize any impacts to this state and national scenic river please contact me at your convenience.

Sincerely,

Cori Jansing
Regulatory Specialist, PWS
for Cardno
Mobile: 513-833-6392
Email: cori.jansing@cardno.com

Enclosure
PN: J156720M59



Basic Prairie Seed Mix

Botanical Name	Common Name	PLS Ounces/Acre
Permanent Grasses:		
Andropogon gerardi	Big Bluestem	12.00
Bouteloua curtipendula	Side-Oats Grama	16.00
Carex spp.	Prairie Sedge Species	3.00
Elymus canadensis	Canada Wild Rye	24.00
Panicum virgatum	Switch Grass	2.50
Schizachyrium scoparium	Little Bluestem	32.00
Sorghastrum nutans	Indian Grass	12.00
	Total	101.50
Temporary Cover:		
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	460.00
Forbs:		
Amorpha canescens	Lead Plant	0.50
Asclepias syriaca	Common Milkweed	2.00
Asclepias tuberosa	Butterfly Weed	1.50
Chamaecrista fasciculata	Partridge Pea	10.00
Coreopsis lanceolata	Sand Coreopsis	6.00
Coreopsis tripteris	Tall Coreopsis	1.50
Dalea purpurea	Purple Prairie Clover	2.00
Desmanthus illinoensis	Illinois Sensitive Plant	2.00
Echinacea purpurea	Broad Leaved Purple Coneflower	8.00
Eryngium yuccifolium	Rattlesnake Master	1.00
Helopsis helianthoides	False Sunflower	0.50
Lespedeza capitata	Round-Headed Bush Clover	1.00
Liatris aspera	Rough Blazing Star	1.00
Lupinus perennis v. occidentalis	Wild Lupine	2.00
Monarda fistulosa	Wild Bergamot	1.00
Oligoneuron rigidum	Stiff Goldenrod	1.00
Drymocallis arguta	Prairie Cinquefoil	1.00
Ratibida pinnata	Yellow Coneflower	4.00
Rudbeckia hirta	Black-Eyed Susan	6.00
Silphium terebinthinaceum	Prairie Dock	1.00
Solidago speciosa	Showy Goldenrod	0.50
Symphyotrichum laeve	Smooth Blue Aster	1.00
Symphyotrichum novae-angliae	New England Aster	0.50
Vernonia gigantea	Smooth Tall Ironweed	2.00
	Total	57.00

Native Tree and Shrub Species to be installed as needed

Species	Name	Tree/Shrub
Acer rubrum	Red Maple	Tree
Hamamelis virginiana	Witch Hazel	Shrub
Liriodendron tulipifera	Tulip Tree	Tree
Quercus alba	White Oak	Tree
Viburnum lentago	Nannyberry	Shrub
Viburnum prunifolium	Blackhaw	Shrub

PROJECT LOCATION

WARREN COUNTY, OH

REFERENCE:
WORLD IMAGERY, 201X, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, ACCESSED 07/2015.

N

0 50 100 200 300 400 Feet

Construction Entrance
Existing Structure
Project Centerline
Fiber Roll
Silt Fence
Proposed Access
State Highway
Railroad
Undisturbed Area

DUKE ENERGY.

Cardno

FIGURE 1

SEDIMENT AND EROSION CONTROL PLAN
F5484 – 138kV COLUMBIA SUBSTATION
RIPARIAN MANAGEMENT PLAN
DUKE ENERGY

DRAWN BY: DKT DATE: 1/8/2019
CHECKED: CJ APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M59_SOW22_5484 138kVColumbiaSubstation\GIS\MXD\20180104_Riprian Managment_S&E Plan.mxd

Attachment G – Regulated Waters Delineation Report

Regulated Waters Delineation Report

F5484 - 138Kv Columbia Structure Replacement Project

South Lebanon and Hamilton Township, Warren County, Ohio

October 14, 2021

Cardno

Document Information

Prepared for	Duke Energy Ohio
Client Contact	Dustin Geisler (Duke Energy)
Project Name	F5484 - 138Kv Columbia Structure Replacement Project
Project Number	Cardno #J19Y465031
Project Manager	Cori Jansing (Cardno)
Date	October 14, 2021

Prepared for:

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

Prepared by:

Cardno
11121 Canal Road, Cincinnati, Ohio 45241

Table of Contents

Appendices

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, located within the proposed Duke Energy Ohio F5484 - 138Kv Columbia Structure Replacement Project Study Area and potential access points (Study Area) in South Lebanon and Hamilton Township, Warren County, Ohio (Figure 1). The field investigation was originally conducted on July 5, 2018 and features were field verified on September 23, 2021.

The total size of the Study Area was approximately 3.83 acres with an actual Project earth disturbance potential of approximately 1 acre. Specifically, the Study Area transects the Little Miami River (Stream 1), and is situated north of Dwire Road, south of Mason Morrow Milgrove Road (CR 38), and west of State Route 48. The Study Area consisted of three habitat types: maintained right-of-way (ROW), secondary growth forest, and forested wetland. The Study Area is located within the Little Miami River below Turtle Creek to above O'Bannon Creek (except Muddy Creek) (HUC 05090202090020) 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.

Until further notice, the April 21, 2020 WOTUS Rule is in effect in Ohio. Furthermore, this report includes a professional opinion as it relates to the April 21, 2020 WOTUS 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 three wetland features within the Study Area. One Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded (PF01A),One Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded (PFO1C), one Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH).

3.1.2 National Hydrography Dataset

The NHD map of the area (Figure 2) identified one stream feature (Little Miami River) within the Study Area.

3.1.3 Soil Survey

The NRCS Soil Survey identified nine (9) 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 F5484 - 138Kv Columbia Structure Replacement Project Study Area

Symbol	Description	Hydric
CnB	Cincinnati silt loam, 2 to 6 percent slopes	N
CnC2	Cincinnati silt loam, 6 to 12 percent slopes	Y
EdF2	Eden complex, 25 to 35 percent slopes, moderately eroded	N
FaF2	Fairmount-Eden flaggy silty clay loams, 25 to 50 percent slopes, moderately eroded	N
FlC2	Fox loam, 6 to 12 percent slopes, moderately eroded	N
Gd	Genesee fine sandy loam	N
Gn	Genesee loam	Y
Rh	Riverwash	N
W	Water	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 C. The Study Area is located in South Lebanon and Hamilton Township, Warren County, Ohio (Figure 1). Specifically, the Study Area transects the Little Miami River and is situated north of Dwire Road, south of Mason Morrow Milgrove Road (CR 38), and west of State Route 48. The Study Area was approximately 3.83 acres and consisted of three habitat types: maintained right-of-way (ROW) secondary growth forests, and forested wetland. The F5484 - 138Kv Columbia Structure Replacement Project will take place entirely within Duke Energy Ohio's existing ROW and easements.

4.2.1 Wetland and Stream Descriptions

The Little Miami River (0.43 acres within the Study Area)

Little Miami River is a listed Section 7 National Wild and Scenic River. An Ohio EPA study of the Lower Little Miami River in 2007 found that at river mile 32.9 (St Rt. 48, within 200 meters of the Survey Area) was classified as Exceptional Warm Water Habitat, with an ICI score of 54 and an IBI score of 52 (OEPA, 2009). The Little Miami River is a mapped perennial Traditional Navigable Water (TNW) and should be considered a jurisdictional "Waters of the U.S.".

Wetland 1 (0.08-acre within the Study Area)

Wetland 1 was a palustrine forested wetland (PFO) located along the Little Miami River. This wetland appeared to be hydraulically connected to the Little Miami River, a TNW. Wetland 1 should be considered a federally jurisdictional "Waters of the U.S.". The ORAM score for Wetland 1 was 54, categorizing the wetland as a Category 2, or moderate quality, wetland. A complete ORAM field data sheet is located in Appendix B.

Data Point 1 (DP01) - Wetland Data Point

Dominant vegetation in the vicinity of Data Point 1 included reed canary grass *(Phalaris arundinacea*, FACW), and Eurasian-buttercup (*Ficaria verna*, FAC). In addition, non-dominant vegetation observed included spotted touch-me-not (*Impatiens capensis*, FACW), Frank's sedge

(*Carex frankii*, OBL), and eastern poison ivy (*Toxicodendron radicans*, FAC). The plants at this data point qualified as hydrophytic vegetation. The soil from 0-16" had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 10%, and a texture of Sandy Loam. The soil at the data point was mapped as Riverwash, and met the Depleted Matrix (F3), and Redox Depressions (F8) hydric soil criteria. Primary indicators of hydrology included Surface Water (A1), Water Marks (B1), Sediment Deposits (B2), and secondary indicators of hydrology observed included Geomorphic Position (D2), and the FAC-Neutral Test (D5). This data point qualified as a wetland.

Data Point 2 (DP02) - Upland Data Point

Dominant vegetation in the vicinity of DP2 included American sycamore *(Platanus occidentalis*, FACW) in multiple strata, eastern cottonwood (*Populus deltoides*, FAC), black willow (*Salix nigra*, OBL), reed canary grass (*Phalaris arundinacea*, FACW), Canadian goldenrod (*Solidago canadensis*, FACU), and river-bank grape (*Vitis riparia*, FACW). In addition, non-dominant vegetation observed included spotted touch-me-not (*Impatiens capensis*, FACW), eastern poison ivy (*Toxicodendron radicans*, FAC), tall goldenrod (*Solidago altissima*, FACU), and stinging nettle (*Urtica dioica*, FACW). The plants at this data point qualified as hydrophytic vegetation. The soil from 0-16" had a matrix soil color of 10YR 4/3 with concentrations in the matrix at 10%, and a texture of Sandy Loam. The soil at the data point was mapped as Riverwash, and did not meet any hydric soil criteria. Only the secondary indicator the FAC-Neutral Test (D5) was observed. This data point did not meet wetland criteria.

Endangered, Threatened and Rare Species

The potential for listed species known to occur within Warren 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 U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources (ODNR) Division of Wildlife occurred as it related to the Natural Heritage Database search results for the Study Area (Appendix D).

Tables summarizing the results of ETR species as they relate to the habitat observed within the Study Area are included with this report. Correspondence with the ODNR DOW and the USFWS regarding RTE located within a ½-mile of the Study Area were sent April 6, 2021. The ODNR-DOW data request receipt and USFWS data request letter are located in Appendix D.

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.

The secondary growth forest vegetation assemblage was located along the Little Miami River and bordering the existing ROW. Dominant canopy species in this habitat consist of green ash (*Fraxinus pennsylvanica),* bur oak (*Quercus macrocarpa*), and black walnut (*Juglans nigra*). Less

dominant species in this habitat included black locust, silver maple (*Acer saccharinum),* shagbark hickory (*Carya ovata*), tulip poplar (*Liriodendron tulipifera*), shagbark hickory (*Carya ovata*), bitternut hickory (*Carya cordiformis*), and tree of heaven (*Ailanthus altissima*). Understory vegetation was dominated by honeysuckle (*Lonicera maackii*), multiflora rose (*Rosa multiflora*) and saplings of canopy species. Average diameter at breast height (DBH) for these canopy species was approximately eight (8) to twelve (12) inches with a maximum of approximately 32 inches. One shagbark hickory will be felled in order to widen the existing access route to the site. Although a formal study was not part of this scope, moderate to good quality potential bat habitat was identified within the Study Area, specifically along the Little Miami River riparian corridor.

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 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 have been developed for projects that meet specific criteria and are deemed to have minimal impact on the aquatic environment. There are currently 52 Nationwide Permits for qualifying activities with 31 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 not otherwise regulated by the USACE.

The OEPA issues Section 401 WQC in conjunction with the USACE' Section 404 permits. A Section 401 Water Quality Certification 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. 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, 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 F5484 - 138Kv Columbia Structure Replacement Project Study Area on July 5, 20178 and September 23, 2021. Table 6-1 summarizes the potentially regulated waters delineated within the Study Area.

Table 6-1 Features Identified within the F5484 - 138Kv Columbia Structure Replacement Project Study Area

Feature Name	NWI Identified	Feature Class	Regulatory Status[1,2]	ORAM Score	Acreage (AC)
Wetland 1	Yes	PFO	Jurisdictional	54	0.08
Little Miami River	Yes	Perennial	Jurisdictional	-	0.43
TOTALS		Wetland	PFO	JD	0.08
		Stream	Perennial	JD	0.43

[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

Several sources of information were consulted to further define the potential habitat of listed species that occur within the county of the Study Area. The table presented in Appendix D contains the list of ETR species known to occur within Warren County and their potential to occur within the Study Area based on their habitat requirements and field observations. There was no running buffalo clover habitat found within the Study Area.

6.1.2 Indiana Bat and Northern Long-eared Bat Roost Habitat

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. Moderate to good quality potential bat habitat was identified within the F5484 - 138Kv Columbia Structure Replacement Project Study Area.

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 letter based on the field observations

was submitted to the USFWS for concurrence on September 30, 2021. The USFWS response letter is located in Appendix D.

6.2 Conclusion

A permit must be obtained from the USACE and the OEPA prior to any filling, dredging, or mechanical land clearing that occurs within the boundaries of any "Waters of the U.S." or 'Waters of the State'.

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 U.S. Army Corps of Engineers has final discretionary authority over all jurisdictional determinations of 'Waters of the U.S.' including wetlands under Section 404 of the CWA in this region. It is therefore, recommended that a copy of this report be furnished to the Huntington District of the U.S. Army Corps of Engineers to confirm the results of our findings.

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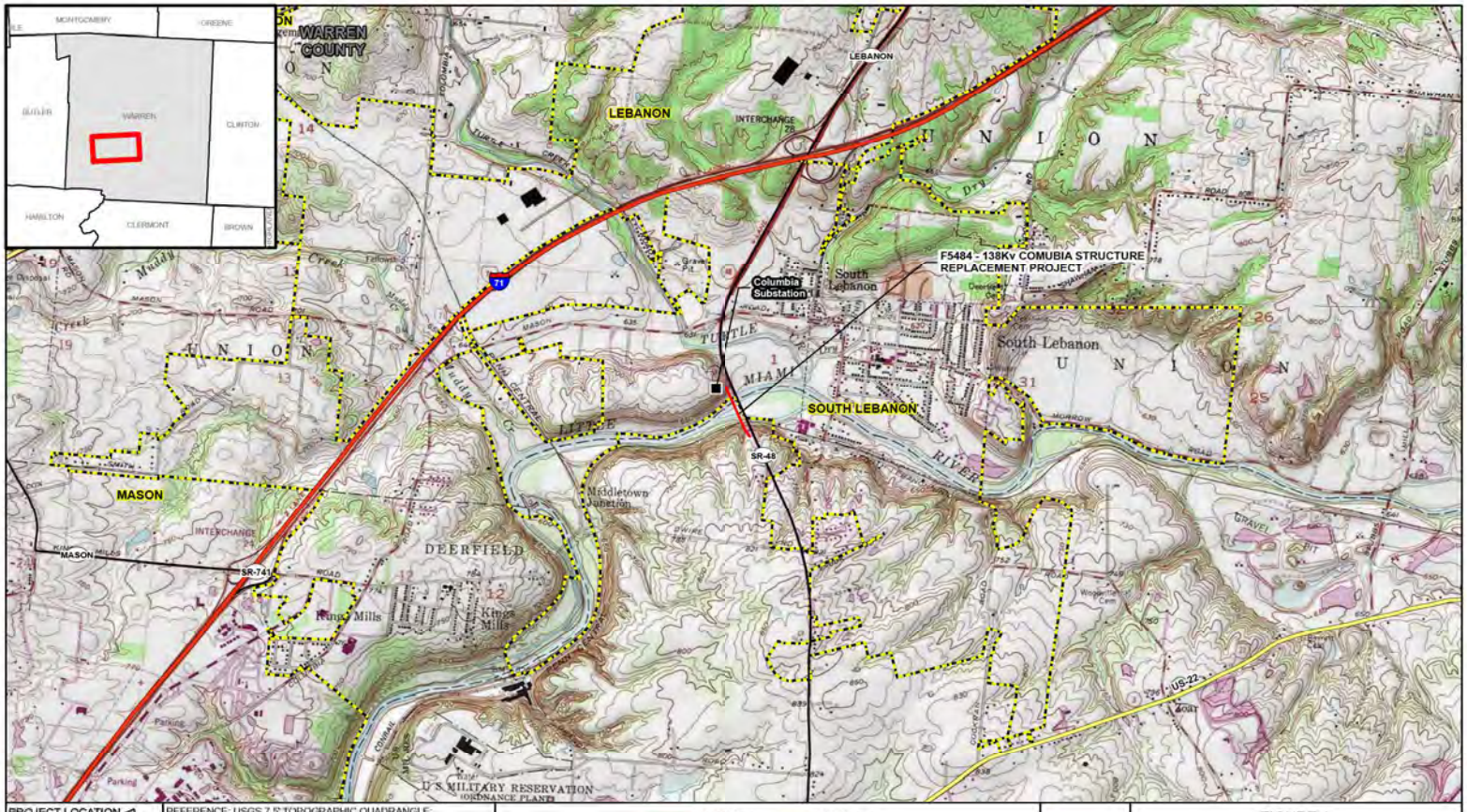
DUKE ENERGY OHIO
F5484 - 138Kv COLUMBIA STRUCTURE
REPLACEMENT PROJECT
REGULATED WATERS DELINEATION REPORT

FIGURES



PROJECT LOCATION

WARREN COUNTY, OH

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

N

0 1,000 2,000 Feet

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

DUKE ENERGY.

Cardno

FIGURE 1
WATERS OF THE U.S. DELINEATION
F5484 - 138Kv COLUMBIA STRUCTURE REPLACEMENT PROJECT
DUKE ENERGY
WARREN COUNTY, OHIO

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CAJ APPROVED: CAJ

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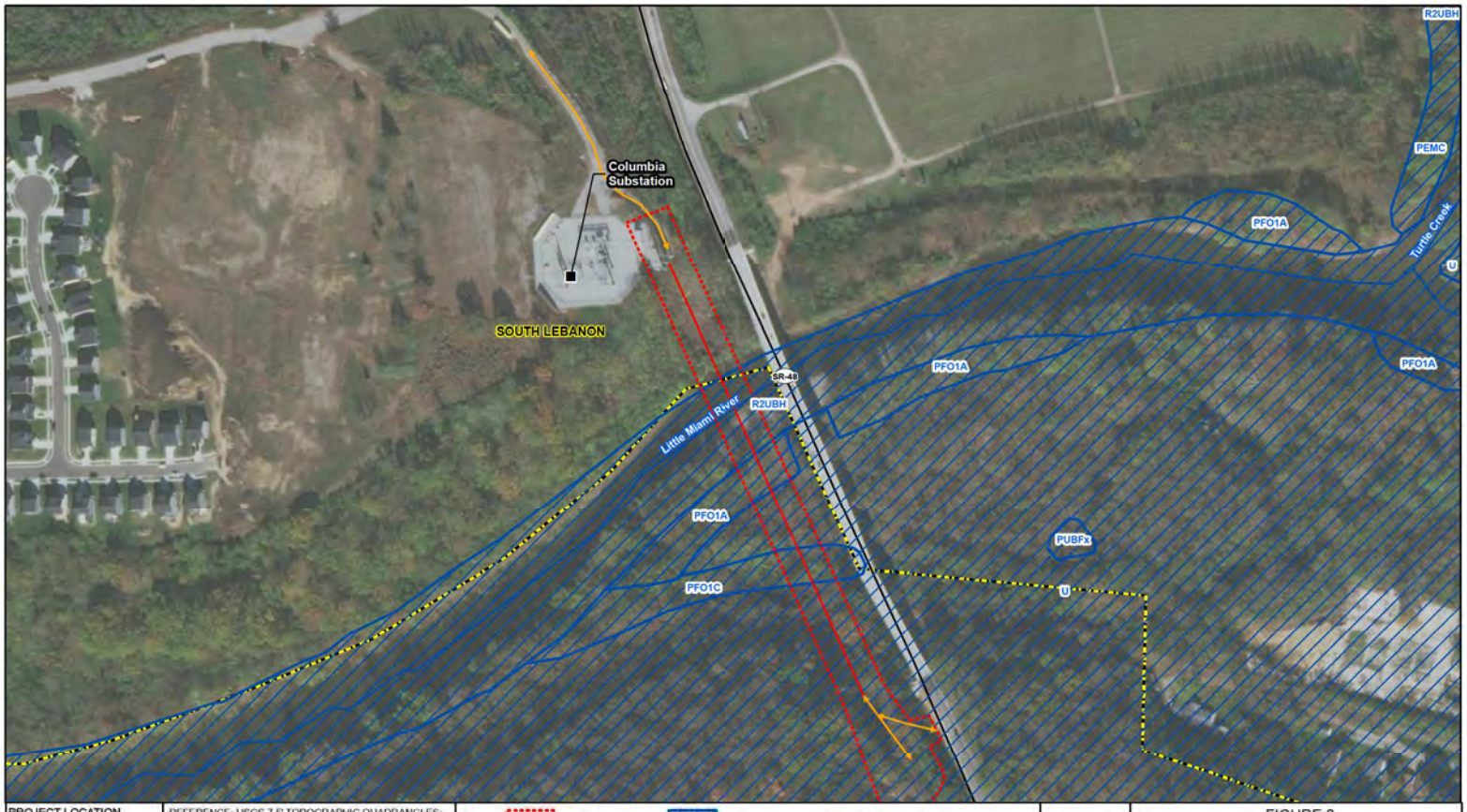

PROJECT LOCATION

WARREN COUNTY, OH

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

N

0 95 190 380 Feet

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

DUKE ENERGY.

Cardno

FIGURE:2

WATERS OF THE U.S. DELINEATION
F5484 - 138Kv COLUMBIA STRUCTURE
REPLACEMENT PROJECT
DUKE ENERGY OHIO
NATIONAL WETLAND INVENTORY

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CAJ APPROVED: CAJ

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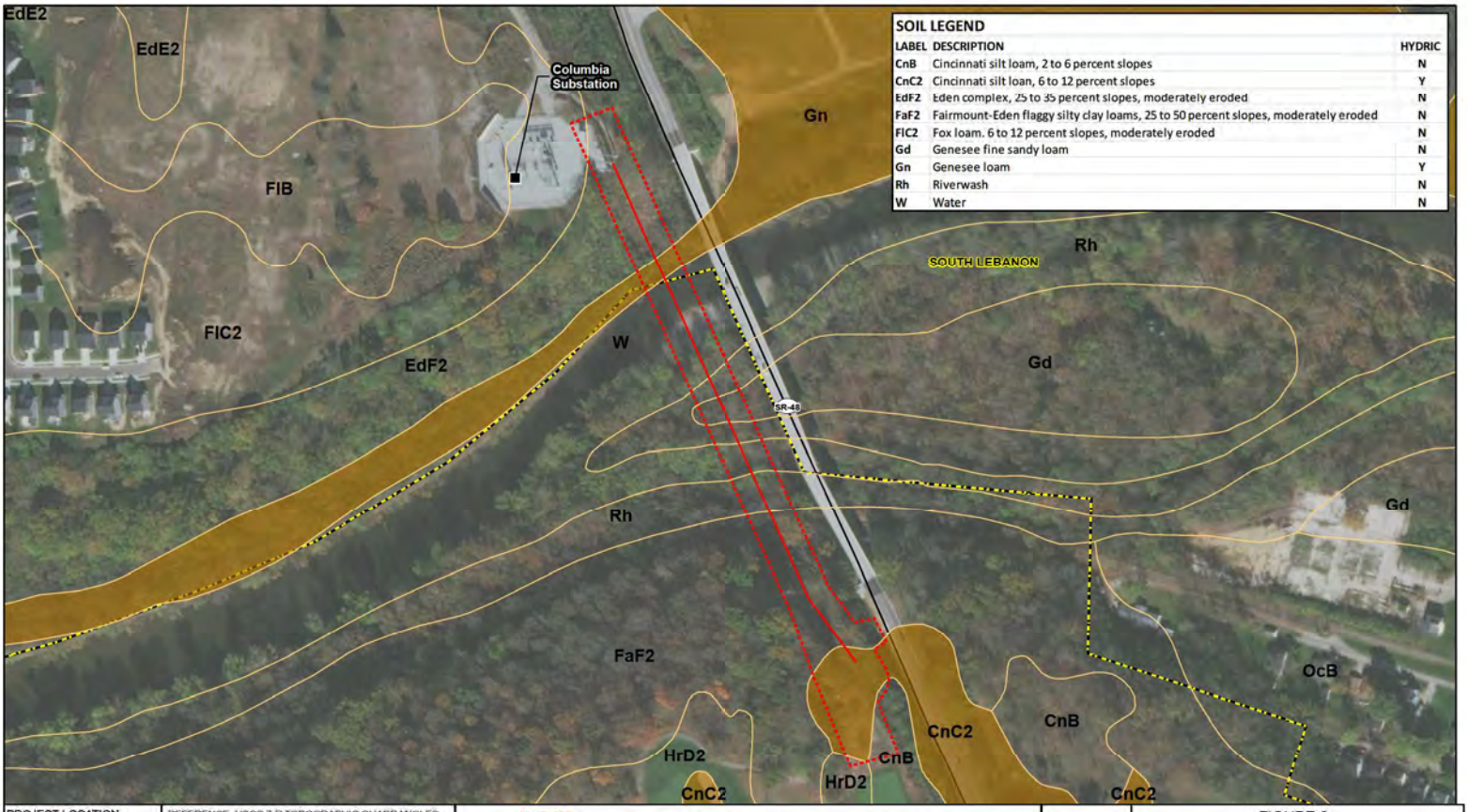

SOIL LEGEND

LABEL	DESCRIPTION	HYDRIC
CnB	Cincinnati silt loam, 2 to 6 percent slopes	N
CnC2	Cincinnati silt loan, 6 to 12 percent slopes	Y
EdF2	Eden complex, 25 to 35 percent slopes, moderately eroded	N
FaF2	Fairmount-Eden flaggy silty clay loams, 25 to 50 percent slopes, moderately eroded	N
FlC2	Fox loam. 6 to 12 percent slopes, moderately eroded	N
Gd	Genesee fine sandy loam	N
Gn	Genesee loam	Y
Rh	Riverwash	N
W	Water	N

PROJECT LOCATION

WARREN COUNTY, OH

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

N

0 95 190 380 Feet

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

DUKE ENERGY.

Cardno

FIGURE:3
WATERS OF THE U.S. DELINEATION
F5484 - 138Kv COLUMBIA STRUCTURE REPLACEMENT PROJECT
DUKE ENERGY OHIO
HYDRIC SOIL MAP

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CAJ APPROVED: CAJ

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PROJECT LOCATION

WARREN COUNTY, OH

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

N

0 87.5 175 350 Feet

Existing Facility
Project Area
Delineated Wetland
Project Centerline
Ditch
Little Miami River

DUKE ENERGY.

Cardno

FIGURE:4

WATERS OF THE U.S. DELINEATION
F5484 - 138Kv COLUMBIA STRUCTURE
REPLACEMENT PROJECT
DUKE ENERGY OHIO
IDENTIFIED FEATURES

DRAWN BY: COD DATE: 11/10/2021
CHECKED: CAJ APPROVED: CAJ

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DUKE ENERGY OHIO
F5484 - 138Kv COLUMBIA STRUCTURE
REPLACEMENT PROJECT
REGULATED WATERS DELINEATION REPORT

APPENDIX

A

SITE PHOTOGRAPHS

Photo 1. Overview of exist ROW and Structure HL-157, Facing Northwest.

Photo 2. View of access route from SR 48 to Structures HL 156 & HL 157, Facing West.

Photo 3. Overview of the existing ROW and Little Miami River, Facing Southeast.

Photo 4. Overview of Wetland 1, Facing West.

DUKE ENERGY OHIO
F5484 - 138Kv COLUMBIA STRUCTURE
REPLACEMENT PROJECT
REGULATED WATERS DELINEATION REPORT

APPENDIX

B

OHIO RAPID ASSESSMENT METHOD
5.0 FORMS

ORAM v 5.0 Field Form Quantitative Rating

Site: Wetland 1 - RFO	Rater(s): D.K. Thompson	Date: July 5, 2018

Project: Duke Energy: F5484 Columbia Structure Replacement

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [X] 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)
- [ ] <0.1 acres (0.04ha) (0 pts)

14	16
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)
- [ ] 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.

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

24	40
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)
- [X] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [X] 100 year floodplain (1)
- [X] Between stream/lake and other human use (1)
- [X] Part of wetland/upland (e.g. forest), complex (1)
- [X] 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)
- [X] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

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

- [X] None or none apparent (12)
- [ ] Recovered (7)
- [ ] Recovering (3)
- [ ] 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

16	56
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed

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

56
subtotal this page

ORAM v 5.0 Field Form Quantitative Rating

Site: Wetland 1 - RFO	Rater(s): D.K. Thompson	Date: July 5, 2018

-2
subtotal this page

Site: Duke Energy: F5484 Columbia Structure Replacement

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)
- [ ] 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.

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

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

- [ ] High (5)
- [ ] Moderately high (4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [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

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

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

- [0] Vegetated hummocks/tussocks
- [1] 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

54 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
F5484 - 138Kv COLUMBIA STRUCTURE
REPLACEMENT PROJECT
REGULATED WATERS DELINEATION REPORT

APPENDIX

C

WETLAND DELINEATION DATA SHEETS-MIDWEST REGION

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Duke Energy: Columbia F5484 Columbia Structure Replacement- Wetland 1 City/County: Union Twp, Warren Count Sampling Date: 7/5/2018

Applicant/Owner: Duke Energy State: OH Sampling Point: DP1

Investigator(s): Danielle K. Thompson; James Crumpler Section, Township, Range: n/a

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

Slope (%): 2% Lat: 39.367542 Long: -84.225674 Datum: NAD83 UTM16N

Soil Map Unit Name: Riverwash 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 ____, 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. *None*			UPL
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *None*			UPL
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	80%	Yes	FACW
2. *Impatiens capensis*	10%	No	FACW
3. *Carex frankii*	5%	No	OBL
4. *Toxicodendron radicans*	5%	No	FAC
5. *Ficaria verna*	30%	Yes	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	130%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1. *None*			UPL
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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	5%	x1 =	0.05
FACW species	90%	x2 =	1.8
FAC species	35%	x3 =	1.05
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	1.30 (A)		2.9 (B)

Prevalence Index = B/A = 2.23

Hydrophytic Vegetation Indicators:

____ 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: DP1

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	90	10YR 4/6	10	C	M	Sandy Loam	Sand and Gravel inclusions

[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)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X 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 X No ___	Depth (inches):	4
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: Duke Energy: F5484 138 kV Columbia Replacement - Wetland 1 City/County: Union Twp, Warren Count Sampling Date: 7/5/2018

Applicant/Owner: Duke Energy Ohio State: OH Sampling Point: DP2

Investigator(s): Danielle K. Thompson; James Crumpler Section, Township, Range: n/a

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

Slope (%): 15% Lat: 39.367464 Long: -84.225635 Datum: NAD83 UTM16N

Soil Map Unit Name: Riverwash 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 ____, 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 ____	No X	

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	30%	Yes	FACW
2. *Populus deltoides*	30%	Yes	FAC
3.			
4.			
5.			
	60%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Platanus occidentalis*	10%	Yes	FACW
2. *Salix nigra*	20%	Yes	OBL
3.			
4.			
5.			
	30%	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	50%	Yes	FACW
2. *Impatiens capensis*	2%	No	FACW
3. *Solidago canadensis*	30%	Yes	FACU
4. *Toxicodendron radicans*	5%	No	FAC
5. *Solidago altissima*	10%	No	FACU
6. *Urtica dioica*	20%	No	FACW
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	117%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	5%	Yes	FACW
2.			
	5%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 86% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	A/B
OBL species	20%	x1 =	0.2
FACW species	117%	x2 =	2.34
FAC species	35%	x3 =	1.05
FACU species	40%	x4 =	1.6
UPL species		x5 =	
Column Totals:	2.12 (A)		5.19 (B)

Prevalence Index = B/A = 2.45

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: DP2

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 4/3	90	10YR 4/6	10	C	M	Sandy Loam	Sand and Gravel inclusions

[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)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

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

Remarks:

Summary: Application Construction Notice for the F5484-138kV Columbia Structure Replacement Project electronically filed by Carys Cochern on behalf of Duke Energy Ohio, Inc.