

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

LETTER OF NOTIFICATION

TALMADGE SUBSTATION EXPANSION PROJECT

Case No.: 24-0037-EL-BLN

February 26, 2024

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

**LETTER OF NOTIFICATION
TALMADGE SUBSTATION EXPANSION PROJECT**

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

4906-6-05(B): LETTER OF NOTIFICATION REQUIREMENTS

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

Name of Project: Talmadge Substation Expansion (“Project”)

Reference Number: 3003

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

American Transmission Systems, Incorporated, (“ATSI”), a FirstEnergy company, is proposing to expand the existing Talmadge 138 kV Substation to convert the existing substation straight bus configuration into a four (4) breaker ring bus configuration. To facilitate this, the substation will expand from its existing square footage of approximately 17,000 square feet to approximately 49,900 square feet. This will result in an approximate 193 percent increase in square footage. In addition to the substation expansion, this project will also involve the installation of two (2) new structures outside of the Talmadge Substation. These new structures are needed to support the reconfigured line exits out of the Talmadge Substation. These components will be collectively referred to as the “Project”.

More specifically, the two components are as follows:

1. Expand and reconfigure the Talmadge Substation from a straight bus configuration into a four (4) 138 kV breaker ring bus with connections to three (3) 138 – 12.47 kV

distribution transformers and two transmission lines. In addition, a new control building with new relaying and a SCADA Remote Terminal Unit (RTU) will be installed at Talmadge Substation along with fiber communications between the Talmadge and Westgate substations.

2. Re- terminate the existing Allen Junction – Westgate 138 kV Transmission Line into Talmadge Substation, thus creating two new lines: (i) the Allen Junction – Talmadge 138 kV Transmission Line; and (ii) the Talmadge – Westgate 138 kV Transmission Line. There will also be relaying upgrades at the Allen Junction and Westgate substations to match new relaying at the Talmadge Substation.

The Project is located in Sylvania Township in Lucas County, Ohio. The general location of the Project is shown in Exhibit 1, a partial copy of the United States Geologic Survey, Lucas County, OH, Quad Map. Exhibit 2 is a copy of ESRI aerial imagery of the Project area. The general layout of the Project is shown in Exhibit 3 and 3A.

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

The Project meets the requirements for a Letter of Notification application because the Project is within the types of projects defined by Item (1)(b), (2)(b) and (4)(b) of the Application Requirement Matrix for Electric Power Transmission Lines. Appendix A of OAC Rule 4906-1-01. This item states:

- (4) *Constructing additions to existing electric power transmission stations or converting distribution stations to transmission stations where:*

- (b) *There is a greater than twenty percent expansion of the fenced area.*

The proposed Project is within the requirements of Item (1)(b) as it involves the expansion of the Talmadge Substation by an amount greater than 20 percent of the existing fenced area.

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

The Project is needed to enhance the reliability, efficiency, resiliency, and operational flexibility of the transmission system in the area and address a now non-standard straight bus design at the Talmadge Substation.

The Project involves making improvements to the reliability and operational flexibility of the transmission system in the project study area to strengthen the transmission system to better withstand certain contingencies and to increase its resiliency, efficiency, and operational flexibility.

The existing Talmadge Substation serves approximately 15,480 customers and has three (3) 138 – 12.47 kV transformers, including two 138 kV transmission terminals. Furthermore, the Allen Junction – Westgate 138 kV Transmission Line serves the following delivery points and serves the majority of the load in the area:

Delivery Point		Customers Served	Load (MW)
Sylvania Distribution Substation		4,870	18
Flower Hospital (Retail Transmission Customer)		1	3
Talmadge Distribution Substation		15,480	56
Totals		20,350	77

Construction of the Project will improve the electrical service to approximately 20,350 customers and 77 MW of load served by the transmission system and out of the 20,350 customers and 77 MW of load, directly strengthen reliability to approximately 15,480 customers and 56 MW of load directly served by the Talmadge Substation.

The existing Talmadge 138 kV Substation is constructed as a straight bus configuration. This straight bus configuration is a less reliable design when compared to ATSI's current substation design standard of a ring bus or breaker-and-a-half substation design. A straight bus design has several points of failure, including when a breaker fails to trip. As designed, if a 138 kV bus fault occurs at Talmadge, all three (3) 138 – 12.47 kV distribution transformers and two (2) 138 kV lines connected to the bus will be disconnected. Straight bus configurations are more susceptible to these failures and are significantly less reliable than the current design standards. Since 2021 the Allen Junction – Westgate 138 kV Transmission Line has experienced three (3) momentary and four (4) sustained outages. Of the outages experienced since 2021, five (5) were caused by failed protection system or failures of relay protection.

ATSI adheres to PJM's General Transmission Owner Guidelines, which are intended to:

- Minimize the magnitude and duration of system outages in the event of a component failure.
- Minimize widespread system effects on voltage, dynamic stability, etc., that occur because of unplanned events.
- Facilitate the isolation of failed component(s) while maximizing the amount of transmission system equipment that can remain in service; and
- Include plans for expeditious restoration of failed facilities/components (such as dedicated spare equipment, etc.)

To meet these minimum standards, ATSI has established that all new substations must, at a minimum, include a breaker-and-a-half or a ring bus configuration, as documented in FirstEnergy's *Requirements for Transmission Connected Facilities*.

The current Talmadge Substation configuration does not meet current standards for transmission substations. The existing 138 – 12.47 kV transformers have a high

exposure risk to a bus fault, and the current substation configuration does not provide adequate operational flexibility during outage events. The Project will improve reliability and provide increased operational flexibility by converting the existing Talmadge Substation to a ring bus configuration.

The Project will add a four (4) breaker ring bus topology to the Talmadge Substation, thereby eliminating the potential for customer outages and voltage concerns resulting from a fault on the Allen Junction – Westgate 138 kV Transmission Line or a fault on the Talmadge Substation 138 kV bus. The Project will improve operational flexibility and efficiency during outages, maintenance, and restoration efforts. It will also reduce the amount of local load loss under Planning Event P1 (*i.e.*, single contingency – transmission circuit) and P2 (*i.e.*, single contingency – bus fault or line fault with a breaker failure) contingency conditions.

The Project Need was presented as a Supplemental Project at the PJM Subregional RTEP-Western Committee (“SRRTEP-Western”) meeting on August 31, 2018. The Solution was presented at the PJM SRRTEP-Western meeting on September 28, 2018. PJM evaluated the proposed Project and did not identify any ATSI or PJM Planning Criteria violations caused by the Project. As such, there is not a need for other transmission system upgrades as a result of the Project. PJM assigned the Project supplemental upgrade identification number s1706. The PJM SRRTEP-Western meeting presentation slides are included as Exhibit 4 and include additional details of the Project drivers.

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

The location of the Project relative to existing or proposed transmission lines is shown in the ATSI Transmission Network Map, included as part of the confidential portion of the FirstEnergy Corp. 2023 Long-Term Forecast Report (“LTFR”). This map was submitted to the PUCO in Case No. 23-0504-EL-FOR under Rule 4901:5-5:04 (C)(2)(b) of the Ohio Administrative Code. The map is incorporated by reference

only. This map shows ATSI's 345 kV and 138 kV transmission lines and transmission substations.

The general location and layout of the Project area are shown in Exhibits 3 and 3a. This Project is included on page 104 in the 2023 LTFR.

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

An alternative to the proposed Project is for ATSI to continue operating with the existing straight bus substation configuration and 138 kV circuit switchers on the transmission terminals. However, this will not prevent a complete outage to the customers served from the Talmadge Substation due to a bus fault or transformer fault.

Another alternative considered was to replace the existing circuit switchers on both 138 kV line terminals connected to the Talmadge Substation with breakers. While this will improve reliability for other customers connected to the Allen Junction – Westgate 138 kV Transmission Line, it does not alleviate the concerns with the straight bus design at the Talmadge Substation or for customers served directly from the Talmadge Substation. Alternatives considered do not provide a solution for sectionalizing the existing transformers and lines, which would still be susceptible to a complete substation outage if there was a contingency event. The proposed Project addresses the reliability concerns for the customers served from Talmadge Substation as well as other customers served from the Allen Junction – Westgate 138 kV Transmission Line.

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

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

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

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

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

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

Construction on the Project is expected to begin as early as June 2024 and be completed/in-service by December 30, 2024.

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

The general location of the Project is shown in Exhibit 1, a partial copy of the United States Geologic Survey, Lucas County, OH, Quad Map. Exhibit 2 is a copy of ESRI aerial imagery of the Project area. The general layout of the Project is shown in Exhibit 3 and Exhibit 3A.

4906-6-05(B)(8): Properties List

This Project is located entirely on Toledo Edison owned property. No new easements will be required.

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

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

The equipment and facilities described below are associated with the substation component of the proposed Project:

Voltage: 138 kV Max System Voltage (550 kV BIL)

Bus Conductor: 4" Aluminum Pipe
(2) 795 KCMIL 61str AAC

Insulators: Porcelain

Breakers: Five (5) 145 kV 3000 A 40 kA Siemens SPS2S Breakers

Switches: Ten (10) 138 kV 2000 A Gang-Operated Vertical Mount Switches
Two (2) 138 kV 2000 A Motor Operated V-Type Switches
Two (2) 138 kV 2000 A Motor Operated Upright Mounted Switches

CVT's: Six (6) 138 kV Single Phase Capacitor Voltage Transformers

WT's: One (1) 138 kV 2000 A Single-Phase Wave Trap

Arresters: Six (6) 108 kV (84kV MCOV) Arresters

Structures: Seven (7) 138 kV Bus Support Structures
One (1) 138 kV 4 Bay Ring Bus Structure
Two (2) 138kV 3 Phase Switch Structures
One (1) 138KV 1 Phase SSVT Stand
One (1) 42' x 32' Packaged Control Enclosure
Four (4) 45' Static Masts

The equipment and facilities described below are associated with the transmission line component of the proposed Project:

Voltage: 138 kV

Conductors: 954 kcmil 37 Strand AAC (Same as existing)

Static Wire: 3#7 Alumoweld

Insulators: Porcelain, Glass

ROW Width: 65 feet

Structure Types: Two (2) new structures will be installed.
Exhibit 5: Two (2) Custom Steel Single Circuit Deadend Single Pole

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

There are no occupied residences or institutions within 100 feet of the Project and therefore no Electric and Magnetic Field (“EMF”) calculations are required by this subsection.

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

The estimated cost for the proposed Project is \$14,800,000.

Although not statutorily required for approval, at the request of OPSB Staff, ATSI confirms that ATSI’s costs will be captured and allocated via FERC formula rates for the ATSI Transmission Zone, Attachment H-21 in the PJM OATT.

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

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

The Project is located in Sylvania Township in Lucas County, Ohio. The land use in the vicinity of the Project area is mostly residential use.

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

Agriculture land use does not exist within the Project area.

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

On behalf of ATSI, TRC performed a desktop review of the Ohio Historic Preservation Office’s (“OHPO”) Online Mapping System (“Review”) on December 27, 2023. The Review was conducted to identify the existence of any significant archeological or cultural resource sites within 0.5 miles of the Project’s potential disturbance area. The results of the search are shown in Exhibit 6.

The OHPO database includes all Ohio listings on the National Register of Historic Places (“NRHP”), such as districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The results of the search indicate that zero (0) listed NRHP sites were identified within 0.5 miles of the Project’s potential disturbance area. The OHPO database also includes a listing of the Ohio Archaeological Inventory (“OAI”), the Ohio Historic

Inventory (“OHI”), previous cultural resource surveys, and the Ohio Genealogical Society (“OGS”) cemetery inventory. This review identified one (1) OAI listed archeological site, zero (0) OHI structural resources, three (3) previous cultural resource surveys, and zero (0) OSG cemeteries that are located within 0.5 miles of the Project’s potential disturbance area. These results are listed below in table 2 and table 3. Because of the proposed Project scope and affected area, the Project is not expected to have any impacts to archaeological and cultural resources.

Table 2. List of OAI Listed Archeological Resources

OAI Number	Affiliation	County	Quad Name
LU0060	Prehistoric	Lucas	Sylvania

Table 3. List of Previous Cultural Resource Surveys

Year	Name	County	Municipality
1984	A Preliminary Archaeological Survey of the Anderson's General Store Project	Lucas	N/A
1984	A Phase II Archaeological Survey Of Portions of the Anderson's General Store Project	Lucas	N/A
2014	Phase I Archaeological Survey for the Whiteford Road Wireless Cellular Tower	Lucas	N/A

4906-6-05 (B)(10)(d): Construction Filings with Local, State, and Federal Governmental Agencies

No additional government agency authorizations are expected to be needed for this Project There are no

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

On behalf of ATSI, TRC Companies, Inc. (TRC) requested an updated Environmental Review of the proposed Project. As part of that Environmental Review, the ODNR Office of Real Estate searches the ODNR Division of Wildlife's Natural Heritage Database in order to research the presence of any endangered, threatened, or rare species within one (1) mile of the Project Study Area. The initial request for an Environmental Review of the Project was sent on October 27, 2023, and a response was received on November 28, 2023, attached as Exhibit 7.

The Project Study Area is 2.88-acres, located in Sylvania Township, Lucas County, Ohio. Based on the information received from correspondence with ODNR for the original Project Study Area, the Project 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 endangered species; the little brown bat (*Myotis lucifugus*), a state endangered species; the tricolored bat (*Perimyotis subflavus*), a state endangered species; the cisco (*Coregonus artedii*), a state endangered fish; the lake sturgeon (*Acipenser fulvescens*), a state endangered fish; the western banded killifish (*Fundulus diaphanus menona*), a state endangered fish; the American eel (*Anguilla rostrata*), a state threatened species; the channel darter (*Percina copelandi*), a state threatened fish; the greater redhorse (*Moxostoma valenciennesi*), a state threatened fish; the Blanding's turtle (*Emydoidae blandingii*), a state threatened species; the spotted turtle (*Clemmys guttata*), a state threatened species; the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species; the blue-spotted salamander (*Ambystoma laterale*), a state endangered species; pondhorn (*Uniomerus tetralasmus*), a state threatened mussel; eastern pondmussel (*Ligumia nasuta*), a state endangered species; rayed bean (*Villosa fabalis*), a federally

endangered mussel; and snuffbox (*Epioblasma triquestra*), a federally endangered mussel. Due to the absence of rare species habitat, Project type, size and location, there are no anticipated adverse effects to state/federally endangered, threatened, proposed species, or proposed designated habitat, as a result of the Project’s proposed activities.

In addition, TRC submitted a request to the US Fish and Wildlife Service (USFWS) for an Ecological Review to research the presence of any endangered, threatened, rare, or designated species within one (1) mile of the Project Area. A copy of USFWS’s Ecological Review response, dated November 6, 2023, is included as Exhibit 9. Based on the information received from correspondence with USFWS for the Project Study Area, the Project is within the range of the Indiana bat, a state endangered and federally endangered species; the northern long-eared bat, a state endangered and federally endangered species; and the tricolored bat, a state endangered species. The response indicated that due to the project type, size, location, and the proposed implementation of seasonal tree cutting, the USFWS does not anticipate adverse effects to federally endangered, threatened, or proposed species or proposed or designated critical habitat.

A list of all endangered, threatened, and rare species, as identified by ODNR DOW and USFWS, is provided in Table 5.

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

Common Name	Scientific Name	Federal and State Listing Status	Affected Habitat
Indiana bat	<i>Myotis sodalis</i>	Endangered	Trees and forests
Northern long-eared bat	<i>Myotis septentrionalis</i>	Endangered	Trees and forests
Little Brown Bat	<i>Myotis lucifugus</i>	State Endangered	Trees and forests
Tricolored Bat	<i>Perimyotis subflavus</i>	State Endangered	Trees and forests
Pondhorn	<i>Uniomerus tetralasmus</i>	State Threatened	Perennial streams
Eastern Pondmussel	<i>Ligumia nasuta</i>	State endangered	Perennial streams

Rayed bean	<i>Villosa fabalis</i>	Federally endangered	Perennial streams
Snuffbox	<i>Epioblasma triquetra</i>	Federally endangered	Perennial streams
Cisco	<i>Coregonus artedi</i>	State endangered	Perennial streams
Lake Sturgeon	<i>Acipenser fulvescens</i>	State endangered	Perennial streams
Western Banded Killfish	<i>Fundulus diaphanous menona</i>	State endangered	Perennial streams
American Eel	<i>Anguilla rostrata</i>	State threatened	Perennial streams
Channel Darter	<i>Percina copelandi</i>	State threatened	Perennial streams
Greater Redhorse	<i>Maxostoma valenciennesi</i>	State threatened	Perennial streams
Blandings Turtle	<i>Emydoidea blandingii</i>	State threatened	Marshy shorelines
Spotted Turtle	<i>Clemmys guttata</i>	State threatened	Marshy shorelines
Kirtland's Snake	<i>Clonophis kirtlandii</i>	State threatened	Opened Wetlands
Blue-Spotted Salamander	<i>Ambystoma laterale</i>	State endangered	Deciduous hardwood forests, swampy woodlands

As a follow up, the DOW recommended that a desktop bat hibernaculum assessment be completed for the Project, which TRC completed for FirstEnergy and submitted to ODNR for concurrence on December 7, 2023. ODNR responded on December 11, 2023, attached as Exhibit 8, concurring that no caves, cliffs, or mine openings occur in the Project Area; therefore, the Project is not likely to impact hibernating bats. In assessing compliance with NWP General Condition 18, TRC determined that minor tree clearing may be required within the Project Study Area. If minor tree clearing is needed as a result of this Project, it will take place within the USFWS recommended tree clearing dates (October 1 – March 31); therefore, no impacts to bat species are anticipated as a result of the construction of this Project.

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

The ODNR and USFWS comments did not identify any areas of ecological concern. On November 2, 2023, TRC biologists conducted a wetland and waterways delineation for Talmadge 138kV Ring Bus 15379141 Project (Project), attached as

exhibit 10. The Project Study Area is approximately 2.88-acres, located in Sylvania Township, Lucas County, Ohio. No ecological resources were observed within the Project Study Area.

The Project Study Area consists mainly of existing access road, substation, and maintained utility right-of-way (ROW) surrounded by residential land use and forested habitat. TRC did not observe the presence of any of the ODNR-listed species during the field investigation, due to the highly maintained nature of the utility ROW and existing facility. Therefore, no impacts are anticipated to the listed reptiles, fish, or birds.

A review of the National Conservation Easement Database (www.conservationeasement.us) revealed no conservation easements in the Project Study Area.

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

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

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

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

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

Lucas County

Mr. Pete Gerken
President
Lucas County Commissioner
1 Government Center
Toledo, Ohio 43604

Ms. Tina Skeldon Wozniak
Lucas County Commissioner
1 Government Center
Toledo, Ohio 43604

Ms. Lisa Sobecki
Lucas County Commissioner
1 Government Center
Toledo, Ohio 43604

Mr. Mike Pniewski, P.E. P.S.
Lucas County Engineer
1049 S McCord Rd
Holland, Ohio 43528

Ms. Lindsay Webb
Lucas County Treasurer
1 Government Center, Suite 500
Toledo, Ohio 43604

Mr. Kevin Joyce
Lucas County SWCD
3350 Hill Ave., Suite K
Toledo, OH 43607

Sylvania Township

Mr. John Crandall
Township Trustee
4927 N. Holland-Sylvania Rd,
Sylvania, OH 43560

Mr. Neal Mahoney
Township Trustee
4927 N. Holland-Sylvania Rd,
Sylvania, OH 43560

Mr. John Jennewine
Township Trustee
4927 N. Holland-Sylvania Rd,
Sylvania, OH 43560

Mr. Dave Simko
Fiscal Officer
4927 N. Holland-Sylvania Rd,
Sylvania, OH 43560

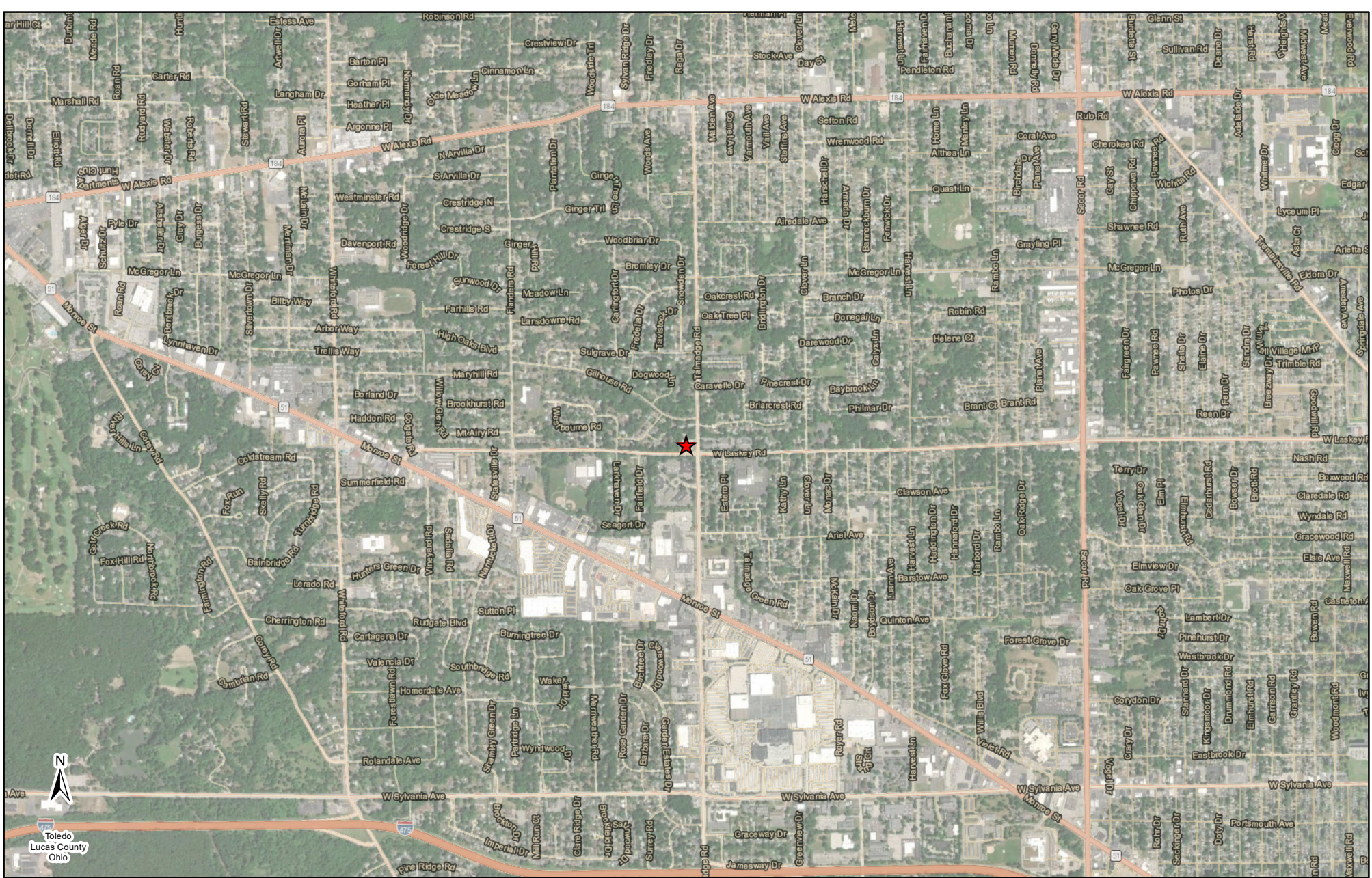
Libraries


Ms. Hannah Grohowski
Toledo Lucas County
Public Library
1032 S. McCord Rd
Holland, OH 43528

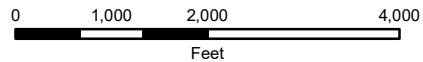
Copies of the transmittal letters to these officials have been included with this application as proof of compliance under OAC Rule 4906-6-07(B) to provide the Board with proof of notice to local officials as required by OAC Rule 4906-6-07(A)(1) and to libraries per OAC Rule 4906-6-07(A)(2).

Information is posted at:

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



LEGEND:
 Project Area



Reference:
 ESRI, Aerial Imagery, ODOT

Coordinate System:
 NAD_1983_StatePlane_Ohio_North_FIPS_3401_Feet
 WKID: 3734 Authority: EPSG

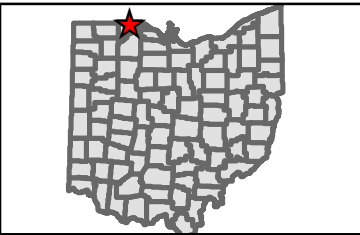


EXHIBIT 2

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

Talmadge Substation Expansion Project

TALMADGE RD

TALMADGE
-
WESTGATE
138kV

ALLEN
JUNCTION
-
TALMADGE
138kV

#599817

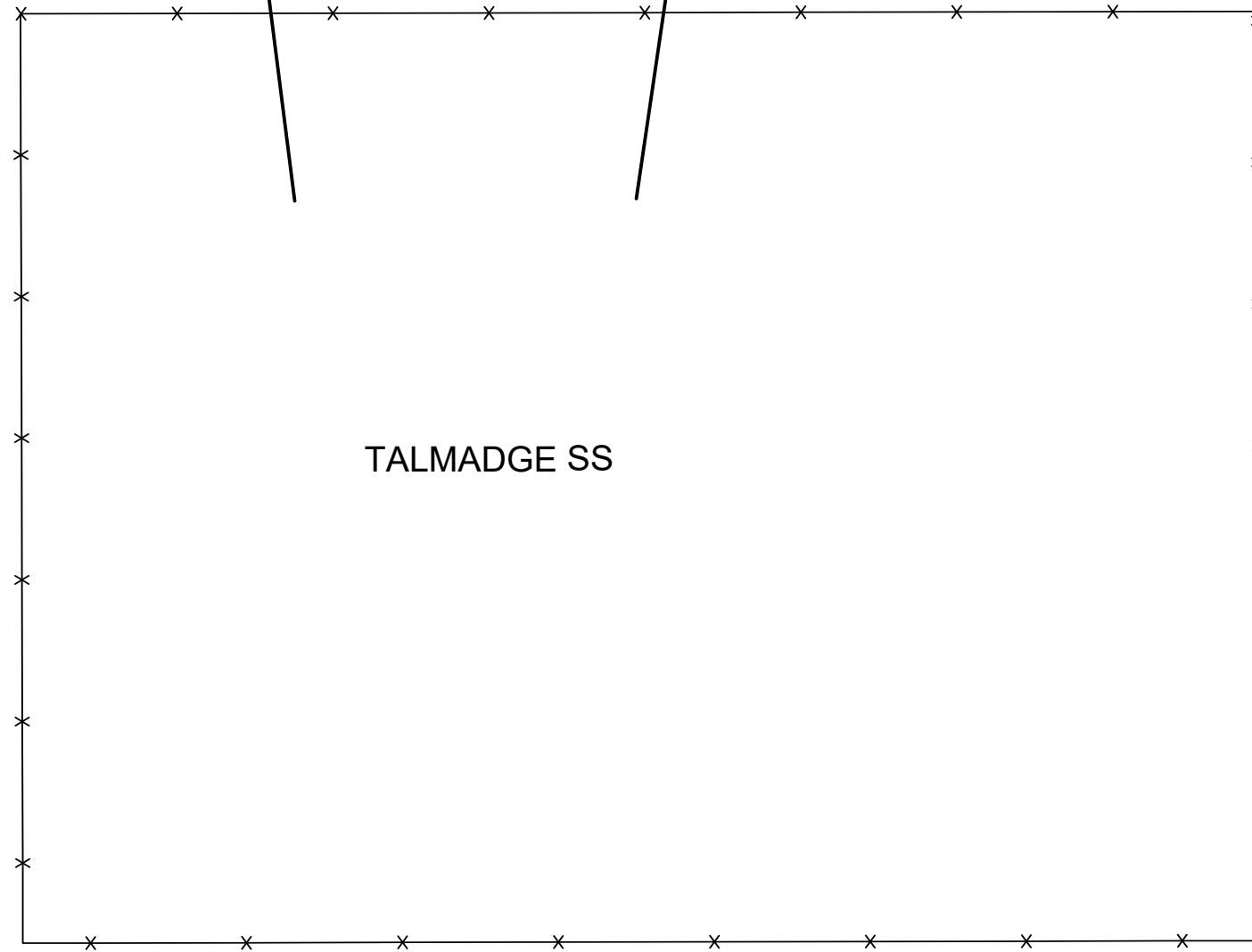
#599802

#14B

#14A

#WT-14

#526015



TALMADGE SS

W LASKEY RD



TOLEDO
LUCAS COUNTY
OHIO

LEGEND

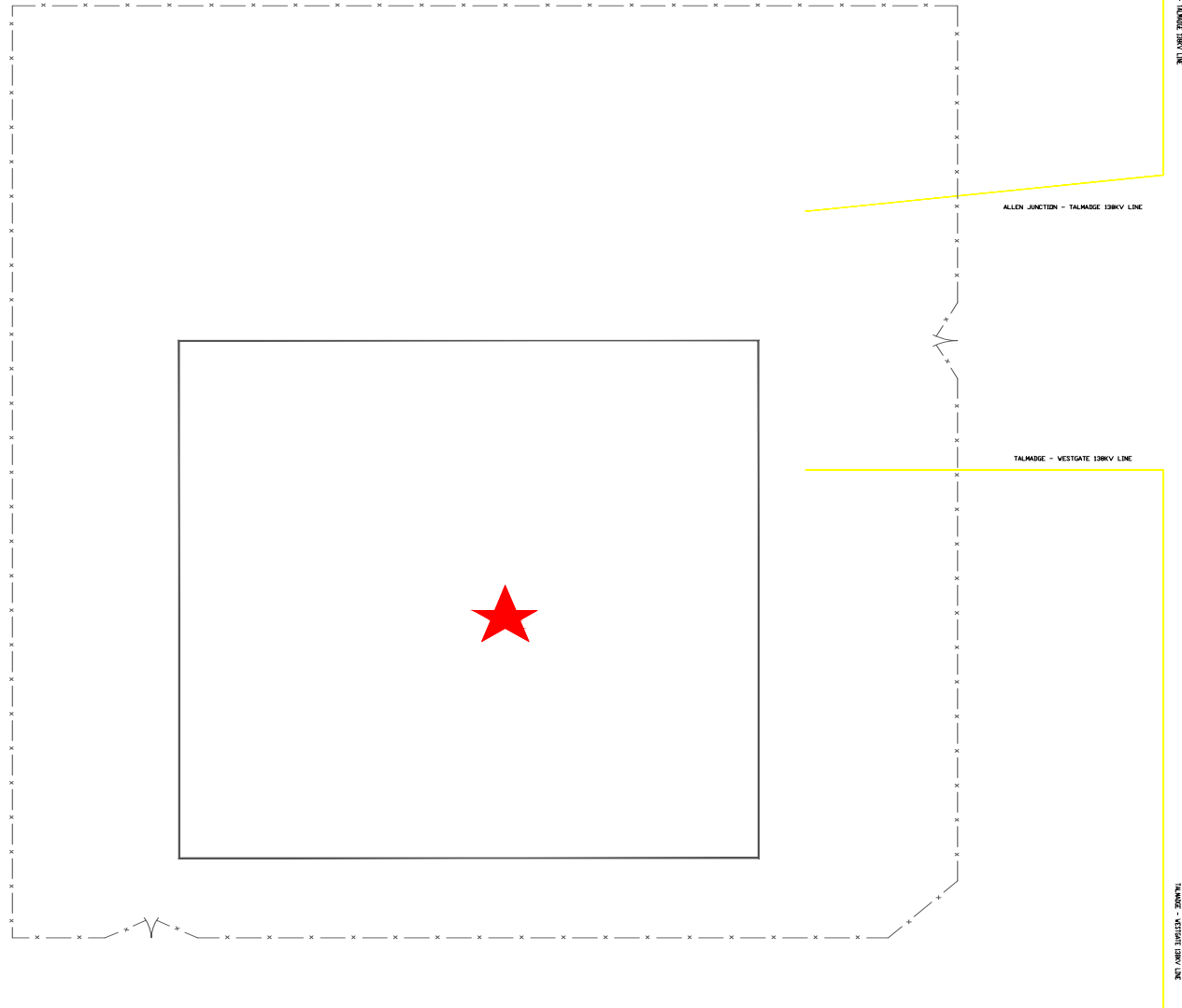
- - NEW OR REPLACED STRUCTURE
- - EXISTING STR TO REMAIN
- ⌊ - SUBSTATION
- - TRANSMISSION CENTERLINE
- x — - FENCE BOUNDARY







Talmadge Substation Expansion
Project

GENERAL LAYOUT

EXHIBIT 3



LEGEND

-  PROJECT LOCATION
-  EXISTING TRANSMISSION LINES
-  PROPOSED EXPANSION
-  EXISTING FENCELINE

ATSI[®]

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

**TALMADGE SUBSTATION
EXPANSION PROJECT**

GENERAL LAYOUT

EXHIBIT 3A



ATSI Transmission Zone: Supplemental Talmadge 138 kV Ring Bus Project

Previously Presented: 8/31/2018 SR RTEP

Problem Statement (Scope and Need/Drivers):

Operational Flexibility and Efficiency

- Improve operational flexibility during maintenance and restoration efforts.
- Reduce the amount of local load loss (Approximately 87 MWs) under (P2) contingency conditions (bus or breaker failure) at Talmadge substation.

Selected Solution:

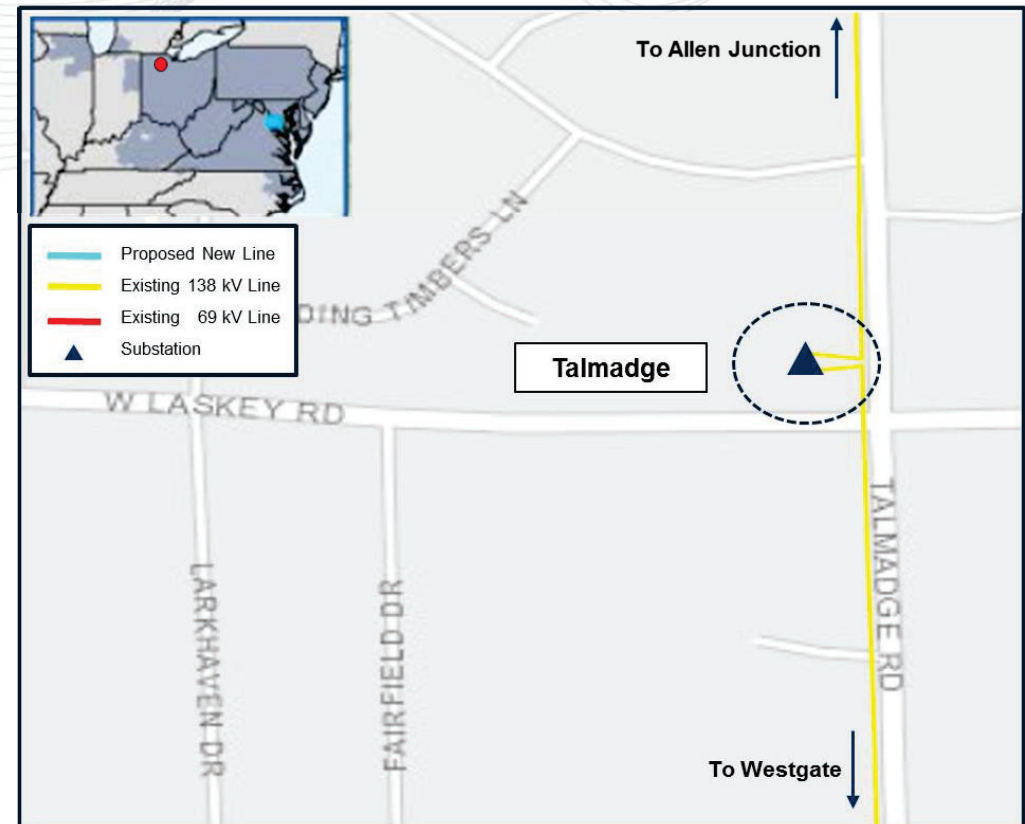
Talmadge 138 kV Ring Bus Project (S1706)

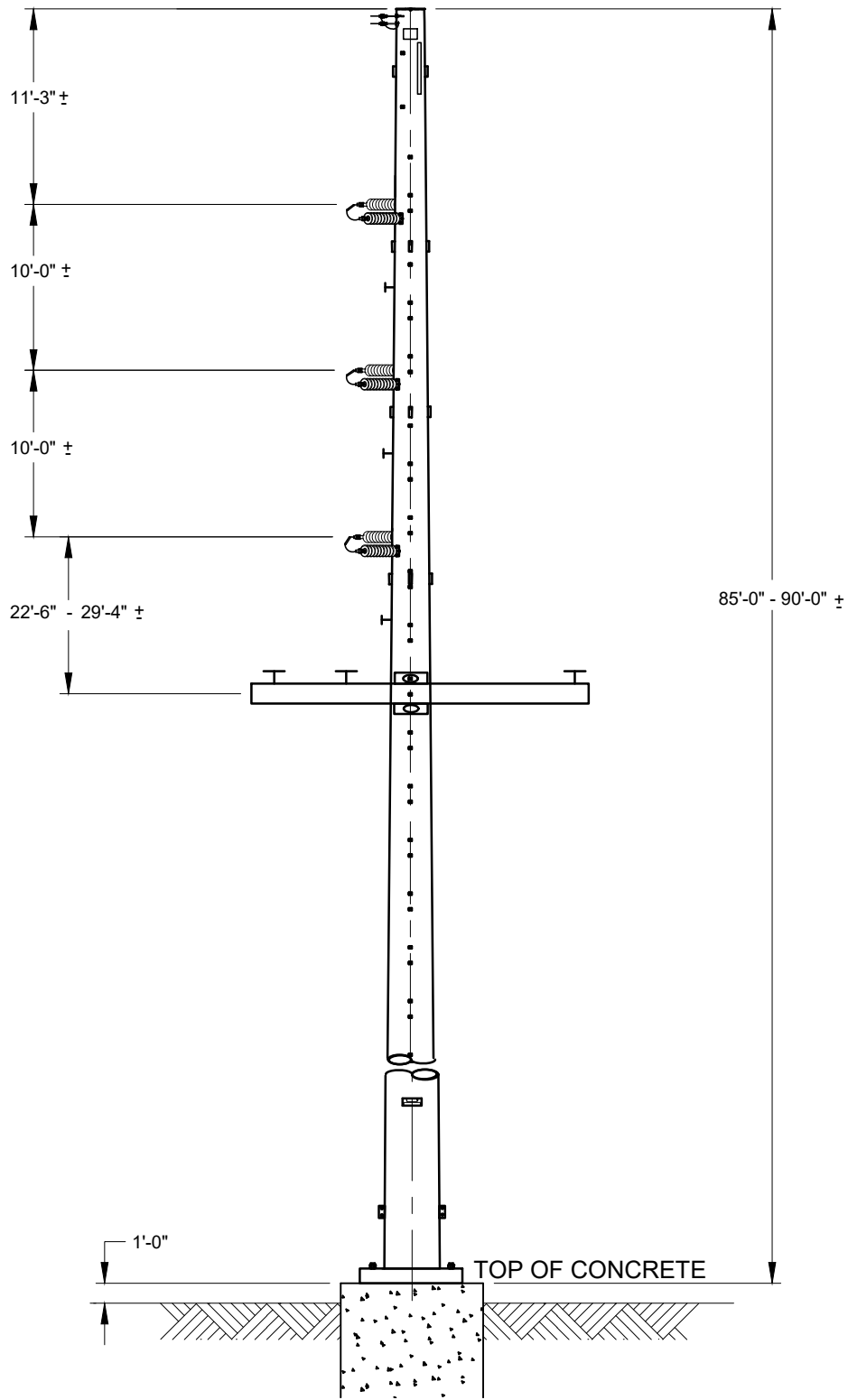
- Expand the existing 138 kV substation at Talmadge to a 4-breaker ring bus.
- Reconfigure Talmadge substation to include terminals for:
 - Talmadge-Westgate 138 kV line
 - Talmadge-Allen Junction 138 kV line
 - Three (3) load connection 138-12.5 kV transformers
- Add new control building to accommodate expansion.

Estimated Project Cost: \$6.1 M

Projected IS Date: 12/31/2020

Status: Conceptual





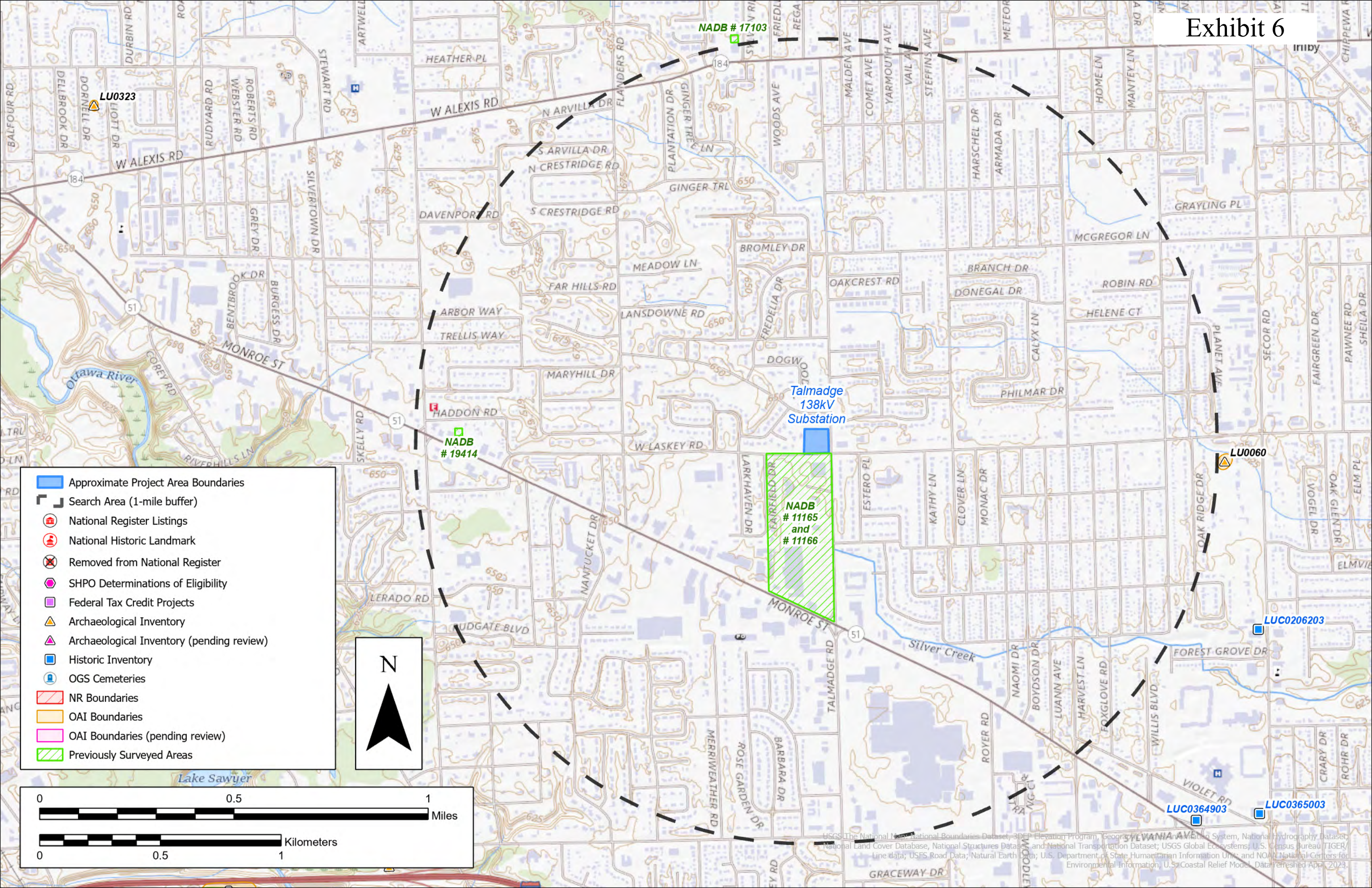
ELEVATION VIEW

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

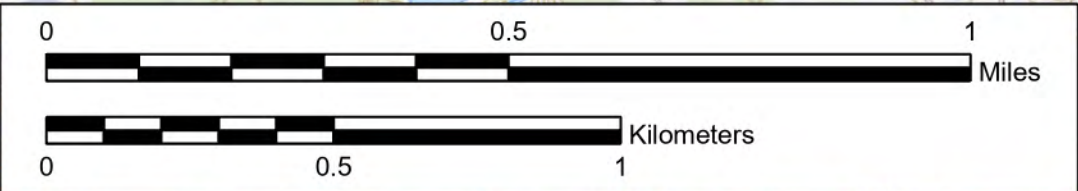
TALMADGE SUBSTATION
 EXPANSION PROJECT

CUSTOM SINGLE CIRCUIT DEADEND SINGLE POLE

EXHIBIT 5



- Approximate Project Area Boundaries
- Search Area (1-mile buffer)
- National Register Listings
- National Historic Landmark
- Removed from National Register
- SHPO Determinations of Eligibility
- Federal Tax Credit Projects
- Archaeological Inventory
- Archaeological Inventory (pending review)
- Historic Inventory
- OGS Cemeteries
- NR Boundaries
- OAI Boundaries
- OAI Boundaries (pending review)
- Previously Surveyed Areas



NADB # 17103

LU0323

NADB # 19414

NADB # 11165 and # 11166

Talmadge 138kV Substation

LU0060

LUC0206203

LUC0364903

LUC0365003

USGS The National Map, National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April 2023.



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate
Tara Paciorek, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6661
Fax: (614) 267-4764

November 28, 2023

Maggie Molnar
TRC Companies, Inc.
1382 West 9th Street, Suite 400
Cleveland, Ohio 44113

Re: 23-1311_Talmadge 138kV Ring Bus 15379141

Project: The proposed project involves work within an existing substation, as well as the installation of 2-new steel poles with concrete foundations, and maintenance on an existing line north of the existing substation.

Location: The proposed project is located in Sylvania township, Lucas 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: A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area.

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

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

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species.

During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH \geq 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "[OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING](#)". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Eileen Wyza at Eileen.Wyza@dnr.ohio.gov).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "[RANGE-WIDE INDIANA BAT & NORTHERN LONG-EARED 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 Eileen Wyza 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

rayed bean (*Villosa fabalis*)

snuffbox (*Epioblasma triquetra*)

State Endangered

eastern pondmussel (*Ligumia nasuta*)

State Threatened

pondhorn (*Unio merus tetralasmus*)

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 of the following listed fish species.

State Endangered

cisco (*Coregonus artedii*)

lake sturgeon (*Acipenser fulvescens*)

western banded killifish (*Fundulus diaphanus menona*)

State Threatened

American eel (*Anguilla rostrata*)

channel darter (*Percina copelandi*)

greater redhorse (*Moxostoma valenciennesi*)

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 Blanding's turtle (*Emydoidea blandingii*), a state threatened species. This species inhabits marshes, ponds, lakes, streams, wet meadows, and swampy forests. Although essentially aquatic, the Blanding's turtle will travel over land as it moves from one wetland to the next. 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 also is 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 fields and meadows. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the blue-spotted salamander (*Ambystoma laterale*), a state endangered species. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

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

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

The [local floodplain administrator](#) should be contacted concerning the possible need for any floodplain permits or approvals for this project.

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

From: [Molnar, Maggie](#)
To: [Bagato, Steve \(B & M\)](#)
Cc: [Falkinburg, Brad](#)
Subject: FW: [EXTERNAL] RE: 23-1311_Talmadge 138kV Ring Bus 15379141: Desktop Hibernacula Assessment
Date: Monday, December 11, 2023 9:55:59 AM
Attachments: [image002.gif](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[image007.png](#)
[image008.png](#)
[image003.png](#)
[image009.png](#)

Steve,

Please see below response from ODNR. They agreed that “no caves, cliffs, or mine openings occur in the project area. Therefore, the project is not likely to impact hibernating bats.”

We will include this response included in the OPSB write-up and have that to you shortly.

Thanks,

Maggie Molnar, PWS

Ecologist



781 Science Boulevard, Suite 200, Gahanna, Ohio 43230
D 614.423.6342 | C 614.949.2437
[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](#)

Please note that our address has changed.

From: Eileen.Wyza@dnr.ohio.gov <Eileen.Wyza@dnr.ohio.gov>
Sent: Monday, December 11, 2023 9:54 AM
To: Given, Emma <EGiven@trccompanies.com>
Cc: Molnar, Maggie <MMolnar@trccompanies.com>; Falkinburg, Brad <BFalkinburg@trccompanies.com>
Subject: [EXTERNAL] RE: 23-1311_Talmadge 138kV Ring Bus 15379141: Desktop Hibernacula Assessment

This is an **External** email. Do not click links or open attachments unless you validate the sender and know the content is safe.

ALWAYS hover over the link to preview the actual URL/site and confirm its legitimacy.

Hello Emma,

Per review of the desktop survey provided for the Talmadge 138kV Ring Bus 15379141 Project, the Ohio Division of Wildlife concurs with your assessment that no caves, cliffs, or mine openings occur in the project area. Therefore, the project is not likely to impact hibernating bats.

Should any reported conditions change before or during construction, please contact me for additional guidance.

Thank you,

Eileen Wyza, Ph.D.

Wildlife Biologist

Ohio Division of Wildlife

Phone: 614-265-6764

Email: Eileen.Wyza@dnr.ohio.gov

Support Ohio's wildlife. Buy a license at wildohio.gov.



This message is intended solely for the addressee(s). Should you receive this message by mistake, we would be grateful if you informed us that the message has been sent to you in error. In this case, we also ask that you delete this message and any attachments from your mailbox, and do not forward it or any part of it to anyone else. Thank you for your cooperation and understanding.

Please consider the environment before printing this email.

From: Given, Emma <EGiven@trccompanies.com>

Sent: Thursday, December 7, 2023 5:00 PM

To: Wyza, Eileen <Eileen.Wyza@dnr.ohio.gov>

Cc: Molnar, Maggie <MMolnar@trccompanies.com>; Falkinburg, Brad <BFalkinburg@trccompanies.com>

Subject: 23-1311_Talmadge 138kV Ring Bus 15379141: Desktop Hibernacula Assessment

Eileen,

In response to ODNR's DOW recommendations (attached), TRC completed a desktop habitat assessment to determine if potential hibernaculum is present within FirstEnergy's proposed Talmadge 138kV Ring Bus 15379141 Project in Sylvania and Washington Townships, Lucas County, Ohio.

Please let us know if you have any questions on the provided desktop assessment.

Thank you,

EmmaLeigh Given, PhD

Ecologist
Planning, Permitting, and Licensing



1382 W 9th St, Suite 400, Cleveland, OH 44113

C 330.446.0265

[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](#)

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 or click the Phish Alert Button if available.

United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994



November 6, 2023

Project Code: 2024-0009450

Dear Maggie Molnar:

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 northern long-eared bat (*Myotis septentrionalis*), and the proposed endangered tri-colored bat (*Perimyotis subflavus*) 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, Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.ohio.gov.

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

Sincerely,

A handwritten signature in blue ink that reads "Scott Hicks". The signature is written in a cursive style.

Scott Hicks
Acting Field Office Supervisor

Surface Water Delineation Report

Talmadge 138kV Ring Bus
15379141 Project

November 20, 2023

Sylvania and Washington
Townships, Lucas County, Ohio

Prepared For:



American Transmission Systems, Inc.
76 South Main, Akron, Ohio 44308

Prepared By:

TRC Companies, Inc.
1382 West Ninth Street, Suite 400
Cleveland, Ohio 44113

TRC Project Number: 429847.0076.0000



TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	METHODOLOGY.....	1
2.1	Wetland Parameters	1
2.1.1	Hydrology	2
2.1.2	Hydric Soils	2
2.1.3	Hydrophytic Vegetation	2
2.2	USACE Wetland Delineation	3
2.3	Ohio Environmental Protection Agency’s Ohio Rapid Assessment Method.....	4
2.4	USACE Waterbody Identification	4
3.0	RESULTS	5
3.1	Site Description	5
3.2	Surface Water Resource Field Delineations	6
3.2.1	Wetlands	6
3.2.2	Waterbodies	6
4.0	PERMITTING CONSIDERATIONS	6
4.1	USACE Verification	7
5.0	LIMITATIONS	7
6.0	REFERENCES.....	8

TABLES

Table 1.	Soils Type Summary	6
----------	--------------------------	---

APPENDICES

- Appendix A Figures
- Appendix B Photographic Record
- Appendix C Data Forms

ACRONYMS AND DEFINITIONS

CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FirstEnergy	FirstEnergy Corporation
GIS	Geographic Information Systems
GPS	Global Positioning System
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
NHD	National Hydrography Dataset
NWI	National Wetlands Inventory
OAC	Ohio Administrative Code
OBL	Obligate Wetland
OEPA	Ohio Environmental Protection Agency
OHWM	Ordinary High Water Mark
ORAM	Ohio Rapid Assessment Method
Project	Talmadge 138kV Ring Bus 15379141 Project
Project Study Area	2.88-acres, located in Sylvania and Washington Townships, Lucas County, Ohio
QHEI	Qualitative Habitat Evaluation Index
Regional Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast (Version 2.0)
Report	Surface Water Delineation Report
TNM	The National Map
TRC	TRC Companies, Inc.
UPL	Obligate Upland
USACE	United States Army Corps of Engineers
USDA-NRCS	United States Department of Agriculture – Natural Resources Conservation Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
1987 Manual	United States Army Corps of Engineers 1987 Wetland Delineation Manual

1.0 Introduction

On behalf of FirstEnergy Corporation (FirstEnergy), TRC Companies, Inc. (TRC) performed a surface water delineation for the Talmadge 138kV Ring Bus 15379141 Project (Project). The proposed Project Study Area is approximately 2.88-acres, located in Sylvania Township and Washington Township, Lucas County, Ohio. The proposed Project involves work within an existing substation, as well as the installation of 2-new steel poles with concrete foundations, and maintenance on an existing electrical line north of the existing substation. On behalf of FirstEnergy, TRC has prepared this Surface Water Delineation Report (Report) for the Project. A site location map of the Project Study Area can be found in Appendix A, Figure 1.

On November 2, 2023, TRC personnel performed field investigations to evaluate and delineate surface water resources (i.e., wetlands and streams) located within the Project Study Area. The delineations were conducted by qualified wetland scientists in accordance with the United States Army Corps of Engineers (USACE) parameters. The objective was to evaluate and delineate potential surface water resources within the Project Study Area, such that the resources could be considered during each phase of the Project. This Report describes the surface water delineation methodology implemented and the existing surface water resources identified within the Project Study Area during field investigations.

The Project Study Area is located at the following approximate centroid coordinates: 41.70609, -83.64583; located in Sylvania Township and Washington Township, Lucas County, Ohio. The Project Study Area occurs within an existing access road, substation, and maintained utility ROW surrounded by residential land use and forested habitat. **Appendix A, Figure 1** and **Figure 2**, provides further information on the location of the proposed Project Study Area.

2.0 Methodology

To complete the surface water delineation and evaluation of the Project Study Area, TRC followed the guidelines and methods outlined by the USACE and Ohio Environmental Protection Agency (OEPA), as described within this section.

2.1 Wetland Parameters

The *USACE 1987 Wetland Delineation Manual (1987 Manual)* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral Northeast Region (Version 2.0) (Regional Supplement)* (USACE, 2012), and the March 6, 1992 guidance memorandum (Williams, 1992) emphasize a three parameter approach to wetland boundary determination in the field. This approach involves the following:

- i. Evidence of wetland hydrology;
- ii. Presence of hydric soils; and
- iii. Predominance of hydrophytic vegetation as defined by *The National Wetland Plant List: 2020 Wetland Ratings* (USACE, 2020).

Positive indicators of all three parameters are normally present in wetlands and serve to distinguish between both dry land and transitional plant communities.

2.1.1 Hydrology

The *1987 Manual and Regional Supplement* provides guidelines for determining the presence of wetland hydrology. Criteria for wetland hydrology are met if the area is inundated or saturated at the soil surface during the growing season for a time sufficient to develop hydric soils and to support hydrophytic vegetation.

2.1.2 Hydric Soils

Hydric soils are defined as soils “that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil” (Federal Register, 1994). Hydric soil indicators described in the *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils Version 8.2* (USDA, NRCS, 2018) were used to identify and document hydric soils as described in the *Regional Supplement*.

2.1.3 Hydrophytic Vegetation

To determine the presence of hydrophytic vegetation, the dominant and non-dominant species in each major vegetative stratum (e.g., tree, shrub/sapling, herbaceous, and woody vine) were identified and recorded.

Plants are placed into indicator status categories depending on their probability of occurring in a wetland in accordance with the USACE’s *The National Wetland Plant List: 2020 wetland ratings* (USACE, 2020). There are five indicator status categories for plants:

1. Obligate wetland plants (OBL): plants that occur almost always (>99%) in wetlands in natural conditions, but which may also occur rarely (<1%) in non-wetlands;
2. Facultative wetland plants (FACW): plants that occur usually (>67-99%) in wetlands but also occur (1-33%) in non-wetlands;
3. Facultative plants (FAC): plants with a similar likelihood (33-67%) of occurring in both wetlands and non-wetlands;
4. Facultative upland plants (FACU): plants that occur sometimes (1-<33%) in wetlands, but occur more often (>67-99%) in non-wetlands; and
5. Obligate upland plants (UPL): plants that occur rarely (<1%) in wetlands but occur almost always (>99%) in non-wetlands under natural conditions.

A prevalence of dominant species that are FAC, FACW, and/or OBL indicates the presence of hydrophytic vegetation.

2.2 USACE Wetland Delineation

Qualified wetland scientists from TRC conducted surface water field investigations on November 2, 2023. The surface water field investigations were conducted within the predetermined Project Study Area (**Appendix A, Figure 1**) that was developed in accordance with the Project location information provided by FirstEnergy. Surface water delineations were conducted using the Federal Routine Determination Method presented in the *1987 Manual* and *Regional Supplement*, including clarifications and interpretations provided in the March 6, 1992 guidance memorandum, and the USACE and Environmental Protection Agency (EPA) guidance on jurisdictional forms (EPA and USACE, 2007 and USACE, 2008).

Hydrology was determined based on a number of indicators that are divided into two categories, primary and secondary. The *1987 Manual* defines hydrology as present when at least one primary indicator (i.e., surface water, saturation, etc.) or two secondary indicators (i.e., geomorphic position, stunted or stressed plants, etc.) are identified. One primary indicator is sufficient to determine if hydrology is present; however, if these are absent then two or more of the secondary indicators are required to determine hydrology. If other probable hydrologic evidence was found, then this was subsequently documented on the data form.

Soils were examined in the field by using a tile spade, generally to a depth of at least 22 inches below the soil surface or until refusal, whichever was shallower. Soil coloration was identified using a *Munsell Soil Color Chart* (Munsell Color Company, 2009). Other characteristics, such as the presence of redoximorphic (Redox) concentrations and depletions and soil texture were also recorded. Redox concentrations and depletions are created when the soil is saturated and has anaerobic conditions (without oxygen gas) which leads to changes in the chemical processes in the soil that produce visible color changes in the soil. Hydric characteristics such as organic soil layers, depleted matrix, gleying, and hydrogen sulfide odor, were noted when observed. Soils at both wetland (if present) and dry land data plot locations were characterized and recorded on the data form.

The presence of hydrophytic vegetation was determined using the procedures described in the *Regional Supplement* and recorded on the data form. Vegetation in both dry land and wetland communities was characterized using a real dominance method, with a radius of 30-feet around the soil sample location for trees and woody vines, 15-foot radius for saplings and shrubs, and a 5-foot radius for herbaceous plants. Plant communities meeting the “50/20” Rule or meeting one of the other indicators set forth in the *1987 Manual*, *Regional Supplement*, and guidance memorandums are considered hydrophytic for the purposes of the wetland classification criteria. In areas where the vegetation was disturbed or not identifiable due to seasonal conditions, soil and hydrology characteristics, and professional judgment/experience were utilized in assessing the primary determining factors for classification as wetlands.

If the soils, hydrology, and vegetation characteristics at a survey point indicated that it was within a wetland, the boundary of the wetland was determined, and the approximate boundary was flagged using wetland flagging and recorded using a handheld Juniper Systems Geode with sub-meter accuracy. Areas observed to have problematic or difficult situations were delineated

utilizing the procedures identified in the *Regional Supplement*, Section 5 – “Difficult Wetland Situations in the Eastern Mountains and Piedmont Region.” Data from the Global Positioning System (GPS) survey was downloaded and integrated into a Geographic Information System (GIS) database for the proposed work areas and used to make the accompanying figures. Identified wetlands were classified according to Cowardin et al. (Cowardin, Carter, Golet, & LaRoe, 1979). Photographs are included in **Appendix B**.

2.3 Ohio Environmental Protection Agency’s Ohio Rapid Assessment Method

According to the Ohio Wetland Water Quality Standards, a wetland quality category (Category 1, Category 2, or Category 3) must be assigned for each wetland if a project will require discharge of dredged or fill material into jurisdictional wetlands. In general, Category 1 wetlands are considered to be of “low quality”, Category 2 wetlands are considered to be of “moderate quality” and Category 3 wetlands are considered to be of “high quality.”

The OEPA has developed the Ohio Rapid Assessment Method (ORAM), which can be utilized to evaluate wetland habitat quality based on the apparent functions and values of the wetland resource. The two primary components of the ORAM are the Narrative Rating and the Quantitative Rating. Each delineated wetland resource received a provisional category designation based on the results of the ORAM Narrative and Quantitative Ratings and review of narrative criteria in the Ohio Administrative Code (OAC) 3745-1-54(C) (Mack, 2000).

2.4 USACE Waterbody Identification

During field investigations, other waterbody features including streams, ponds, lakes, etc. were investigated. Streams within the Project Study Area were identified by the presence of an ordinary high water mark (OHWM) and scoured channel or defined bed and banks. All streams identified in the Project Study Area that were wider than five feet were demarcated via GPS from bank-to-bank. Streams that were less than five feet wide had the centerline demarcated.

Identified streams were evaluated utilizing OEPA approved methods for stream habitat assessment which include the Qualitative Habitat Evaluation Index (QHEI) (Ohio EPA, 2006) and/or the Headwater Habitat Evaluation Index (HHEI) (Ohio EPA, 2020) assessment method. These approved assessment methods provide an empirical, quantified evaluation of streams as required by the State of Ohio for permitting and mitigation purposes. These methods assess stream habitat to provide a qualitative index (or score) to determine the level of compensatory mitigation that may be needed for impacts to waters of the U.S. (i.e., streams).

Use of the QHEI or HHEI assessment method is determined based on the size of the stream’s drainage area and/or the stream’s pool depths. Where coverage was available, the drainage area was calculated using automated basin characteristics from StreamStats v 4.10.1: Ohio (USGS, 2021).

Following OEPA guidance, streams with a drainage area of greater than 1.0 square mile (2.6 square kilometers) or which have pools with maximum depths over 15.8 inches (40.0 centimeters), as determined by measuring pool depth within the stream, were evaluated using

the QHEI. Data on these streams were collected on the QHEI form provided by the OEPA. The QHEI is composed of six principal metrics: substrate, instream cover, channel morphology, riparian zone and bank erosion, pool/glide and riffle-run quality, and map gradient. Each metric is scored separately and summed to obtain the total QHEI score. Using the scoring methods associated with these forms, the stream is placed into the following general narrative ranges, dependent on stream size; for smaller streams (≤ 20 sq. mi): Excellent >70 , Good 55-69, Fair 43-54, Poor 30-42, and Very Poor <30 ; for larger streams (>20 sq. mi): Excellent >75 , Good 60-74, Fair 45-59, Poor 30-44, and Very Poor <30 .

The HHEI was utilized to score streams with a drainage area of <1.0 square mile (2.6 square kilometers). Data on these streams were collected on the HHEI forms, provided by the OEPA. Observational data regarding the physical nature of the stream corridor including stream flow, riparian zone land use and buffer width, and channel modification were recorded. Measurements included bankfull width, maximum pool depth and substrate composition.

Streams identified during the course of the investigation were classified as perennial, intermittent, or ephemeral waterways in accordance with the rationale defined by the USACE Buffalo District.

The Project Study Area was also investigated for areas that were considered “open water” by the USACE. According to the USACE an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” may include rivers, lakes, and ponds. Artificial “open water” features may include stormwater retention basins, fish hatchery ponds, drainage tile pump stations, etc.

3.0 Results

3.1 Site Description

The Project Study Area is approximately 2.88-acres located in Sylvania Township and Washington Township, Lucas County, Ohio; within the Shantee Creek watershed (12-Digit Hydrologic Unit Code [HUC]: 041000010301) (USGS, 2022).

The Project Study Area is shown on the Sylvania, Ohio (2019) United States Geological Survey (USGS) 7.5-minute series topographic quadrangle (**Appendix A, Figure 1**).

There are no United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) features mapped within the Project Study Area (**Appendix A, Figure 3**) (USFWS, 2022).

The USGS National Hydrography Dataset (NHD) (USGS, 2018) Downloadable Data Collection from The National Map (TNM) is a comprehensive set of digital spatial data that encodes information about naturally occurring and constructed bodies of surface water (e.g., lakes, ponds, and reservoirs), paths through which water flows (e.g., canals, ditches, streams, and rivers) and related entities such as point features (e.g., springs, wells, stream gages, and dams). There are no NHD streams mapped within the Project Study Area (**Appendix A, Figure 4**).

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel, 39095C0059F (eff. 03/16/2016), the proposed Project is not located within a FEMA-mapped 100-Year Flood Zone (**Appendix A, Figure 3**) (FEMA, 2021).

The United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) Web Soil Survey (USDA-NRCS, 2016) was used to identify the soil types contained within the Project Study Area (**Appendix A, Figure 4**). **Table 1** provides a summary of the soils identified within proposed Project Study Area.

Table 1. Soils Type Summary

Map Unit Symbol	Map Unit Name	Hydric Status	Acres Within Study Area	Percent Cover in Study Area
ByA	Bixler-Urban land complex, 0 to 3 percent slopes	Non-Hydric with Hydric Inclusions	2.88	100%
TOTAL			2.88	100%
Notes: Accessed online November 2023 at: http://websoilsurvey.sc.egov.usda.gov .				

3.2 Surface Water Resource Field Delineations

TRC performed the field investigation on November 2, 2023. Weather conditions were normal for the season, with temperatures ranging between 51 degrees to 59 degrees Fahrenheit, and partly cloudy skies. Native and non-native herbaceous vegetation was observed within the Project Study Area. The USACE maintains the final authority that determines jurisdiction; therefore, statements about jurisdiction within this Report are preliminary and subject to final determination by the USACE and OEPA.

3.2.1 Wetlands

During the field investigation, no wetlands were delineated within the Project Study Area. Rule out points (U-EKG-1 & U-EKG-2 shown in **Appendix A, Figure 5**) were recorded on the USACE Wetland Determination Data Forms – Northcentral and Northeast Region to verify the absence of wetlands within the Project Study Area. The Data Forms are provided in **Appendix C**.

3.2.2 Waterbodies

During the field investigations, no streams, ponds, or other water bodies were delineated within the Project Study Area.

4.0 Permitting Considerations

It is anticipated that due to the nature of the Project and lack of water resources within the Project Study Area, no resources will be impacted by the proposed Project activities. This Project is

located in Sylvania and Washington Townships, Lucas County, Ohio, which is within the USACE Buffalo Regulatory District. The Project is also located within an “Eligible” area according to Ohio EPA’s Stream Eligibility for Nationwide Permit Program (OEPA, 2017) and therefore is eligible for coverage under the OEPA 401 Water Quality Certification (WQC) for Nationwide Permits (**Appendix A, Figure 6**). As currently proposed, it is TRC’s understanding based on a lack of water resources within the Project Study Area that this Project will not require waterway permitting.

4.1 USACE Verification

The USACE has the authority to determine and/or verify the geographical boundaries of Waters of the United States in accordance with 33 Code of Federal Regulations (CFR) 328 and 33 CFR 329; therefore, the results of this Report are termed “preliminary” until verified and accepted by the USACE.

5.0 Limitations

This Report is limited in scope to the specific terms of the Agreement previously entered into between TRC and FirstEnergy. This Report represents the conditions within the Project Study Area identified herein, as of the inspection dates.

Should the Project change from the scope described herein, TRC should be immediately notified such that additional investigations may be conducted to amend the content of the Report herein. Human-induced and/or natural changes within the Project Study Area may occur after the date of this investigation and may result in changes to the presence, extent, and classification of the surface water resources identified within this Report.

6.0 References

- Cowardin, L., Carter, V., Golet, F., & LaRoe, E. (1979). *Classification of Wetland and Deepwater Habitats of the United States*. 103 pp. U.S. Fish and Wildlife Service.
- Federal Register. (1994, July 13). Changes in hydric soils of the United States.
- FEMA. (2021). *FEMA Flood Map Service Center*. Retrieved from U.S. Department of Homeland Security: Federal Emergency Management Agency: <https://msc.fema.gov/portal>
- Mack, J. (2000). ORAM v. 5.0 Quantitative Score Calibration. Columbus, Ohio: Ohio Environmental Protection Agency, Division of Surface Water, 401/Wetland Ecology Unit.
- Mack, J. (2001). Ohio EPA Technical Report WET/201-1. Columbus, Ohio: Ohio Environmental Protection Agency, Division of Surface Water, 401/Wetland Ecology Unit.
- Munsell Color Company. (2009). X-Rite Munsell Soil Color Book 2009 Revised Edition.
- OEPA. (2017). 401 Water Quality Certification for Nationwide Permit Eligibility Online Map. Retrieved November 2023, from <https://www.arcgis.com/apps/webappviewer/index.html?id=e6b46d29a38f46229c1eb47deefe49b6>
- Ohio Administrative Code Rule 3745-1-11. (n.d.). Maumee River Drainage Basin, Table 11-1. *Use Designations for Water Bodies in the Maumee River Drainage Basin*.
- Ohio EPA. (2006). *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI)*. Columbus, OH: Division of Surface Water, Ohio Environmental Protection Agency.
- Ohio EPA. (2020). *Field Methods for Evaluating Primary Headwater Streams in Ohio (Version 4.1) (HHEI)*. Columbus, OH: Division of Surface Water, Ohio Environmental Protection Agency.
- Rankin, E. T. (1989, November 6). The Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application. Columbus, Ohio: Ohio Environmental Protection Agency, Division of Surface Water.
- USACE. (1987). *Corps of Engineers Wetlands Delineation Manual*. Vicksburg, MS: Environmental Laboratory U.S. Army Corps of Engineers.
- USACE. (2008, June 26). Regulatory Guidance Letter, Subject: Jurisdictional Determinations.
- USACE. (2012). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*. Vicksburg: U.S. Army Engineer

Research and Development Center Environmental Laboratory: U.S. Army Corps of Engineers.

USACE. (2020). *The National Wetland Plant List, version 3.5*. Retrieved from <http://wetland-plants.usace.army.mil/>

USDA, NRCS. (2018). *Field Indicators of Hyrdric Soils in the United States, Version 8.2*. (L. Vasilas, G. Hurt, & C. Noble, Eds.) USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils.

USDA-NRCS. (2016). *Web Soil Survey*. Retrieved November 2023, from <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

USEPA, USACE. (2007, June 5). *Clean Water Act Jurisdiction Following Supreme Court's Decision in Rapanos V. United States & Carabell v. United States*.

USFWS. (2022). *National Wetlands Inventory*. Retrieved November 2023, from <http://www.fws.gov/wetlands/Data/Mapper.html>

USGS. (2018). *National Hydrography Dataset*. Retrieved November 2023, from <https://nhd.usgs.gov/data.html>

USGS. (2019). *Topographical Quadrangle Maps (7.5-minute series). Sylvania, OH 7.5-minute Quadrangle*. U.S. Geological Survey.

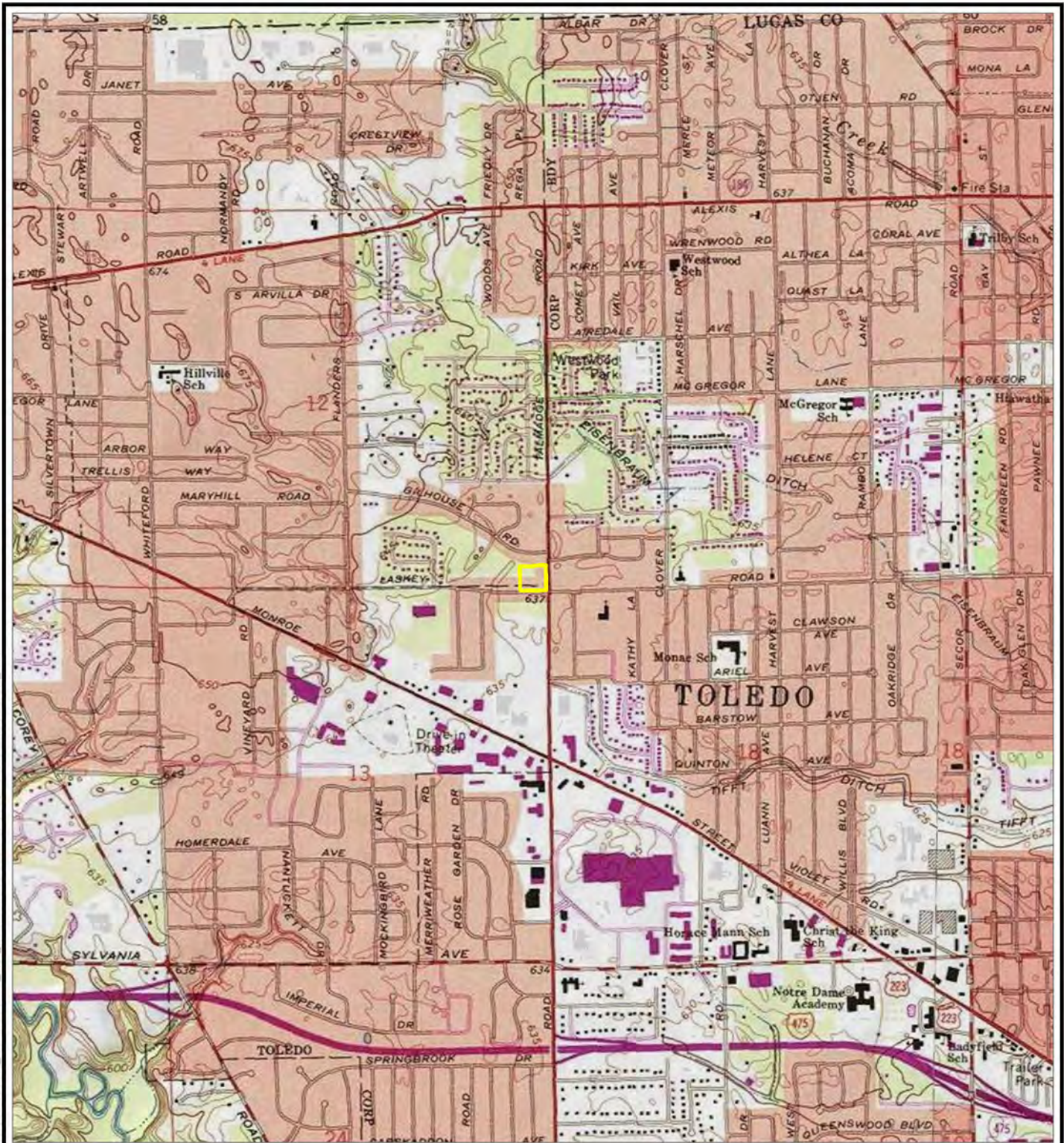
USGS. (2021). *StreamStats, v 4.10.1*. (U.S. Geological Survey) Retrieved November 2023, from *StreamStats Ohio*: <https://streamstats.usgs.gov/ss/>

USGS. (2022, February). *The National Map (TNM)*. Retrieved November 2023, from <https://apps.nationalmap.gov/viewer/>

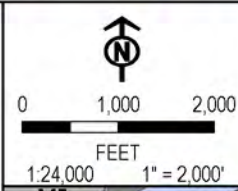
Williams, A. (1992). *Memorandum: Clarification and Interpretation of the 1987 Manual*. U.S. Army Corps of Engineers.

Appendix A

Figures



 PROJECT STUDY AREA



PROJECT: **FIRSTENERGY
TALMADGE 138KV RING BUS 15379141 PROJECT
LUCAS COUNTY, OH**

TITLE: **SITE LOCATION MAP**

DRAWN BY: M. OPEL	PROJ. NO.: 429847.0076
CHECKED BY: M. MOLNAR	FIGURE 1
APPROVED BY: B. FALKINBURG	
DATE: OCTOBER 2023	



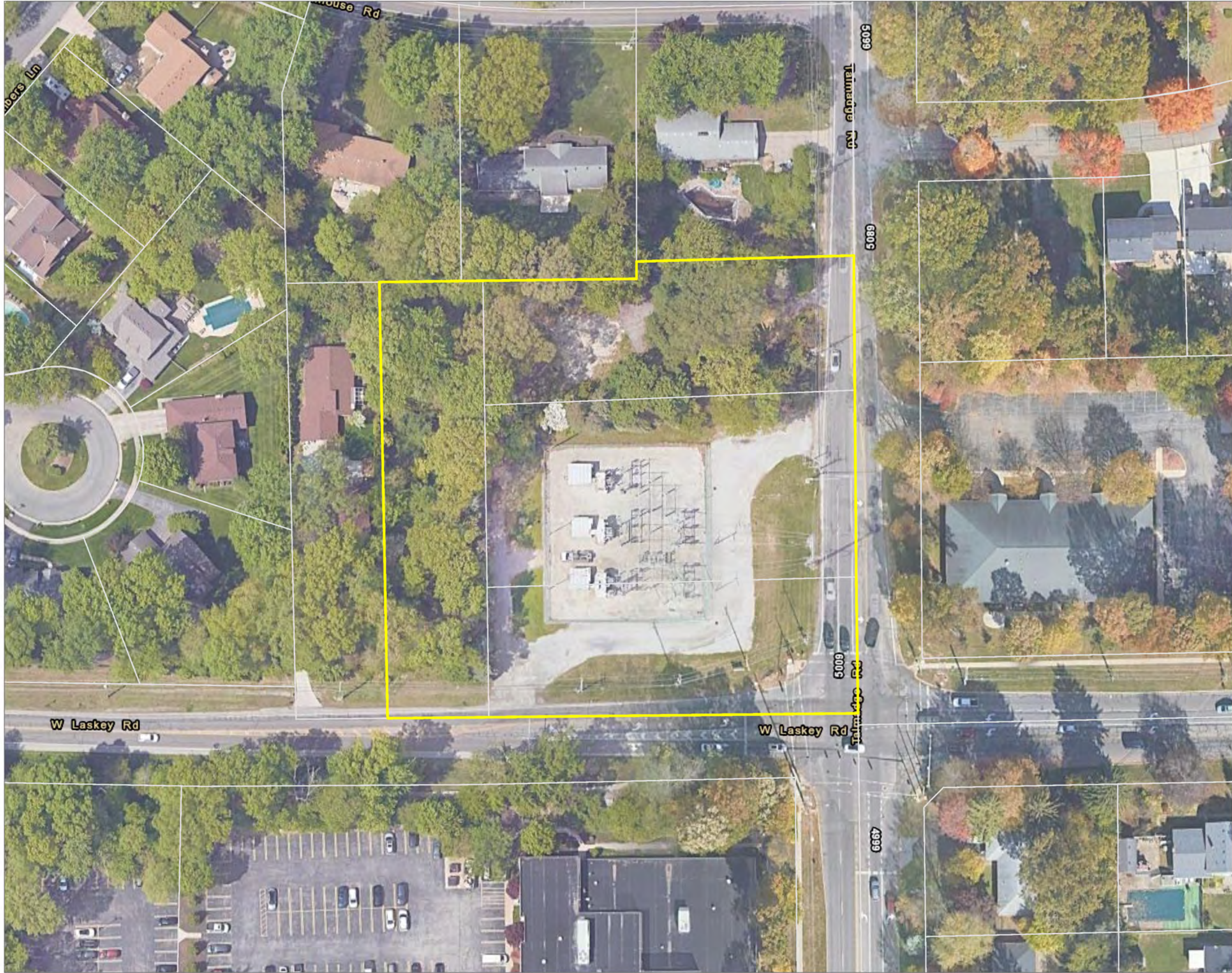
1382 WEST NINTH STREET
SUITE 400
CLEVELAND, OH 44113
PHONE: 216-344-3072

BASE MAP: USA TOPO MAPS MAP SERVICE, SYLVANIA QUAD

FILE: WDR

COORDINATE SYSTEM: NAD 1983 STATEPLANE OHIO NORTH FIPS 3401 FEET; MAP ROTATION: 0
 -SAVED BY: MOPEL ON 10/24/2023 16:55:54 PM; FILE PATH: T:\1-PROJECTS\FIRST ENERGY\429847.APRX; LAYOUT NAME: FIG01_SLM

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet; Map Rotation: 0
 - Saved By: MOPEL on 10/24/2023, 16:55:24 PM; File Path: T:\PROJECTS\First_Energy\429847_0076_Talmdge\15-APR\15WDR.aprx; Layout Name: Fig02_Aerial

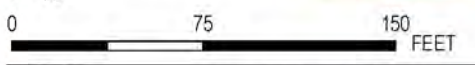


- PROJECT STUDY AREA
- PARCEL BOUNDARIES

BASE MAP: GOOGLE MAPS.



1:900
1" = 75'



PROJECT:		FIRSTENERGY TALMADGE 138KV RING BUS 15379141 PROJECT LUCAS COUNTY, OH	
TITLE:		AERIAL MAP	
DRAWN BY:	M. OPEL	PROJ. NO.:	429847_0076
CHECKED BY:	M. MOLNAR	FIGURE 2	
APPROVED BY:	B. FALKINBURG		
DATE:	OCTOBER 2023	 1382 WEST NINTH STREET SUITE 400 CLEVELAND, OH 44113 PHONE: 216-344-3072	
FILE:	WDR.aprx		

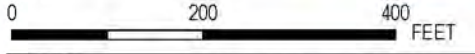


- PROJECT STUDY AREA
- HYDRIC SOIL
- NON-HYDRIC W/ HYDRIC INCLUSIONS SOIL
- NON-HYDRIC SOIL

BASE MAP: GOOGLE MAPS.
 DATA SOURCES: SOILS DATA ACQUIRED FROM USDA/NRCS SSURGO DATABASE.

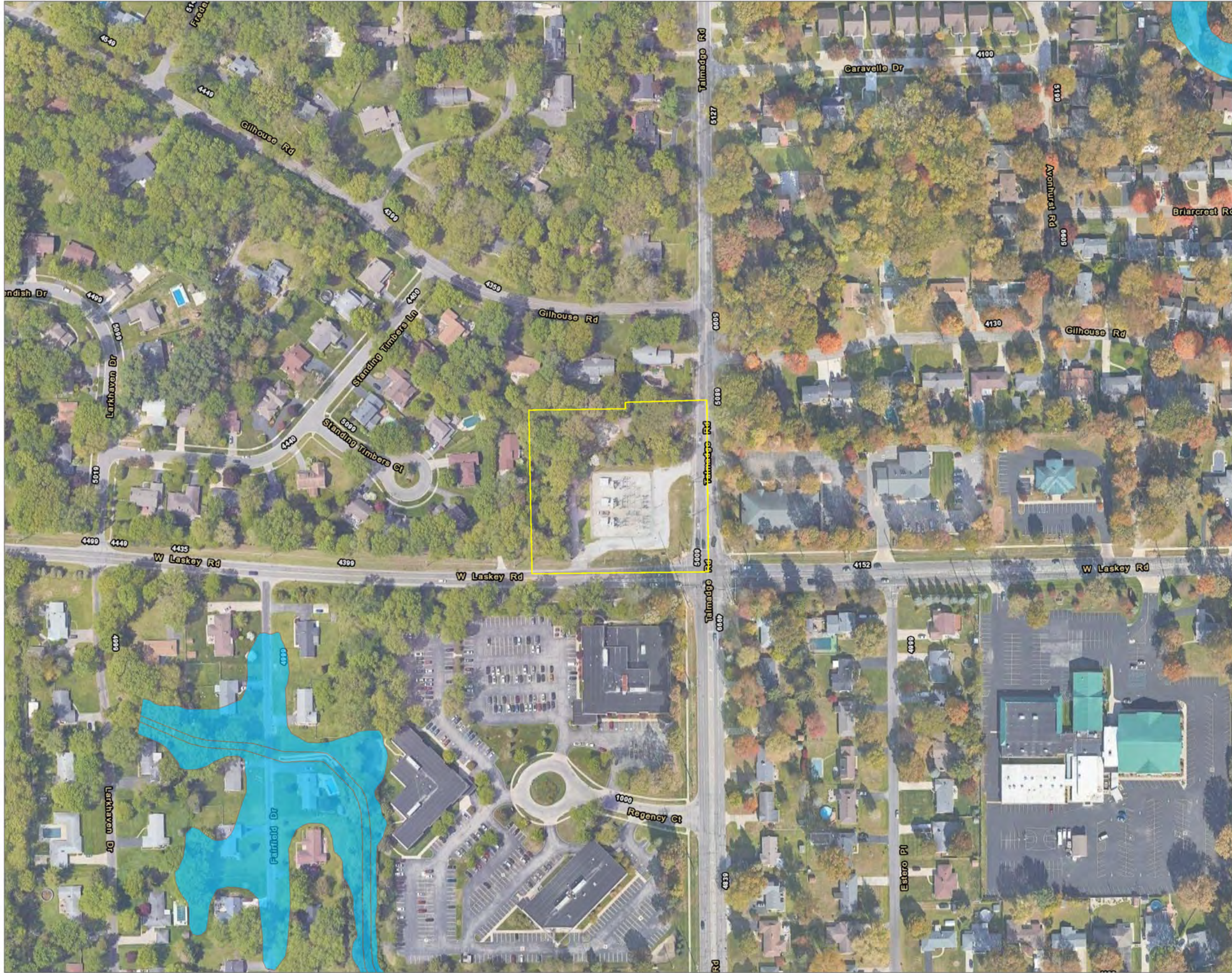


1:2,400
 1" = 200'



PROJECT: FIRSTENERGY TALMADGE 138KV RING BUS 15379141 PROJECT LUCAS COUNTY, OH	
TITLE: SOILS MAP	
DRAWN BY: M. OPEL	PROJ. NO.: 429847.0076
CHECKED BY: E. GIVEN	FIGURE 3
APPROVED BY: B. FALKINBURG	
DATE: NOVEMBER 2023	
1382 WEST NINTH STREET SUITE 400 CLEVELAND, OH 44113 PHONE: 216-344-3072	
FILE:	WDR.aprx

Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet; Map Rotation: 0
 Saved By: MOPEL on 11/8/2023 11:24:06 AM; File Path: T:\PROJECTS\First_Energy\15379141\15379141_VDR.aprx; Layout Name: Fig03_Soils

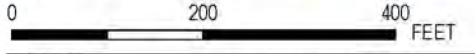


- PROJECT STUDY AREA
- NATIONAL HYDROGRAPHY DATASET (NHD) STREAM
- NATIONAL WETLANDS INVENTORY (NWI) FEATURE
- 100-YEAR FLOOD ZONE

BASE MAP: GOOGLE MAPS.
 DATA SOURCES: WETLAND DATA ACQUIRED FROM U.S. FISH & WILDLIFE SERVICE, NATIONAL WETLANDS INVENTORY (NWI); STREAM DATA ACQUIRED FROM USGS, NATIONAL HYDROGRAPHY DATASET (NHD); FLOOD DATA ACQUIRED FROM FEMA, NATIONAL FLOOD HAZARD LAYER (NFHL).



1:2,400
 1" = 200'



PROJECT: FIRSTENERGY TALMADGE 138KV RING BUS 15379141 PROJECT LUCAS COUNTY, OH	
TITLE: NHD, NWI AND FEMA FLOODPLAIN MAP	
DRAWN BY: M. OPEL	PROJ. NO.: 429847.0076
CHECKED BY: E. GIVEN	FIGURE 4
APPROVED BY: B. FALKINBURG	
DATE: NOVEMBER 2023	
1382 WEST NINTH STREET SUITE 400 CLEVELAND, OH 44113 PHONE: 216-344-3072	
FILE:	WDR.aprx

Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet; Map Rotation: 0
 Date Saved: 11/28/2023 11:24:09 AM; File Path: T:\PROJECTS\First_Energy\15379141\WDR.aprx; Layout Name: Fig04_Hydro

Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet; Map Rotation: 0
 - Saved By: MOPEL on 11/23/2023, 10:41:30 AM; File Path: T:\PROJECTS\Final_Energy\H29847_0076_Talmdge\2-aprx\WDR.aprx; Layout Name: Fig05_Delineation

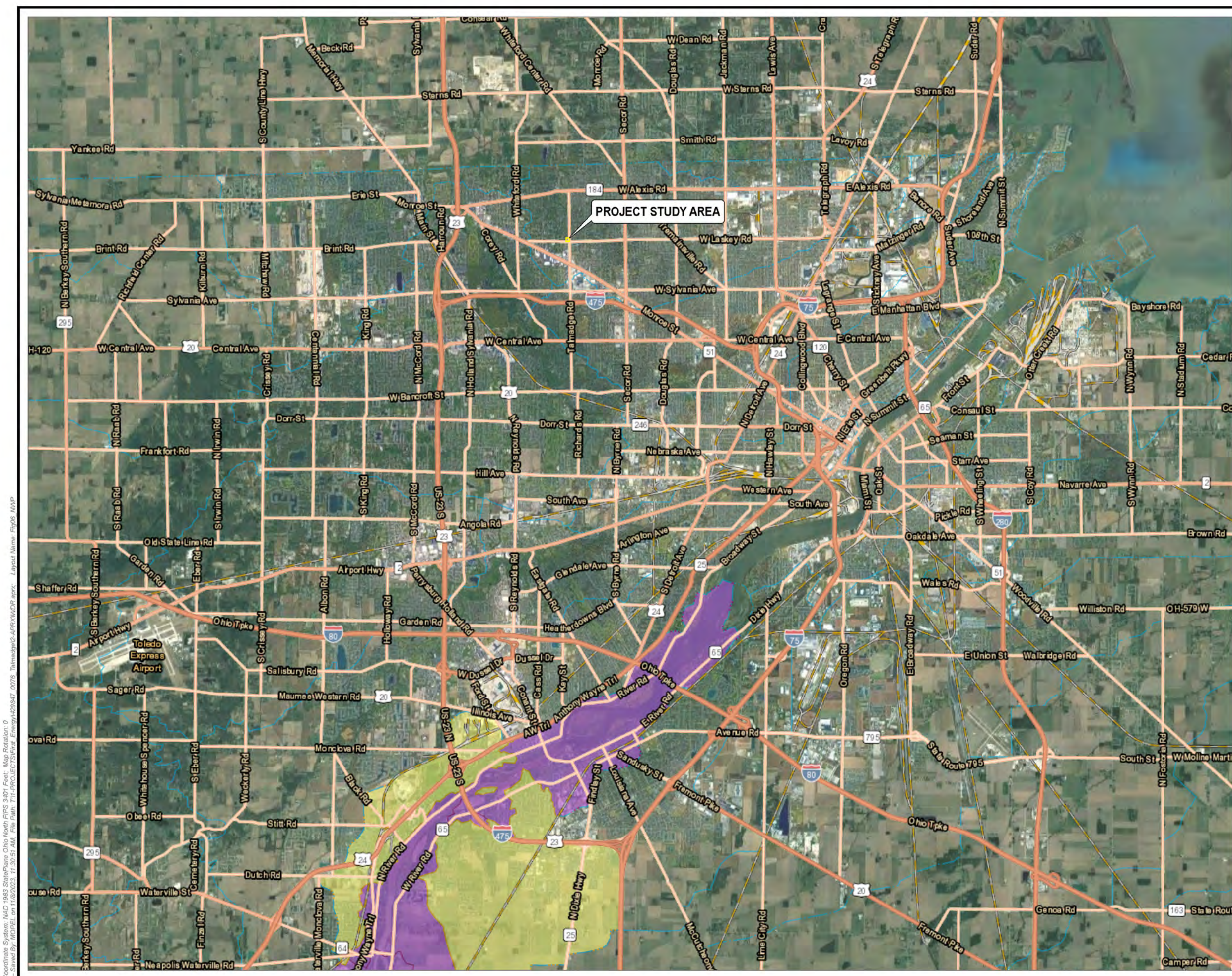


- PROJECT STUDY AREA
- CULVERT
- RULE OUT POINT

BASE MAP: GOOGLE MAPS.
 DATA SOURCES: TRC WETLAND DELINEATION COMPLETED NOVEMBER 2, 2023.

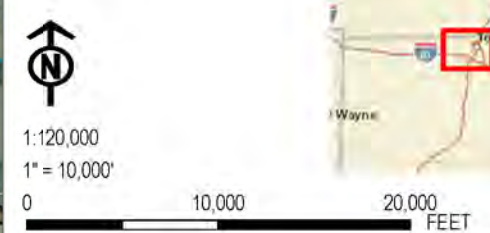


PROJECT:		FIRSTENERGY TALMADGE 138KV RING BUS 15379141 PROJECT LUCAS COUNTY, OH	
TITLE:		DELINEATED RESOURCES MAP	
DRAWN BY:	M. OPEL	PROJ. NO.:	429847.0076
CHECKED BY:	E. GIVEN	FIGURE 5	
APPROVED BY:	B. FALKINBURG		
DATE:	NOVEMBER 2023		
		1382 WEST NINTH STREET SUITE 400 CLEVELAND, OH 44113 PHONE: 216-344-3072	
FILE:			WDR.aprx



- PROJECT STUDY AREA
- OHIO EPA 401 WATER QUALITY CERTIFICATION FOR NATIONWIDE PERMIT ELIGIBILITY
- INELIGIBLE
- POSSIBLY ELIGIBLE
- ELIGIBLE

BASE MAP: GOOGLE MAPS.
 DATA SOURCES: NATIONWIDE PERMITS STREAM DATA ACQUIRED FROM THE OHIO EPA.



PROJECT: FIRSTENERGY TALMADGE 138KV RING BUS 15379141 PROJECT LUCAS COUNTY, OH	
TITLE: NATIONWIDE PERMITS STREAM ELIGIBILITY MAP	
DRAWN BY: M. OPEL	PROJ. NO.: 429847.0076
CHECKED BY: E. GIVEN	FIGURE 6
APPROVED BY: B. FALKINBURG	
DATE: NOVEMBER 2023	
1382 WEST NINTH STREET SUITE 400 CLEVELAND, OH 44113 PHONE: 216-344-3072	
FILE:	WDR.aprx

Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet; Map Rotation: 0
 - Saved By: MOPEL on 11/28/2023, 11:30:51 AM. File Path: T:\PROJECTS\First_Energy\15379141\15379141_VDR.aprx; Layout Name: Fig06.aprx

Appendix B

Photographic Record

Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 1.

Photo Date:
 11/02/2023

Description:

Representative photo from the southwest corner of Project Study Area, facing north.



Photo No. 2.

Photo Date:
 11/02/2023

Description:

Representative photo from the southwest extent of Project Study Aea, facing east.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 3.

Photo Date:
11/02/2023

Description:

Representative photo from the southeast extent of Project Study Area, facing north.



Photo No. 4.

Photo Date:
11/02/2023

Description:

Representative photo from the southeast extent of the Project Study Area, facing northwest.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 5.

Photo Date:
 11/02/2023

Description:

Representative photo from the southeast extent of the Project Study Area, facing west.



Photo No. 6.

Photo Date:
 10/20/2023

Description:

Representative photo from the northeast extent of the Project Study Area, facing east.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 7.

Photo Date:
 11/02/2023

Description:

Representative photo of northwest extent of the Project Study Area, facing south.



Photo No. 8.

Photo Date:
 11/02/2023

Description:

Representative photo of the northeast extent of the Project Study Area, facing north.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 9.

Photo Date:
 11/02/2023

Description:

Representative photo of the northeast extent of the Project Study Area, facing east.



Photo No. 10.

Photo Date:
 10/20/2023

Description:

Representative photo of the northeast extent of the Project Study Area, facing south.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 11.

Photo Date:
 11/2/2023

Description:

Representative photo of the northeast extent of the Project Study Area, facing west.



Photo No. 12.

Photo Date:
 11/2/2023

Description:

Representative photo of the northeast corner of the substation within the Project Study Area, facing west.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 13.

Photo Date:
 11/02/2023

Description:

Representative photo of the northeast corner of the substation within the Project Study Area, facing east.



Photo No. 14.

Photo Date:
 11/02/2023

Description:

Representative photo of the northeast corner of the substation within the Project Study Area, facing south.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 15.

Photo Date:
 11/02/2023

Description:

Representative photo of the northwest corner of the substation within the Project Study Area, facing east.



Photo No. 16.

Photo Date:
 11/02/2023

Description:

Representative photo of the northwest corner of the substation within the Project Study Area, facing south.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 17.

Photo Date:
 11/02/2023

Description:

Representative photo of the northwest corner of the substation within the Project Study Area, facing west.



Photo No. 18.

Photo Date:
 11/02/2023

Description:

Representative photo of the southside of substation, facing north.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 19.

Photo Date:
 11/02/2023

Description:

Representative photo of the southside of substation, facing east.



Photo No. 20.

Photo Date:
 11/02/2023

Description:

Representative photo of the southside of substation, facing west.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 21.

Photo Date:
 11/02/2023

Description:
 Upland rule out point (U-EKG-2), facing north.



Photo No. 22.

Photo Date:
 11/02/2023

Description:
 Upland rule out point (U-EKG-2), facing east.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 23.

Photo Date:
 11/02/2023

Description:
 Upland rule out point (U-EKG-2), facing west.



Photo No. 24.

Photo Date:
 11/02/2023

Description:
 Upland rule out point (U-EKG-1), facing north.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 25.

Photo Date:
 11/02/2023

Description:
 Upland rule out point (U-EKG-1), facing east.



Photo No. 26.

Photo Date:
 11/02/2023

Description:
 Upland rule out point (U-EKG-1), facing south.



Client Name: FirstEnergy	Site Location: Sylvania and Washington Townships, Lucas County, Ohio	Project No. 429847.0076.0000
------------------------------------	--	--

Photo No. 27.

Photo Date:
11/2/2023

Description:
Upland rule out point (U-EKG-1), facing west.



Appendix C

Data Forms



**USACE Wetland Determination Data Forms – Northcentral and
Northeast Region**

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Talmadge 138kV Ring Bus 15379141 Project City/County: Toledo, Lucas County Sampling Date: 2023-11-2
 Applicant/Owner: FE State: OH Sampling Point: U-EKG-01
 Investigator(s): EKG, Michael Whitacre Section, Township, Range: 12 9S 6E
 Landform (hillslope, terrace, etc): Flat Local relief (concave, convex, none): None Slope (%): 0 to 1
 Subregion (LRR or MLRA): MLRA 99 of LRR L Lat: 41.7058126 Long: -83.6463347 Datum: WGS84
 Soil Map Unit Name: Bixler-Urban land complex, 0 to 3 percent slopes NWI Classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>U-EKG-01</u>
Remarks: (Explain alternative procedures here or in a separate report.) Coverture is UPL. Based on the absence of all three parameters, this area is an upland.	

HYDROLOGY

<p>Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)</p> <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"><input type="checkbox"/> Surface Water (A1)</td> <td style="width:50%; border: none;"><input type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> High Water Table (A2)</td> <td style="border: none;"><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Saturation (A3)</td> <td style="border: none;"><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Water Marks (B1)</td> <td style="border: none;"><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Sediment Deposits (B2)</td> <td style="border: none;"><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Drift Deposits (B3)</td> <td style="border: none;"><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td style="border: none;"><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Iron Deposits (B5)</td> <td style="border: none;"><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td style="border: none;"><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p>Secondary Indicators (minimum of two required)</p> <table style="width:100%; border: none;"> <tr><td style="border: none;"><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)																															
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)																															
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)																															
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																															
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)																															
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)																															
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																															
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)																															
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)																															
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																																
<input type="checkbox"/> Surface Soil Cracks (B6)																																
<input type="checkbox"/> Drainage Patterns (B10)																																
<input type="checkbox"/> Moss Trim Lines (B16)																																
<input type="checkbox"/> Dry-Season Water Table (C2)																																
<input type="checkbox"/> Crayfish Burrows (C8)																																
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)																																
<input type="checkbox"/> Stunted or Stressed Plants (D1)																																
<input type="checkbox"/> Geomorphic Position (D2)																																
<input type="checkbox"/> Shallow Aquitard (D3)																																
<input type="checkbox"/> Microtopographic Relief (D4)																																
<input type="checkbox"/> FAC-Neutral Test (D5)																																
<p>Field Observations:</p> Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/></p>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks: The criterion for wetland hydrology is not met.																																

VEGETATION – Use scientific names of plants.

Sampling Point: U-EKG-01

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30 ft radius</u>)																		
1. <u><i>Picea glauca</i></u>	15	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>16.7%</u> (A/B)														
2. <u><i>Quercus palustris</i></u>	10	Yes	FACW															
3. <u><i>Quercus velutina</i></u>	10	Yes	NI															
4. <u><i>Quercus alba</i></u>	10	Yes	FACU															
5. _____																		
6. _____																		
7. _____																		
	45	= Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:right;">Total % Cover of:</td> <td style="text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>80</u></td> <td>x 4 = <u>320</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>340</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.8</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>80</u>	x 4 = <u>320</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>340</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>10</u>	x 2 = <u>20</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>80</u>	x 4 = <u>320</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>90</u> (A)	<u>340</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)																		
1. _____																		
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
	0	= Total Cover																
Herb Stratum (Plot size: <u>5 ft radius</u>)																		
1. <u><i>Lonicera japonica</i></u>	35	Yes	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u><i>Cirsium arvense</i></u>	15	Yes	FACU															
3. <u><i>Sanicula canadensis</i></u>	5	No	FACU															
4. _____																		
5. _____																		
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
12. _____																		
	55	= Total Cover																
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)																		
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____																		
3. _____																		
4. _____																		
	0	= Total Cover		Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														

Remarks: (Include photo numbers here or on a separate sheet.)
 The criterion for hydrophytic vegetation is not met.

SOIL

Sampling Point: U-EKG-01

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 to 12	10YR 2/2	100					Sandy Loam	
12 to 20	10YR 4/1	80					Sandy Loam	
12 to 20	10YR 4/2	20					Sandy Loam	

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- Loamy Mucky Mineral (F1) **(LRR K, L)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- Coast Prairie Redox (A16) **(LRR K, L, R)**
- 5 cm Muck Peat or Peat (S3) **(LRR K, L, R)**
- Dark Surface (S7) **(LRR K, L)**
- Polyvalue Below Surface (S8) **(LRR K, L)**
- Thin Dark Surface (S9) **(LRR K, L)**
- Iron-Manganese Masses (F12) **(LRR K, L, R)**
- Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Not present
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

The criterion for hydric soil is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Talmadge 138kV Ring Bus 15379141 Project City/County: Toledo, Lucas County Sampling Date: 2023-11-2
 Applicant/Owner: FE State: OH Sampling Point: U-EKG-02
 Investigator(s): EKG, Michael Whitacre Section, Township, Range: 12 9S 6E
 Landform (hillslope, terrace, etc): Flat Local relief (concave, convex, none): None Slope (%): 0 to 1
 Subregion (LRR or MLRA): MLRA 99 of LRR L Lat: 41.70627 Long: -83.645731 Datum: WGS84
 Soil Map Unit Name: Bixler-Urban land complex, 0 to 3 percent slopes NWI Classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>U-EKG-02</u>
Remarks: (Explain alternative procedures here or in a separate report.) Covertupe is UPL. Based on the absence of all three parameters, this area is an upland.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"><input type="checkbox"/> Surface Water (A1)</td> <td style="width:50%; border: none;"><input type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> High Water Table (A2)</td> <td style="border: none;"><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Saturation (A3)</td> <td style="border: none;"><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Water Marks (B1)</td> <td style="border: none;"><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Sediment Deposits (B2)</td> <td style="border: none;"><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Drift Deposits (B3)</td> <td style="border: none;"><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td style="border: none;"><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Iron Deposits (B5)</td> <td style="border: none;"><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td style="border: none;"><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p><u>Secondary Indicators (minimum of two required)</u></p> <table style="width:100%; border: none;"> <tr><td style="border: none;"><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)																															
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)																															
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)																															
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																															
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)																															
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)																															
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																															
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)																															
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)																															
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																																
<input type="checkbox"/> Surface Soil Cracks (B6)																																
<input type="checkbox"/> Drainage Patterns (B10)																																
<input type="checkbox"/> Moss Trim Lines (B16)																																
<input type="checkbox"/> Dry-Season Water Table (C2)																																
<input type="checkbox"/> Crayfish Burrows (C8)																																
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)																																
<input type="checkbox"/> Stunted or Stressed Plants (D1)																																
<input type="checkbox"/> Geomorphic Position (D2)																																
<input type="checkbox"/> Shallow Aquitard (D3)																																
<input type="checkbox"/> Microtopographic Relief (D4)																																
<input type="checkbox"/> FAC-Neutral Test (D5)																																
<p>Field Observations:</p> Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/></p>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks: The criterion for wetland hydrology is not met.																																

VEGETATION – Use scientific names of plants.

Sampling Point: U-EKG-02

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30 ft radius</u>)																		
1. _____				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)														
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
<u>0</u>					= Total Cover													
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)																		
1. <u>Juniperus virginiana</u>	15	Yes	FACU	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:right;">Total % Cover of:</td> <td style="text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>35</u></td> <td>x 4 = <u>140</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>235</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.4</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>35</u>	x 4 = <u>140</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>235</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>10</u>	x 2 = <u>20</u>																	
FAC species <u>25</u>	x 3 = <u>75</u>																	
FACU species <u>35</u>	x 4 = <u>140</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>70</u> (A)	<u>235</u> (B)																	
2. <u>Lonicera japonica</u>	5	Yes	FACU															
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
<u>20</u>				= Total Cover														
Herb Stratum (Plot size: <u>5 ft radius</u>)																		
1. <u>Ulmus rubra</u>	25	Yes	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Persicaria pensylvanica</u>	10	Yes	FACW															
3. <u>Arctium minus</u>	10	Yes	FACU															
4. <u>Trifolium repens</u>	5	No	FACU															
5. <u>Asteraceae</u>	5	No	NI															
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
12. _____																		
<u>55</u>				= Total Cover														
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)																		
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____																		
3. _____																		
4. _____																		
<u>0</u>					= Total Cover													
				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														

Remarks: (Include photo numbers here or on a separate sheet.)
 The criterion for hydrophytic vegetation is not met.

SOIL

Sampling Point: U-EKG-02

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 to 7	10YR 4/2	100	10YR 4/2				Sandy Loam	
7 to 14	10YR 3/2	50	10YR 5/4	50	C	M	Sandy Loam	
14 to 20	10YR 4/1	100					Sandy Loam	

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- Loamy Mucky Mineral (F1) **(LRR K, L)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- Coast Prairie Redox (A16) **(LRR K, L, R)**
- 5 cm Muck Peat or Peat (S3) **(LRR K, L, R)**
- Dark Surface (S7) **(LRR K, L)**
- Polyvalue Below Surface (S8) **(LRR K, L)**
- Thin Dark Surface (S9) **(LRR K, L)**
- Iron-Manganese Masses (F12) **(LRR K, L, R)**
- Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Not present
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

The criterion for hydric soil is not met.